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| **Network Infrastructure**  Diploma in CSF/IT  Year 2 (2020/21) Semester 3 | Week 11 |
| **2** hours |
| **Windows Server 2016 & Active Directory** | |

**Part 1 – Introduction to Windows 2016 Server**

1. A PC machine is to be installed with Windows 2016 **Standard** Edition. It has the following resources:

INTEL CPU: 2.9 GHz

RAM: 8 GB

Disk Space: 500 GB

You need to configure DHCP, DNS, and Active Directory on this server. The server will also act as a print and FTP server. It will also have to support Microsoft SQL Service. There are about 100 users on the network.

1. Will you be able to install Windows 2016 software on the PC based on its hardware? Refer to this web site for your answers:

<https://docs.microsoft.com/en-us/windows-server/get-started/system-requirements>

1. Do you think that the hardware resources are adequate? What is your recommendation?

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| 1. Yes 2. The hardware is adequate for 100 users’ network. But since I don’t know what CPU is used, I will recommend using a Dual-Core 2 Ghz or higher CPU. |

2. How many editions of Microsoft Windows 2016 servers are there and how many days can the evaluation copy be tested?

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| There is 3 version, the standard, essentials and datacenter edition. Which have 180 days for the evaluation copy. |

1. Explore the following features in Windows 2016 Server :

a) Hyper-V

b) Server Core Installation / Power Shell

c) Dynamic Hardware Partitioning

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| 1. Hyper-V enable hardware virtualization for Windows 2016 server, 1 hardware can have many virtual machine 2. The Server Core installation is a Windows installation option available for Windows servers. It allows us to select server roles we need, reduce the maintenance and management requirements and the attack surface for those server roles. 3. Dynamic Hardware Partitioning allow us to isolate the server hardware so we can assign an independent instance of each operating system you have, so one OS will not use too much hardware resource, which cause all OS in the server to slow down. |

**Part 2 – Active Directory**

1. Explain the terms domain, tree and forest used in Active Directory.

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| A domain is a network object that allow administrator to set administrative boundaries between different network entities.  A tree is a set of 1 or more domain that has the same namespace and a forest is set of 1 or more tree. |

2. What are organization units (OUs)? What is the purpose of creating OUs?

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| OU is a subdivision within an Active Directory. We can store users, groups, computers, and other organizational units in it. We can also organizational unit structures in each domain that are independent of the structures in the other domains. |

3. What is a domain controller and what is its role in an Active Directory domain?

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| A domain controller is a server that responds to authentication requests and verify users on client device. |

4. Whenever the Windows Server 2016 (acting as a domain controller) fails, all users are unable to log into the network to access network resources. Suggest a way to improve the reliability of the network.

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| We can have a backup domain controller or server, so when the current domain controller or server failed, the backup domain controller or server can still respond to authentication requests and verify users on client device. |

5. Design an Active Directory infrastructure based on the following scenario:

* A company called NAM Pte. Ltd is based in Singapore.
* It has altogether 500 users in Singapore and it has 3 departments:

SALES, MARKETING and ADMINSTRATION.

* It has regional offices in Kuala Lumpur, Manila and Jakarta.
* NAM Pte Ltd bought over a company called BOTAK Pte. Ltd in US.
* Botak Pte. Ltd. has an Active Directory domain network called Botak.com.

Recommend the minimum number of domain controllers required for this infrastructure.

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| The minimum number of domain controllers needed is 5 but I recommend 10 (each domain should have 2 domain controller for redundancy). |

*End of Tutorial*