Creating a VLAN (virtual local area network) on Cisco area.

To create a VLAN the following requirements are necessary.

1) VLAN Name : "Office Expansion".

2) VLAN ID : 20.

3) Ports: The VLAN should include ports on which the new office area device are connected. These ports are on the switch module labled "Expansion Switch".

Steps to create VLAN (Office Expansion) in CISCO packet tracer:

Step 1 : I'm using CISCO packet Tracer to create VLAN.

Step 2 : To use CISCO packet Tracer, Download & install the CISCO packet tracer.

Step 3 : After the successfull installation, create an account in CISCO packet Tracer.

Step 4 : Now launch the CISCO packet Tracer to create the VLAN.

Step 5 : After the successful launching of cisco packet tracer create any kind of topology along with the CISCO switch.

Step 6 : Here I am creating a star topology along with many devices like pc's, laptop's and servers and connected them to the CISCO switch.

Step 7 : To configure the VLAN, click on the CISCO switch and select CLI (command line interface).

Step 8: Write some commands to configure the VLAN the following commands are used to configure the VLAN

Step 9: To configure the VLAN first enable the switch

Step 10: The command for enabling is

switch>en
switch#

Step 11: Issue the "configure terminal" command in order to enter the global configuration mode.

The command is config.

Step 12: Create an ID for VLAN and as per the requirements the ID is 20. So, the command is

Switch#VLAN 20.

Step 13: Create a name for VLAN and as per the requirement the name is "OfficeExpansion". So the command will be

switch# name OfficeExpansion.

Step 14: Issue the "Interface [Type] mod/port" command in order to enter the interface configuration mode. Here the command is,

switch(config-vlan)#exit
switch(config)# int fa1/0

Here int is a interface & fa1/0 is the port number. Here we are configuring the port.

Step 15: Issue the switch port mode access command in order to configure the port mode. The command will be

switch(config-if)#switch.port mode access

Step 16: Issue the "switchport ~~mode~~ access <vlan-id>" command inorder to enter the VLAN membership mode. for port the command will be,

switch (config-if)# switchport access vlan 20.

Step 17: Now you can verify the VLAN configuration. Configuration is verified using show VLAN brief.

Commands for the configuration of VLAN:-

```
switch > en
switch # config
switch (config) # vlan 20
switch (config-vlan) # name OfficeExpansion
switch (config-vlan) # exit
switch (config) # int fa0/1
switch (config-if) # switchport mode access.
Switch (config-if) # switchport access vlan20.
switch (config-if) # exit
switch (config) # exit
switch # show vlan brief
```

Here show VLAN brief is use to show the available ports for the newly created VLAN 20 (Office Expansion)

Rationale:

- By creating a VLAN for the new office expansion, you're logically segregating the network.
- This enhances security by limiting broadcast domains and reduces the risk of unauthorized access the sensitive data.

Considerations:

- Ensure that the ports on the "Expansion switch" are only accessible to the authorized devices. Use proper security measures like strong passwords or 802.1x authentication if needed.

- Implement appropriate firewall rules & access control lists between VLANs to control inter-VLAN traffic & maintain security.

- Monitor the network performance regularly to ensure that the segmentation doesn't lead to bottlenecks or congestion. Adjust bandwidth allocation if necessary.