

Networking with cisco

Topic: - Cisco Practice Project(June)

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Overview

ABC.pvt.ltd wants M.M info tech to design a network for their company which include the following departments: -

- IT
- Infrastructure
- Sales
- Human Resources
- Finance
- Marketing
- Wireless Network for staff (50 hosts)
- Guests Network (50 hosts)

The IP address range assigned to us is

IP address: - 172.16.2.0/23(CIDR)

Subnet mask: - 255.255.254.0

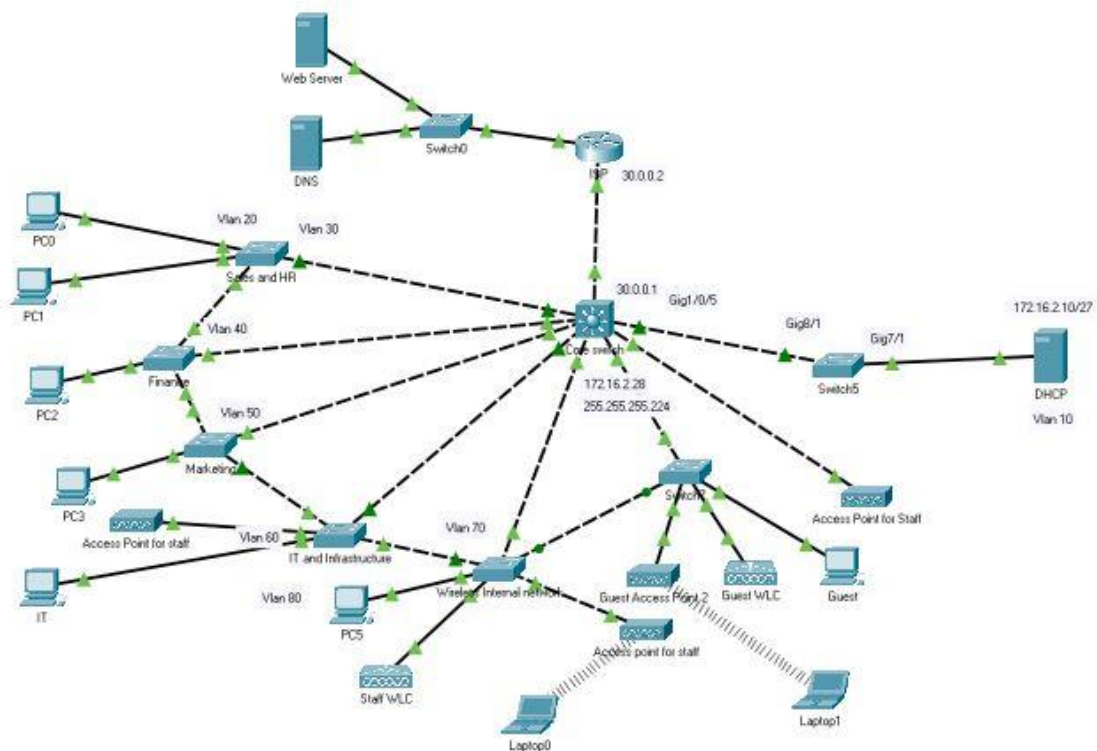
Wildcard mask: - 0.0.1.255

Public IP: 30.0.0.1/28 for switch to connect to router and 202.16.223.1/24 for DNS,HTTP

After subnetting the Ip address I have used the following IP addresses (172.16.2.0/27):

Network Address	Usable Host Range	Broadcast Address:
172.16.2.0	172.16.2.1 - 172.16.2.30	172.16.2.31
172.16.2.32	172.16.2.33 - 172.16.2.62	172.16.2.63
172.16.2.64	172.16.2.65 - 172.16.2.94	172.16.2.95
172.16.2.96	172.16.2.97 - 172.16.2.126	172.16.2.127
172.16.2.128	172.16.2.129 - 172.16.2.158	172.16.2.159
172.16.2.160	172.16.2.161 - 172.16.2.190	172.16.2.191
172.16.2.192	172.16.2.193 - 172.16.2.222	172.16.2.223
172.16.2.224	172.16.2.225 - 172.16.2.254	172.16.2.255

Network Design



Design Functionality

This topology has one DHCP server in Vlan 10 with the IP address of 172.16.2.10/27 which is connected to a layer 2 switch. All devices that are directly connected to switch are in Access mode on their respective Vlan and layer two switches to core switch layer. I have used Ip helper-address configuration to implement IP addresses to all Vlan. There are total 4 access points for the WLC, 2 for Staff and another 2 for Guests.

Details With configurations

DHCP configuration

The screenshot shows the DHCP configuration window with the 'Services' tab selected. The configuration for the 'serverPool' is as follows:

- Interface: GigabitEthernet0
- Service: ☒ On
- Pool Name: serverPool
- Default Gateway: 0.0.0.0
- DNS Server: 0.0.0.0
- Start IP Address: 172.16.2.172
- Subnet Mask: 255.255.255.224
- Maximum Number of Users: 31
- TFTP Server: 0.0.0.0
- WLC Address: 0.0.0.0

Below the configuration fields is a table of existing DHCP pools:

Pool Name	Default Gateway	DNS Server	Start IP Address	Subnet Mask	Max User	TFTP Server	WLC Address
HR	172.16.2.6	202.16.22	172.16.2.6	255.255.2	10	0.0.0.0	0.0.0.0
Finance	172.16.2.9	202.16.22	172.16.2.9	255.255.2	20	0.0.0.0	0.0.0.0
Marketing	172.16.2.1	202.16.22	172.16.2.1	255.255.2	20	0.0.0.0	0.0.0.0
Sales	172.16.2.3	202.16.22	172.16.2.3	255.255.2	10	0.0.0.0	0.0.0.0
IT and Infrastructure	172.16.2.1	202.16.22	172.16.2.1	255.255.2	10	0.0.0.0	0.0.0.0
Wireless Internal	172.16.2.2	202.16.22	172.16.2.2	255.255.2	25	0.0.0.0	0.0.0.0

DHCP server has 7 DHCP pool.

- (Vlan 30)i.e. HR Start IP: - 172.16.2.65 – 20 hosts maximum, Default gateway for Vlan : - 172.16.2.65,
Subnet mask: -255.255.255.224.
- (Vlan 40)Finance Start IP: - 172.16.2.98 – 20 hosts maximum, Default gateway for Vlan : - 172.16.2.97 Subnet mask: -255.255.255.224.
- (Vlan 50)Marketing Start IP: - 172.16.2.130 – 20 hosts maximum, Default gateway for Vlan : - 172.16.2.129 Subnet mask: -255.255.255.224.
- (Vlan 20) Sales Start IP:- 172.16.2.34 – maximum hosts 10, Default gateway for Vlan: - 172.16.2.33 Subnet mask: -255.255.255.224.

- (Vlan 60)IT and infrastructure: - 172.16.2.162 – 10 hosts maximum, Default gateway for Vlan : -172.16.2.161 Subnet mask: -255.255.255.224.
- (Vlan 70)Wireless Internal: - 172.16.2.228 – 25 hosts maximum, Default gateway for Vlan : - 172.16.2.65 Subnet mask: -255.255.255.224.
- (Vlan 80)Guest Network: -172.16.2.195 – 20 hosts maximum, Default gateway for Vlan : - 172.16.2.193 Subnet mask: -255.255.255.224.
- Vlan 10: DHCP IP : 172.16.2.10 subnet mask

After providing the gateway of VLAN on each switch I applied ip helper-address, which is the IP(172.16.2.10) of DHCP.

Switches

Sales and HR Switch

Password : - cisco

- Note*: anyone can see the password by typing show running-config command to hide password it is important to type command “enable secret “password””. For now, I haven’t hide the password as it’s a project.
- *Every Switch has password, Banner, and Hostname for making it simple for network admins to manage network*
- “copy running-config startup-config” for saving the configurations.

Line console 0 security is also used.

Username: admin

Password: cisco

```

Current configuration : 1284 bytes
!
version 12.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname SalesAndHR
!
enable password cisco
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  switchport access vlan 20
  switchport mode access

```

Finance Switch

Password: - cisco

Line console 0 security is also used.

Username: admin

Password: cisco

```

!
hostname Finance
!
enable password cisco
!
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  --More--

```

Marketing, IT, infrastructure , Internal wireless switch and Guest credentials

Line con 0

Username: - Admin

Password: - cisco

Enable: - cisco.

Core switch Credentials

enable password : admin

Line con 0

Username : admin

Password: core

WLC

Staff wireless network

Management Ip : 172.16.2.227

Default gateway: 172.16.2.225

Subnet mask: 255.255.255.224

Ip range : 172.16.2.225 – 172.16.2.254

Credentials:

Username: Admin

Password: Admin@password

SSID – Staff

Password – Staff@password

Guest WLC

Management IP: -172.16.2.194

Default gateway: -172.16.2.193

Username: Admin

Password:Admin@password

(when I tried to implement VTP and added domain name for server many features of this topology stopped working)

PC5


Physical
Config
Desktop
Programming
Attributes

Web Browser
X
URL https://172.16.2.227/frameMonitor.html
Go
Stop

Cisco
MONITOR
WLANs
CONTROLLER
WIRELESS
SECURITY
MANAGEMENT
COMMAND

Monitor

Summary
Access Points
Cisco CleanAir
Statistics
CDP
Rogues
Clients
Sleeping Clients
Multicast
Applications
Local Profiling

Summary
150 Access Points Supported


Controller Summary
Management IP Address 172.16.2.227, ::/128
Software Version 8.3.111.0
Field Recovery Image Version 7.6.101.1
System Name Internal WLC
Up Time 1 hours, 23 minutes, 27 seconds
System Time Fri Jul 22 21:09:37 2022
Redundancy Mode N/A
Internal Temperature +31 C

Rogue Summ
Active Rogue APs 0
Active Rogue Clients 0
Adhoc Rogues 0
Rogues on Wired Network 0

Top WLANs

Top

