

Private cloud enhances learning experience for end users in Nanyang Polytechnic

The deployment of a private cloud has enabled Nanyang Polytechnic's School of Engineering (Electronics) to build up its cloud computing capabilities and allowed staff and students to benefit from more efficient resource provisioning.

The Challenge

Engineering is one of seven schools at Nanyang Polytechnic (NYP) offering full-time diplomas as well as advanced and specialist courses. As the School which runs the polytechnic's Diploma in Multimedia & Infocomm Technology, it is also very much involved in cloud computing.

"Cloud computing adoption is accelerating, given its value proposition to enterprises, institutions and end users," said Mr Chan Yew Meng, Senior Director, School of Engineering (Electronics). "The School is developing graduates with the relevant expertise for the infocomm industry and partnering companies to develop innovative cloud computing solutions that meet market needs. We are also an institutional user of cloud computing as we realise the benefits of adopting cloud computing systems and technologies. In a nutshell, we teach it, develop solutions around it and use it."

ORGANISATION

Nanyang Polytechnic (NYP)

INDUSTRY

Education & Learning

CHALLENGE

NYP wanted to build up the capability to set up and manage a cloud data centre and to expose its students and industry professionals to cloud-related technologies and their benefits

SOLUTION

NYP worked with Platform Computing to deploy Infrastructure Sharing Facility, a job scheduling and resource allocation manager that enable the delivery of Infrastructure-as-a-Service. This creates a private cloud that allows for the automated or self-service provisioning of ICT resources

BENEFITS OF CLOUD SERVICES

- Enables self-service resource provisioning
- Optimises the use of lab time
- Allows greater flexibility in learning
- Reduces management overheads

The Solution

In 2008, the School worked with Platform Computing to develop a Proof of Concept for the deployment of Platform's Infrastructure Sharing Facility (ISF). The ISF is a job scheduling and resource allocation manager which enables the delivery of Infrastructure-as-a-Service (IaaS) and allows organisations to build and run their private clouds. It sits on top of the School's existing ICT infrastructure which comprises blade servers, a storage area network as well as other networking equipment.

"We were looking to see if the IaaS layer could handle self-provisioning, support workflow approval and had the ability to limit resource requests," said Mr Foo Yong Wee, Manager, Communications and Networks Group.

After three months, the School was convinced that these use cases could be satisfied and proceeded to deploy ISF. Since then, other cloud services such as desktop virtualisation have been rolled out progressively to lecturers and students.

Today, the School uses the said private cloud in teaching and learning, and in test and development environments. For example, during lab sessions, the students can access a

personalised virtual desktop pre-loaded with their required applications and course materials. The private cloud has also enabled the School to implement a workflow to support self-service provisioning of resources by students. For example, if they need to set up more virtual machines for their projects, they can request for the resources to do so. The system routes the request to the respective supervisors for approval, and the resources are then automatically provisioned to the student.

The Benefits

The deployment of a private cloud has enabled students, lecturers and administrators to enjoy the benefits of IaaS.

Enables self-service resource provisioning

The private cloud allows students to access ICT resources using the self-service features of the IaaS. This results in more efficient provisioning and frees up more time for the supervisor to guide students in their project work.

Lecturers and administrators have also benefitted from the IaaS. "Previously, if I wanted my students to make use of a virtual machine with certain software installed, I would have to create what I want them to see and from there, create clones for each of the 25 students. With the cloud deployment, all we have to do is to create a template for the students, and they can do self-provisioning of resources," said Mr Frankie Chan, Lecturer in Multimedia and Infocomm Technology.

According to Technical Support Officer Mr Aw Hock Choon, the automation of workflow to allow self-service provisioning could reduce administrative overheads by up to 20 per cent.

Optimises the use of lab time

During lab sessions, students can access their personalised virtual desktops which come pre-configured with the applications they need for the session. "The advantage of the virtual desktop is that everything resides on the server, so we no longer have to download and install the applications that we need for each class. This allows us to begin the lab session almost immediately and gives us more time to work on our projects," said final-year student Ms Lee Poh Kim.

Allows greater flexibility in learning

With the private cloud, the students enjoy greater flexibility to go through their course materials outside of their lab sessions. As Mr Frankie Chan pointed out, "The students will be able to log in to their virtual desktop when they connect to the campus network, so they do not need to go specifically to the lab if they need to access their applications or course materials."

Reduces management overheads

The IaaS allows for the centralised management of desktops, which also helps to reduce the workload of administrators. For example, instead of having to reset each desktop after a lab session, the private cloud enables administrators to return the desktops to their original setting with a simple centralised reboot.

About the National Grid

The National Grid is a national effort that draws together commercial cloud service providers to offer pay-per-use access to compute, storage and software facilities. The three consortia who have been appointed National Cloud Service Providers are Alatum led by Singapore Computer Systems Ltd (now part of SingTel), nGrid led by New Media Express Pte Ltd and PTC System (S) Pte Ltd.

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