



“To meet the continual growth of business and information technology in Beijing, our Beijing Industrial Cloud service platform must have a robust storage infrastructure that can provide unsurpassed reliability, performance and scalability. The Hitachi Data Systems storage solution demonstrates cutting-edge advantages in performance and reliability, empowering us to overcome our operational challenges in a hassle-free way.”

Wu Yilei
 Research and Development
 Beijing Computing Center

Beijing Computing Center

INDUSTRY Government

SOLUTIONS *Cloud, File and Content Services, Modular Platform*
Hardware — Hitachi Adaptable Modular Storage 2500 and Hitachi NAS Platform 3080, powered by BlueArc®
Software — Hitachi Dynamic Link Manager
Services — Provided by Hitachi TrueNorth™ Partner Nikoyo



Hitachi Data Systems Helps Beijing Computing Center Build Reliable, High-performance File Management System

Established in 1973, Beijing Computing Center was one of the first computer centers in China and continues to be one of China's most influential computer application technology research and promotion agencies. It now serves customers across a number of business segments including industrial, commercial, transportation, energy, environmental protection, financial, taxation, social affairs and more. To address the essential operational requirements that support these activities, the center opted for a state-of-the-art capacity allocation technology built on Hitachi NAS Platform and Hitachi Adaptable Modular Storage.

Since its inception, Beijing Computing Center has completed hundreds of research projects commissioned by the national and municipal government, as well as numerous service-oriented projects for multifaceted business customers. As such, it has played a key role in the popularity, adoption and development of computing solutions in China.

Today, Beijing Computing Center has successfully deployed many super-cloud service platforms. Operated on an enterprise-service model, these cloud platforms bring together the products, solutions and services of both upstream and downstream suppliers to create a collaborative, cloud-based alliance. Ultimately,

the center seeks to build a complementary partnership that can mutually benefit every member of its supply chain, from R&D and production to commercialization and application deployment. In this way, it will create a dynamic, independent and innovative business ecosystem.

Beijing Industrial Cloud Project

In recent years, the Beijing Industrial Cloud has been the center's major cloud-computing project. This massive new platform is designed to enable small and medium-sized enterprises, especially Beijing's technology innovation companies, to obtain the resources and services they need at a low cost. It also helps

significantly reduce the overall energy consumption of IT enterprises in the Beijing area. This encourages greener economic development and establishes a cloud-based service model that can support the development of next-generation data centers.

However, as the business has grown, the Beijing Industrial Cloud platform has faced more and more challenges. These have included rapid data growth, long-term data retention, managing vast volumes of historical data with a high accumulative rate, and the need for high-performance storage for the high-performance computing. For the continued success of the platform, it was critical that the center find new ways to ensure its storage resources are used efficiently, safely and continuously. Beijing Industrial Cloud needed to optimize the allocation of storage resources, improve the efficiency of the entire storage system and meet the stringent capacity demands of high-performance computations.

To address these critical operational requirements, Hitachi Data Systems proposed a solution based on Hitachi NAS Platform (HNAS) 3080, powered by BlueArc®, and Hitachi Adaptable Modular Storage (AMS) 2500 solutions. Using state-of-the-art capacity allocation technology, the Hitachi solution meets the rigorous demands of the Beijing Industrial Cloud in the key areas of performance, reliability, capacity and manageability.



During the two-week storage configuration, installation and evaluation process, Beijing Computing Center also expressed its great satisfaction at the price-to-performance advantage of Hitachi storage products.

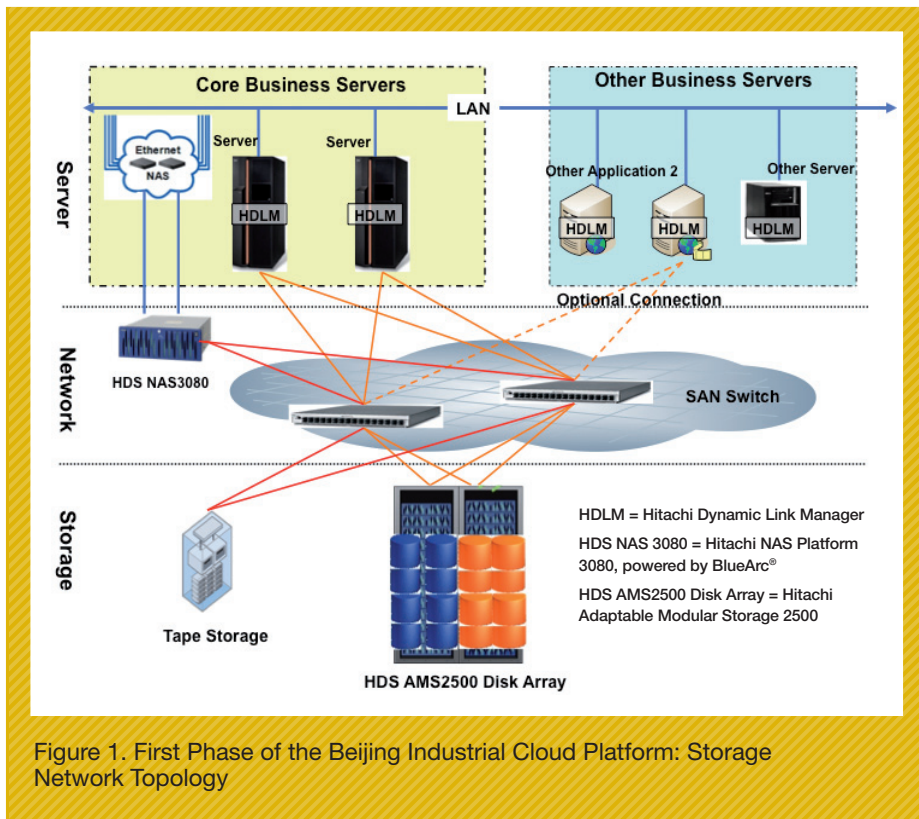


Figure 1. First Phase of the Beijing Industrial Cloud Platform: Storage Network Topology

Highly Available, High-performance Hitachi Storage Solutions

The first phase of the Beijing Industrial Cloud platform sought to build a storage system for science and engineering computing applications. The goal was to build a storage platform with a raw capacity of 250TB that could effectively support both SAN and NAS + SAN systems simultaneously.

The storage infrastructure of the HNAS and SAN storage infrastructure was a crucial aspect of the project, and ensuring that the system could support a huge amount of data traffic without compromising reliability and efficiency was key to success. HNAS 3080 and AMS 2500 storage platforms are specifically designed for processing large data volumes and supporting multiple-user-access environments. The entire storage environment

can comfortably accommodate a storage capacity of up to 4PB, far surpassing the center’s storage requirements, both today and in the future.

As can be seen in Figure 1, the storage network topology of the Beijing Industrial Cloud platform mainly consists of the high-performance HNAS 3080 device and an AMS 2500 storage system with 60 units of high-performance 600GB 15000RPM SAS disks and 120 units of 2TB 7200RPM SATA disks.

The introduction of Hitachi NAS Platform aimed to improve the center’s efficiency and performance for file and data sharing by fundamentally eliminating system sprawl and traffic bottlenecks. With the virtualization functions of HNAS, such as virtual servers, virtual volumes and virtual

storage pools, the center’s storage administrators can now effectively allocate storage capacity for different applications and users. HNAS also provides an intelligent file tiering function, enabling policy-based hierarchical storage management to match data to user or application needs. In the event of overload or system failure, the virtual server automatically adjusts to meet the failover and load-balancing requirements. The virtual server automatically performs failover in the event of system failure to provide high availability, and can also be manually migrated to achieve load balancing.

- **Cutting-edge Architecture, Functionality and Throughput:** The unique architecture, functionality and throughput of the Hitachi NAS Platform help optimize the operation of the Beijing Industrial Cloud platform.
- **Architectural Advantages:** The Hitachi hardware file-sharing system, open storage architecture, multiple network sharing protocols and single-node operational support completely eliminate the bottlenecks found in traditional NAS solutions.
- **Functionality Advantages:** With the support of Hitachi technologies, the new platform is able to achieve storage virtualization, large-scale file management, data protection and much more. The system’s key features include an advanced virtualization framework, intelligent file tiering, snapshots, a modular design, virtual server support and seamless integration with Hitachi storage resource management software, policy-based storage management, anti-virus and security.
- **Throughput Advantages:** With multiple field programmable gate arrays (FPGA), the internal HNAS structure is fully equipped to meet the high-throughput requirements of massive data processing and sharing.

Enhanced Storage Strategies for Better Business Outcomes

The Beijing Industrial Cloud platform required a huge capacity for file processing and sharing, as well as a highly scalable storage capacity. Hitachi NAS Platform optimizes the platform's day-to-day operations with unparalleled performance, reliability, availability and massive storage capacity. To complement the maturity of its proven technology, Hitachi also invests in continual innovation and technology refinements, which ensure that the Beijing Industrial Cloud will always remain at the forefront of performance. Hitachi Data Systems likewise sets itself apart from its competitors by completely resolving the system bottlenecks of a traditional NAS, and delivering unprecedented system scalability. By integrating the unique Hitachi file-processing and sharing function, the new platform is able to provide storage virtualization, a large-scale file system and robust data protection on a scale that simply would not have been possible before. Third-party evaluation has also confirmed that HNAS has unrivaled capacity and throughput, and that its hardware architecture delivers enormous processing power for the new platform.

Success with Hitachi Data Systems

In partnership with Hitachi Data Systems, Beijing Computing Center has successfully deployed its Beijing Industrial Cloud and established another self-developed cloud computing service platform called Beijing Cloud. These important projects are intended to drive innovation and product development among businesses of all sizes and greatly enhance the competitiveness of China's industries in the global economy.

Throughout its collaboration with Beijing Computing Center, Hitachi Data Systems consistently demonstrated its superior storage technology and professionalism. During the two-week storage configuration, installation and evaluation process, Beijing Computing Center also expressed its great satisfaction at the price-to-performance advantage of Hitachi storage products.



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