Scalable, High-Performing Software-Defined Data Center by Sugon and VMware

VMware Horizon 7* on VMware Cloud Foundation* and Intel® Xeon® processors enables a flexible, agile infrastructure for tens of thousands of virtualized desktops.

Executive Summary

Sugon Information Industry Co., Ltd (Sugon), one of China's leading data center solution providers, delivered a cost-effective software-defined data center (SDDC) solution based on VMware Cloud Foundation* and VMware Horizon 7* to modernize the existing data center at a prestigious technical university. This solution supports the university's students and faculty through a virtualized desktop infrastructure (VDI), which has enabled the university to simplify and streamline its data center management. With the help of Intel, Sugon deployed its solution to the university across 20 rack-mount servers built with Intel® Xeon® processors, Intel® Solid-State Drives (SSDs), and Intel® Ethernet Controllers, in addition to a complete software stack from VMware. The VMware* solution–based SDDC demonstrates an easy deployment that could accommodate other universities and organizations that need to provide desktops to a large number of users.

Overcoming Obstacles to Host Thousands of Users

A major university was facing a challenge with its data center infrastructure. The IT team needed to deliver desktop services and apps to 15,000 users, but adding new infrastructure to its data center was becoming cost-prohibitive. The university wanted a way to easily scale up and out to support active VDI users while also supplying the throughput that users required.

The university wanted to implement an SDDC to meet its needs, but it also knew that providing compute power to users via a private cloud has its own set of complexities. SDDCs are perceived to be difficult and costly to implement, in addition to requiring niche, expert workers for deployment and management. Few organizations have this kind of expertise on staff or can afford the salaries of these expert hires.

To help the university update its data center, Sugon partnered with Intel to develop and implement an SDDC. Sugon* rack-mount servers with Intel Xeon processors, Intel SSDs, and Intel Ethernet Controllers provide the compute, storage, and network necessary to meet the performance needs of the university's users. The Intel® processor–based Sugon rack-mount servers also helped the university cut down on operational costs and physical footprint while delivering the required performance.

Sugon developed the software stack with VMware technologies; this stack enables the university to centrally manage and support the many applications and services that its faculty and students rely upon, in addition to scaling to accommodate thousands of simultaneously active users. Thanks to hardware from Intel and Sugon, plus the capabilities of the VMware stack, the university's IT team does not need to hire expensive experts to set up or maintain the SDDC.

Using VMware to Support and Scale Data Centers

Sugon designed, developed, and deployed this private cloud and VDI solution to enhance and, in some cases, replace the university's existing data center infrastructure. The solution aimed to provide the university with a cloud computing platform, desktop, and storage solution, and a mobile office platform that would provide more stability and scalability than the legacy infrastructure.

Table 1. A major China-based university benefits from an SDDC with VDI deployment[1]

UNIVERSITY SDDC DEPLOYMENT BENEFITS[1]
Supports more than **500** virtual hosts and **15,000** user accounts
Provides more than **1,000** simultaneous users with the right VDI configuration to match their needs
Reduces power consumption and data center footprint
Expected to reduce total cost of ownership (TCO) of the data center by up to **20** percent
Anticipated to increase online transactional processing (OLTP) speeds by **50** percent

Sugon tested the solution against traditional virtualization and graphics-intensive virtual desktops and confirmed that it could achieve:

- A scalable platform to accommodate a large, fluctuating number of users
- Central management to monitor bandwidth, workloads, CPU usage, and memory usage
- Rapid deployment and shutdown of desktops and application services for new users
- Performance to match users' needs
- Improved data security

Sugon's deployments prove that a centrally managed VDI solution is possible to build, deploy, and maintain in a university setting. Implementing the solution can make it easy for the university to deploy the solution to thousands of users in months instead of years. Because of the SDDC, the desktop services can also be switched off on-demand. Sugon's Intel and VMware technology–based solution can reduce the overall time that IT organizations spend maintaining physical desktop computers and can help save on capital and operating expenses.

Sugon Solution Details

Sugon created its SDDC solution to specifically cater to the university's needs. Sugon rack servers with Intel components and VDI software built with VMware Cloud Foundation and VMware Horizon 7 are composed of:

- 20 Sugon I840-G25* rack-mount servers
- Four Intel Xeon processors E7-4820 v3 per server to provide high performance, power efficiency, reliability, and hardware-enhanced security
- The Intel SSD DC S3510 Series to provide a read/write cache-acceleration layer to improve performance and capacity
- A dual-port 10 gigabit Intel Ethernet Controller X540-AT2 to deliver up to 80 gigabit per second (Gbps) and bidirectional throughput while increasing efficiency, agility, and ability to manage bandwidth demands

The university wanted to automate user validation, so when a student or professor logged into the system, the system would automatically determine how much compute power that user would need and configure and deploy a virtual desktop instance to meet the user's requirements. To manage this, Sugon configured a software stack that includes:

- Sugon Cloudview*, a cloud manager that provides automated user validation
- VMware Cloud Foundation for SDDC and VMware Horizon 7 to automate VDI image creation and access
- VMware Cloud Foundation consists of VMware vSphere 6.0* for virtual machines and VMware vSAN* for storage
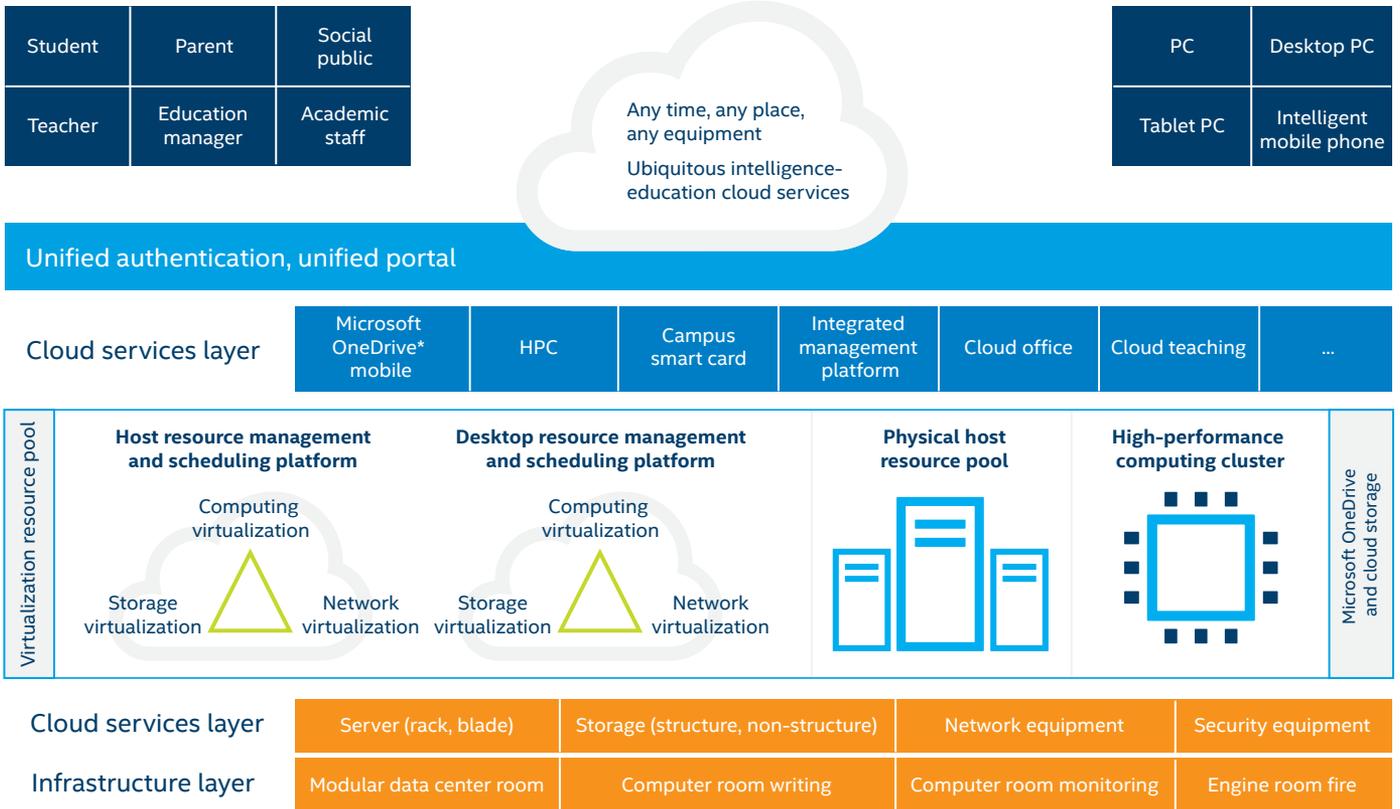
Student	Parent	Social public
Teacher	Education manager	Academic staff

Any time, any place, any equipment

Ubiquitous intelligence-education cloud services

PC	Desktop PC
Tablet PC	Intelligent mobile phone

Unified authentication, unified portal

Cloud services layer

| Microsoft OneDrive* mobile | HPC | Campus smart card | Integrated management platform | Cloud office | Cloud teaching | ... |

Virtualization resource pool

Host resource management and scheduling platform
- Computing virtualization
- Storage virtualization
- Network virtualization

Desktop resource management and scheduling platform
- Computing virtualization
- Storage virtualization
- Network virtualization

Physical host resource pool

High-performance computing cluster

Microsoft OneDrive and cloud storage

Cloud services layer

| Server (rack, blade) | Storage (structure, non-structure) | Network equipment | Security equipment |

Infrastructure layer

| Modular data center room | Computer room writing | Computer room monitoring | Engine room fire |

Figure 1. The VMware* SDDC solution deployed and designed by Sugon for a major university in China

The VDI from VMware Horizon 7 can host a range of operating systems including Red Hat* Enterprise Linux*, Windows*, and CentOS*.

Figure 1 shows the design of Sugon's VMware and Intel technology–based VDI solution, which can be replicated for other universities and organizations with a large number of VDI user needs.

Future Considerations

Two other universities have already purchased Sugon's VMware SDDC solution, and there are five more awaiting an assessment from Sugon to see how the solution might work for their institutions. In partnering with VMware and Intel, Sugon will be able to offer cost savings to its future SDDC solution customers.

VMware, Intel, and Sugon: A Scalable SDDC Solution for VDI

Sugon and Intel collaborated to provide a prestigious technical university with an SDDC solution—a solution that neither company would have been able to offer without the other's partnership. This VMware solution–based SDDC can be implemented in other universities or organizations.

Industry collaborations such as these will go a long way toward solving IT challenges in the data center.

About Sugon

Sugon was founded in the mid-1990s and now stands among China's top 100 high-performance computing, server, storage, cloud computing, and big data vendors. The company is supported by the Chinese Academy of Sciences (CAS) and has a track record of advancing China's science and industry research.

To see how Sugon is helping companies implement SDDC solutions, visit **http://sugon.com/en** or connect with Sugon on WeChat* by searching Sugoncn or by scanning the following QR code from the WeChat app.

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