Huawei Enables Malaysia University to Build Asia-Pacific Region's First 100G Smart Campus Network

Background

Malaysia's largest — and most prestigious — university planned to improve its online learning and scientific research capabilities, but its legacy network made that impossible. Its original wired and wireless network equipment was obsolete, and Wi-Fi performance was poor. The Universiti Putra Malaysia (UPM) has three campuses spread over 3,000 acres (12 square km), with 30,000 students and teachers — and it needed a "smart campus network" urgently.

Challenges

UPM's legacy network architecture was rather complex. Wired and wireless network devices as well as servers were managed independently. As a result, network management and maintenance was difficult, and fault location was time-consuming. Other challenges:

- Virtual Desktop Infrastructure (VDI) applications were becoming increasingly popular, but UPM had no high-bandwidth core network
- Converged wired and wireless networks were not possible with no central management of equipment and servers
- UPM wanted to offer students high-quality network services that are charged by time used or traffic volume, but it couldn't do that, either
- UPM's legacy network infrastructure could not support Massive Open Online Courses, or MOOCs, that could provide free courses over the Internet and serve even more Malaysian students
- UPM's video services and image transmission consumed huge amounts of traffic that created network bottlenecks

Solution

To solve these issues, UPM looked to Huawei and its Agile Education Campus Network Solution.

Huawei's Agile Switches ensure non-blocking network connections using high-speed cards that provide 100G ports. The 100G backbone network designed by Huawei met network traffic requirements

Executive Summary

Industry
Education

Challenges
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- Wanted to offer students high-quality network services that are charged by time used or traffic volume
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Solution
- 100G core backbone network
- Refined operations and accounting provides controllable network and operation services
- 1,200+ 802.11ac APs cover indoor and outdoor areas such as classrooms, playgrounds, dormitories, and lecture halls
- High bandwidth and a stable core network enables Big Data modeling analytics and HPC

Benefits
- Implements MOOCs and HPC
- Shares Wi-Fi offloading revenue with the carrier
- Enables Big Data analytics
- Everyone on campus can connect to the Wi-Fi network

for interconnection between backbone campus networks and interconnection between switches and data centers. Over the next five years, as traffic grows, the campus network can be expanded by binding 100G ports on multiple 100G cards. So far, UPM's new campus network is the first 100G smart campus network in the Asia-Pacific Region (APR).

Huawei's Agile Switches provide:

- Unified authentication, accounting, and policies on the core network, ensuring high operational efficiency
- Time- and traffic-based network service operation packages based on Huawei's Destination Address Accounting technology
- Differentiated charging models for access to the internal campus network and the Internet
- Mobile Apps to provide services such as online learning and online course selection

In addition, the Agile Switches use the industry-leading, native terabit Access Controller (AC) to implement AC functions by using the full programmability of Huawei's Ethernet Network Processor chip. The native AC eliminates bottlenecks in wireless traffic forwarding and guarantees more efficient and ever-simpler network Operations and Maintenance (O&M) and management, while lowering O&M workload and costs.
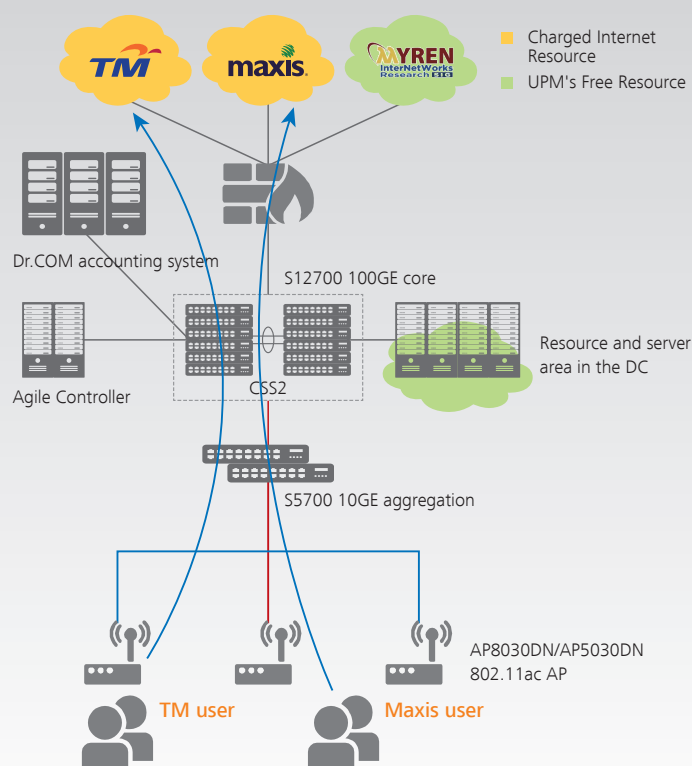
Access Points (APs) are deployed for indoor and outdoor areas, implementing full wireless coverage without coverage "holes" on any UPM campus. Huawei also uses the latest 802.11ac technology that ensures up to 1.3 Gbit/s access bandwidth. What's more, Huawei's impending dual 5G-LTE technology will enable a single AP to deliver up to 2.6 Gbit/s bandwidth.

Benefits

The Huawei solution enables the university to offer students diversified, charged or free value-added services for higher-quality on-site or online education. The university also can:

- Implement MOOCs and HPC for scientific research
- Share Wi-Fi offloading revenue with the carrier

Big Data analytics, the education cloud, and mobile education are all based on the Internet. Huawei's Agile Education Campus Network Solution provides UPM a smart campus network that features a low fault rate and no coverage holes. No matter where students and staff are — a classroom, a library, a lecture hall, a playground, or a dormitory — they can connect effortlessly to the Wi-Fi network.

- Charged Internet Resource
- UPM's Free Resource

Dr.COM accounting system

S12700 100GE core

Agile Controller

CSS2

Resource and server area in the DC

S5700 10GE aggregation

AP8030DN/AP5030DN 802.11ac AP

TM user

Maxis user

For more information about Huawei Smart Education Solution, please visit: http://e.huawei.com/en/solutions/industries/education

About Huawei Enterprise Business Group

Huawei Enterprise Business Group ("Huawei Enterprise") is one of the three business groups of Huawei, a leading global information and communications technology (ICT) solutions provider. Leveraging Huawei's strong R&D capabilities and comprehensive technical expertise, Huawei Enterprise provides a wide range of highly efficient customer-centric ICT solutions and services to global vertical industry and enterprise customers across government and public sector, finance, transportation, electric power, energy, commercial businesses, and ISPs.Huawei Enterprise's innovative and leading solutions cover network infrastructure, unified communications and collaboration (UC&C), cloud computing & data center, enterprise information security, and industry application solutions.

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