LAB 2: IoT IT INFRASTRUCTURE
Basic Network Services Design

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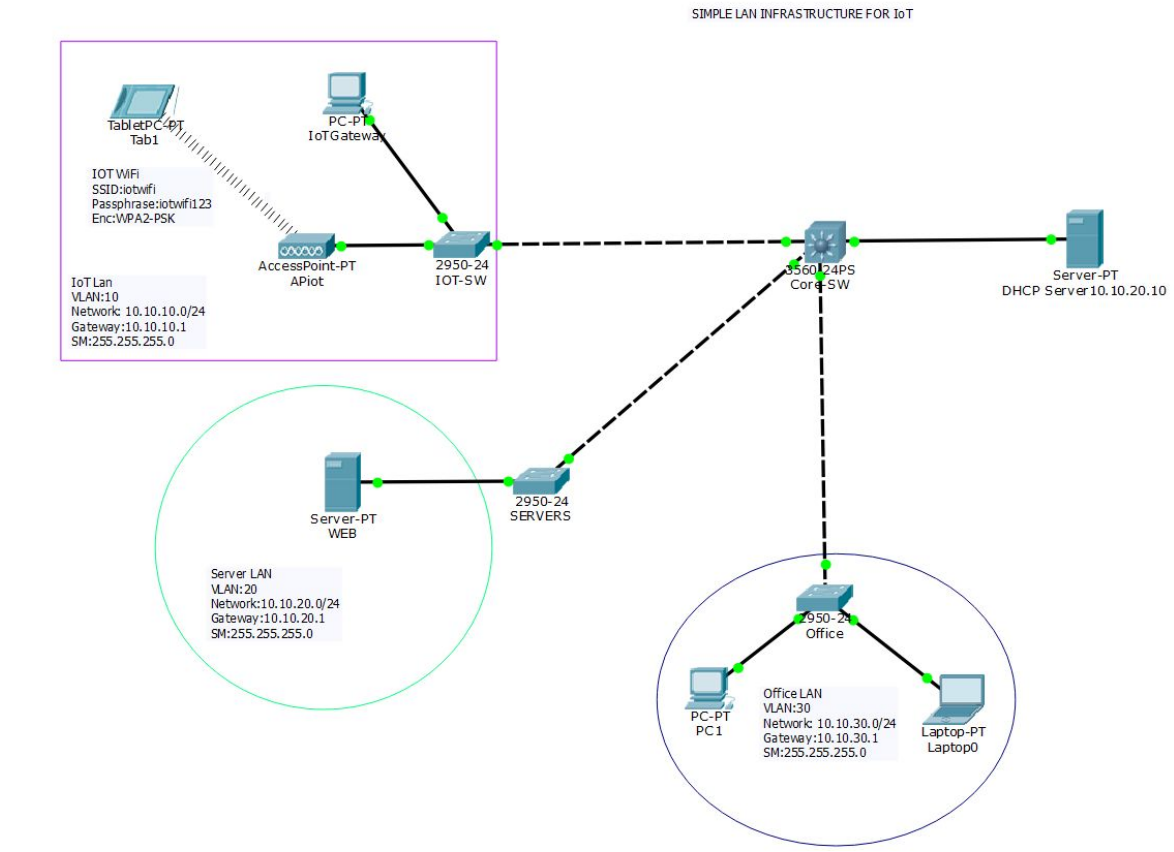
LAB 2: BASIC IoT NETWORK DESIGN

Objective:
This lab exercise will guide you to build a basic reliable Local Area Network to Implement IoT technology. You will have to configure Core Switch, VLAN, DHCP Server and WiFi devices to make sure they can communicate with each other.

Step1:

Study below network design and service required



Step2:

Launch the Cisco packet tracer and build the network as shown in Step1, ensure all the connections and devices are labeled

Step3:

1. Create VLAN Database on Core-SW, assign a unique VLAN Domain Name and VLAN password
2. Create VLANs (ids) and VLAN Name to be assigned to different subnetworks

Step4:

Configure Core-SW and assign ip addresses to the VLAN interfaces. Remember, these interfaces are to be the gateways to all the corresponding subnetworks.

Step5:

Configure Trunk ports on all connections between switches.

Step6:

1. Configure all access switches to join the VLAN domain
2. Connect all devices to access switches and set their VLAN port to the correct VLAN id of the respective subnetwork.

Step7:

1. Configure Wireless AP to serve Wifi connection to IoT wireless devices.
2. Configure SSID and pass-phrase
3. Ensure Wireless AP is connected to the correct VLAN or network segment.

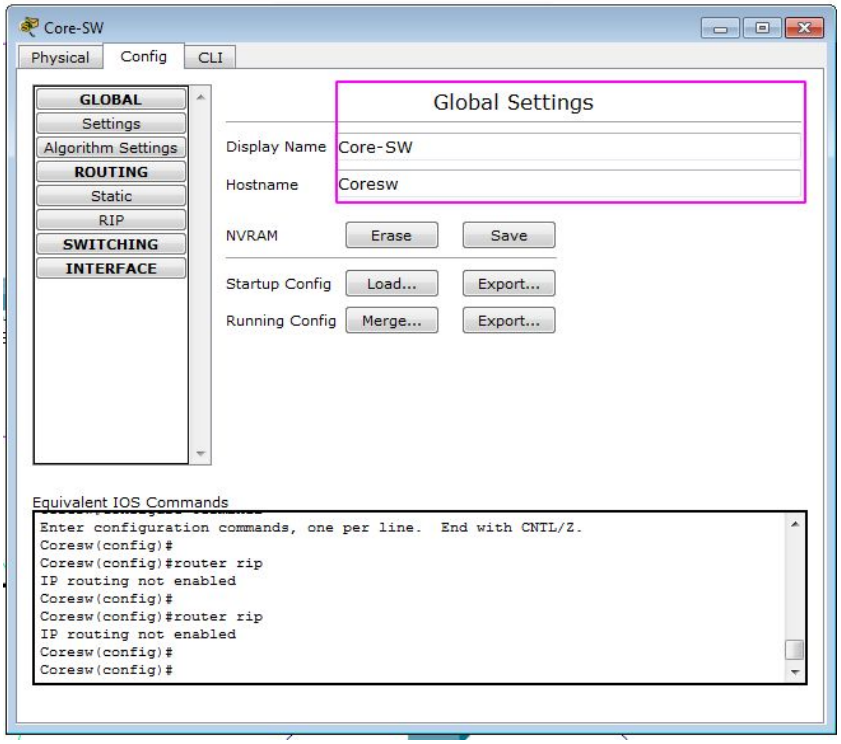
Step8:

1. Configure DHCP and Web Servers.
2. Join the servers LAN port to the correct VLAN
3. Configure DHCP server IP address
4. Configure DHCP scopes to serve IP addresses to all subnetworks.
5. Configure Core-SW to allow DHCP request relay to each subnetwork.
6. Check that devices that use DHCP get the correct ip address
7. Check that the wireless devices are getting the correct ip addresses from DHCP server
8. Test all connections by sending PDU packets between each device.You are good once all PDU packets get the replies.

Step1 & 2: Build simple IoT Network

1. Install Cisco packet tracer 6.2 provided into your PC if you haven't got one.
2. Make sure all the devices are added and connected as required by the network design.

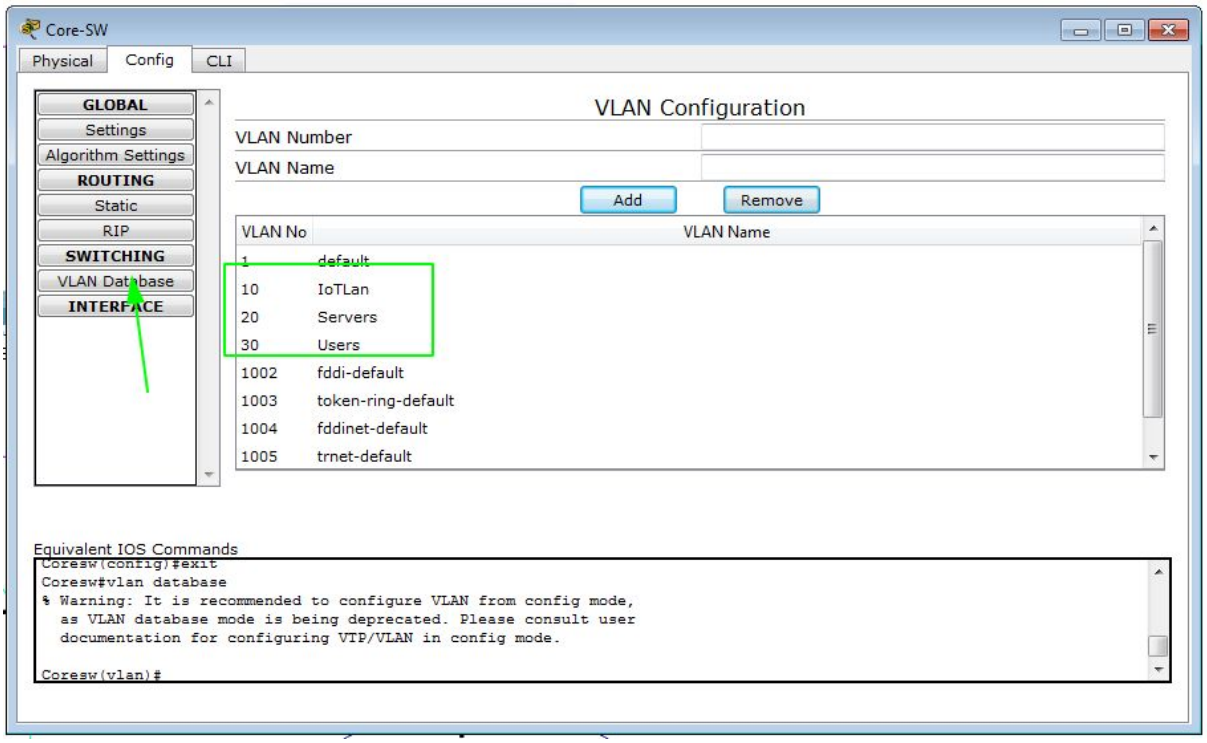
Step3: Configure Core-SW and VLANs

1. 

2. Core-SW VLAN Database as VLAN Domain server

```
Coresw#
Coresw#show vtp status
VTP Version                     : 2
Configuration Revision          : 12
Maximum VLANs supported locally : 1005
Number of existing VLANs        : 8
VTP Operating Mode              : Server
VTP Domain Name                 : iot
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x88 0x2D 0xD7 0xD0 0x0E 0xA5 0x40 0x56
Configuration last modified by 0.0.0.0 at 3-1-93 00:00:00
Local updater ID is 10.10.10.1 on interface Vl10 (lowest numbered VLAN interface
found)
```

3.

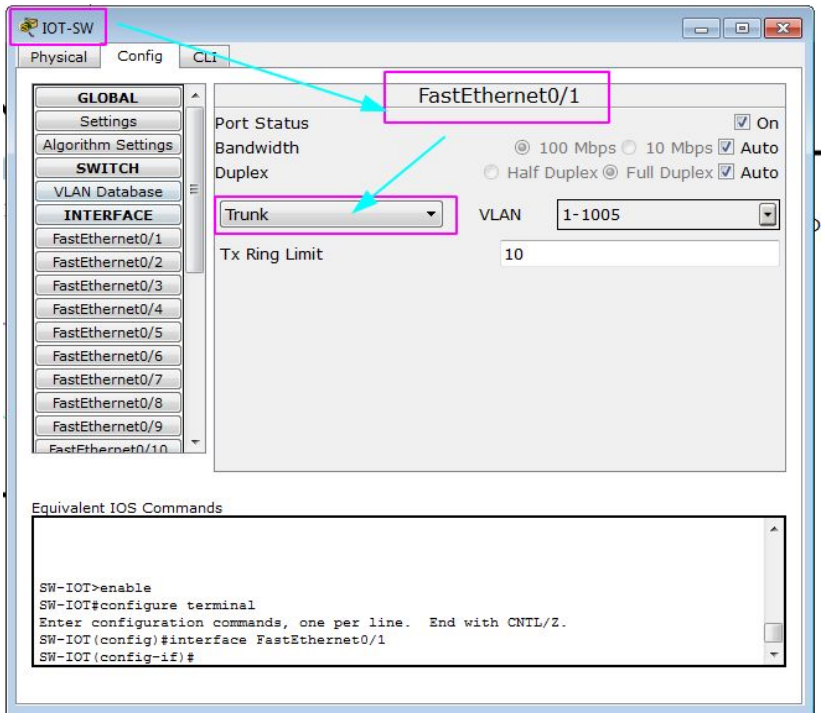
4. 

Step4: Configure Core-SW VLAN interfaces

Coresw(config)#int Vlan 10

Coresw(config-if)#ip address 10.10.10.1 255.255.255.0

Step5: Configure trunk ports



Step 6: Configure Access Switches to Join VLAN Domain

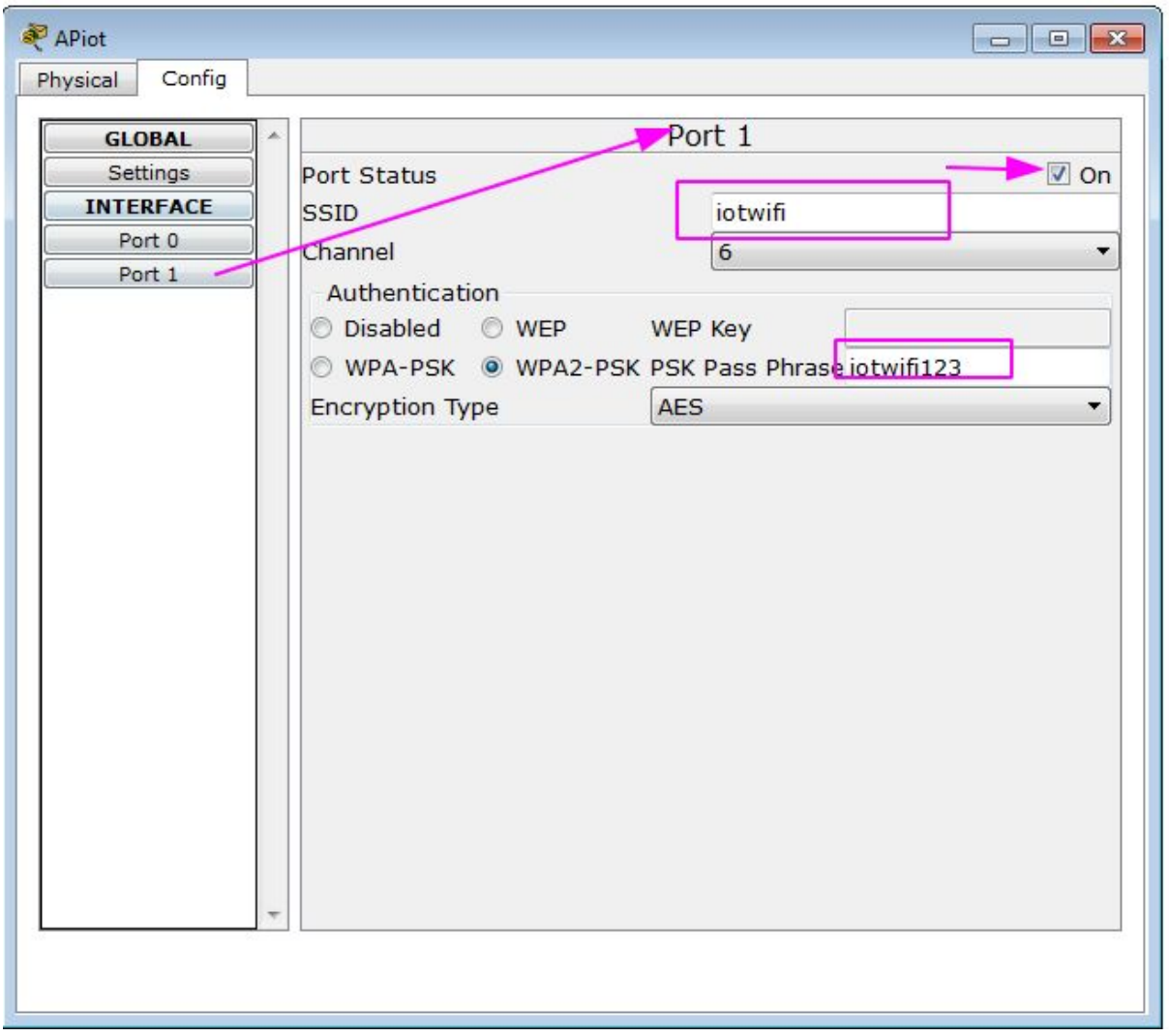
1. Configure VTP Database for switches

```
Switch#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vtp mode cli
Switch(config)#vtp mode client
Setting device to VTP CLIENT mode.
Switch(config)#vtp doma
Switch(config)#vtp domain iot
Changing VTP domain name from NULL to iot
Switch(config)#vtp pass
Switch(config)#vtp password iotwifi
Setting device VLAN database password to iotwifi
```

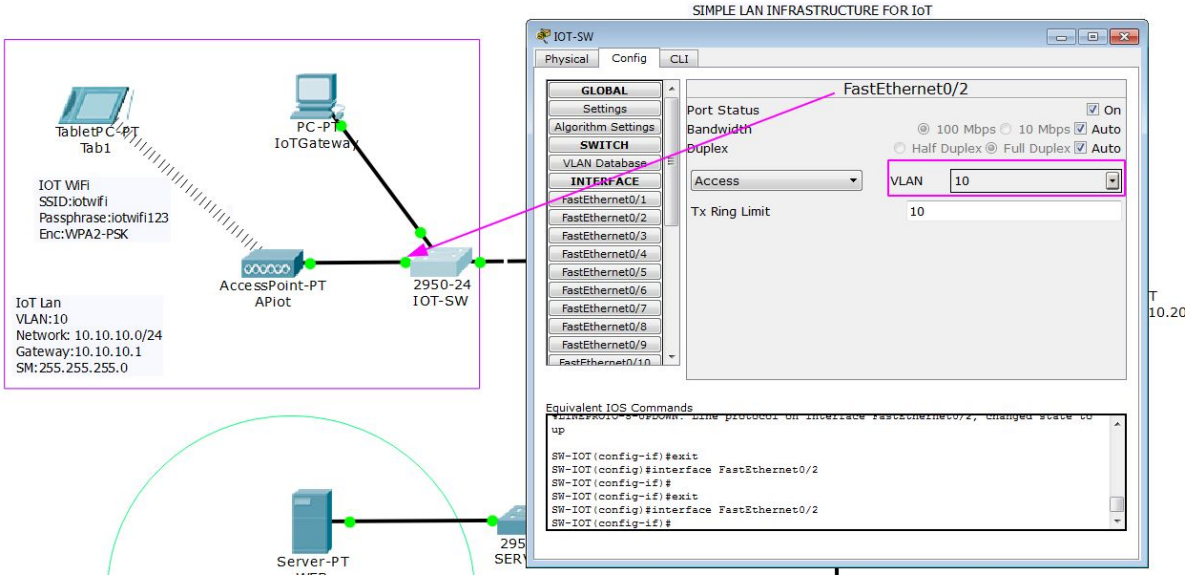
2. Checking VTP Status

```
SERVERS#show vtp status
VTP Version                     : 2
Configuration Revision          : 12
Maximum VLANs supported locally : 255
Number of existing VLANs        : 8
VTP Operating Mode              : Client
VTP Domain Name                 : iot
VTP Pruning Mode                : Disabled
VTP V2 Mode                     : Disabled
VTP Traps Generation            : Disabled
MD5 digest                      : 0x88 0x2D 0xD7 0xD0 0x0E 0xA5 0x40 0x56
Configuration last modified by 0.0.0.0 at 3-1-93 00:00:00
```

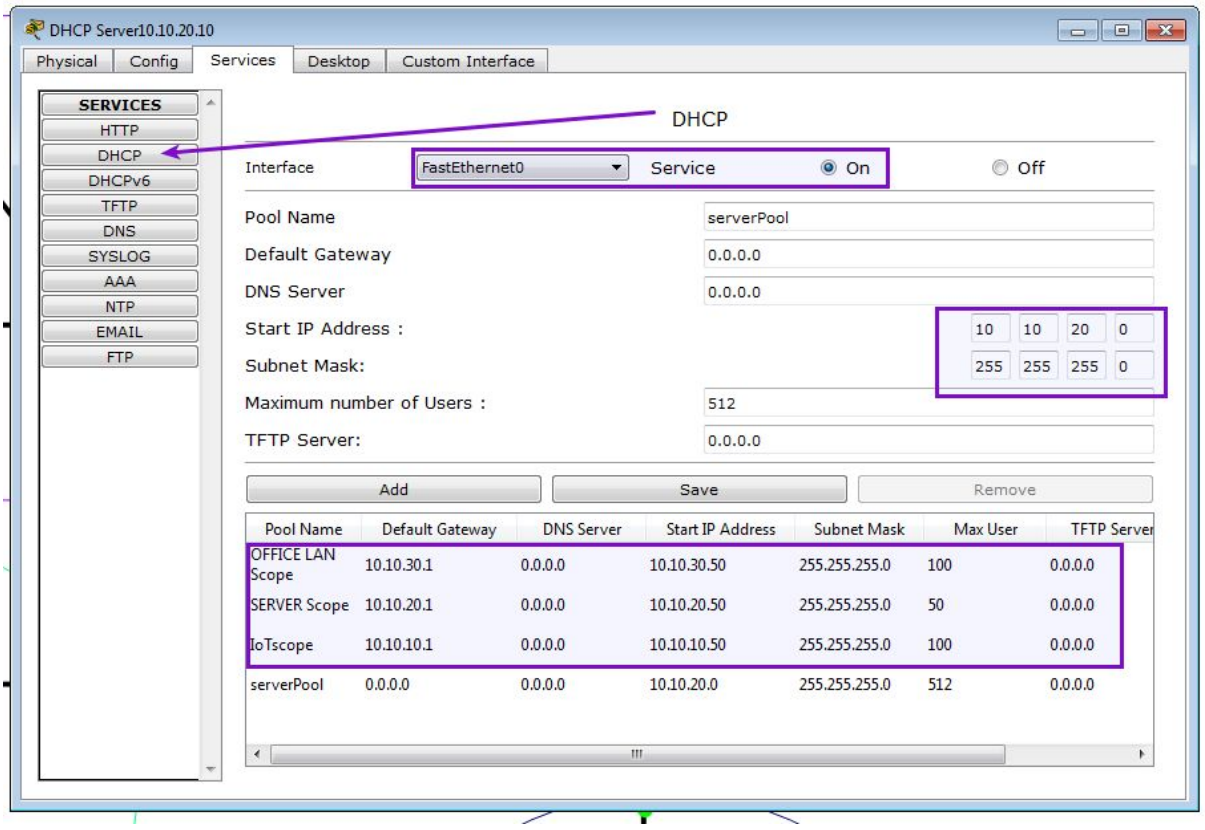
Step7: Configure Wireless AP



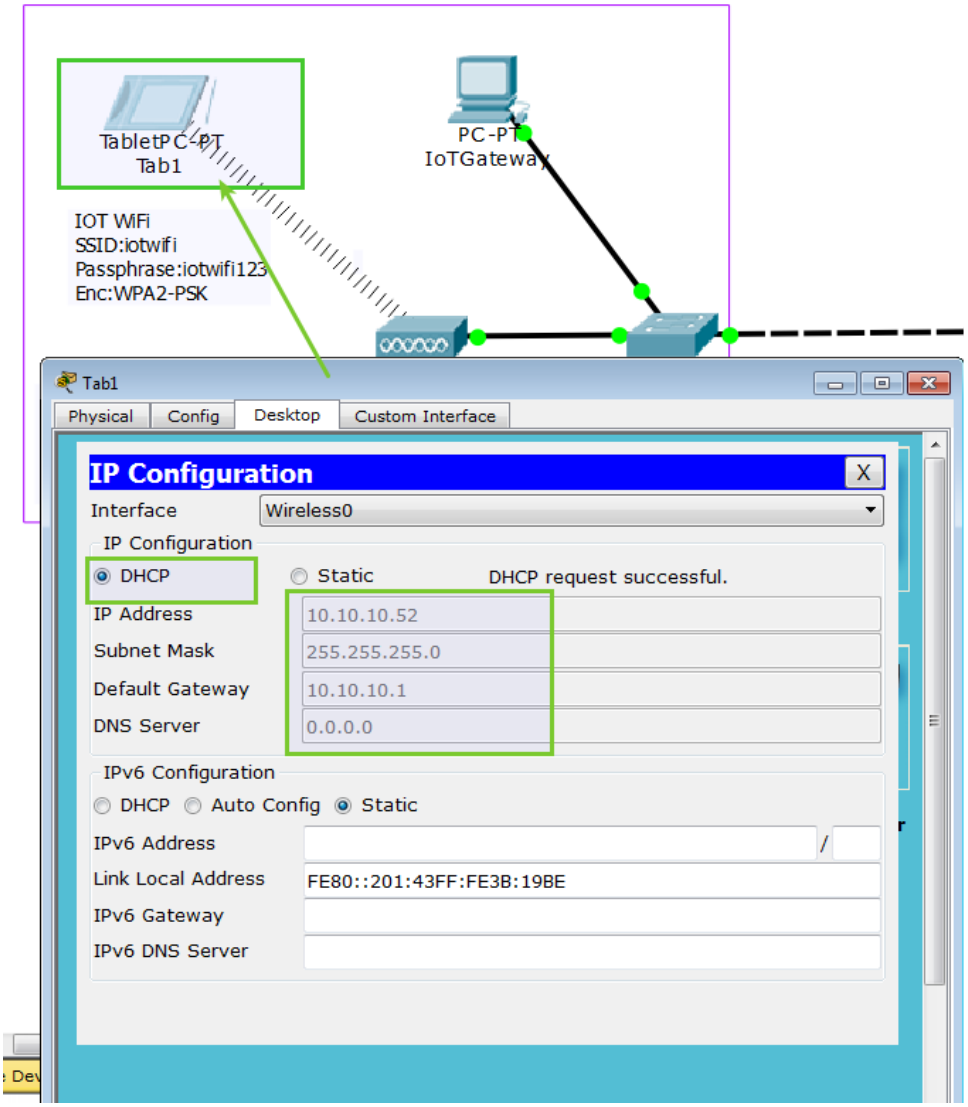
Ensure WirelessAP is connected to the correct VLAN.



Step8:Configure DHCP Server and Subnet IP address scope



Checking device dhcp request status.



Successful ping test from Tab1(10.10.10.52) to DHCP Server (10.10.20.10).

Please proceed with the ping test with other devices as well.