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5G Technology! IN SMART CAMPUS

SPECIAL GUEST FOR THIS ISSUE :

Emerging Technology on Network Infrastructure

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What's Inside?

5G, Wifi6 and Emerging Network Technologies

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The Big leap.....

Our beloved Malaysia, was once struck hard by the pandemic brought by the Coronavirus, and suffered greatly from many aspects. From our economic crisis to the suffering of people facing lack of necessities,becoming jobless and even student study took a roundabout hardship. However,beneath all this darkness,a beacon of hope appeared. Yes everyone, after hurdles and hurdles of dark times,finally,the nation is moving forward, once again,and thanks to 5G,we are now taking a big leap forward in realising the digitalisation of our country,Malaysia.

The foundation to smart city:

SMART CAMPUS

Now that 5G is in the picture, many innovations will gradually come, and one of them is the implementation of Smart City. However, this time, let's take a deeper dive into its foundation, the Smart Campus.firstly, let's clarify what is campus. A campus can be an office, factory,stadium or even a shopping mall,since a campus is actually referring to the place that we spend our time to work,study or even shopping. However, a Smart Campus is a campus which apply new technologies such as AI and Big data to further enhance the services it provides.

Go Green!!! with 5G in Smart Campus

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When talking about Smart Campus, there are definitely a lot of technological applications implemented within them, especially with the rise of the 5G network. However, as a responsible citizen of the earth, ensuring the safety of our mother nature comes first,and luckily, our technologies agree. With technologies like the Internet of Things (IoT) and smart control systems, we are now able to optimize our abilities to monitor our environment status and situation, including providing the possible solution.

Within a smart campus, we are talking from the perspective of green and environmental technological application as the environment is important for everyone inside them, whether they are customer or personnel. Thus, a green sustenance is the best way to provide the excellence environment for both of them. For instance, we are now in the era of digitalization, and that means reduced energy consumption and achieving green operation. The system does their job by gathering energy consumption data, monitoring and analyzing them while also providing accurate solutions on how to optimize energy consumption.

Other than that include the installation of Smart Meter, where rather than having someone read the meter once a month, which is both tiring and time consuming, the Smart Meter sends everyday electrical consumptions value daily through the internet directly to the personnel,which saves both time and energy. And lastly, through Smart Environment Monitoring System, which can monitor a lot of thing Malaysian are familiar with,such as air pollution,sound pollution and, temperature

source :5G Application-Smart Campus

Reflection

On this day and age, most campus in Malaysia has implemented online classes in its education system. Hence, it is necessary for the campus to have a stable, fast and reliable connection to be able to adapt with the new system efficiently. This is where the implementation of 5G in Smart Campus comes to play. When 5G is applied. It's ultra reliable and low latency allow students and teachers to attend online classes or meeting better without any lags or interruption.

Not only that, assignments and online tests can also be assigned and done in a more professional manner. Campus can avoid any late submission due to internet error. This can significantly enhance the productivity and interest of student in partaking online exams and tests since they will not face any issue such as late submission due to slow internet connection.

"EMERGING TECHNOLOGY ON NETWORK INFRASTRUCTURE" (COMMSCOPE MALAYSIA)

BY MR GOH BIH DER

WHAT IS A MEANING OF NETWORK INFRASTRUCTURE ?

The hardware and software resources of a complete network that enable network connectivity, communication, operations, and administration of a corporate network are referred to as network infrastructure. It connects users, processes, applications, services, and external networks/the internet by providing a communication channel and services.

Does pandemic give impact on IT world?

The pandemic that is engulfing the world is now shocking both in the physical and electronic worlds. The world of technology is also one of the elements that has been affected and is extremely significant in the development of continuing to live as normal. There are many reasons why the world of IT or technology is advancing to assist individuals in their daily lives. In terms of employment, for example. Many employees are required to work from home and do tasks online. As a result, technology is required to ensure that occupations are not interrupted. After that, various platforms, such as the human style of purchasing, are shifting to digital. For example, to keep a person from becoming infected with the covid-19 virus when out shopping. Many of the applications have been designed to function similarly to supermarkets, just with online purchasing available. Learning and teaching are also influenced by the networked environment. It is critical for a student who lives off campus to have a reliable internet connection. In addition, a student must use a VPN to access the college website. This explains why remote management via IT systems is key during pandemics. As a result, there are several other consequences of this pandemic.

Example of network Infrastructure devices

- ·hub
- ·modem
- ·cabel modem
- ·fax
- ·bridge
- ·layer 2 switch
- ·voice switch
- ·multi layer switch
- ·router with firewall
- ·Netflow Router
- ·Storage router
- ·wireless router
- ·voice router
- ·Pc
- ·PC software
- ·laptop
- ·workstation
- ·Directory Server
- ·File Server
- ·Web Server
- ·Web Browser
- ·Cellular Phone
- ·Phone
- ·IP Phone
- ·Tower Server
- ·Firewall (General)
- ·Cisco IOS Firewall
- ·Cisco PIX Firewall
- ·Cisco ASA Firewall
- ·Cisco Secure ACS
- ·Cisco ISE
- ·Ethernet Network Segment
- ·WAN Link

"EMERGING TECHNOLOGY ON NETWORK INFRASTRUCTURE" (COMMSCOPE MALAYSIA)

Example of Internet of Thing devices

Amazon Echo Plus Voice Controller

The Amazon Echo Plus voice controller is a well-liked and reliable Internet of Things device. It can play music, make phone calls, set timers and alarms, ask questions, deliver information, check the weather, manage to-do and shopping lists, control house instruments, and more.

August Doorbell Cam

August Doorbell Cam is a useful Internet of Things (IoT) invention. August Doorbell Cam provides the ability to answer your door from any location. It monitors your doors at all times and records any motion changes at your front entrance

Belkin WeMo Smart Light Switch

The WeMo Light Switch allows you to control your lights from the wall, your phone, or your voice. This smart light switch connects to your current home Wi-Fi network, allowing you to control your lights wirelessly without the need for a subscription or hub.

Bitdefender BOX IoT Security Solution

Bitdefender Box is a great Internet-of-Things gadget. The Smart Home Cybersecurity Hub protects a variety of Internet-connected devices from viruses, stolen passwords, identity theft, surveillance, and other threats.

Basic Components Found in Wireless Network Infrastructure

Access Point - Wireless devices can connect to a wired network via access points. It is less difficult to build access points inside a wired network to link all computers or devices than it is to create connections using wires and cables. Wireless access points are required for wireless network communication. The sort of access point used by an organisation will be determined by its specific requirements.

Switches - Switches are important system building pieces. When there are too many devices on the same network, such as PCs, access points, printers, and servers, network traffic becomes congested and data flow slows. Switches assist in resolving these challenges by dividing the total network into smaller groups so that local traffic in one region does not interfere with local traffic in another.

Routers and edge platforms - Routers and edge routing systems make decisions regarding the best path to take from source to destination in order to provide a high application quality of experience. These devices can also play an important role in enforcing data security policies, ensuring that traffic only goes where it is allowed and is scanned for malicious threats.

controllers - A wireless LAN (WLAN) controller is part of an enterprise's wireless network infrastructure. A WLAN design allows corporate users to keep their network connection while travelling throughout the wireless service area, such as in an office. The WLAN controller is responsible for managing the access points that allow wireless devices to connect to the company's network.

Reflection

Based on this fifth lecture, we can understand how important network infrastructure is in achieving the 4.0 industrial revolution. According to the speaker, this network architecture is linked to the Internet of Things (IoT). This demonstrates that this advancement has the potential to make human existence easier in the future. Furthermore, this session illustrates how Wifi 6 technology will overcome the challenges we have previously encountered in the use of devices or networks. Other than that , this talk also discuss about advantages of internet of thing at the same time on a challenge to deploy them in the real world . Thus , the change from analog to digital in all aspects can provide many benefits in carrying out routine human activities on a daily routine.

Doyou know about 5G and Wifi6?

Both 5G and Wi-Fi 6 are compatible technologies that provide higher speeds, lower latency, and increased capacity over their predecessors. Wi-Fi and 5G offer complementary functionalities which are Wi-Fi is better suited to indoor wireless coverage and 5G is better suited to outdoor use cases

5G ,WIFI6 AND EMERGING NETWORK TECHNOLOGIES

Description Of The Infrastructure

5G The next phase is the fifth generation of wireless technology systems, usually known as 5G. It provides speeds that are comparable to fibre-optic connections and are faster than previous generations.
If 5G becomes widely accessible, consumers may experience speeds of 700 to 3025 Mbps, or 3.025 Gbps, according to early tests.

5G technology can be applied to many features such as healthcare, smart cities and homes and also transport. The improvement of speed and bandwidth surely smoothly the process of the developments.

WiFi 6 offers a number of significant improvements that will benefit wireless users all over the world. Data transmission rates have skyrocketed. In terms of data transfer speed, WiFi 6 follows in the footsteps of previous generations. The theoretical speed of WiFi 6 is 9.6Gbps.

Thanks to technology (OFDMA) MU-MIMO enables higher data rates at a given range to increase network capacity . Due to that, Wifi 6 brings more gigabits speed, extremely low latency, high capacity networks, extended battery life. When comparing WiFi 6 to WiFi 5, a single device may be able to transport data up to 40% faster. Even 2.4GHz networks will benefit from better speeds when using a WiFi 6 router.

The Devices Used

The most 5G technology devices used are into IOT Devices, Autonomous vehicles, VR/AR experiences, Cloud and data centre, Smart Home and City, Medical Services and Utilities and Infrastructure.
For example, security system, smart door lock, dynamic driving task or driverless, connected ambulances, IoT sensor monitoring and remote robotic control

Basically, Wifi 6 is about to get faster. Higher data rates transmission and low latency in Wifi 6 make work become more smooth and faster. There are a lot of devices that use Wifi 6 especially smartphones, tablets, laptops and computers. These devices are usually used for daily life and also for work. For the business or company that use Wifi 6 for their internet connections will provide a better work environment. Other than that, there is also a TV that supports Wifi 6 and this device will give better performances such as superwide channel and 4K Resolutions.

DOMAIN OF 5G

- **Next gen smart tourism**

Enhancing touring guide mobile app

- **Advance 5g industrial park**

Create job opportunities to younger generations

- **Enables AR/VR based education**

Better way wo know-how and make remote class learning possible

DOMAIN OF 6

- **Supports gigabits broadband promotion**

WiFi 6 features a 2.8-fold increase in bandwidth. As a result, the internet connection coverage expands and allowing users to have wi-fiaccess from anywhere

- **New video service**

WiFi 6 offers a decreased latency and delivers anti-interference which enables the advancement of home value-added services such as online video instruction, cloud engagement, and improved Esports acceleration.

REFLECTION

With the existence of the new technology which is 5G and wi-fi 6 people will have a better experience with using the internet as it has stated in the talk that wi-fi 6 has improved its bandwidth by 2.8 times. Moreover wi-fi 6 provides a better multi-users experience and reduced terminal power where more people can connect to the wi-fi without making the connection laggy. This advance technology not only provides us convenience on using it, it also offers many job opportunities to the yourger generations. As we are currently living in the pandemic , this new and advance technology really helps alot especially in terms of educational purposes. Nowadays, most people have a serious trouble having a proper and stable internet connection. With this invention, all those trouble will no longer exist becouse wi-fi 6 and 5G offers users less lag , better connection with low-latency.