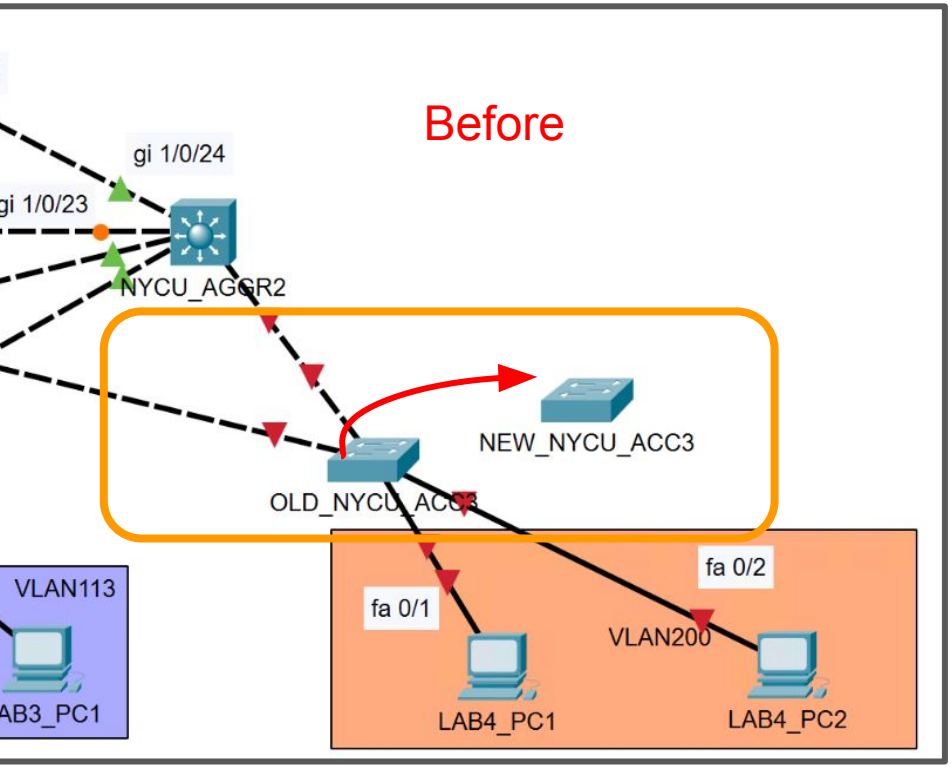
112B CCNA Midterm Exam

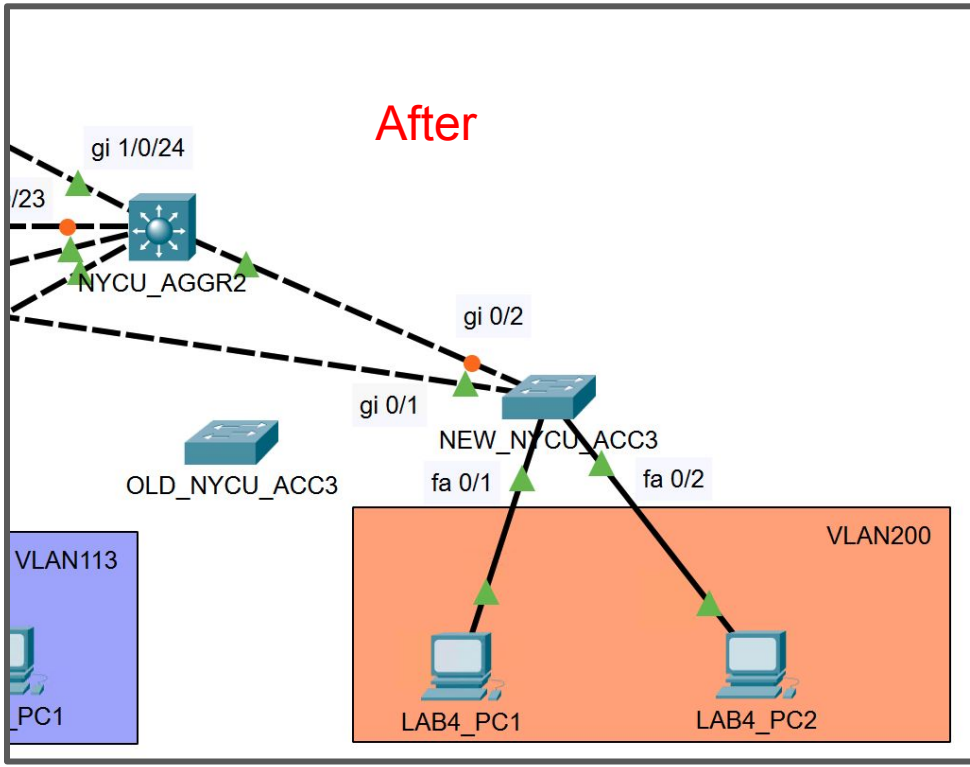
- 確保檔案存放在桌面，以免電腦出現異常後遺失！！
- 建議保留原檔，複製第二份檔案出來，當作作答檔案。
- 推薦 Packet Tracer 啟用 show port labels when mouse over in logical workspace 功能。
- 請隨手存檔。

Notice

- No need to configure **badroot** and **ISP**
- Some configurations are already on the network device
  - Among them, some settings are incorrect, so you need to determine which ones are correct and which ones are incorrect on your own.
- Do not remove static route on **NYCU_R3**
- Do not remove any physical connection
  - Except the **OLD_NYCU_ACC3** switch
- Do not remove description
- Save what you have done at all times to startup-config
  - Make sure you save your configuration to both switches and PacketTracer
  - We will reboot all network devices before judging
- Raise your hand if you meet any questions
- Change file name to **112B_Mid_{your student id}** and submit to e3

Change topology



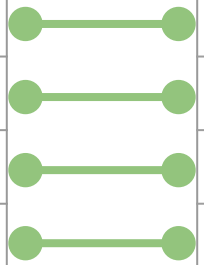


Requirements - Change topology

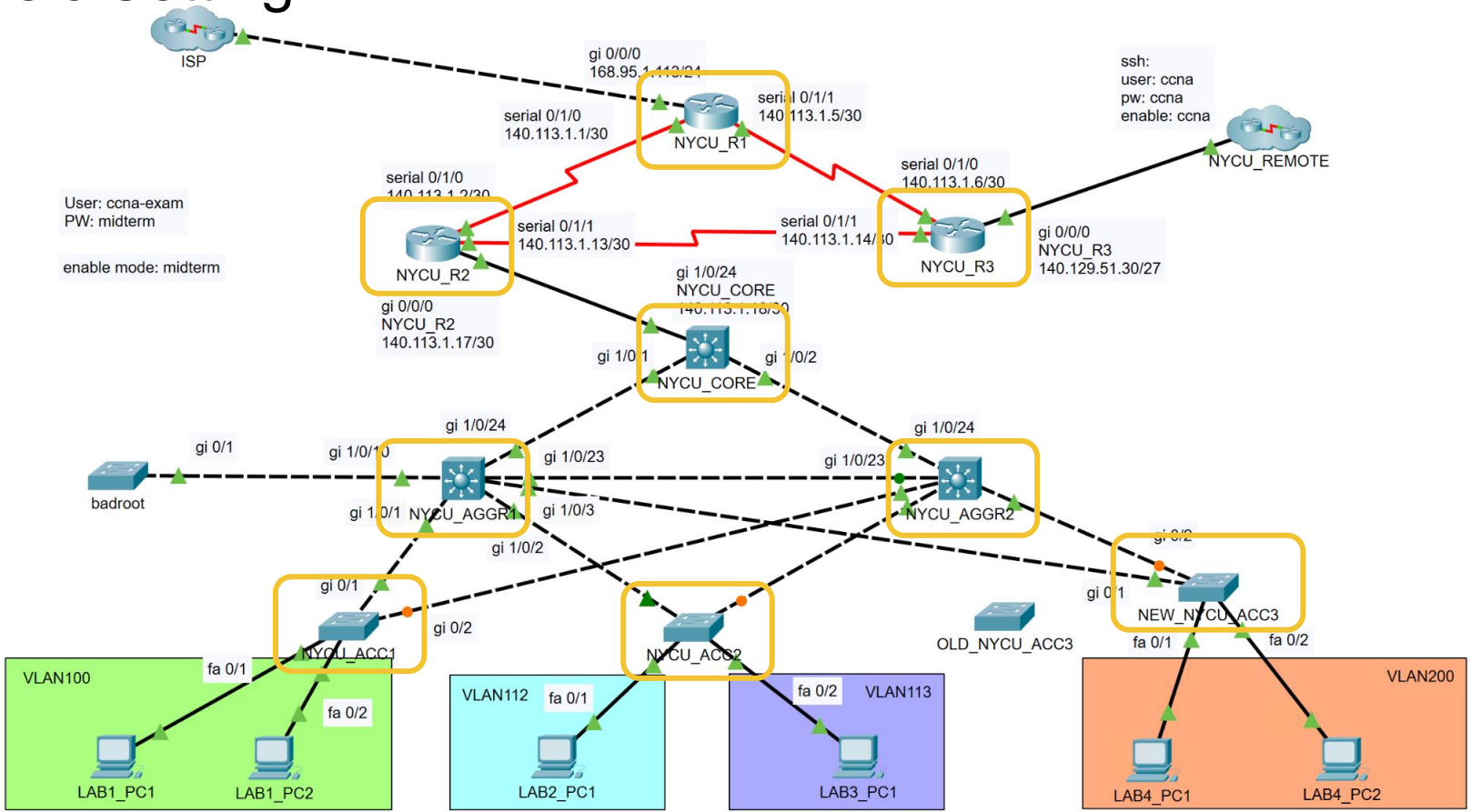
Due to unknown reasons, the LAB4 network is often unstable.
The network administrator wants to replace **OLD_NYCU_ACC3** with **NEW_NYCU_ACC3**

Please follow the form below to **connect the physical cables**:

Device	Interface		**Device**	Interface
NEW_NYCU_ACC3	Gig 0/1		**NYCU_AGGR1**	Gig 1/0/3
	Gig 0/2		**NYCU_AGGR2**	Gig 1/0/3
	Fa 0/1		**LAB4_PC1**	Fa 0
	Fa 0/2		**LAB4_PC2**	Fa 0



Basic Setting



Requirements - Basic Setting 1

Basic setting on NYCU device:

Router: **NYCU_R1, NYCU_R2, NYCU_R3**

L3 Switch: **NYCU_CORE, NYCU_AGGR1, NYCU_AGGR2**

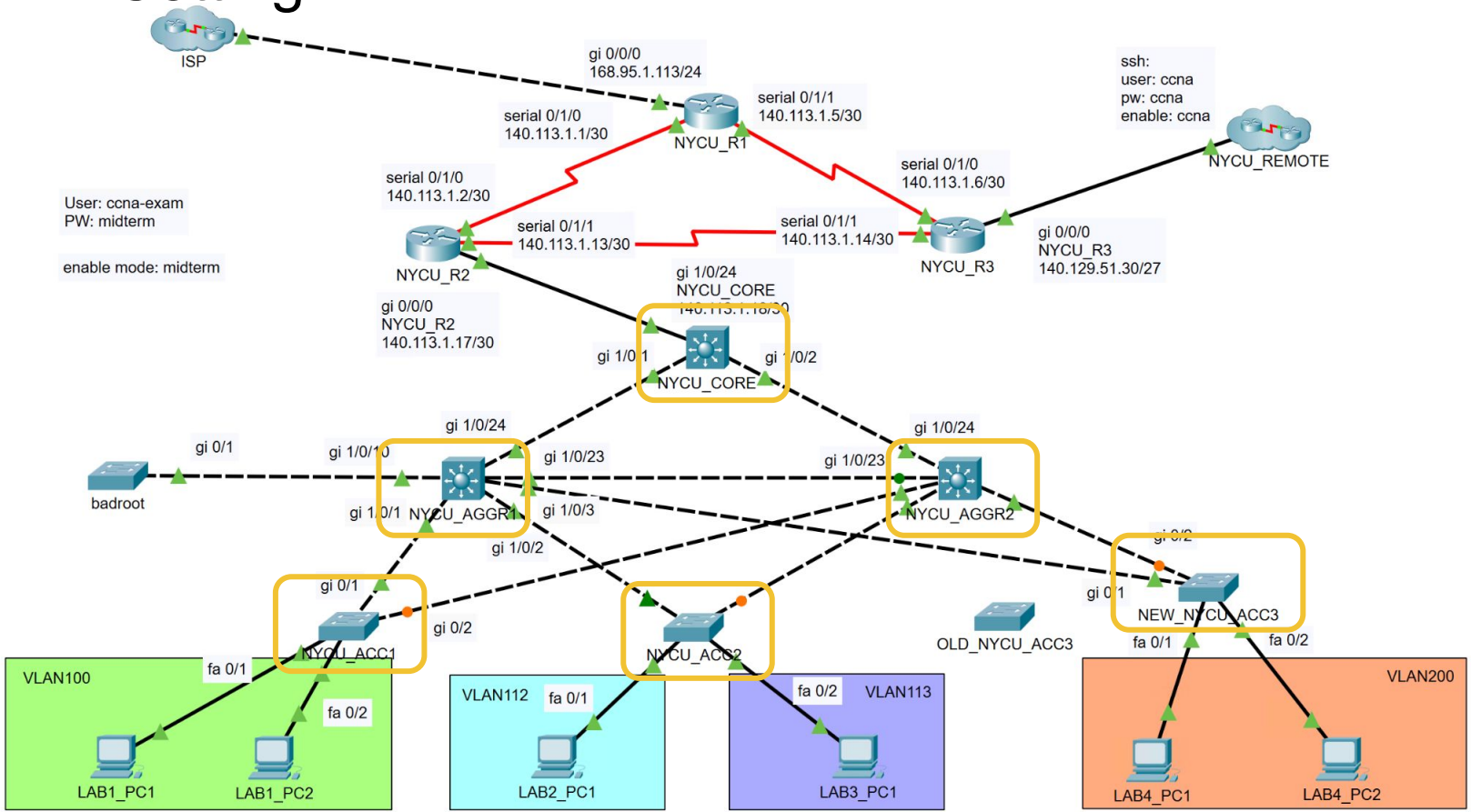
L2 Switch: **NYCU_ACC1, NYCU_ACC2, NEW_NYCU_ACC3**

1. Set hostname
   - The hostname is shown on the topology under every device
2. Add user **ccna-exam**
   - Use **midterm** as password and encrypt it with MD5
3. Set privileged EXEC Access password
   - Use **midterm** as password and encrypt it with MD5

Requirements - Basic Setting 2

4. Use **cs.nycu.edu.tw** as domain name
5. Set up SSH connection
    - version **2**
    - Modulus Bits: **2048**
6. Set up vty connection
    - SSH setting should be configured on all vtys (**0-15**)
    - Set connection timeout to **300 seconds**
    - Login local account
7. Shutdown CDP on end device interface (connect to LAB PC)
    - Don’t disable CDP globally
8. Shutdown unused ports on the switch
9. Do not configure the shutdown port

VLAN Setting



Requirements - VLAN

VLAN should setting on NYCU switches :

L3 Switch: **NYCU_CORE, NYCU_AGGR1, NYCU_AGGR2**

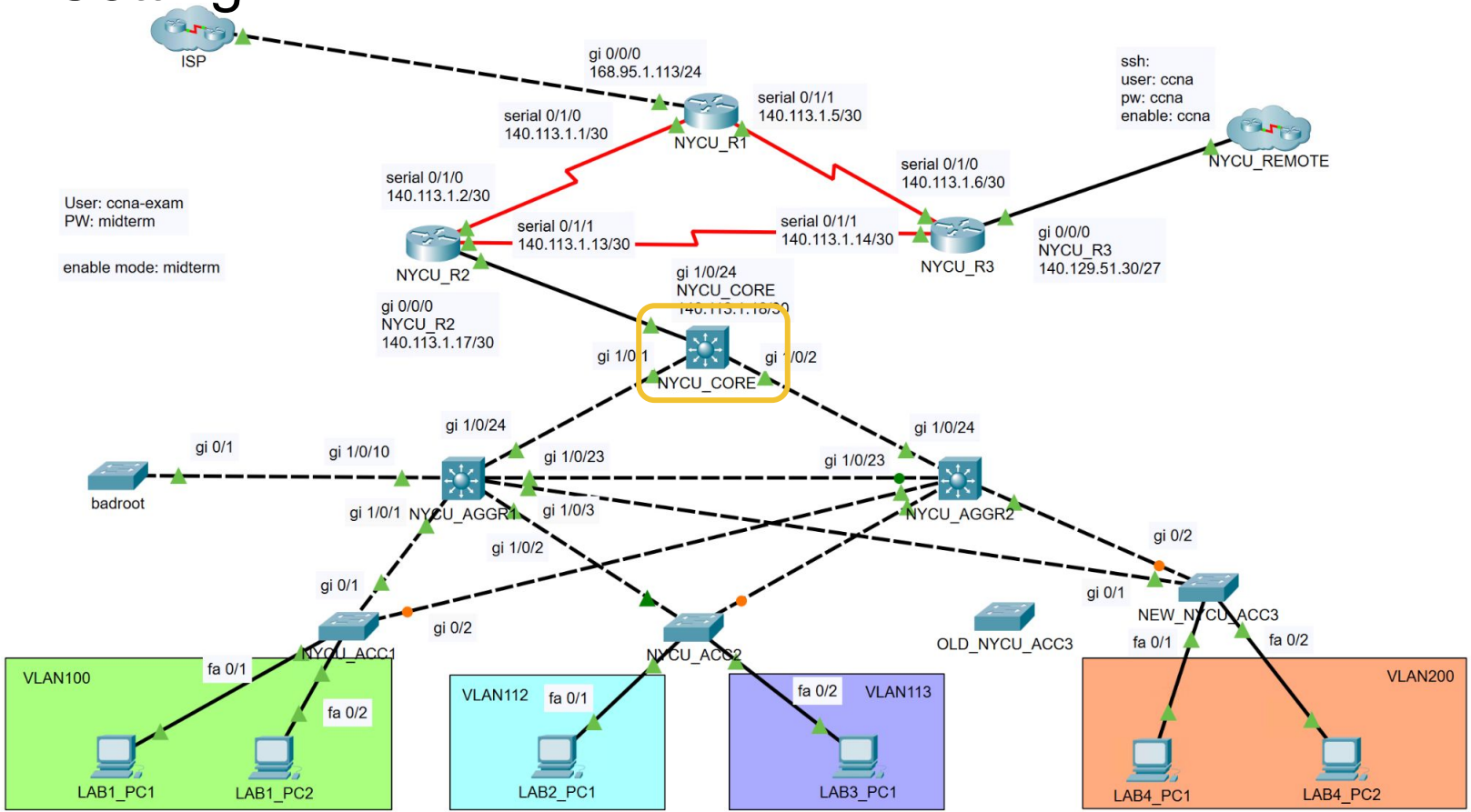
L2 Switch: **NYCU_ACC1, NYCU_ACC2, NEW_NYCU_ACC3**

1. Create L2 VLAN (VLAN 88, 100, 112, 113, 200 and 1001)
2. The link between two switches should set **trunk mode**
3. Set **native VLAN 88** on trunk port
4. Trunk port only allows VLANs that are used by the end devices (LAB PC)
    - Hint: native VLAN and management are also required
5. The end device interface should be configured with the correct VLAN ID

VLAN name and subnet

VLAN	Name	Purpose	Subnet
88	VLAN0088	Native VLAN	None
100	VLAN0100	LAB PC	140.113.100.0/24
112	VLAN0112	LAB PC	140.113.112.0/27
113	VLAN0113	LAB PC	140.113.113.0/28
200	VLAN0200	LAB PC	140.113.200.0/24
1001	management	Switch MGMT	140.113.32.0/24

SVI Setting

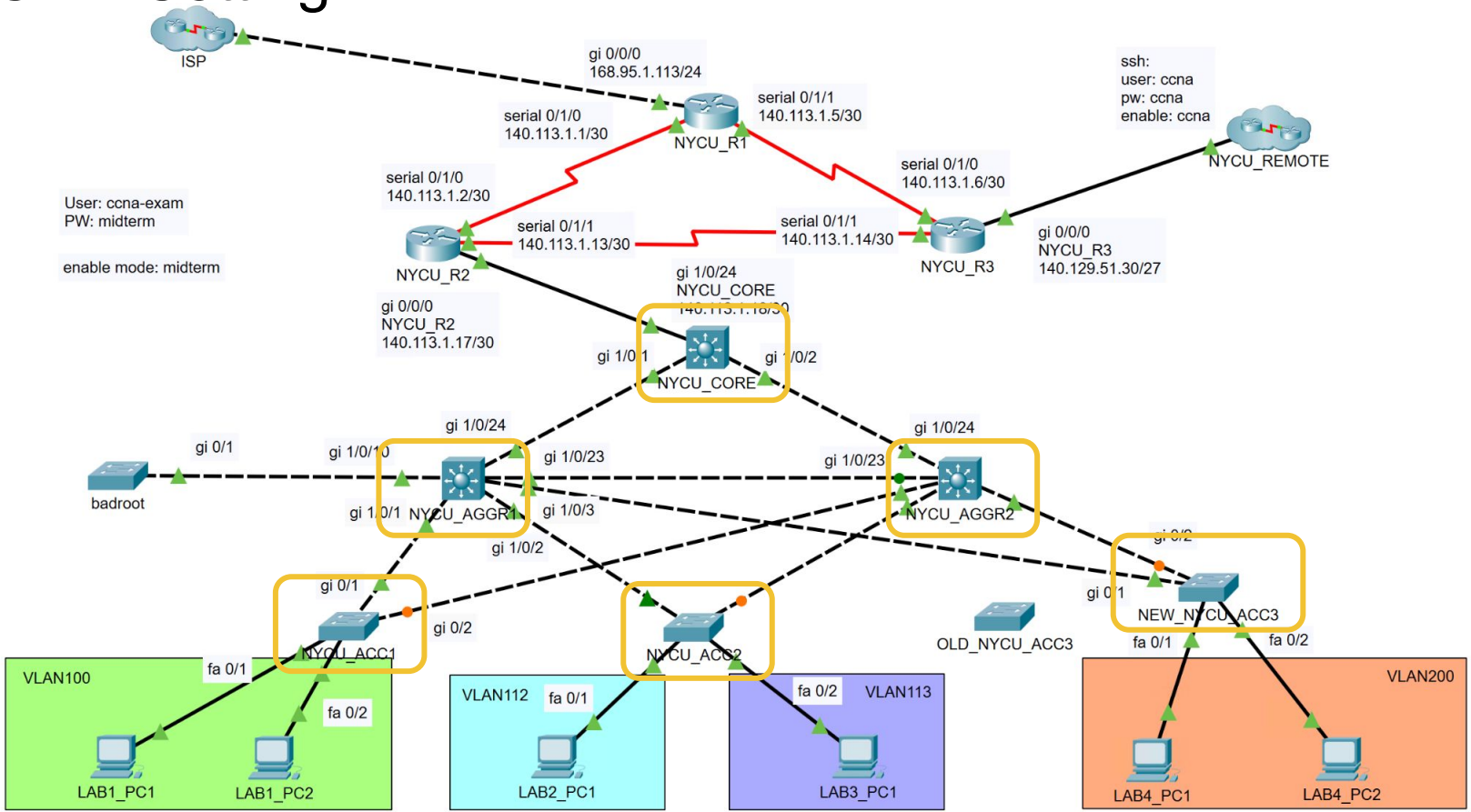

ISP
gi 0/0/0
168.95.1.113/24
serial 0/1/0
140.113.1.1/30
NYCU_R1
serial 0/1/1
140.113.1.5/30
ssh:
user: ccna
pw: ccna
enable: ccna
NYCU_REMOTE
User: ccna-exam
PW: midterm
enable mode: midterm
serial 0/1/0
140.113.1.2/30
serial 0/1/1
140.113.1.13/30
serial 0/1/1
140.113.1.14/30
serial 0/1/0
140.113.1.6/30
NYCU_R2
NYCU_R3
gi 0/0/0
NYCU_R3
140.129.51.30/27
gi 1/0/24
NYCU_CORE
gi 0/0/0
NYCU_R2
140.113.1.17/30
gi 1/0/1
gi 1/0/2
NYCU_CORE
gi 1/0/24
gi 0/1
gi 1/0/10
gi 1/0/23
gi 1/0/24
gi 1/0/23
badroot
gi 1/0/1
NYCU_AGGR1
gi 1/0/3
NYCU_AGGR2
gi 1/0/2
gi 0/2
gi 0/1
gi 0/1
NEW_NYCU_ACC3
gi 0/2
OLD_NYCU_ACC3
NYCU_ACC1
NYCU_ACC2
fa 0/1
fa 0/1
fa 0/2
VLAN100
VLAN112
fa 0/1
fa 0/2
VLAN113
VLAN200
LAB1_PC1
LAB1_PC2
LAB2_PC1
LAB3_PC1
LAB4_PC1
LAB4_PC2

Requirements - SVI

SVI should set on **NYCU_CORE**

1. Create SVI for VLAN 100, 112, 113, 200, 1001
2. Set SVI IP addresses
    - VLAN 1001: 140.113.32.1/24
    - VLAN 100, 112, 113, 200: The **last available** IP address in the subnet
3. Allow different VLANs to communicate with each other
4. Set Gig 1/0/24 to L3 (Layer 3) interface

MGMT Setting

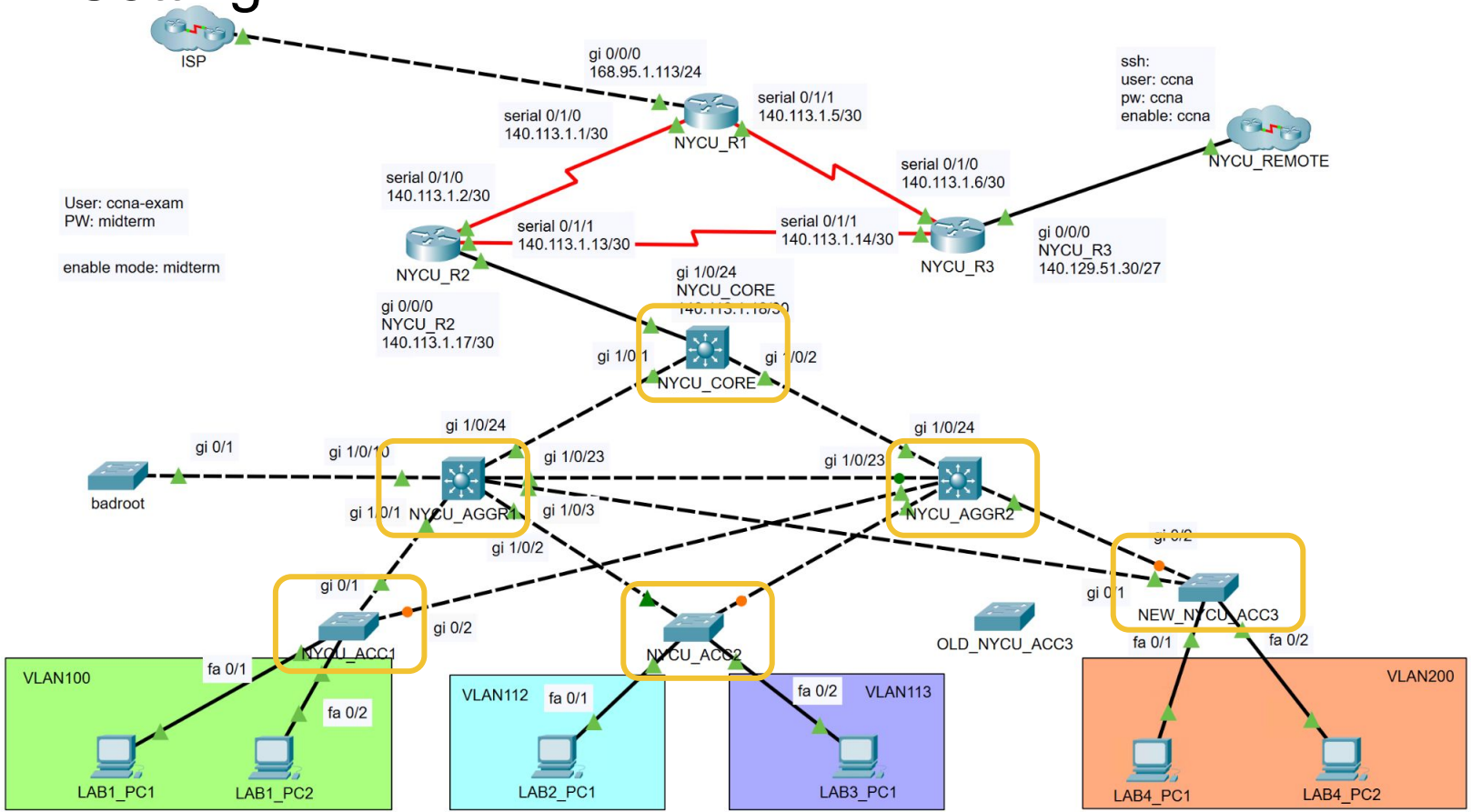


Requirements - MGMT Setting

Set the management IPs on VLAN 1001 (SVI)

Device	IP
NYCU_CORE	140.113.32.1/24
NYCU_AGGR1	140.113.32.2/24
NYCU_AGGR2	140.113.32.3/24
NYCU_ACC1	140.113.32.11/24
NYCU_ACC2	140.113.32.12/24
NEW_NYCU_ACC3	140.113.32.13/24

STP Setting

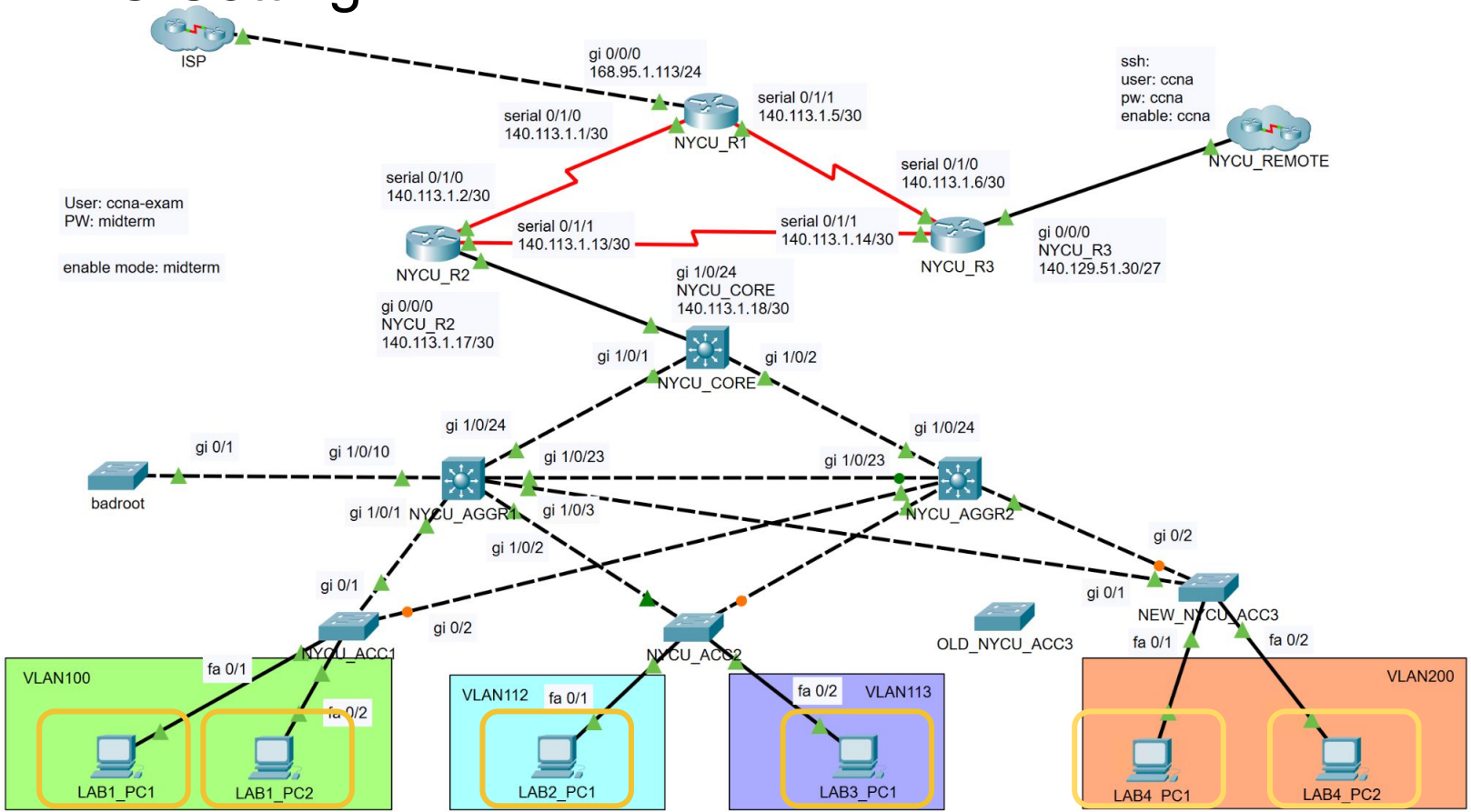

ISP
gi 0/0/0
168.95.1.113/24
NYCU_R1
serial 0/1/0
140.113.1.1/30
serial 0/1/1
140.113.1.5/30
ssh:
user: ccna
pw: ccna
enable: ccna
NYCU_REMOTE
User: ccna-exam
PW: midterm
enable mode: midterm
serial 0/1/0
140.113.1.2/30
serial 0/1/1
140.113.1.13/30
serial 0/1/1
140.113.1.14/30
serial 0/1/0
140.113.1.6/30
NYCU_R2
NYCU_R3
gi 0/0/0
NYCU_R3
140.129.51.30/27
gi 0/0/0
NYCU_R2
140.113.1.17/30
gi 1/0/24
NYCU_CORE
NYCU_CORE
gi 1/0/24
gi 1/0/23
gi 1/0/24
gi 1/0/23
gi 0/1
badroot
NYCU_AGGR1
gi 1/0/3
gi 1/0/2
NYCU_AGGR2
gi 0/1
gi 0/2
NYCU_ACC1
NYCU_ACC2
OLD_NYCU_ACC3
NEW_NYCU_ACC3
fa 0/1
fa 0/2
VLAN100
fa 0/1
fa 0/2
LAB1_PC1
LAB1_PC2
VLAN112
fa 0/1
LAB2_PC1
fa 0/2
VLAN113
LAB3_PC1
VLAN200
LAB4_PC1
LAB4_PC2

Requirements - STP

1. Set VLAN 88, 100, 112, 113, 200, 1001 STP priority of **NYCU_CORE** to **4096**

   Should setting on NYCU Switches:
2. Please use **Rapid PVST** as STP mode
3. Set VLAN 88, 100, 112, 113, 200, 1001 STP
4. Avoid the role of root switch (**NYCU_CORE**) being robbed by badroot switch
   - Root guard configuration shouldn't affect other switches except **badroot**
5. Set portfast on the interfaces connected to end devices (LAB PC)
6. Prevent BPDU from entering the interfaces configured as portfast mode
   - Disable the interface if any BPDU enters it
   - Configuration should on each interface

LAB PC Setting



Requirements - LAB PCs

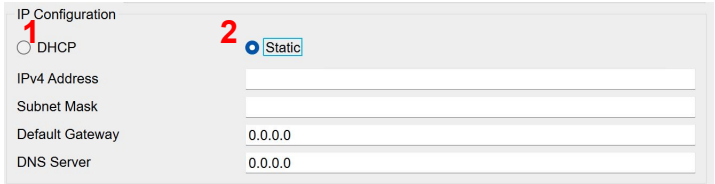
IP Address setting on LAB PCs:

- Gateway
  - The **last available** IP address in the subnet
- DNS Server
  - **8.8.8.8**

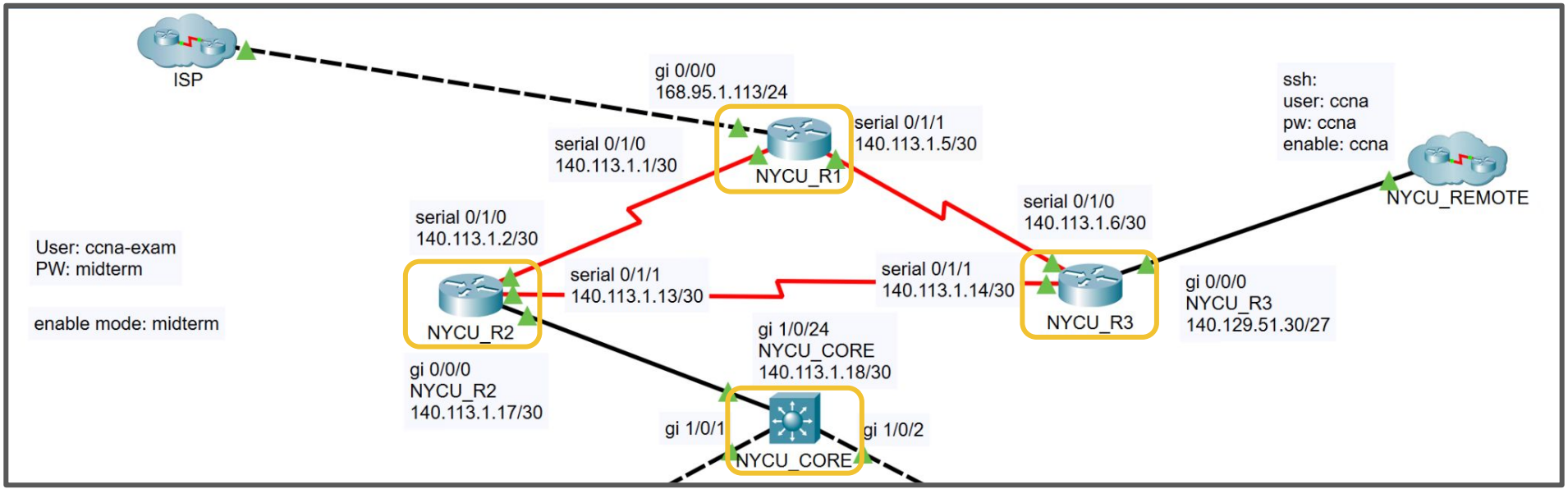
Device	IP Address
LAB1_PC1	140.113.100.1/24
LAB1_PC2	140.113.100.2/24
LAB2_PC1	140.113.112.1/27
LAB3_PC1	140.113.113.1/28
LAB4_PC1	140.113.200.1/24
LAB4_PC2	140.113.200.2/24

Hint: LAB4_PC2

- **建議先點 DHCP(1) 再按 Static(2) Mode**
- **避免 IP Address 設定跑掉**



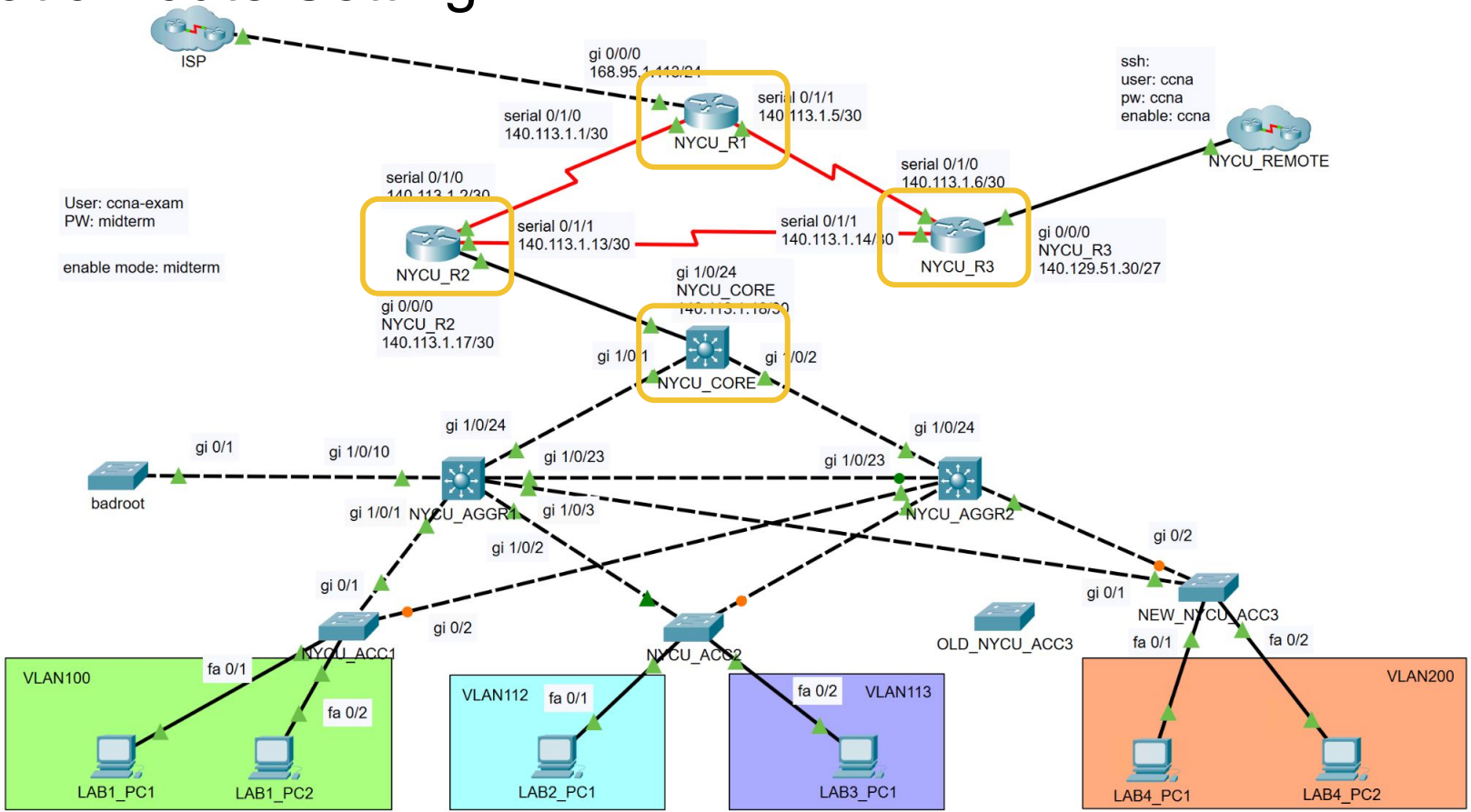
Router interface IP address



Requirements - Router interface IP address

Device	Serial 0/1/0	Serial 0/1/1	GigabitEthernet 0/0/0	GigabitEthernet 1/0/24
NYCU_R1	140.113.1.1/30	140.113.1.5/30	168.95.1.113/24	
NYCU_R2	140.113.1.2/30	140.113.1.13/30	140.113.1.17/30	
NYCU_R3	140.113.1.6/30	140.113.1.14/30	140.129.51.30/27	
NYCU_CORE				140.113.1.18/30

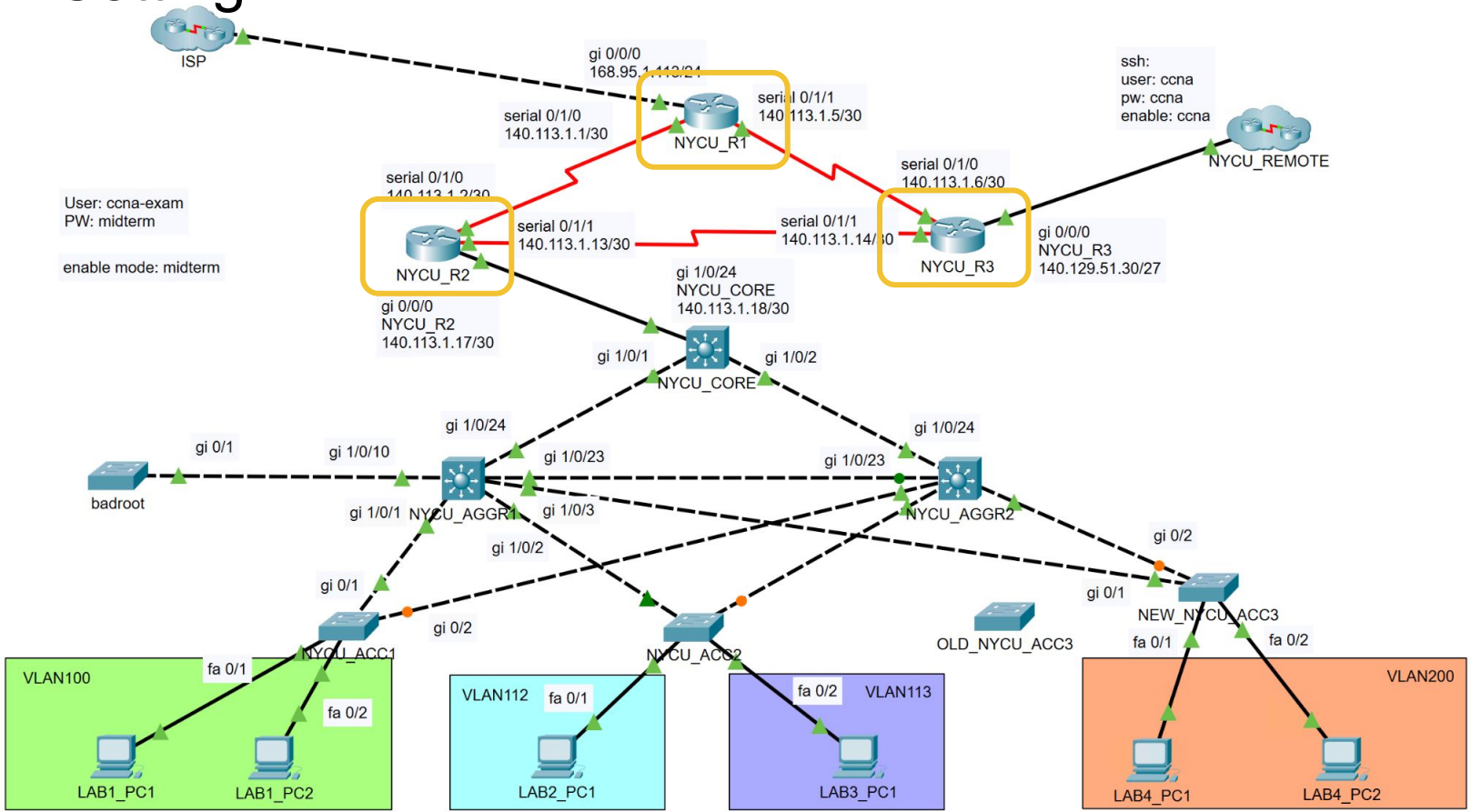
Static Route Setting



Requirements - Static Route

1. Set default route (**via exit-interface name**) on **NYCU_CORE**
2. Set VLAN 1001 default gateway on NYCU Switches:
   NYCU_AGGR1, NYCU_AGGR2,
   NYCU_ACC1, NYCU_ACC2, NEW_NYCU_ACC3
3. Configure a static route (**via IP address**) on **NYCU_R2** to provide access for VLAN 100, 112, 113, 200, 1001

RIP Setting


ISP
gi 0/0/0
168.95.1.113/24
serial 0/1/0
140.113.1.1/30
NYCU_R1
serial 0/1/1
140.113.1.5/30
ssh:
user: ccna
pw: ccna
enable: ccna
NYCU_REMOTE
serial 0/1/0
140.113.1.6/30
User: ccna-exam
PW: midterm
enable mode: midterm
serial 0/1/0
serial 0/1/1
140.113.1.13/30
NYCU_R2
serial 0/1/1
NYCU_R3
gi 0/0/0
NYCU_R3
140.129.51.30/27
gi 1/0/24
NYCU_CORE
140.113.1.18/30
gi 0/0/0
NYCU_R2
140.113.1.17/30
gi 1/0/1
gi 1/0/2
NYCU_CORE
gi 1/0/24
gi 1/0/24
gi 0/1
gi 1/0/10
gi 1/0/23
gi 1/0/23
badroot
gi 1/0/1
NYCU_AGGR1
gi 1/0/3
NYCU_AGGR2
gi 1/0/2
gi 0/2
gi 0/1
gi 0/1
NEW_NYCU_ACC3
OLD_NYCU_ACC3
gi 0/2
NYCU_ACC1
NYCU_ACC2
fa 0/1
fa 0/1
fa 0/2
VLAN100
VLAN112
fa 0/1
fa 0/2
VLAN113
VLAN200
LAB1_PC1
LAB1_PC2
LAB2_PC1
LAB3_PC1
LAB4_PC1
LAB4_PC2

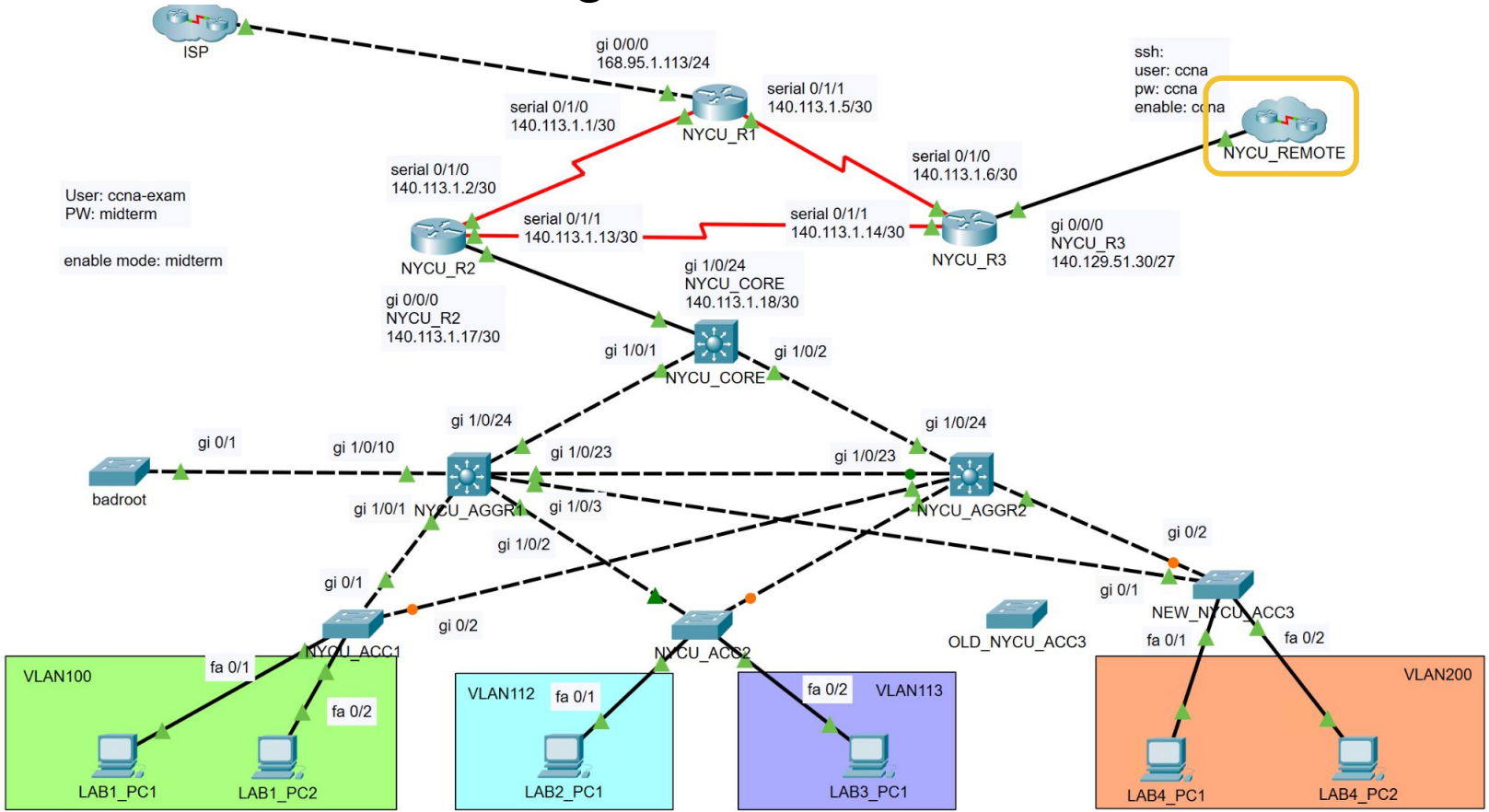
Requirements - RIP

RIP should setting on NYCU Routers:

NYCU_R1, NYCU_R2, NYCU_R3

- Set interface IP address (refer to the topology on next page)
- Set RIP
  - Version 2
  - Only use “network” command to advertise subnets
  - No auto-summary
  - Set passive interface on the port that connects to the switch
  - Advertise default route to ISP to other routers

Remote Network Setting



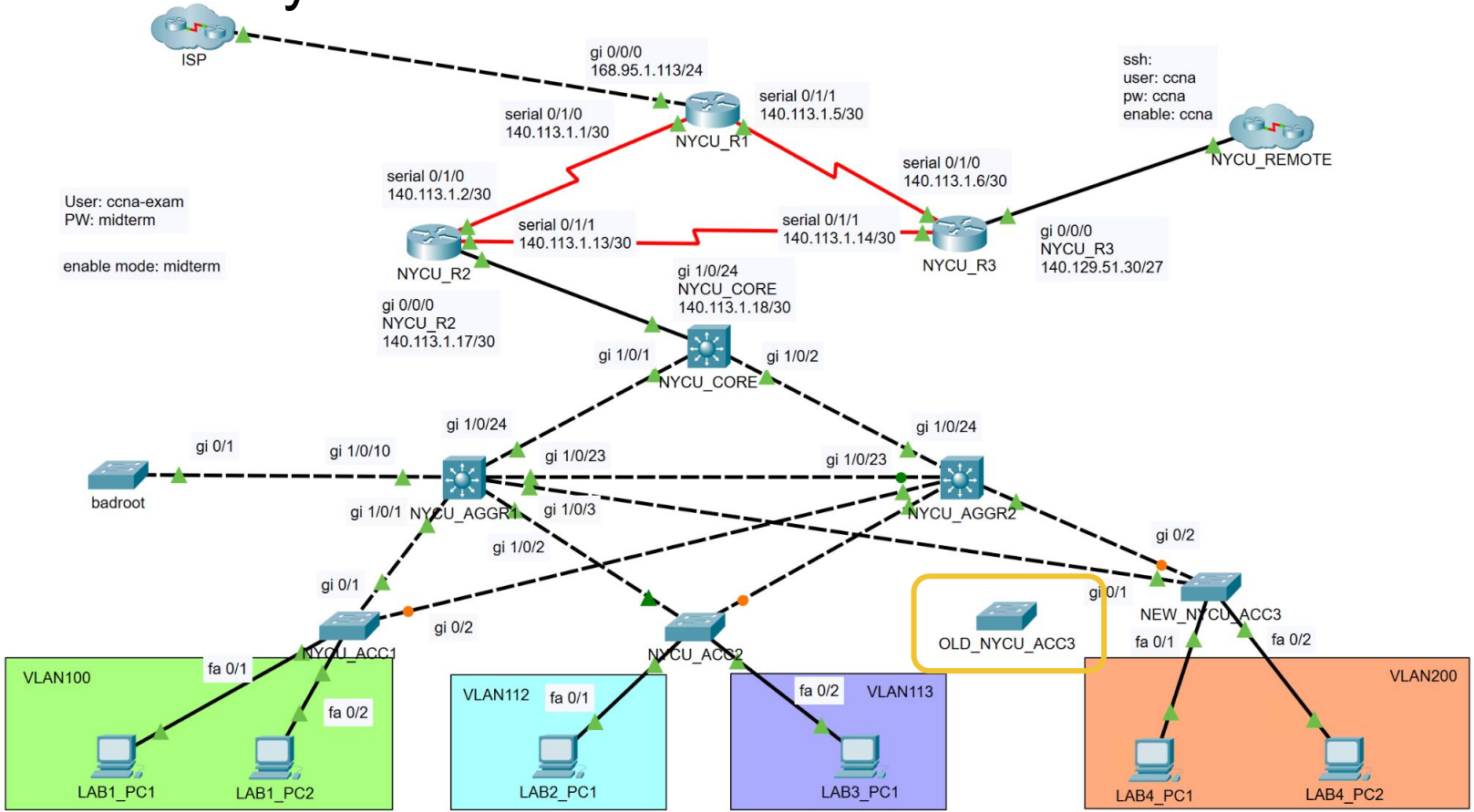
Requirements - Remote Network

- SSH to NYCU_REMOTE via **NYCU_R3**
  - local account name: **ccna**
  - local account password: **ccna**
  - Enable password: **ccna**
  - Check all the switch in NYCU_REMOTE

- Someone reported that **PC2** cannot connect to the Gateway.
  - Please help solve this problem.
  - Hint: Check whether the interface settings are **consistent** with others

- Disable unused interfaces on **end switches**
- Hint: Use CDP commands to check device neighbor(s)

Cisco Factory Reset



Requirements - Cisco Factory Reset

Config on OLD_NYCU_ACC3

- Set hostname : **OLD_NYCU_ACC3**
- Use **midterm** as password and encrypt it with MD5
- Shutdown all unused port