การออกแบบระบบเครือข่าย (Network Design)

แผนผังการจัดสรร IP Address (IP Addressing Plan)

ระบบเครือข่ายใช้ Network Address หลักคือ **172.16.0.0/16** โดยมีการแบ่ง Subnet ดังนี้:

VLAN ID	ชื่อเครือข่าย (Name)	Subnet Mask (CIDR)	Network Address	Gateway IP	จำนวน IP ที่รองรับ
10	Teacher	255.255.255.0 (/24)	172.16.10.0	172.16.10.1	254 Hosts
20	Computer Lab	255.255.255.0 (/24)	172.16.20.0	172.16.20.1	254 Hosts
30	Admin/Finance	255.255.255.0 (/24)	172.16.30.0	172.16.30.1	254 Hosts

40	Management	255.255.255.0 (/24)	172.16.40.0	172.16.40.1	254 Hosts
50	Server	255.255.255.0 (/24)	172.16.50.0	172.16.50.1	254 Hosts
60	Student Wi-Fi	**255.255.254.0 (/23)**	172.16.60.0	172.16.60.1	**510 Hosts**

ภาพผลการ config dhcp pool บน Layer 3 Switch

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Physical   Config   CLI   Attributes

L3SW#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
L3SW(config)#do sh ip dhcp pool

Pool VLAN10_TEACHER :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 3
 Excluded addresses             : 6
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                Leased/Excluded/Total
 172.16.10.1          172.16.10.1     - 172.16.10.254    3   / 6    / 254

Pool VLAN20_COMPUTERLAB :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 2
 Excluded addresses             : 6
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                Leased/Excluded/Total
 172.16.20.1          172.16.20.1     - 172.16.20.254    2   / 6    / 254

Pool VLAN30_ADMIN :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 0
 Excluded addresses             : 6
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                Leased/Excluded/Total
 172.16.30.1          172.16.30.1     - 172.16.30.254    0   / 6    / 254

Pool VLAN40_MANAGEMENT :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 1
 Excluded addresses             : 6
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                Leased/Excluded/Total
 172.16.40.1          172.16.40.1     - 172.16.40.254    1   / 6    / 254

Pool VLAN50_SERVERFARM :
 Utilization mark (high/low)    : 100 / 0
 Subnet size (first/next)       : 0 / 0
 Total addresses                : 254
 Leased addresses               : 1
 Excluded addresses             : 6
 Pending event                  : none

 1 subnet is currently in the pool
 Current index        IP address range                Leased/Excluded/Total
```

ผลลัพธ์ของ DHCP

IP Configuration

Interface	FastEthernet0

IP Configuration

- ⦿ DHCP   ◯ Static
- IPv4 Address   172.16.10.11
- Subnet Mask   255.255.255.0
- Default Gateway   172.16.10.1
- DNS Server   172.16.50.100

IPv6 Configuration

- ◯ Automatic   ⦿ Static
- IPv6 Address
- Link Local Address   FE80::20C:CFFF:FE40:D884
- Default Gateway
- DNS Server

802.1X

ภาพการ config DNS server

DNS

Physical Config Services Desktop Programming Attributes

SERVICES
- HTTP
- DHCP
- DHCPv6
- TFTP
- DNS
- SYSLOG
- AAA
- NTP
- EMAIL
- FTP
- IoT
- VM Management
- Radius EAP
- PRP

DNS

DNS Service	⦿ On	◯ Off

Resource Records

Name		Type	A Record

Address

Add	Save	R

No.	Name	Type	
0	school.ac.th	A Record	172.16.50.100
1	www.school.ac.th	A Record	172.16.50.11