Lab4 - Cisco Switch

NASA 1! 2025

Wired @ Nalab

2025/03/11

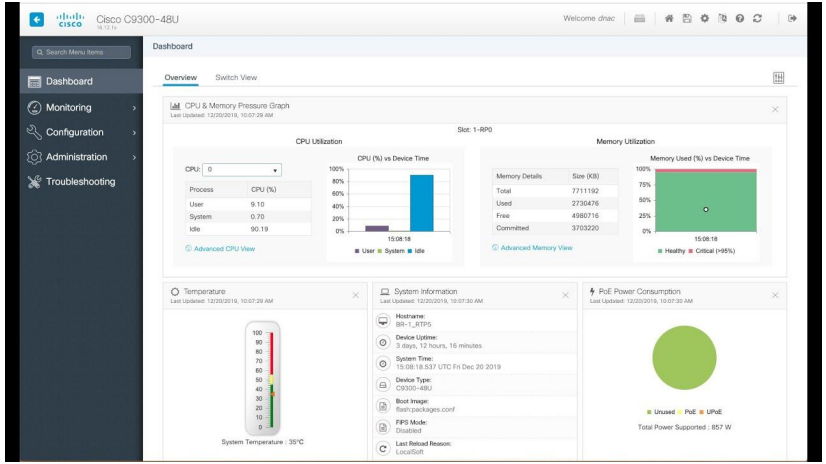
前置作業

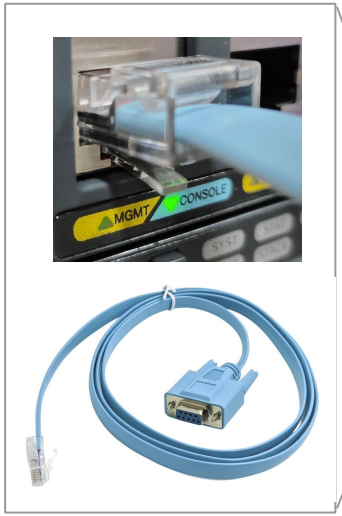
- 安裝 Cisco Packet Tracer 8.2.0
- 下載 Lab4.pka

Cisco Switch

Connect to switch

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#interface FastEthernet 0/1
Switch(config-if)#?
  authentication    Auth Manager Interface Configuration Commands
  cdp               Global CDP configuration subcommands
  channel-group     Etherchannel/port bundling configuration
  channel-protocol  Select the channel protocol (LACP, PAgP)
  description       Interface specific description
```





CLI

GUI

Console Port

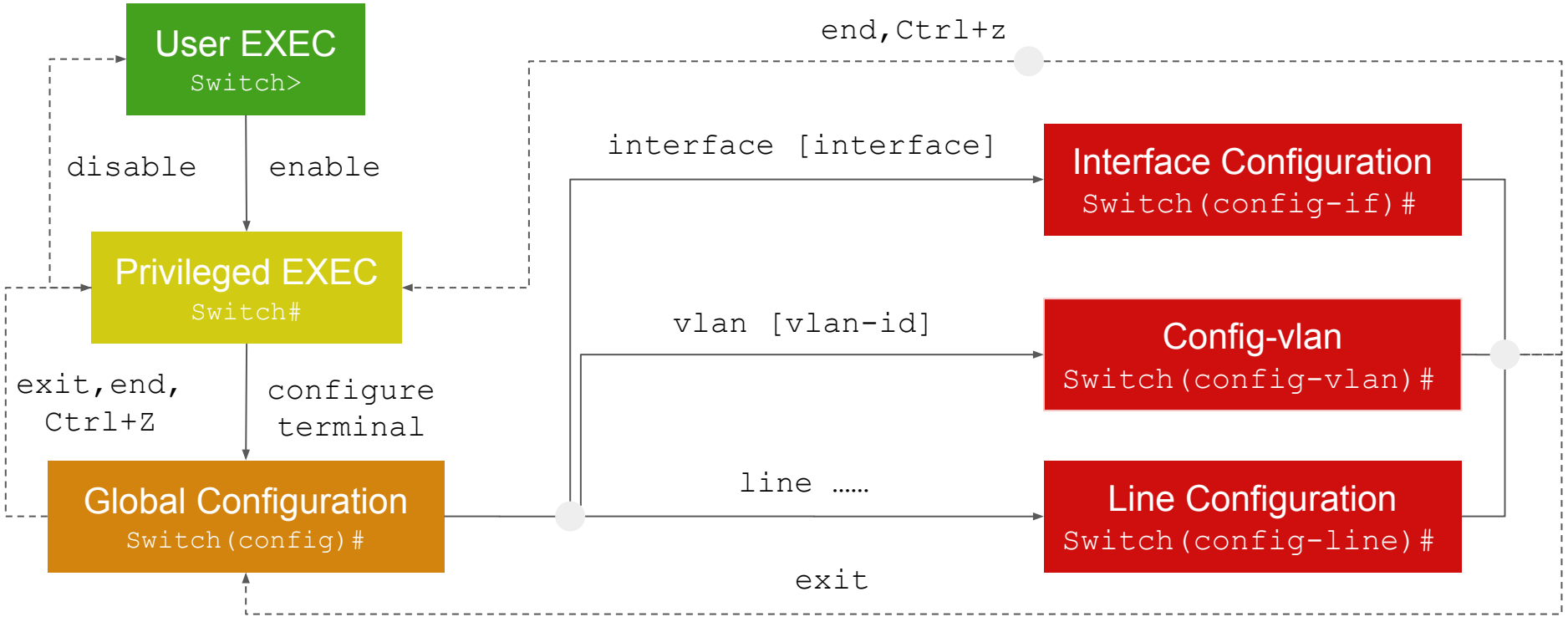
VTY Telnet / SSH

HTTP / HTTPS

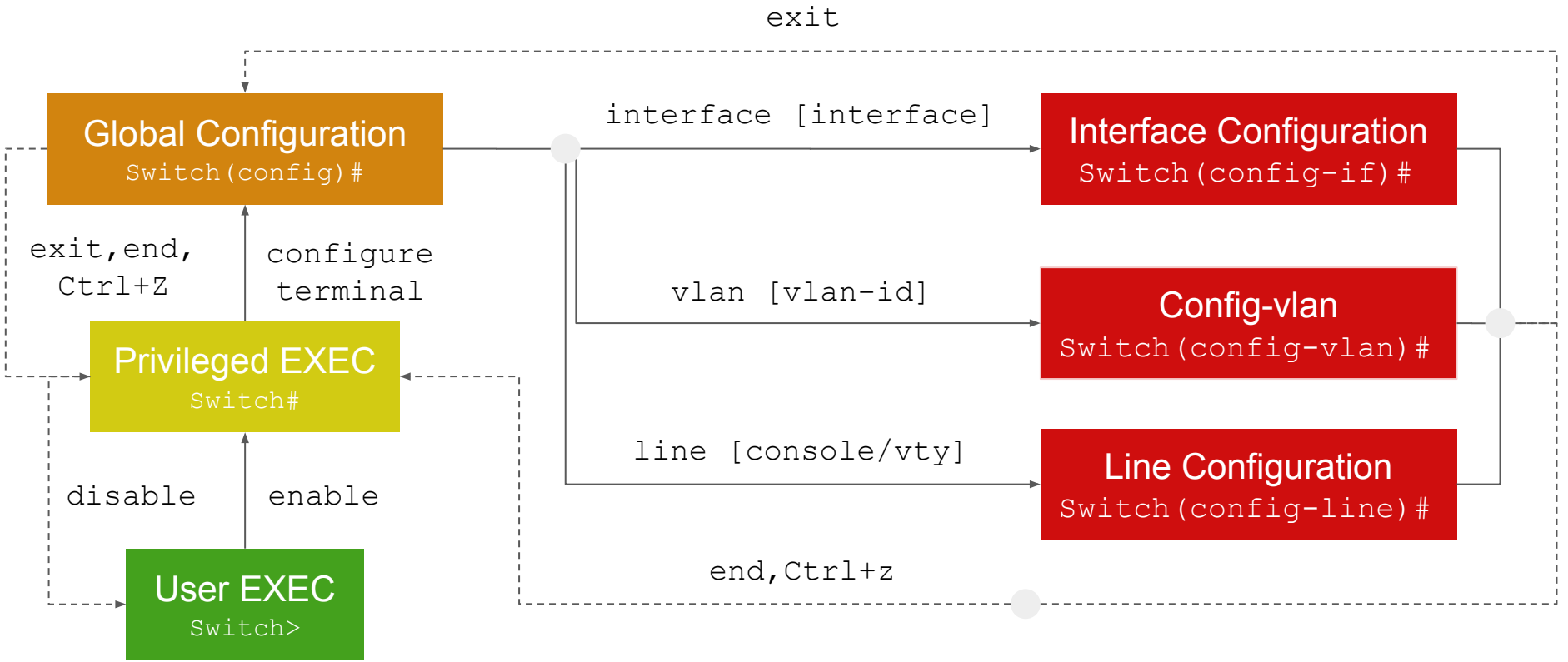
Cable = 現場

Net = 遠端

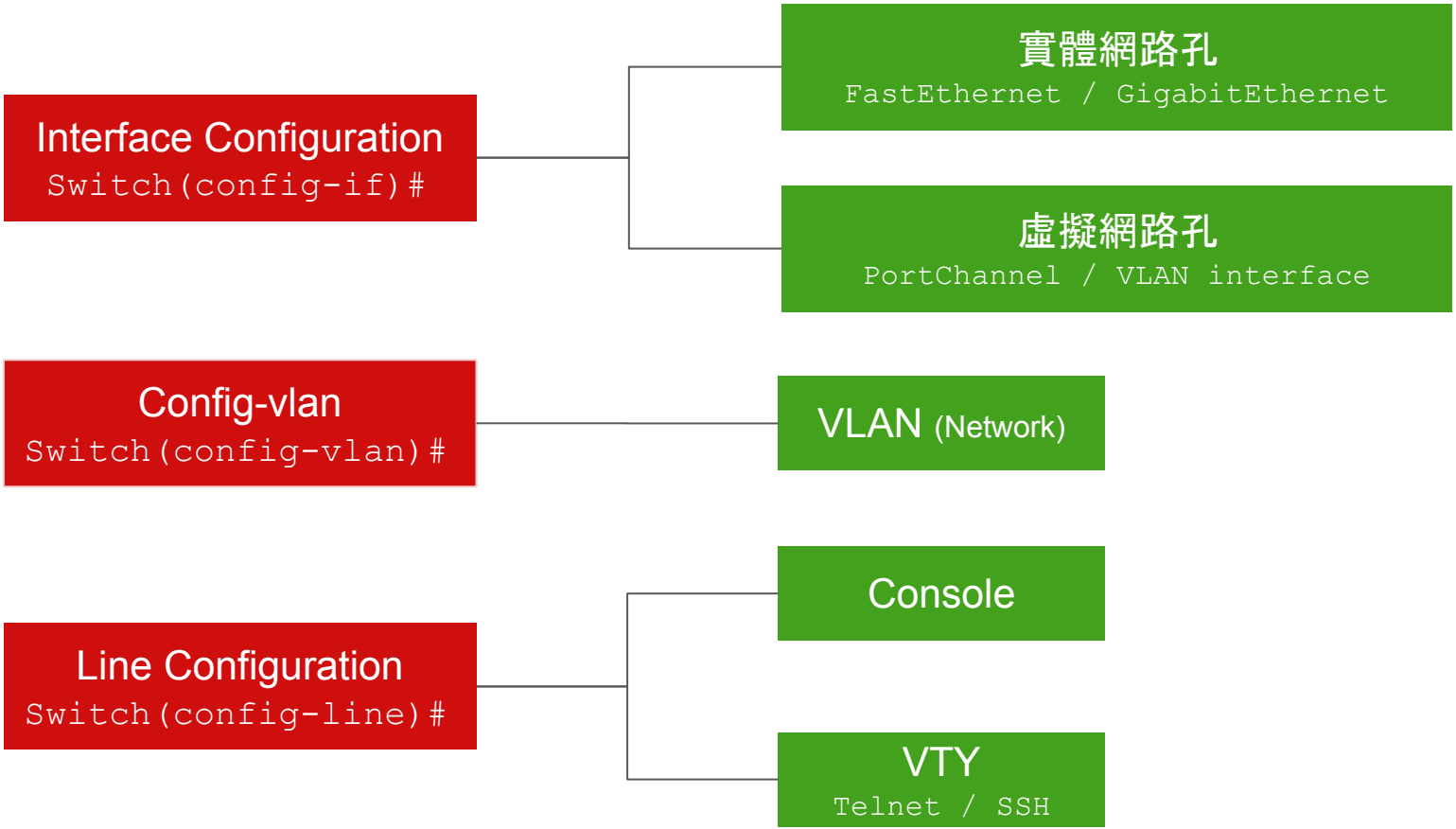
Cisco command mode



Cisco command mode



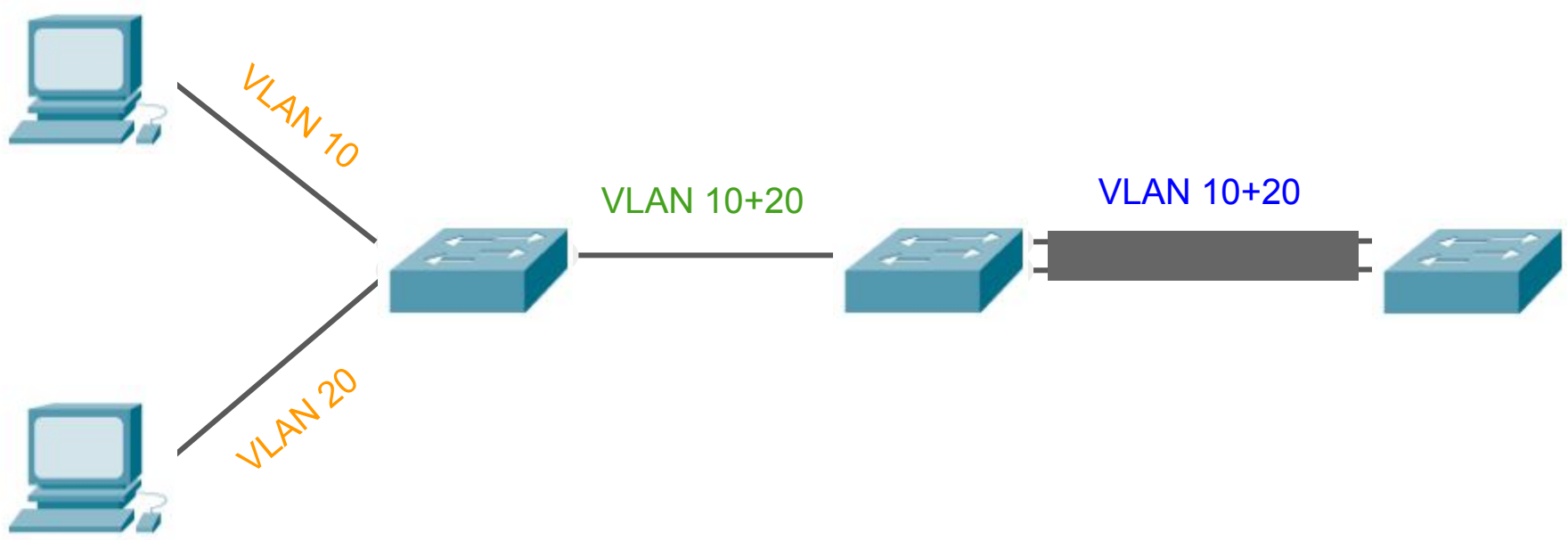
Cisco command mode



Cisco command mode

```
meow>                                                   // user EXEC
meow> enable
meow#                                                   // privileged EXEC
meow# configure terminal
meow(config)#                                           // global configuration
meow(config)# interface GigabitEthernet 1/0/1
meow(config-if)#                                        // interface configuration
meow(config-if)# exit
meow(config)#                                           // global configuration
meow(config)# exit
meow#                                                   // privileged EXEC
meow# disable
meow>                                                   // user EXEC
```

VLAN concept recap



VLAN

Trunk

Port Channel

VLAN-related command

- 創建 VLAN

```
meow(config)# vlan 99                                    // create a vlan
meow(config-vlan)# exit
```

- Access : 單一 VLAN

```
meow(config)# interface FastEthernet 1/0/1               // specify interface
meow(config-if)# switchport mode access                  // force mode ACCESS
meow(config-if)# switchport access vlan 123
meow(config-if)# exit
```

- Trunk : 多個 VLAN

```
meow(config)# interface GigabitEthernet 1/0/2            // specify interface
meow(config-if)# switchport mode trunk                       // force mode
TRUNK
meow(config-if)# switchport trunk allowed vlan 1-10,123
meow(config-if)# exit
```

VLAN-related command

- Port Channel : 多個 Port

```
// 1. add physical ports into port channel
meow(config-if)# interface range GigabitEthernet 1/0/1-4
meow(config-if-range)# channel-group 1 mode active
meow(config-if-range)# exit

// 2. create a new port channel
meow(config)# interface port-channel 1
meow(config-if)# switchport mode trunk
meow(config-if)# switchport trunk allowed vlan 1-10,123
meow(config-if)# exit
```

PAgP	Desirable	Auto
Desirable	V	V
Auto	V	X

LACP	Active	Passive
Active	V	V
Passive	V	X

Some tips

- 顯示 Switch 的狀態與設定
  - 用 `show` 去 show 各式各樣的資訊

```
meow# show ...                          // in privileged EXEC
meow(config)# do show ...               // at or above global configuration
```

Command	Information	Command	Information
`show running-config`	Running configuration	`show vlan`	VLANs in VLAN database
`show interfaces status`	All interface status	`show mac address-table`	MAC address table
`show interfaces Gi0/1`	Detail of specified interface	`show etherchannel summary`	Port-channel status
`show vlan`	VLANs in VLAN database	`show ?`	If you have no idea

Some tips

- 有事沒事就按按 `<TAB>` 來自動補字

```
meow# show ru<TAB>
meow# show running-config
```

- 不知道要打什麼指令，打 `?` 就對了

```
meow#show ?
aaa                 Show AAA values
Access-lists        List access lists
arp                 Arp table
boot                show boot attributes
...
```

```
meow#show c?
cdp clock crypto
```

Some tips

- Cisco 很聰明，給它足夠多的字就可以和其他指令區分

```
meow# sh ru
meow# conf t
meow(config)# int Fa0/1
```

=

```
meow# show running-config
meow# configure terminal
meow# interface
FastEthernet0/1
```

- `show` 出來好長，只想尋找特定資訊時，打 `|` 就對了
  - `show … | include <regex>`：輸出包含 `<regex>` 的行數
  - `show … | exclude <regex>`：輸出不含 `<regex>` 的行數
  - `show … | begin <regex>`　：輸出第一個包含 `<regex>` 後的行數

```
meow# show mac address-table | include 000a.*
```

- 要怎麼取消設定，最前面加個 `no` 就行咯

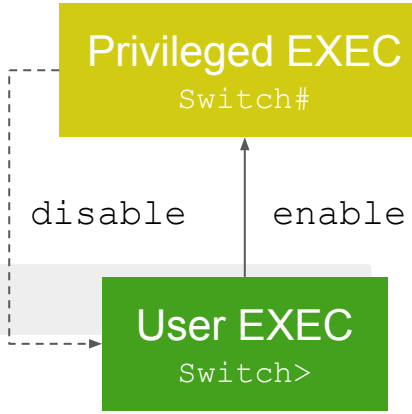
```
meow(config-if)# no switchport mode access
```

Some tips

- 記得把 `running-config` 複製到 `startup-config`，不然停電你會哭死
  - `running-config`：存在 Switch 的揮發性記憶體 (=PC的記憶體)
  - `startup-config`：存在 Switch 的非揮發性記憶體 (=PC的硬碟)

```
meow# copy running-config startup-config   // method 1
meow# write memory                         // method 2
```

Other common settings



- 設定主機名稱

```
meow(config)# hostname catpillar
```

- 幫 `enable` 設定密碼

```
meow(config)# enable password PASSWORD              // method 1
meow(config)# enable secret PASSWORD             // method 2
meow# show running-config | include enable
enable password PASSWORD                    // looks not good, right?
enable secret 5 $1$mERr$cP1uxB/ASHbnPQTLzT8H10
```

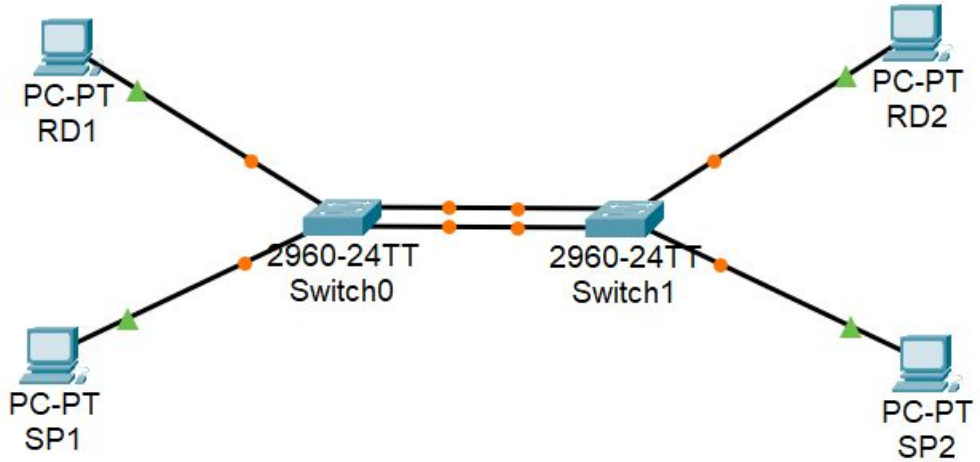
- 幫 config 中的明文密碼加密

```
meow(config)# service password-encryption
meow# show running-config | include enable password
enable password 7 08116D7D3A2E2A2536        // looks better
```

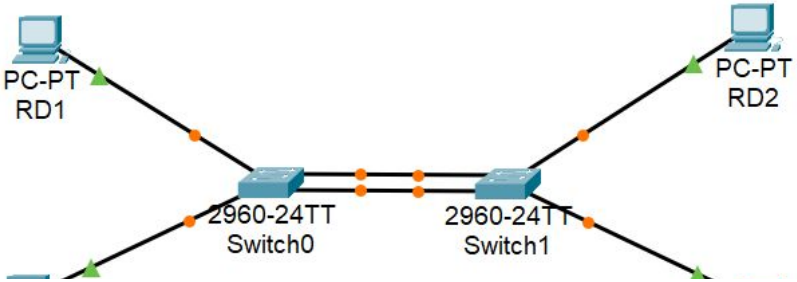
Cisco Packet Tracer

Goal

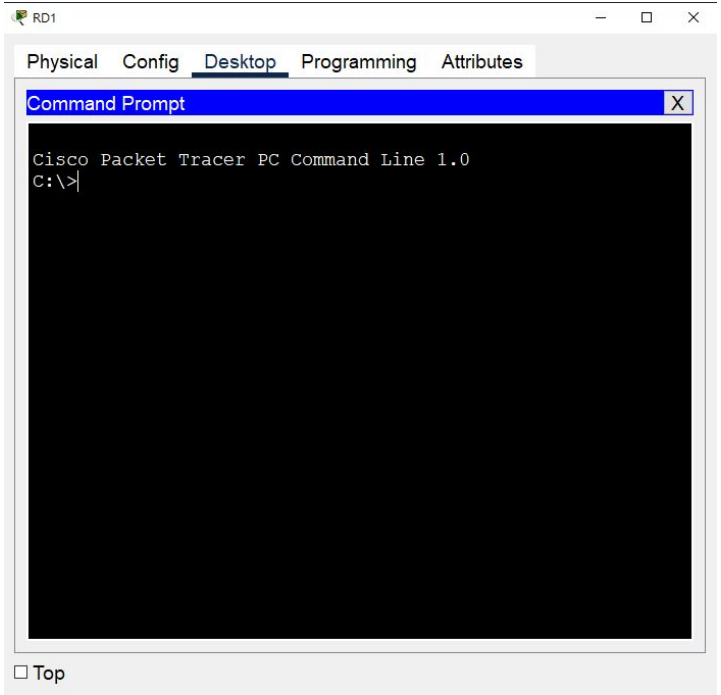
- Make RD's computer in VLAN100.
- Make SP's computer in VLAN200.
- Computers in the same VLAN shall be able to ping each other.
- Computers NOT in the same VLAN shall NOT be able to ping each other.
- Two physical links between Switch0 and Switch1 shall form a port channel.



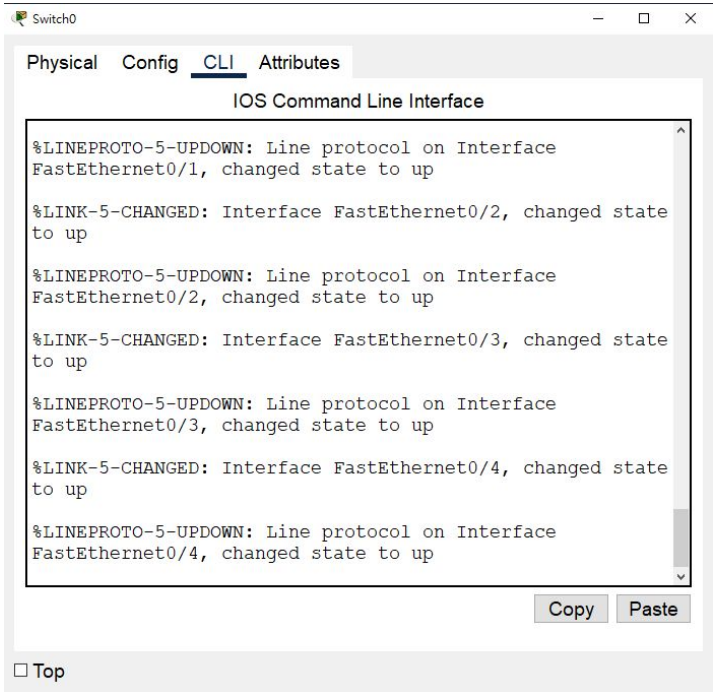
Instructions



點選 Computer > “Desktop” > “Command Prompt”

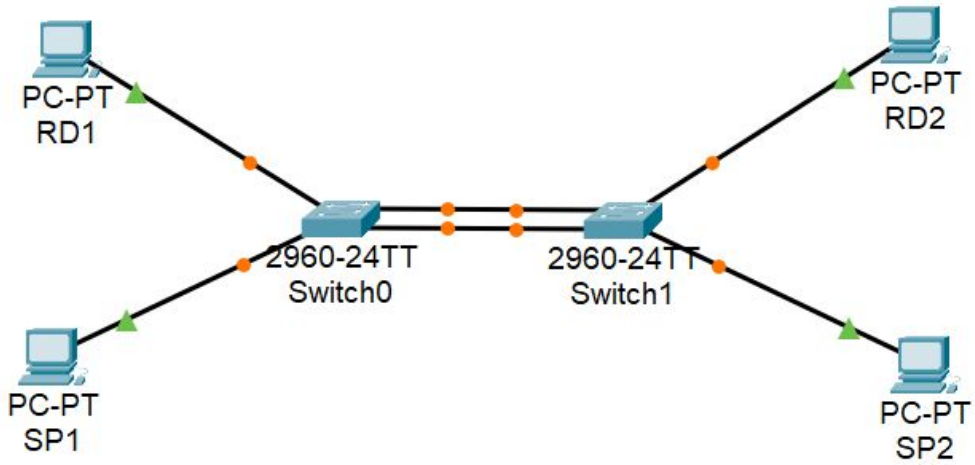


點選 Switch > “CLI”

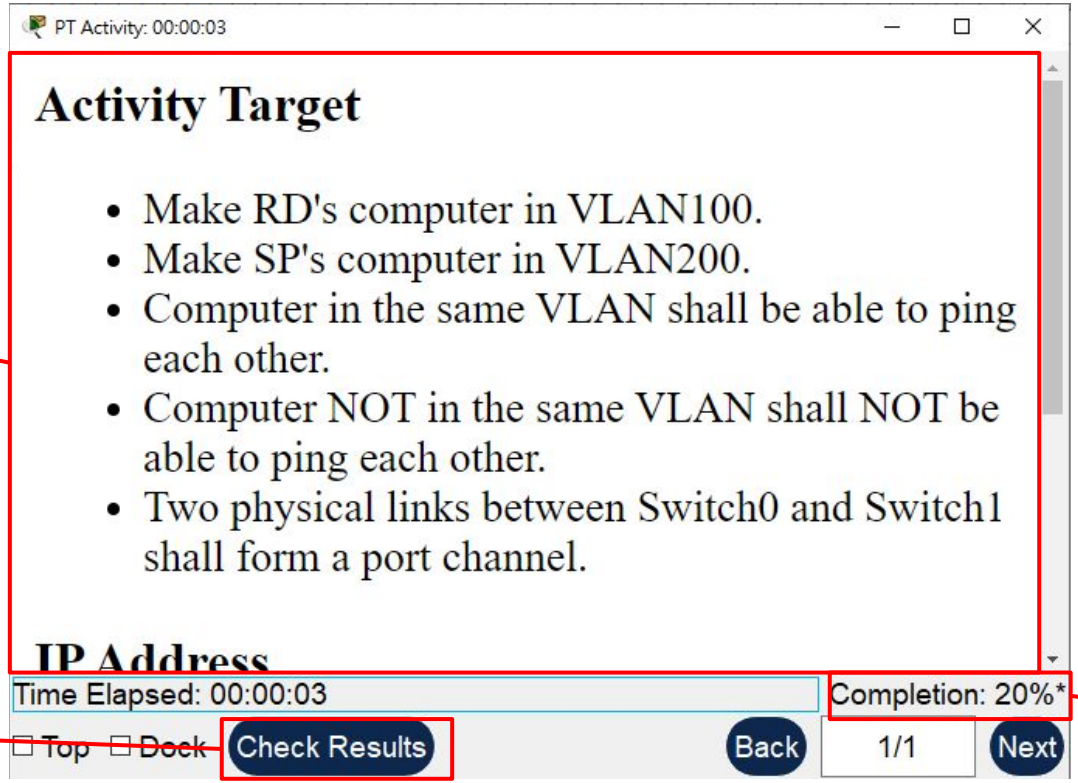


Instructions

- 字型可以到 “Option” > “Preferences” > “Font” 修改字體/大小/顏色
- 把滑鼠指標移到機器上可以顯示一些網路設定
- 把滑鼠指標移到網路線上可以看到實體埠口



Instructions



題目說明

檢查結果

完成度

Instructions

Overall Feedback | Assessment Items | Connectivity Tests

Expand/Collapse All | Show Incorrect Items

Assessment Items	Status	Points	Componen	Feedback
Network				
Switch0				
Ports				
FastEthernet0/1				
✔ Access VLAN	Correct	1	Switching	
✔ Port Mode	Correct	1	Other	
FastEthernet0/2				
✔ Access VLAN	Correct	1	Switching	
✔ Port Mode	Correct	1	Other	
GigabitEthernet0/1				
✔ Channel Group	Correct	1	Switching	
✔ Port Mode	Correct	1	Other	
GigabitEthernet0/2				
✔ Channel Group	Correct	1	Switching	
✔ Port Mode	Correct	1	Other	
Port-channel1				
✔ Port Mode	Correct	1	Other	
✘ Port Up	Incorrect	1	Physical	
Switch1				
Ports				
FastEthernet0/1				
✘ Access VLAN	Incorrect	1	Switching	
✔ Port Mode	Correct	1	Other	
FastEthernet0/2				
✘ Access VLAN	Incorrect	1	Switching	
✔ Port Mode	Correct	1	Other	

Overall Feedback | Assessment Items | Connectivity Tests

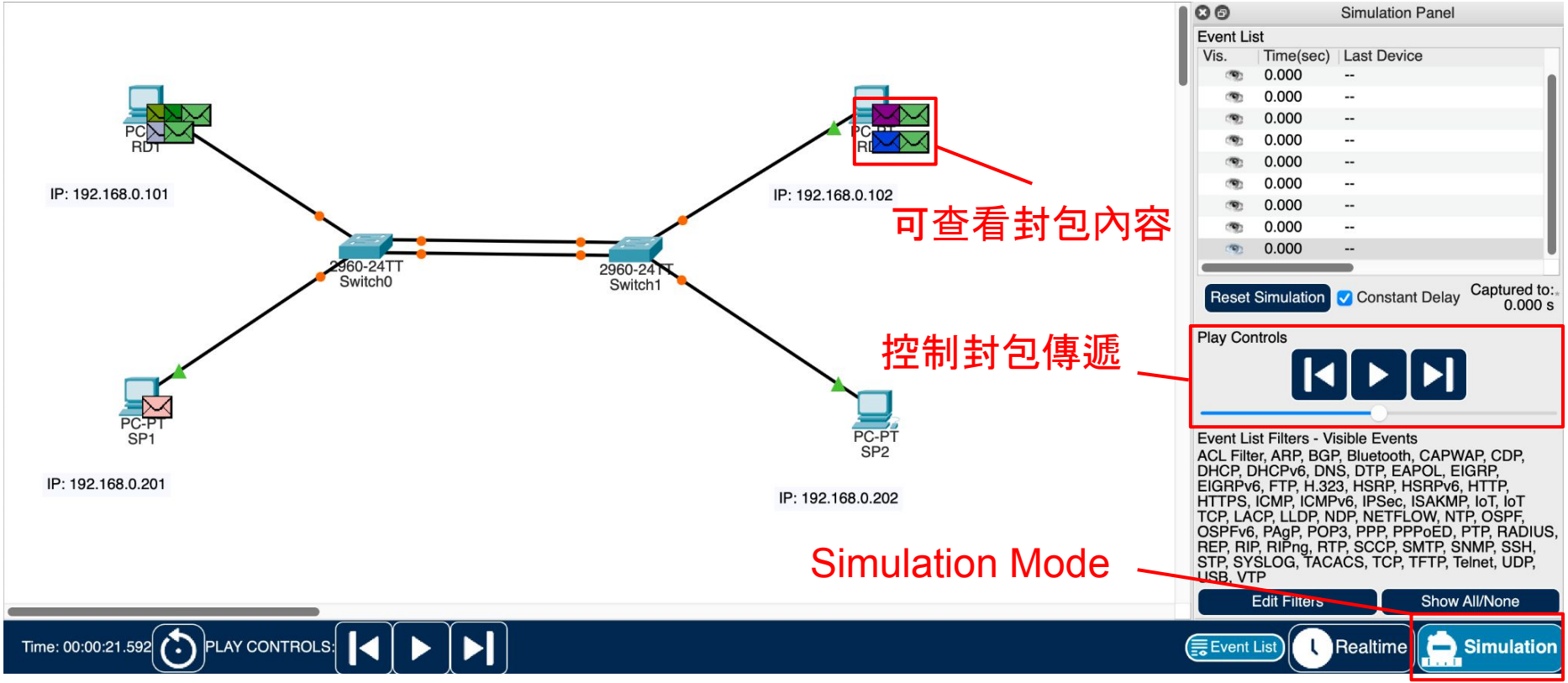
Below are the results of your connectivity tests:

	Status	ɜst Conditic	Points	Source	Destination	Type
1	Incorrect	Successful	1	RD1	RD2 : ...	ICMP
2	Correct	Fail	1	RD1	SP1 : ...	ICMP
3	Correct	Fail	1	RD1	SP2 : ...	ICMP
4	Correct	Fail	1	RD2	SP1 : ...	ICMP
5	Incorrect	Fail	1	RD2	SP2 : ...	ICMP
6	Incorrect	Successful	1	SP1	SP2 : ...	ICMP

搞成一陀義大利麵不知道怎麼修 0.0

"File" > "Reset Activity"

Instructions



Submit

請將做完的 .pka 檔**存檔**後繳交到 NTU COOL "Lab 4"

- 需要問問題的話，信件主旨 [NASA Lab4] .....