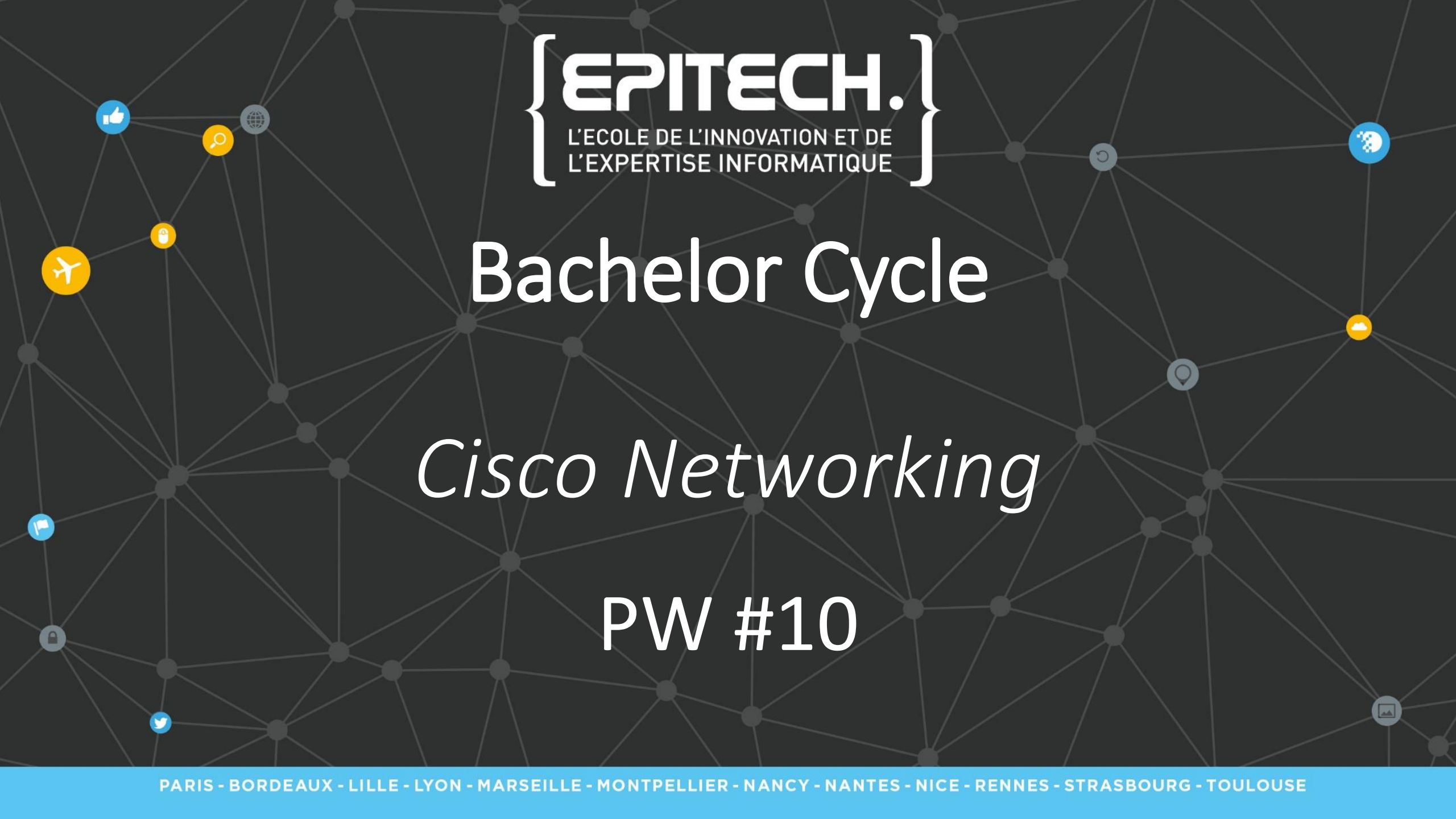

EPITECH.
L'ECOLE DE L'INNOVATION ET DE L'EXPERTISE INFORMATIQUE
Bachelor Cycle
Cisco Networking
PW #10
PARIS - BORDEAUX - LILLE - LYON - MARSEILLE - MONTPELLIER - NANCY - NANTES - NICE - RENNES - STRASBOURG - TOULOUSE

# Summary

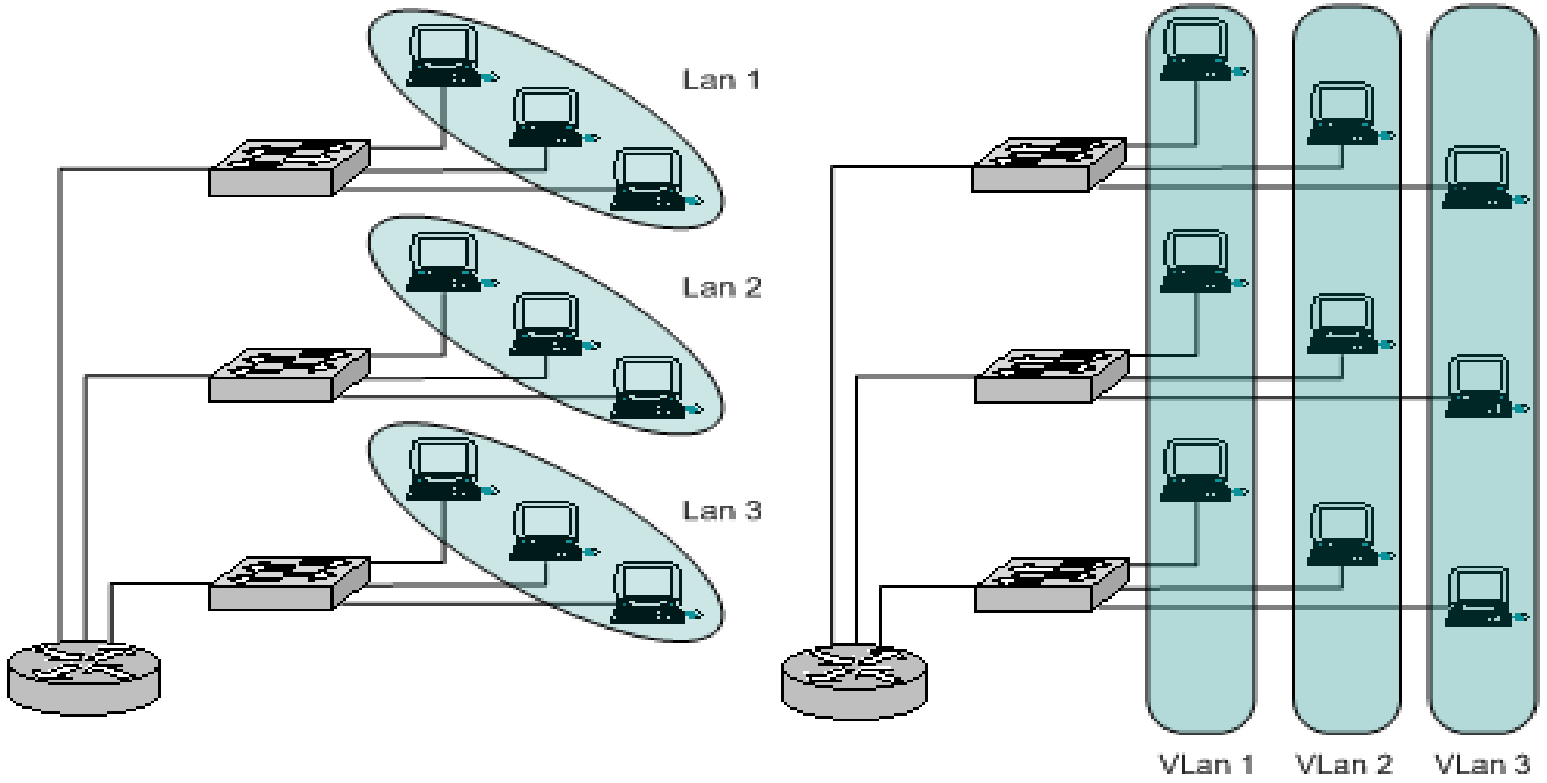
- The VLANs
  - Definition
  - Segmentation
  - Configuration
- Port security
- Etherchannel

# The VLANs

- VLAN : Virtual Local Area Network
- Using VLANs, you can logically segment switched networks.
- Assign a port to a virtual network
- Increase tne number of broacast domain
- Increase security

# Segmentation

- Comparison between physical segmentation and VLAN segmentation :



# VLANs Types

- Static VLAN (Physical Layer)
  - Assign port manually
  - Easier to configure
  - Simplier to monitor

- Dynamic VLAN (Layer 2 and 3)
  - Ports are automatically assigned to their VLAN
  - Based essantially on MAC address or protocol type

# VLAN Configuration 1/2

- Creation :

```
lab1-sw24# vlan database

lab1-sw24(vlan)# vlan 2 name COMPTA

VLAN 2 added:

    Name: COMPTA

lab1-sw24(vlan)#  exit
```

- Add a port to a VLAN :

```
lab1-sw24(config)# interface [range] fastEthernet 0/x[-y]

lab1-sw24(config-if)# switchport access vlan 2
```

# VLAN Configuration 2/2

- Show all the VLAN:

```
lab1-sw24# show vlan brief

VLAN Name                             Status    Ports

---- -------------------------------- ---------------------------

1    default                          active    Fa0/1, Fa0/2 ...

2    COMPTA                           active    Fa0/4

3    MARKETING                        active    Fa0/3

4    ADM                              active
```

# Port security (1/2)

- It is possible to configure some restrictions on switch port. These restrictions are handleable by the « port security » command.

- Example :
  - The first learnt MAC address on the switch port 0/5 willbe considered as the only one usable.
  - The port will be automatically extend in case of security violation :

```
lab1-sw24(config)# interface fastEthernet 0/5
lab1-sw24(config-if)# switchport mode access
lab1-sw24(config-if)# switchport port-security
lab1-sw24(config-if)# switchport port-security maximum 1
lab1-sw24(config-if)# switchport port-security mac-address sticky
lab1-sw24(config-if)# end
lab1-sw24# show port security
```

# Port security (2/2)

- The security is compromised if :
  - **The number of securized MAC address is exceeded.**
  - Another MAC address is learned on the same port
  - A securized address is present on multiples port

- To disable port security :

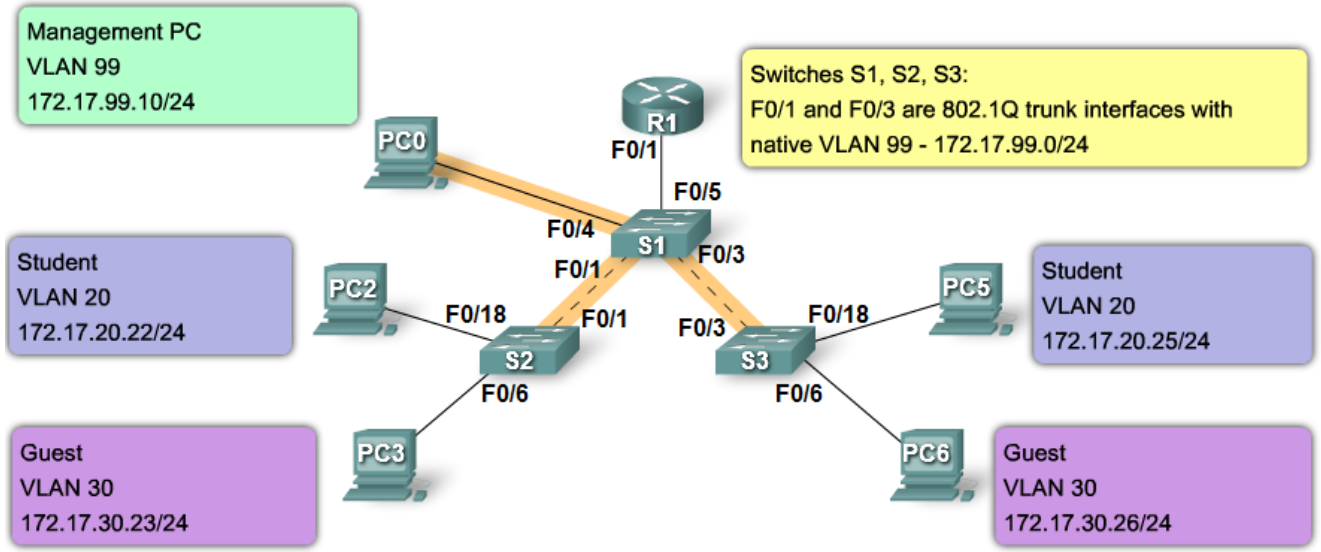
```
lab1-sw24(config)# interface fastEthernet 0/5

lab1-sw24(config-if)# no port security
```

- Beware, this is not an advanced security practice

# VLAN Managment

- A management VLAN is any VLAN you configure to access the management capabilities of a switch.

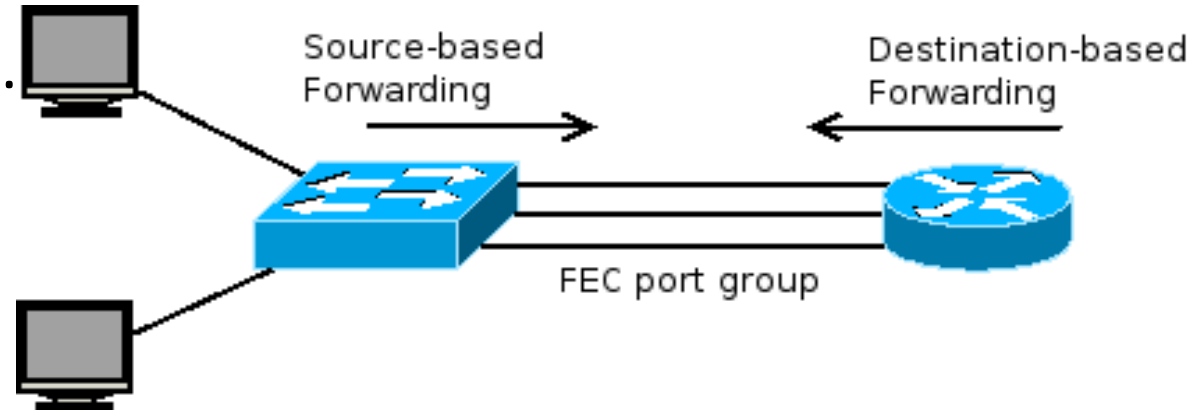
```
lab1-sw24(config)# interface vlan 2

lab1-sw24(config-if)# ip address 192.168.0.254 255.255.255.0
```



# Etherchannel

- 2 types of port agregation are available :
  - Based on source MAC address :
    This agregation type supports up to 8 ports.
  - Based on destination MAC address :
    This agregation type supports an unlimited number of port.

A Catalyst 2900 XL supports up to 12 agregations.



# Etherchannel Configuration 1/2

- Create an agregation on 2 ports based on a destination :

```
lab1-sw24(config)# interface fastEthernet 0/1
lab1-sw24(config-if)# channel-group <ng> mode on
lab1-sw24(config-if)# no shutdown
lab1-sw24(config-if)# exit
lab1-sw24(config)# interface fastEthernet 0/2
lab1-sw24(config-if)# channel-group <ng> mode on
lab1-sw24(config-if)# no shutdown
```

# Etherchannel Configuration 2/2

- Verify the configuration :

```
lab1-sw12# sh etherchannel summary

Flags:  d - default     D – down

 I - in use

Group Ports

----- -----

1     Fa0/1(Id) Fa0/2(I)
```

# Trunk Configuration

Create a trunk on a port:

```
lab1-sw24(config)# interface fastEthernet 0/x

lab1-sw24(config-if)# switchport mode trunk
```

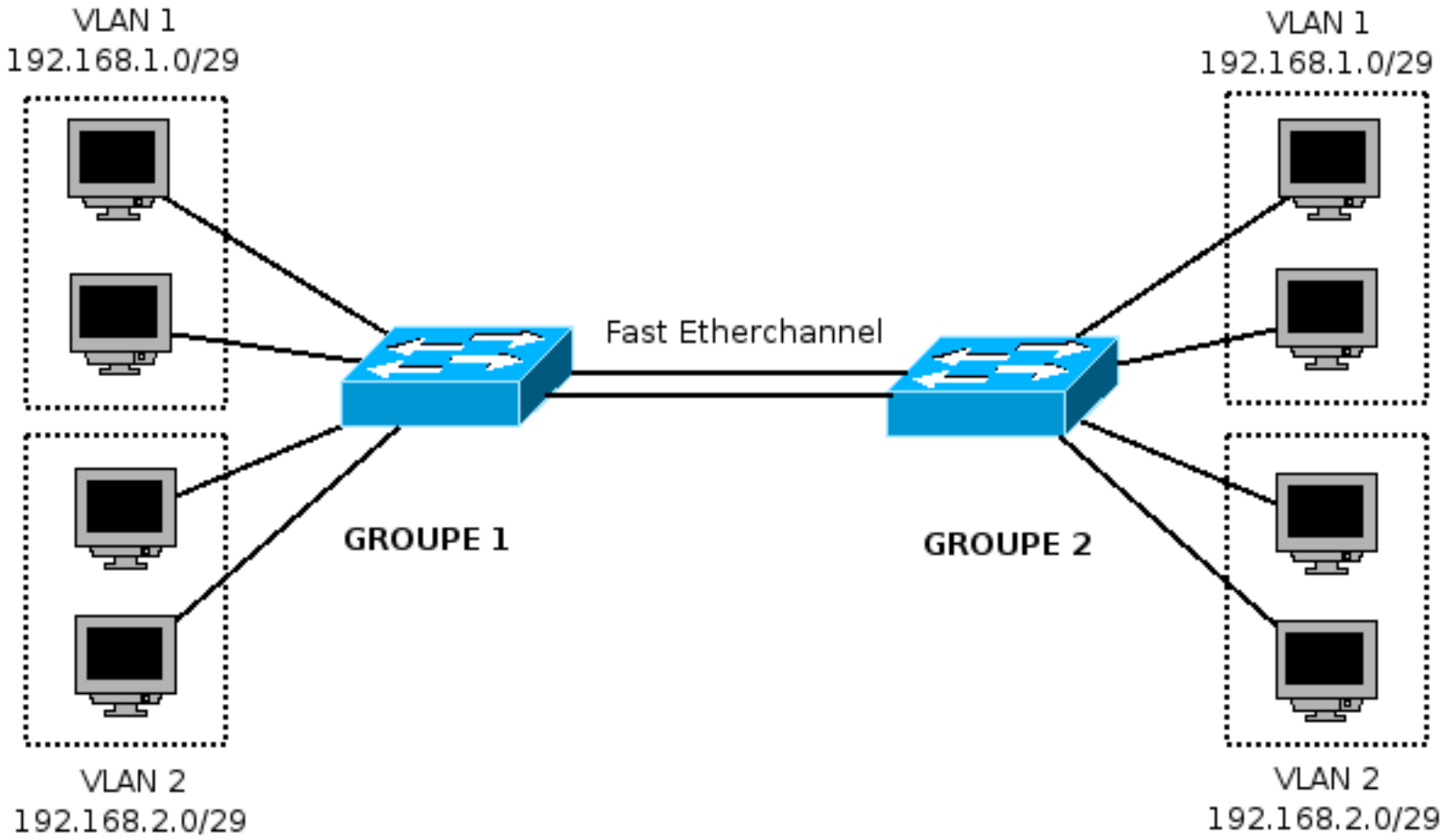
- Or on a port channel:

```
lab1-sw24(config)# interface range fastEthernet 0/x-y

lab1-sw24(config-if-range)# channel-group <1-6> mode <active, auto, desirable, on, passive >

lab1-sw24(config-if)# switchport mode trunk
```

- Possible trunk options:

```
lab1-sw24(config-if)# switchport trunk allowed vlan <1-1005>

lab1-sw24(config-if)# switchport trunk native vlan <1-1005>
```

# Manipulations 1/2



# Manipulations 2/2

1. Link your computers. The VLAN 2 will be your management VLAN, you must be able to administrate your switches with telnet.

2. Link your group with another group. Create a port agregation FEC on 2 ports. **Every computer from the same VLAN must be able to communicate between them.**

3. Each port can be use only by the connected machine.

4. Install an MRTG server on a computer from VLAN 2 and activate SNMP on the switch, then generate some traffic.