

台北海洋技術學院

Taipei College of Maritime Technology

104 年 HPN 教育訓練



時間:104 年 12 月 22 日下午 02:00~02:50

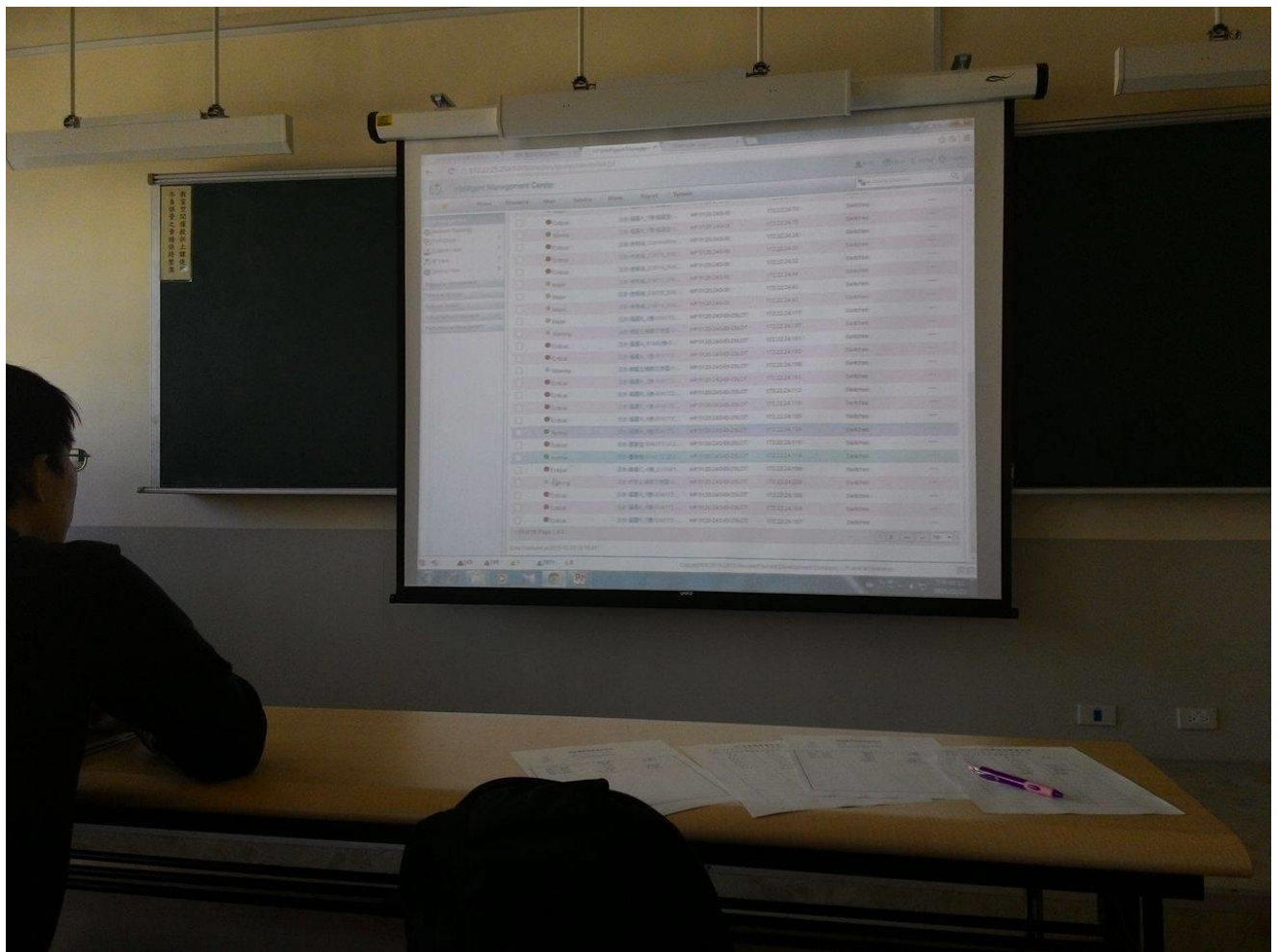
地點台北海洋技術學院淡水校區福環樓 6F D617 教室

講師:蕭玉龍先生

網路實務研習營簽到表

日期：104年12月22日 PM 2:00-2:50
 講師：蕭玉龍
 地點：台北海洋技術學院圖書館會議室
 課程內容：HPN-Switch 教育訓練

[illegible]



HPN 教育訓練

簡報大綱

- ㄦ 章節1：A系列產品型號
- ㄦ 章節2：Switch 產品簡介
- ㄦ 章節2：Switch Console操作
- ㄦ 章節3：Switch WEB操作
- ㄦ 章節4：IRF簡介

- ## H (Service Type Indicate)

EI – Enhanced Software Image
 SI – Standard Software Image
 POE-EI – PoE Supported EI
 POE-SI – PoE Supported SI

A-系列固定埠交換器

10GE

Large campus
distribution layer
DC access layer



A5820X-14/24 SFP+

1G plus 8

*10G

Large campus
distribution layer
DC access layer



A5800-24/48G

GE Edge Plus 10G

SME core layer
Large campus
distribution layer



A5120SI/EI

SI : No 10G Uplink and
QoS



A5500 SI

SI : RIP Only, Lite IRF



A5500 EI

FE Edge

Access layer for
campus LAN



A3100SI/EI

SI : Lite security , ACL/AM



A3600SI

SI : RIP Only, Lite IRF



A3600EI



A3610

No Stacking Feature

Layer 2 +

Standard Layer 3

Full Layer 3

Function

A-系列模組交換器

數據中心，
大型企業核心
高速運算中心
(HSC)

A9500 Series
12, 8 and 5-slot 1.4 terabit switches
Up to 192 **10GB & 576 Gig ports**
Load-sharing fabrics, redundant chassis,
management, power supplies, fans
Intelligent Resilient Fabric (IRF2)

中型數據中心
學術網核心



A9500
857 Mpps



A12500
2.2 Bpps

A12500 Series
18 and 8-slot **6.6/3.3 terabit** switches
Up to 128 (1:1)/512 (4:1)
10GB & 864 Gig ports
Non-blocking, zero service
interruption design
Architecture supports
40/100-GbE
Wire speed
L2/IPv4/IPv6/MPLS
Intelligent Resilient Fabric
(IRF2)

企業核心
大型企業匯
集層



A7500
714 Mpps

A7500 Series
10, 6, 3 and 2-slot, **2.4 terabit** switch
Up to **84 10GB and 504 Gig ports**
Red. main control; passive backplane; Intelligent
Resilient Fabric (IRF2)
IPv4, IPv6, OSPF, BGP, IS-IS

功能與效能

HP Campus LAN Switch Comparison



Performance	A9512	A9508	A9505	A7510	A7506-V	A5820-14XG	A5800-48G-PoE
Chassis/Box Switching Capacity	1.44 Tbps	1.44 Tbps	720 Gbps	1.5 Tbps	768 Gbps	488 Gbps	284 Gbps
Throughput	857 Mpps	571 Mpps	357 Mpps	714 Mpps	488 Mpps	363Mpps	211 Mpps
10GE (1:1) Density (max per chassis/box)	48	32	20	40	24	22	8
10GE (x:1) Density (max per chassis/box)	192 (4:1)	128 (4:1)	90 (4:1)	84 (2:1)	52	22	8
1GE (1:1) Density (max per chassis/box)	576	384	240	504	312	4	80
Port to Port Latency	4-5 uSec	4-5 uSec	4-5 uSec	4-5 uSec	4-5 uSec	1.48 (sf) - 1.2 (ct) uSec	2.1 uSec
PoE(+)	No	No	No	Yes (integrated)	Yes (integrated)	No	Yes

**Flexible, energy efficient architecture,
leveraging common OS, management and
network design/resiliency protocols**

Rounding out our Comprehensive Enterprise Switching Portfolio



	A3100-EI	A3600	A3610	A5120	A5500-SI	A5500-EI
Speeds	•10/100 •Gigabit	•10/100 •Gigabit	•10/100 •Gigabit •10G	•Gigabit	•10/100 •Gigabit •10GE	•10/100 •Gigabit •10GE
Expandability	Clustering	Clustering/Stackable	Clustering	IRF	Clustering/ Single IP Mgmt	IRF
Form Factor	Desk and 19" Rack Mountable	19" Rack Mountable	19" Rack Mountable	19" Rack Mountable	19" Rack Mountable	19" Rack Mountable
Management	CLI / Web / SNMP	CLI / Web / SNMP	CLI / Web / SNMP	CLI / Web / SNMP	CLI / Web / SNMP	CLI / Web / SNMP
Switching	L2	L2/3	L2/3/4	L2/3	L2/3	L2/3/4
Routing	Static Routes*	RIP/OSPF/PIM	RIP / OSPF / BGP/ IS-IS / PIM	Static Routes*	RIP	RIP / OSPF / BGP /IS-IS /PIM
IPv6	Management	Management	Routing, Management, VLANs	Management	Management, VLANs	Management/Routing/VLANs
Target Markets	Medium Business / Branch / Enterprise	Enterprise	Enterprise	Medium Business / Branch / Enterprise	Medium Business / Enterprise	Enterprise

- Integrated network mgmt and Common OS reduces complexity and IT training/personnel - lowers deployment and maintenance costs

HP Data Center Switch Portfolio



A12518

A12508

A9512

A9508

A9505

A5820-24XG A5820-14XG

Performance

Chassis/Box Switching Capacity	6.6 Tbps	3.3 Tbps	1.44 Tbps	1.44 Tbps	720 Gbps	488 Gbps	488 Gbps
Throughput	2.2 Bpps	950 Mpps	857 Mpps	571 Mpps	357 Mpps	363Mpps	363Mpps
10GE (1:1) Density (max per chassis/box)	128	64	48	32	20	24	22
10GE (x:1) Density (max per chassis/box)	512 (4:1)	256 (4:1)	192 (4:1)	128 (4:1)	90 (4:1)	24	22
1GE (1:1) Density (max per chassis/box)	864	384	576	384	240	4	4
1GE (x:1) Density (max per chassis/box)	864	384	576	384	240	4	4
Port to Port Latency	8.15 uSec	8.15 uSec	4-5 uSec	4-5 uSec	4-5 uSec	1.48 (sf) - 1.2 (ct) uSec	
Power consumption (fully loaded chassis)	7,400 W	2,878 W	1,370 W	990 W	640 W	160 W	178 W

New modern architecture, leveraging
common OS, management and network
design/resiliency protocols

HP Networking Ethernet Switching Portfolio – Competitive Cross-Ref Matrix



Managed Switches	HP (A-Series)	HP (E-Series)	Cisco	Juniper	Brocade
	A12500		Nexus 7000		Big Iron RX Net Iron MLX
	A5820		Nexus 5000 Nexus 2000	EX4500	Turbo Iron / Net Iron / Fast Iron CX
	A9500/A7500		Catalyst 6500	EX8200	Big Iron MX
	A7500	E8200	Catalyst 4500R		Big Iron RX / Fast Iron Super X
		E5400	Catalyst 4500		
	A5820	E6600	Catalyst 4900M	EX2500/EX4500	Turbo Iron 24X
	A5800/A5500EI	E4800G	Catalyst 3750X (IP Services SW)	EX4200	Fast Iron CX
	A5500SI	E5400	Catalyst 3750X (IP Base SW)	EX4200	Fast Iron CX
	A5500SI	E5400	Catalyst 3750X (LAN Base)	EX4200	
	A5500EI	E4800G	Catalyst 3560X (IP Services SW)	EX3200	
	A5500SI	E3500G/E6200	Catalyst 3560X (IP Base SW)	EX3200	Fast Iron GS
	A5500SI	E2910G	Catalyst 3560X (LAN Base SW)	EX3200	
	A5120EI	E2910G	Catalyst 2960S (LAN-Base SW)	EX2200	
	A5120SI	E25XXG	Catalyst 2960S (LAN-Lite SW)	EX2200	
Managed Switches	A3600 EI(10/100)		Catalyst 3750v2 (IP Serv SW)		Fast Iron Edge
	A3600SI(10/100)	E5400	Catalyst 3750v2 (IP Base SW)		
	A3600EI(10/100)		Catalyst 3560v2 (IP Services SW)		
	A3600SI(10/100)	E3500	Catalyst 3560v2 (IP Base SW)	EX2x00	Fast Iron WS
	A3100EI(10/100)	E2610	Catalyst 2960 (LAN-Base SW)	EX2x00	
	A3100SI(10/100)	E25XX	Catalyst 2960 (LAN-Lite SW)		

Switch Console操作

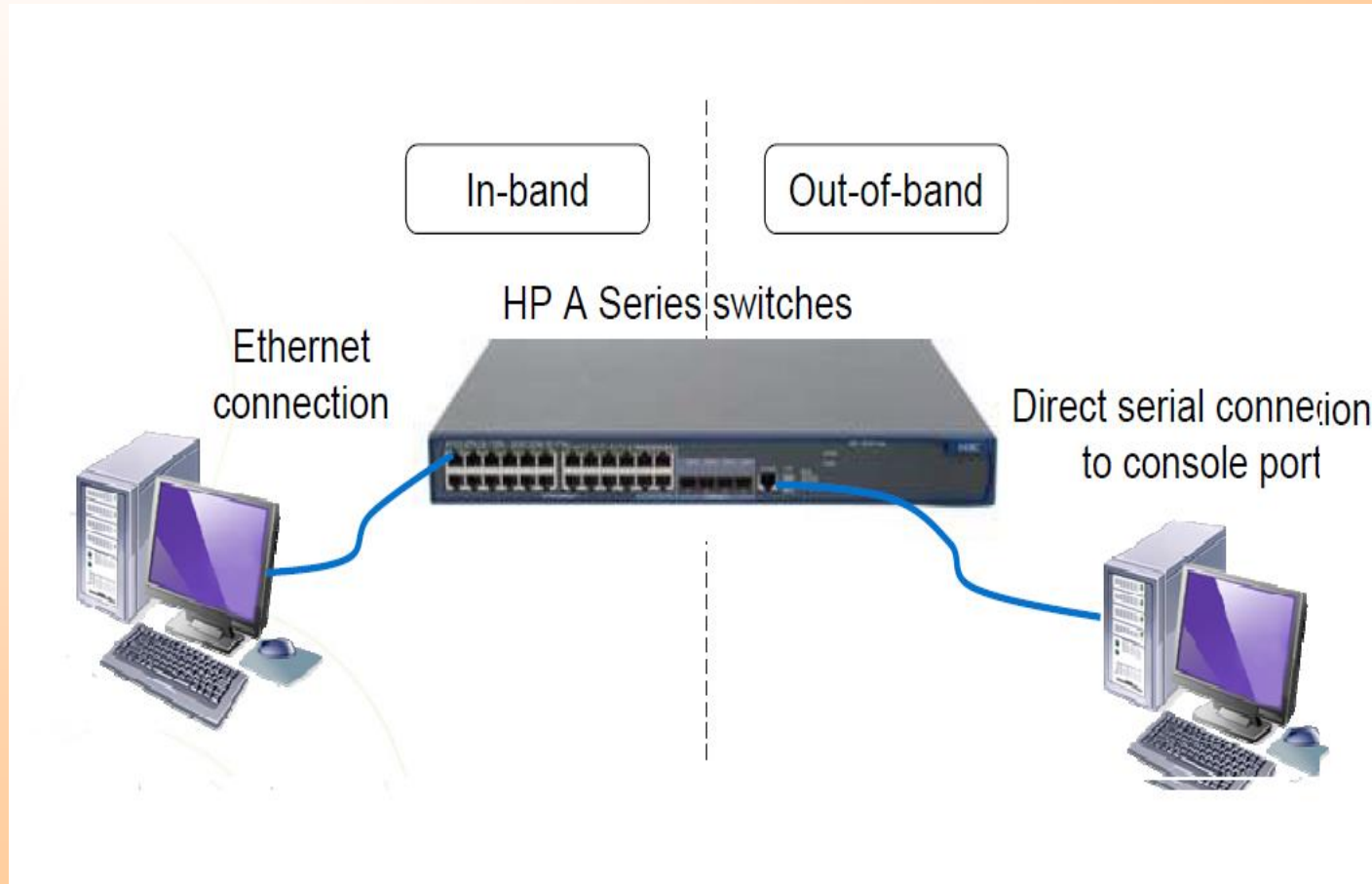
- ↯ 常用指令對照
- ↯ 進入CLI
- ↯ 常用快速鍵
- ↯ Port 名稱
- ↯ 超級終端機登入方式
- ↯ 進入設定模式
- ↯ 顯示設定檔(display current-configuration)
- ↯ 存檔(save)
- ↯ 查看版本(display version)
- ↯ 取消某一行設定(undo)
- ↯ 在vlan 1 查看設定

Switch Console操作

- ↯ 回上一層(quit)
- ↯ 重開機(reboot)
- ↯ 修改Console 名稱
- ↯ 新增VLAN(例如: 新增VLAN 5 ,名稱叫OFFICE)
- ↯ 移除VLAN 5
- ↯ Add vlan by port (例如:port 1 and port 2至VLAN2)
- ↯ 802.1Q(例如:把port 24 加入 VLAN 2, 且讓每個vlan都放行)
- ↯ 802.3ad link-aggregation(例如: port 47 and port 48 擲在group 1)

常用指令對照

ProVision	Comware 5	Cisco
enable	system-view	enable
show running-config	display current-config	show running-config
write memory	save	write
erase startup-config	reset saved-config	erase startup-config
no	undo	no
reload	reboot	reload
exit	quit	exit



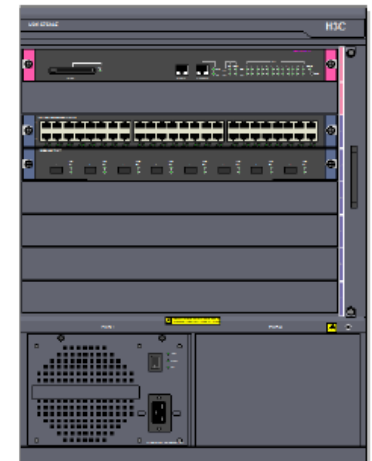
常用快速鍵

按鍵	功能
<?>	查詢可使用指令
<Tab>	自動補齊指令
<Ctrl + E>	移動至行尾
<Ctrl + X>	刪除游標左側所有字元
<Ctrl + A>	移動至行首
< ↑ >	顯示上一次輸入指令

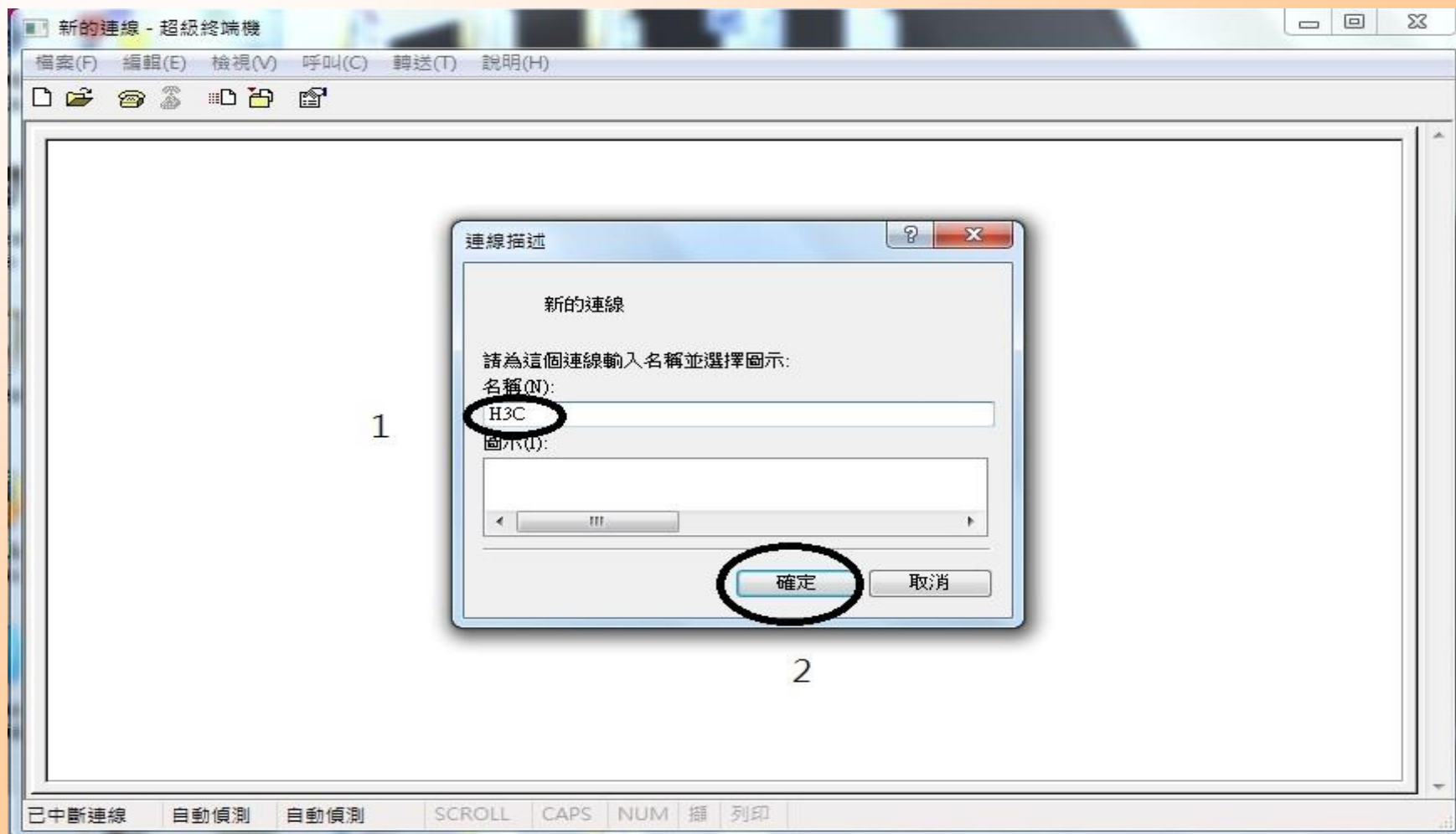
- Standalone
- slot/0/port number
- 例如
- e1/0/9
- g1/0/13



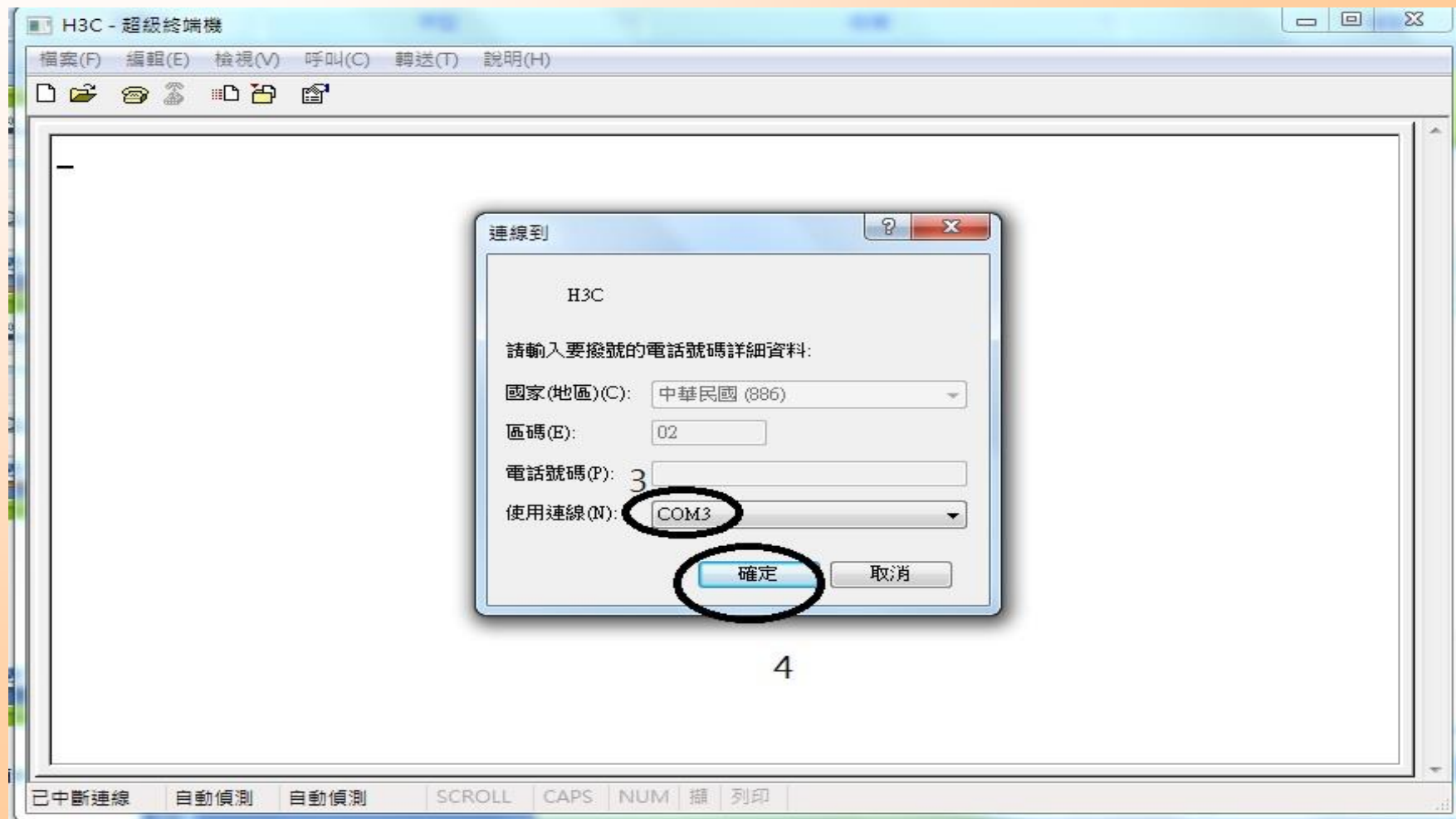
- Chassis
- Slot/module/0/port
- 例如
- g1/2/0/7
- ten2/2/0/18



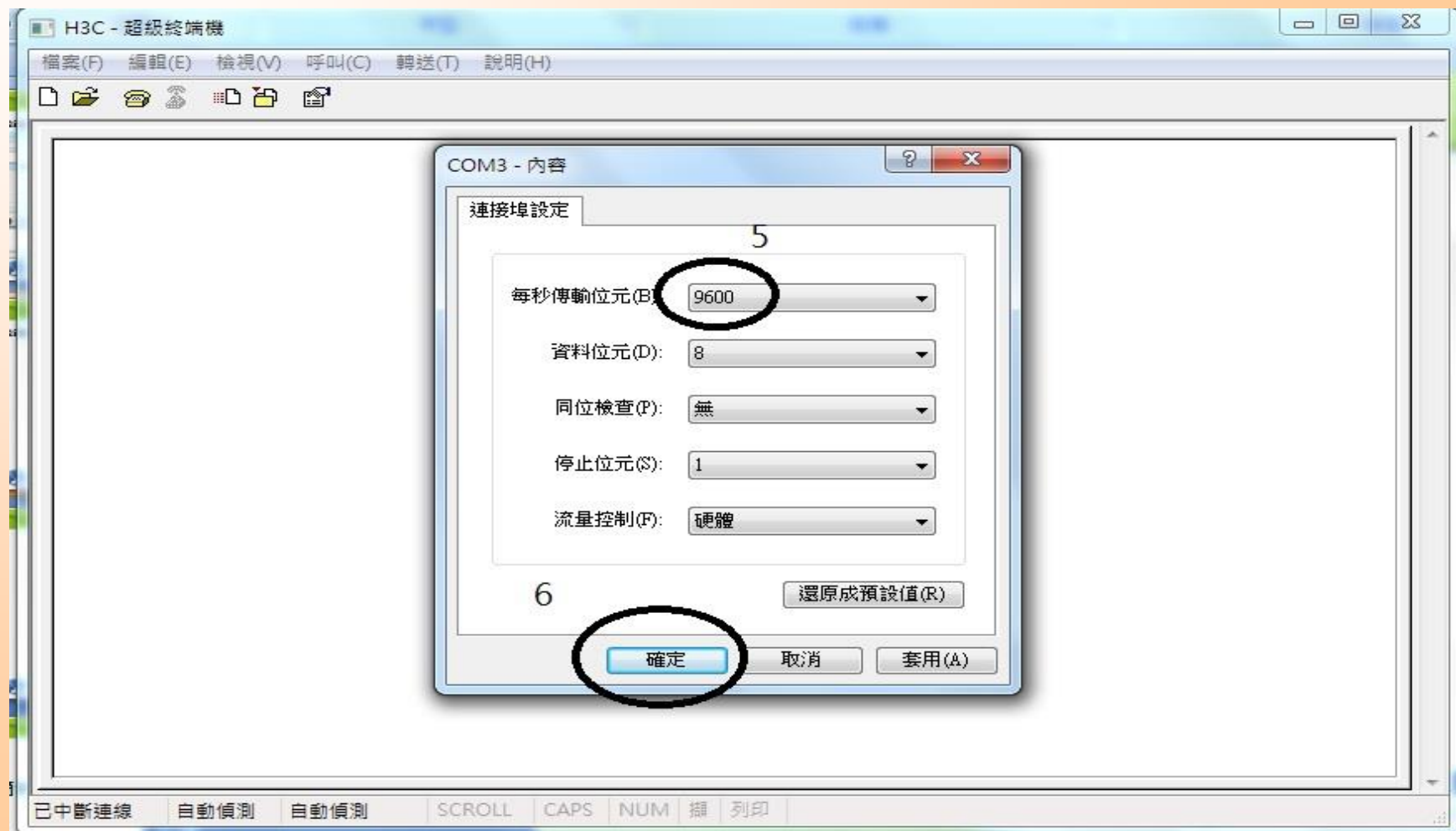
登入方式(超級終端機第1步驟)



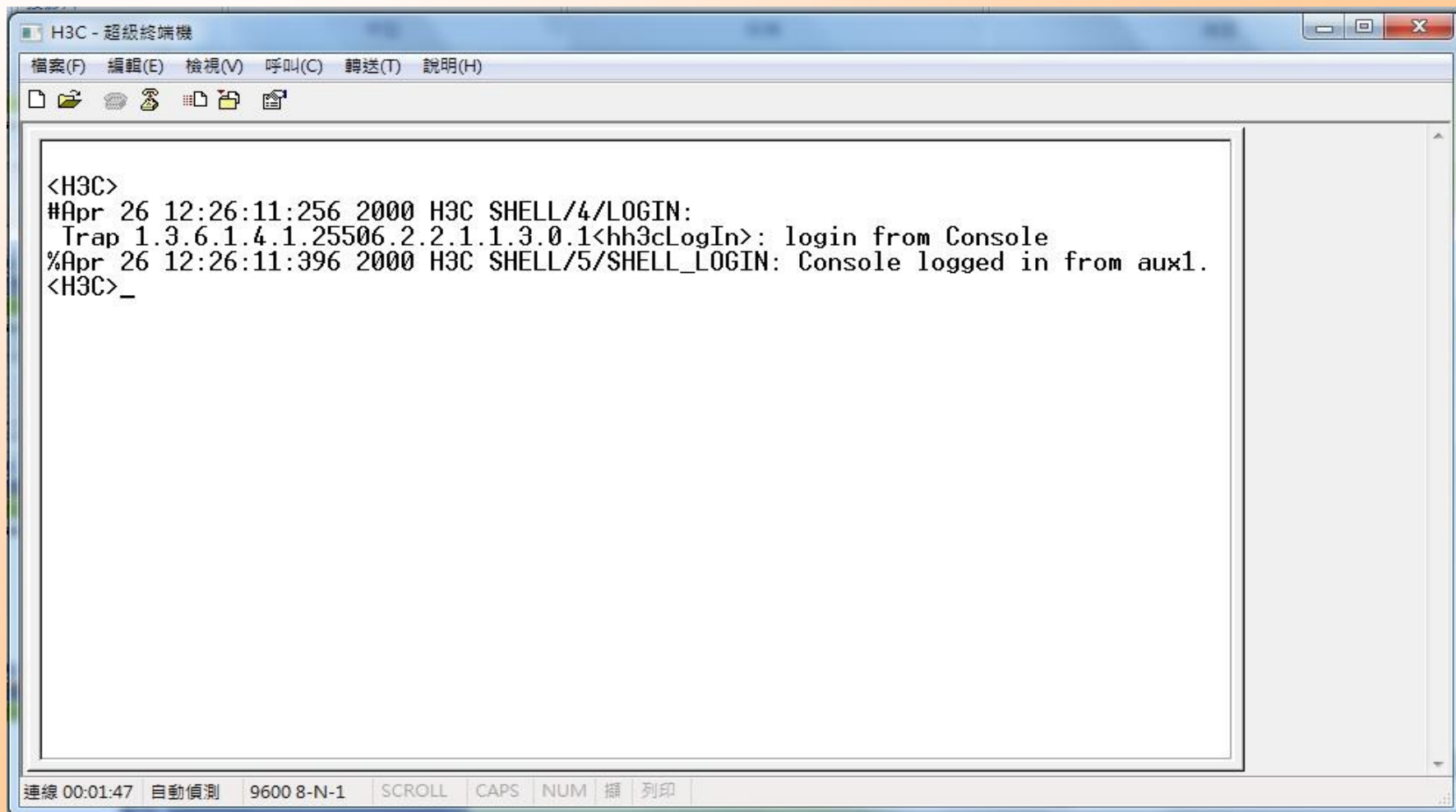
登入方式(超級終端機第2步驟)



登入方式(超級終端機第3步驟)



登入方式(超級終端機第4步驟)

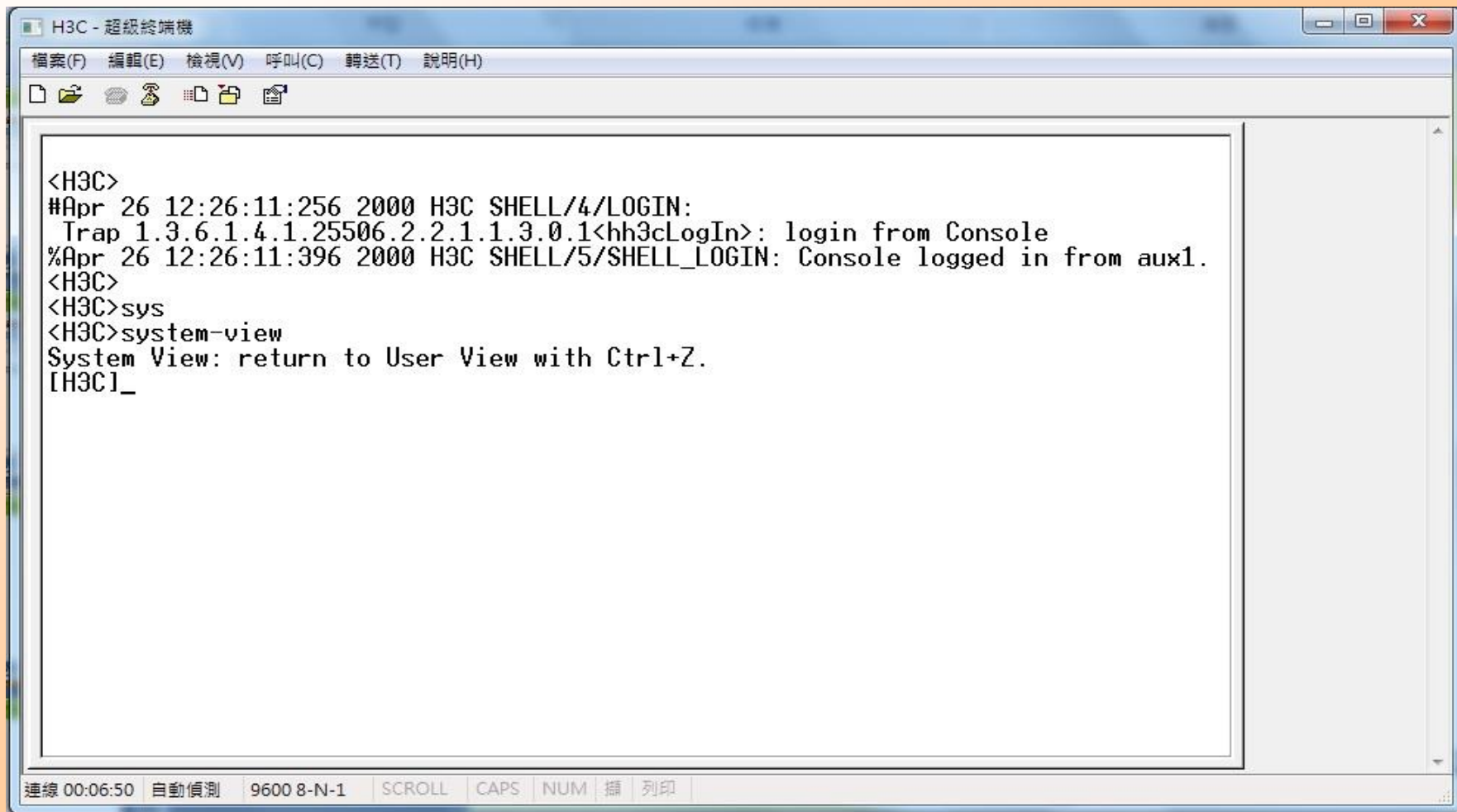


The screenshot shows a terminal window titled "H3C - 超級終端機". The window has a menu bar with "檔案(F)", "編輯(E)", "檢視(V)", "呼叫(C)", "轉送(T)", and "說明(H)". Below the menu bar is a toolbar with icons for file operations. The main text area displays the following output:

```
<H3C>  
#Apr 26 12:26:11:256 2000 H3C SHELL/4/LOGIN:  
Trap 1.3.6.1.4.1.25506.2.2.1.1.3.0.1<hh3cLogIn>: login from Console  
%Apr 26 12:26:11:396 2000 H3C SHELL/5/SHELL_LOGIN: Console logged in from aux1.  
<H3C>_
```

At the bottom of the window, there is a status bar with the following information: "連線 00:01:47", "自動偵測", "9600 8-N-1", "SCROLL", "CAPS", "NUM", "擷", and "列印".

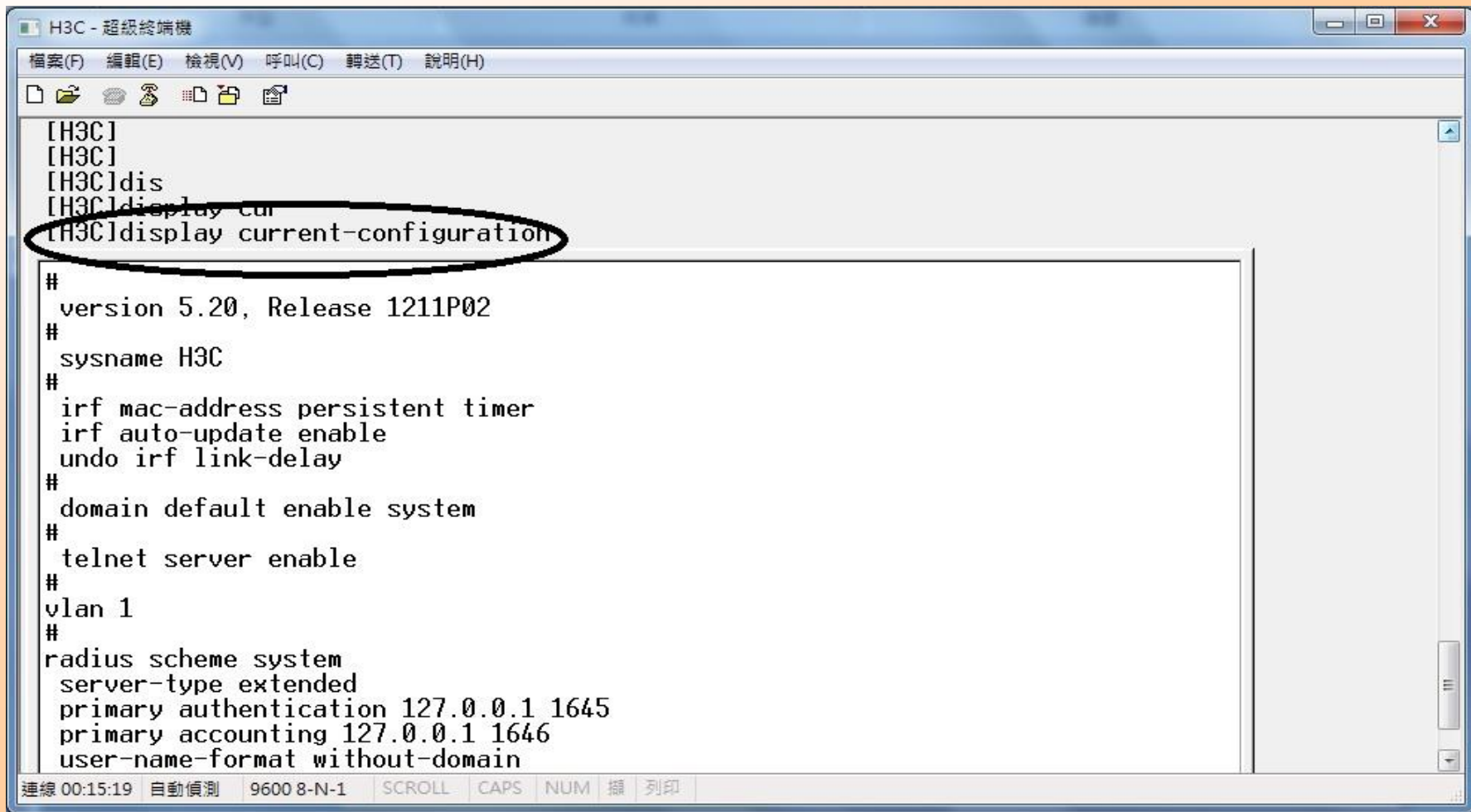
進入設定模式(system-view)



```
<H3C>
#Apr 26 12:26:11:256 2000 H3C SHELL/4/LOGIN:
Trap 1.3.6.1.4.1.25506.2.2.1.1.3.0.1<hh3cLogIn>: login from Console
%Apr 26 12:26:11:396 2000 H3C SHELL/5/SHELL_LOGIN: Console logged in from aux1.
<H3C>
<H3C>sys
<H3C>system-view
System View: return to User View with Ctrl+Z.
[H3C]_
```

The screenshot shows a terminal window titled "H3C - 超級終端機". The menu bar includes 檔案(F), 編輯(E), 檢視(V), 呼叫(C), 轉送(T), and 說明(H). The toolbar contains icons for file operations. The terminal output shows a successful login from the console and the user entering the commands to switch to system view. The status bar at the bottom displays connection information: 連線 00:06:50, 自動偵測, 9600 8-N-1, and keyboard status for SCROLL, CAPS, NUM, and 插 列印.

顯示設定檔(display current-configuration)

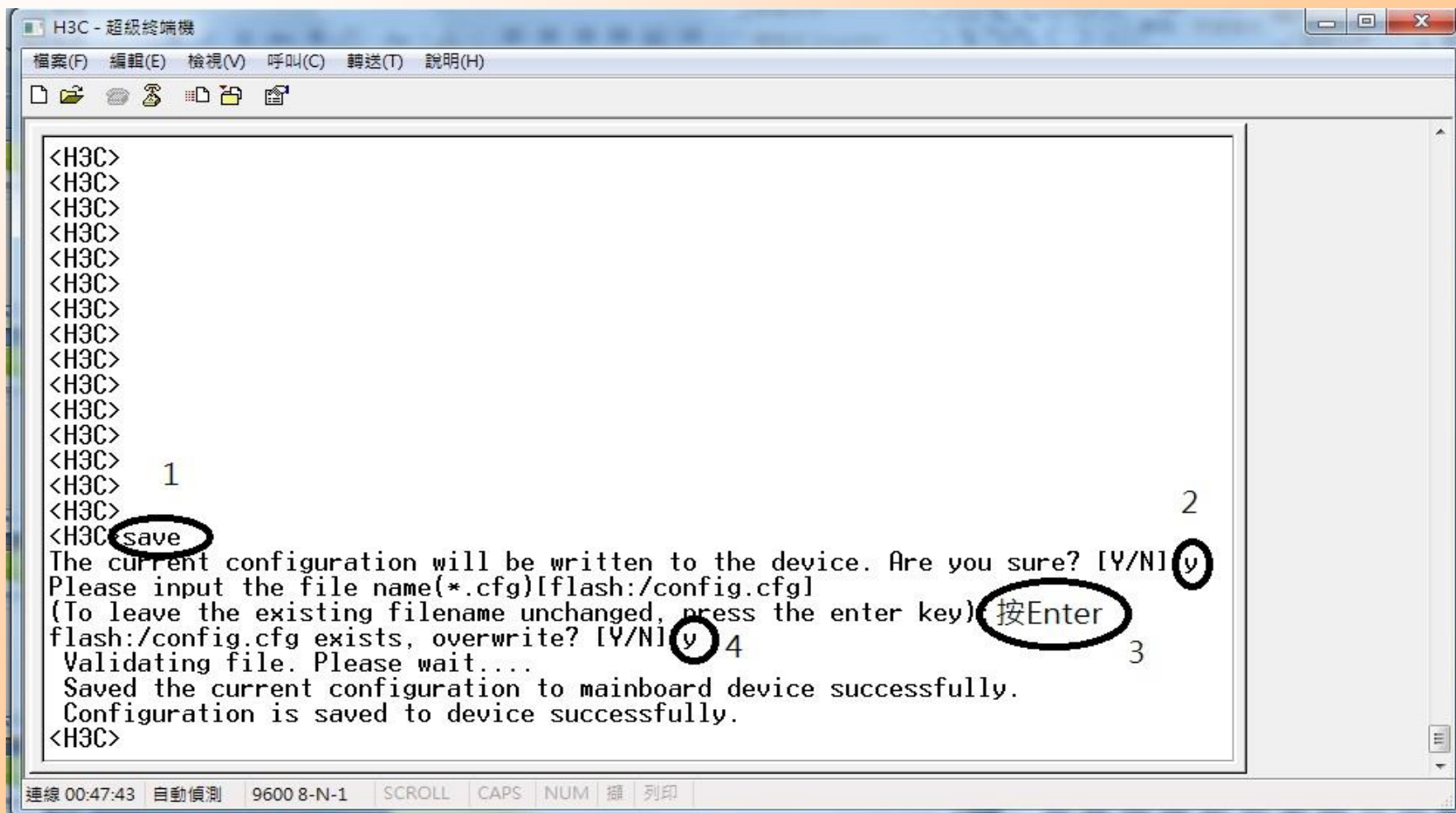


The screenshot shows a terminal window titled "H3C - 超級終端機". The command prompt is [H3C]. The command entered is `display current-configuration`, which is circled in black. The output of the command is displayed below the command line.

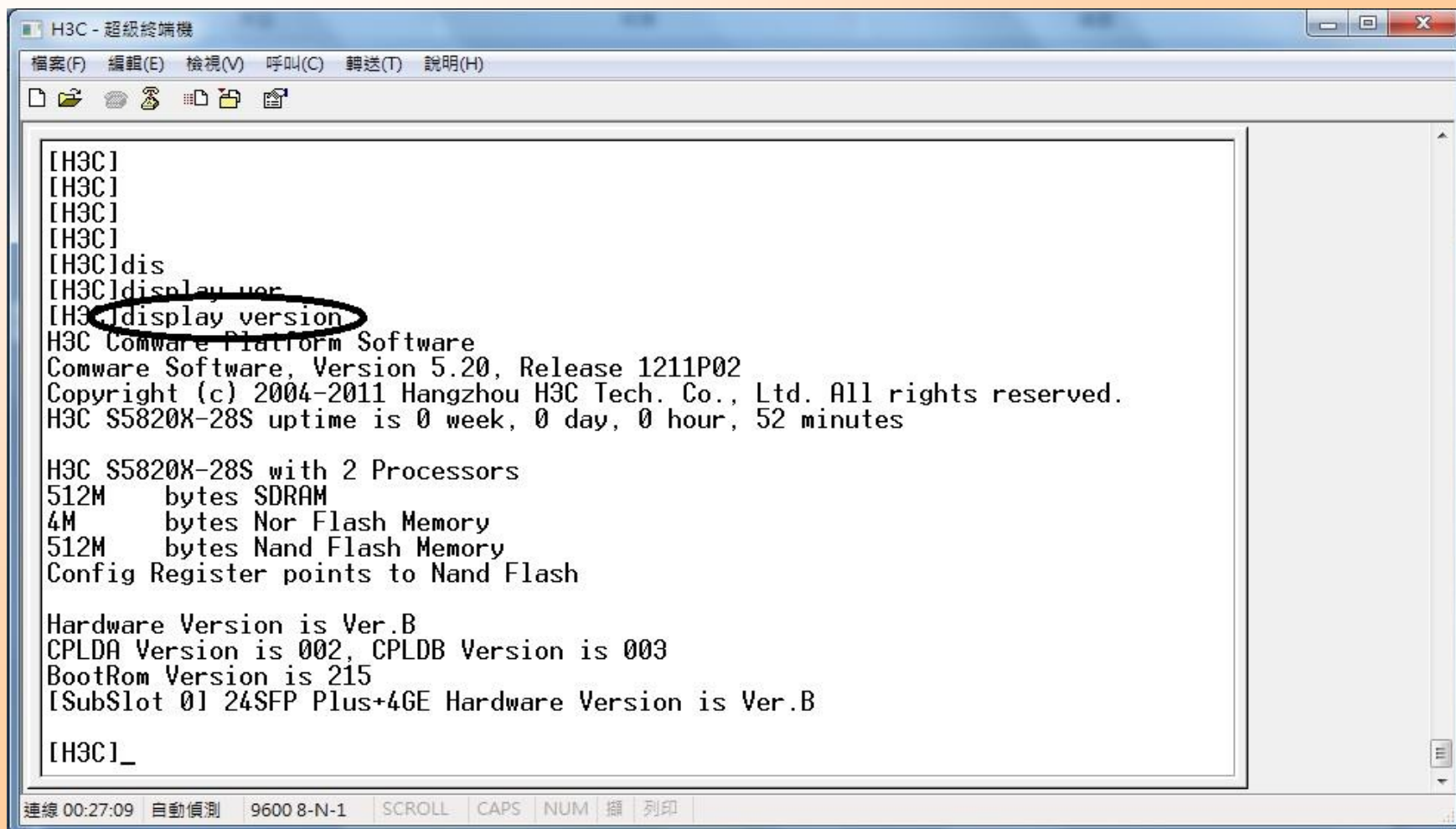
```
[H3C]
[H3C]
[H3C]dis
[H3C]display cur
[H3C]display current-configuration

#
version 5.20, Release 1211P02
#
sysname H3C
#
irf mac-address persistent timer
irf auto-update enable
undo irf link-delay
#
domain default enable system
#
telnet server enable
#
vlan 1
#
radius scheme system
server-type extended
primary authentication 127.0.0.1 1645
primary accounting 127.0.0.1 1646
user-name-format without-domain
```

The terminal window also shows a menu bar with options: 檔案(F), 編輯(E), 檢視(V), 呼叫(C), 轉送(T), 說明(H). The status bar at the bottom shows: 連線 00:15:19 自動偵測 9600 8-N-1 SCROLL CAPS NUM 擷 列印.



查看版本(display version)



```
H3C - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]dis
[H3C]display ver
[H3C]display version
H3C Comware Platform Software
Comware Software, Version 5.20, Release 1211P02
Copyright (c) 2004-2011 Hangzhou H3C Tech. Co., Ltd. All rights reserved.
H3C S5820X-28S uptime is 0 week, 0 day, 0 hour, 52 minutes

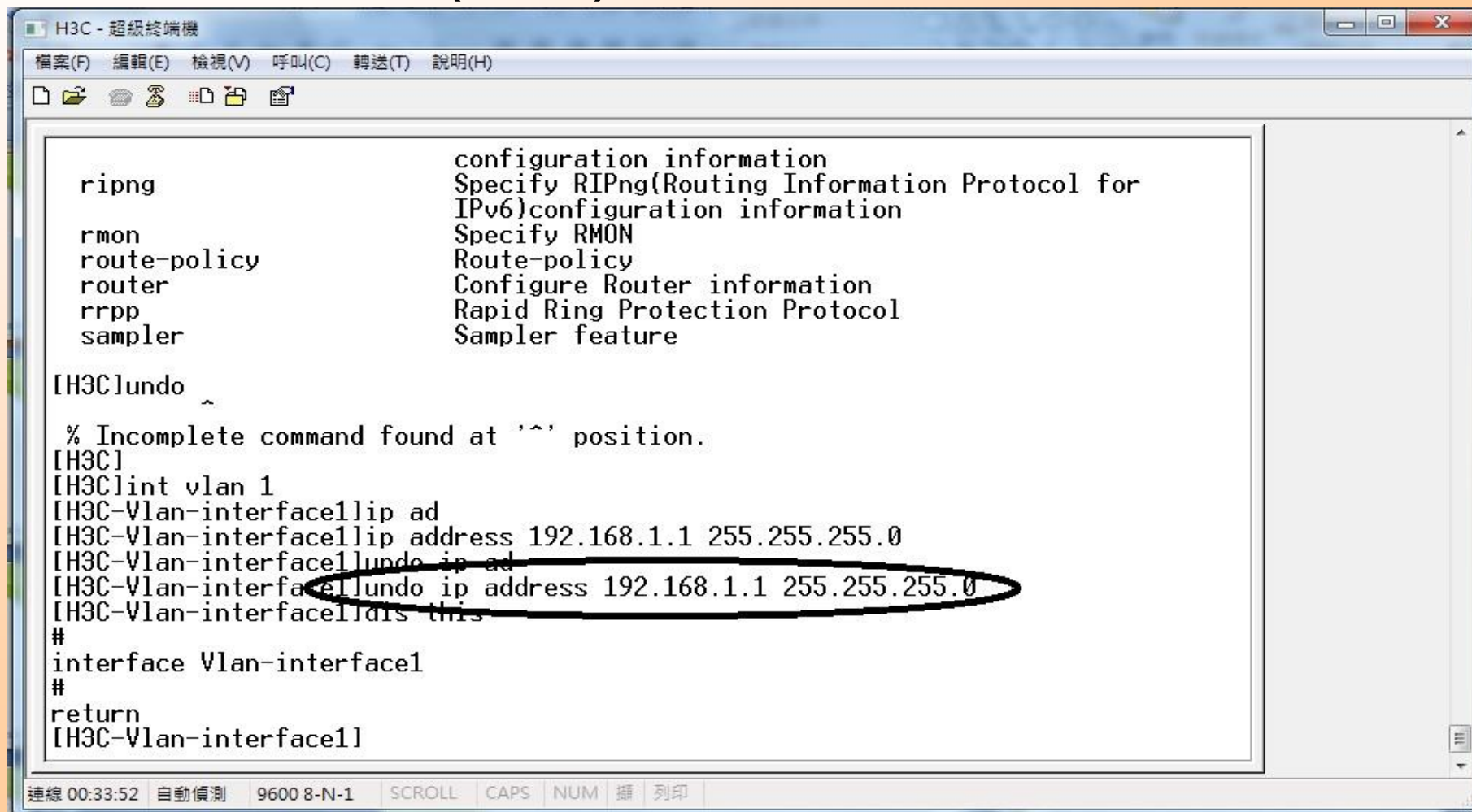
H3C S5820X-28S with 2 Processors
512M      bytes SDRAM
4M        bytes Nor Flash Memory
512M      bytes Nand Flash Memory
Config Register points to Nand Flash

Hardware Version is Ver.B
CPLDA Version is 002, CPLDB Version is 003
BootRom Version is 215
[SubSlot 0] 24SFP Plus+4GE Hardware Version is Ver.B

[H3C]_
```

連線 00:27:09 自動偵測 9600 8-N-1 SCROLL CAPS NUM 顯示 列印

取消某一行設定(undo)



```
H3C - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)

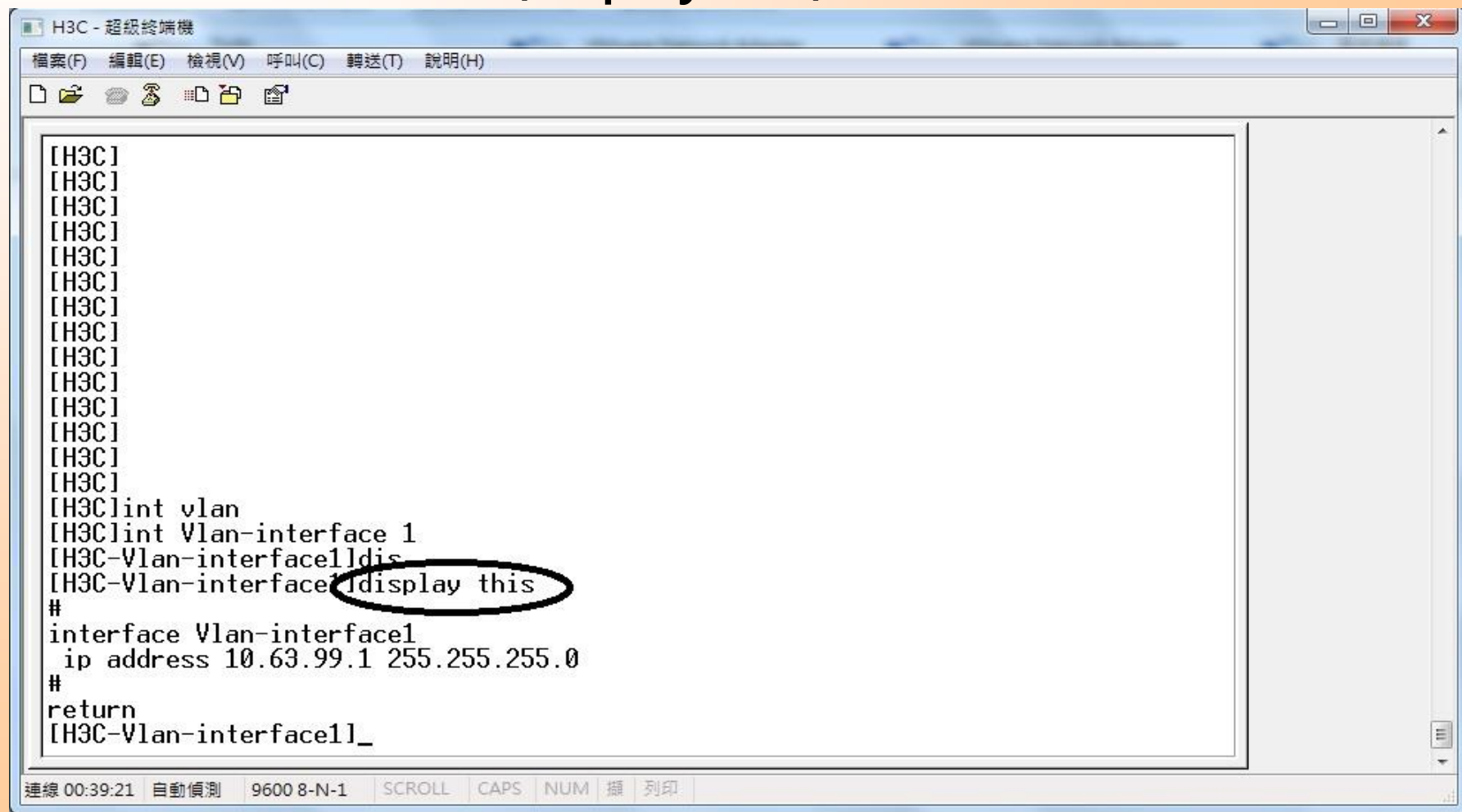
ripng          configuration information
                Specify RIPng(Routing Information Protocol for
                IPv6)configuration information
rmon           Specify RMON
route-policy   Route-policy
router         Configure Router information
rrpp           Rapid Ring Protection Protocol
sampler        Sampler feature

[H3C]undo ^
% Incomplete command found at '^' position.
[H3C]
[H3C]int vlan 1
[H3C-Vlan-interface1]ip ad
[H3C-Vlan-interface1]ip address 192.168.1.1 255.255.255.0
[H3C-Vlan-interface1]undo ip ad
[H3C-Vlan-interface1]undo ip address 192.168.1.1 255.255.255.0
[H3C-Vlan-interface1]dis this
#
interface Vlan-interface1
#
return
[H3C-Vlan-interface1]
```

連線 00:33:52 自動偵測 9600 8-N-1 SCROLL CAPS NUM 攝 列印

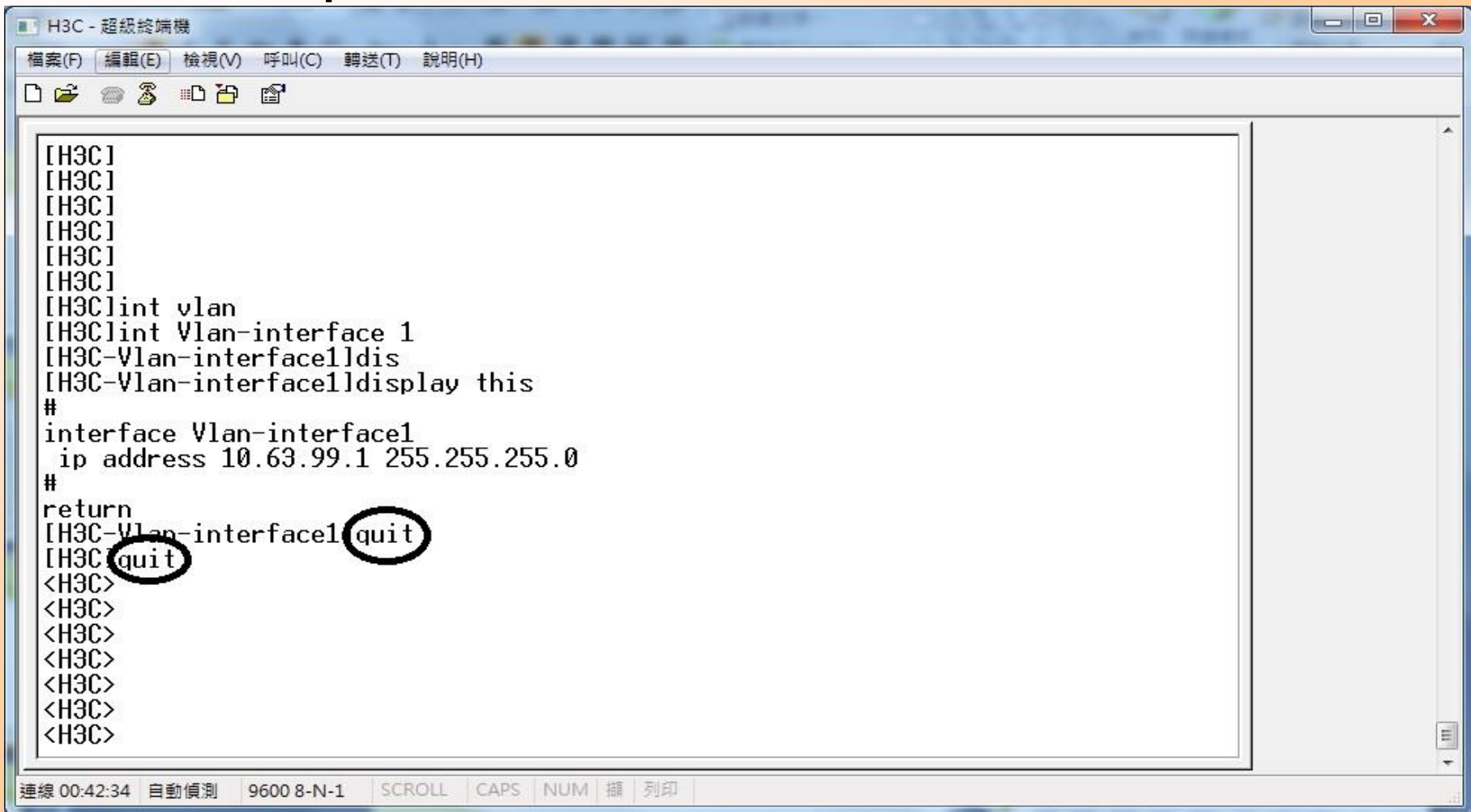


在vlan 1 查看 設定(display this)



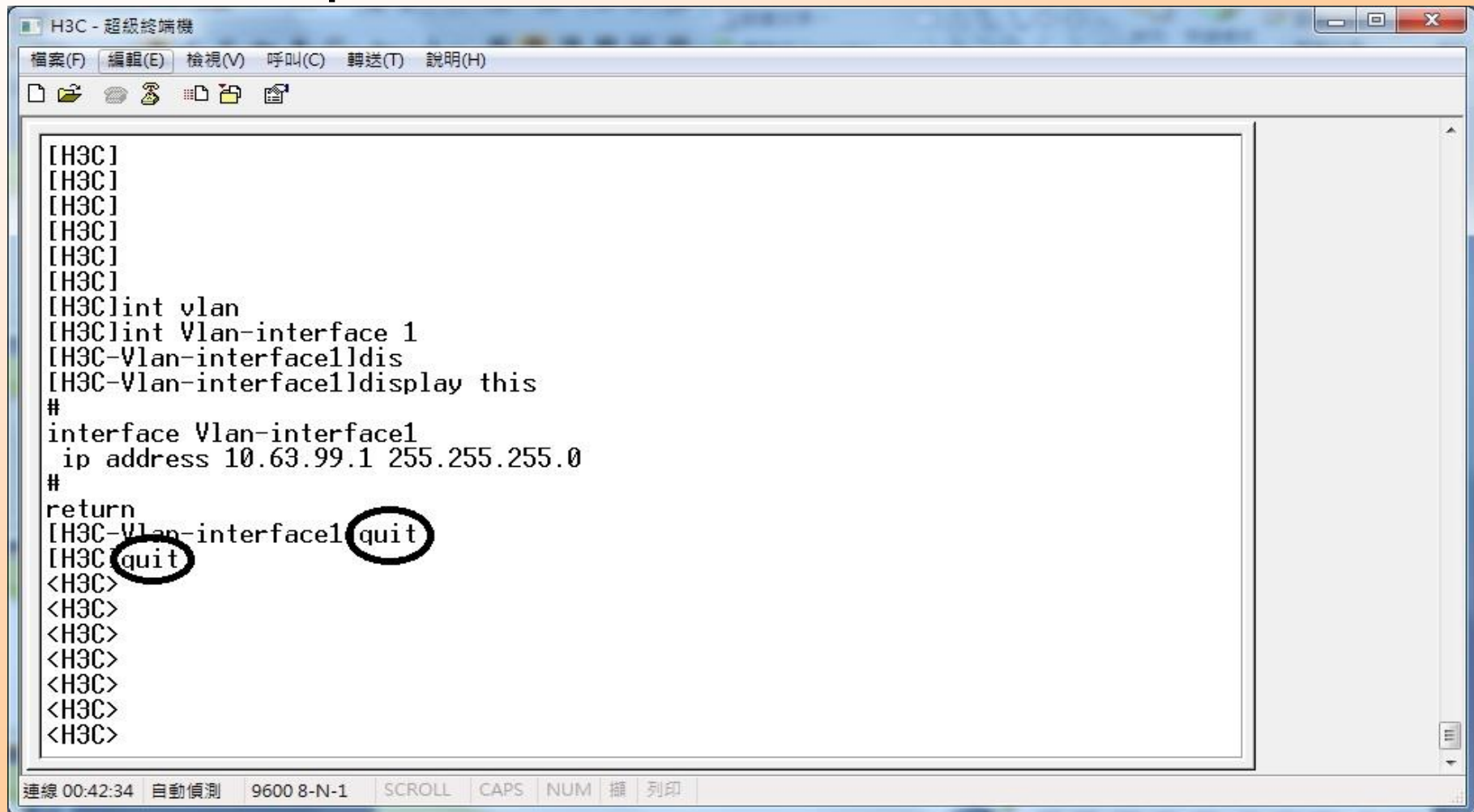


回上一層(quit)

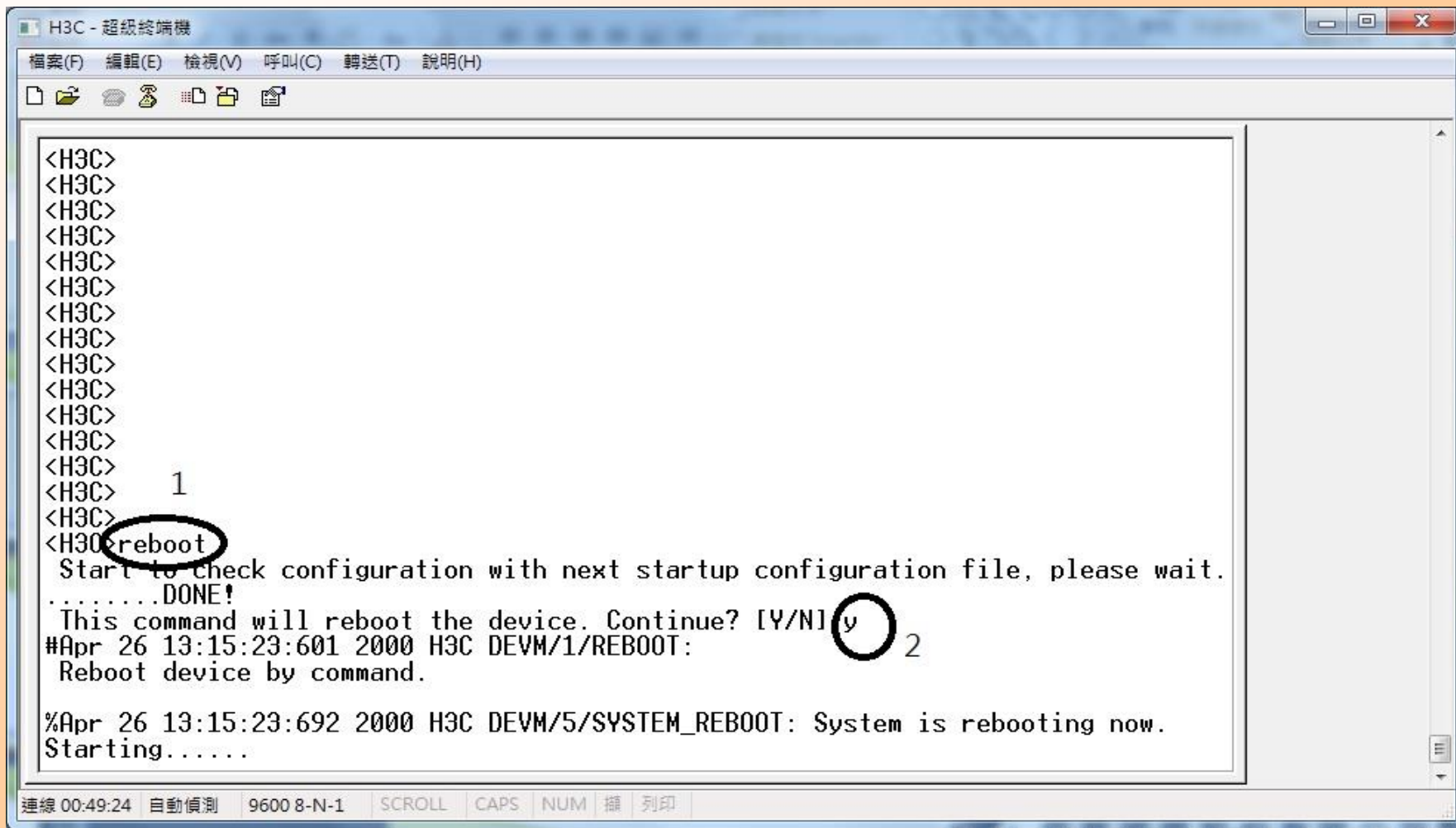




回上一層(quit)



重開機(reboot)



The screenshot shows a terminal window titled "H3C - 超級終端機". The menu bar includes 檔案(F), 編輯(E), 檢視(V), 呼叫(C), 轉送(T), and 說明(H). The toolbar contains icons for file operations. The terminal text shows a series of "<H3C>" prompts. The 13th prompt is followed by a circled "1". The 14th prompt is followed by the command "reboot", which is also circled. The terminal then displays the following messages:

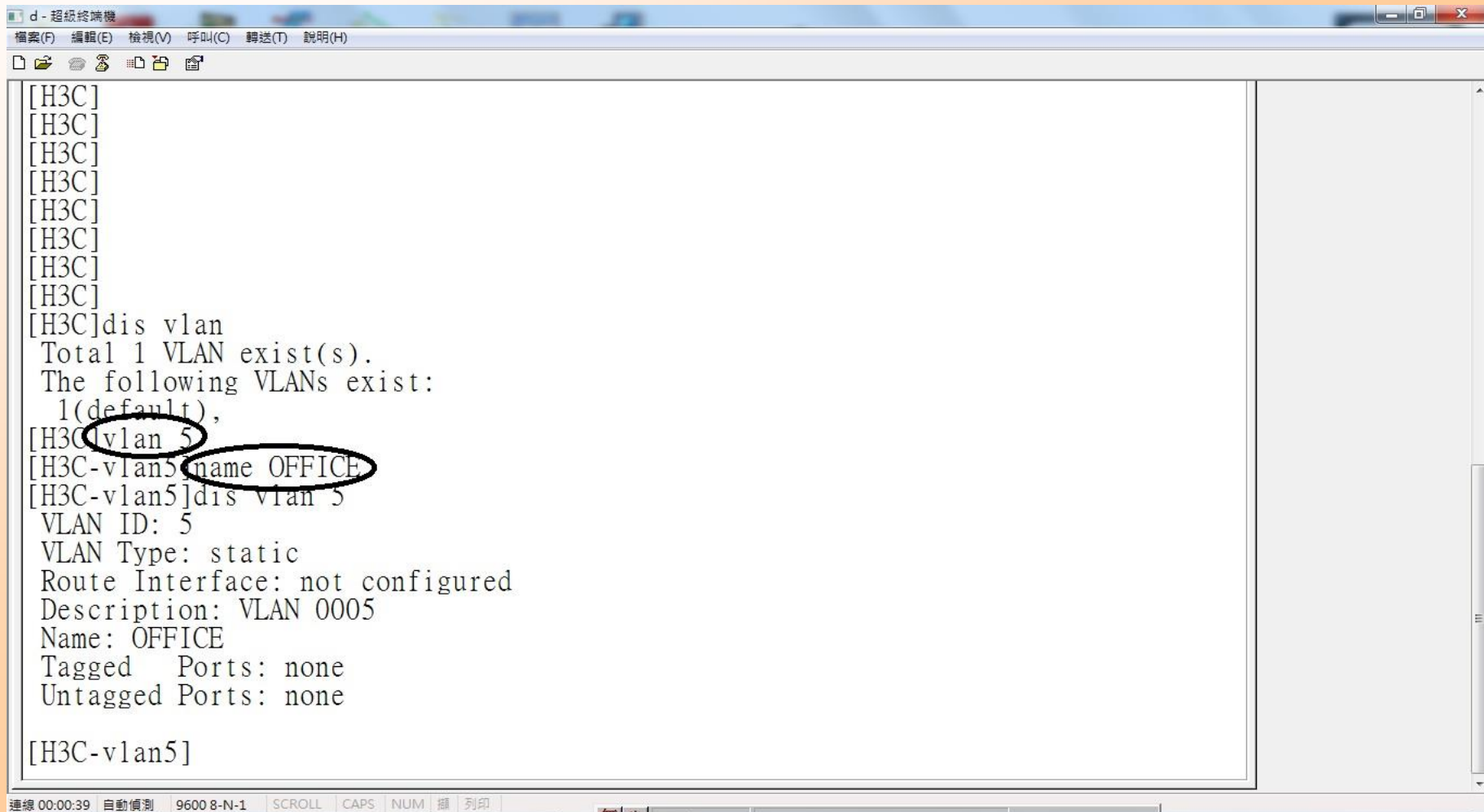
```
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C>
<H3C> 1
<H3C>
<H3C>reboot
Start to check configuration with next startup configuration file, please wait.
.....DONE!
This command will reboot the device. Continue? [Y/N] y 2
#Apr 26 13:15:23:601 2000 H3C DEVM/1/REBOOT:
Reboot device by command.

%Apr 26 13:15:23:692 2000 H3C DEVM/5/SYSTEM_REBOOT: System is rebooting now.
Starting.....
```

The status bar at the bottom shows: 連線 00:49:24 自動偵測 9600 8-N-1 SCROLL CAPS NUM 插 列印.



新增VLAN(例如: 新增VLAN 5,名稱叫OFFICE)



```
d - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]dis vlan
Total 1 VLAN exist(s).
The following VLANs exist:
1(default),
[H3C-vlan5]name OFFICE
[H3C-vlan5]dis vlan 5
VLAN ID: 5
VLAN Type: static
Route Interface: not configured
Description: VLAN 0005
Name: OFFICE
Tagged Ports: none
Untagged Ports: none

[H3C-vlan5]
```

連線 00:00:39 自動偵測 9600 8-N-1 SCROLL CAPS NUM 插 列印



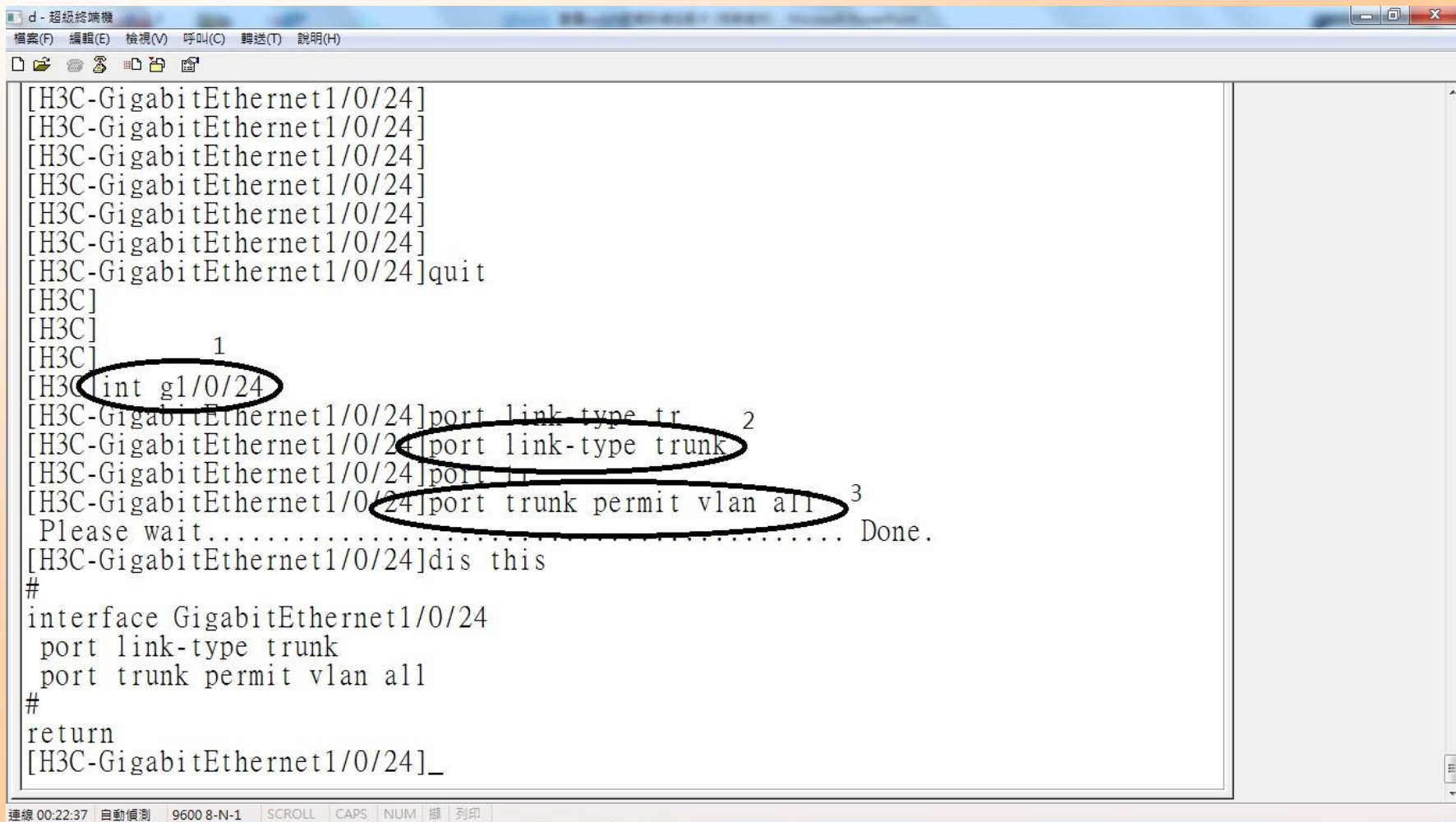


Add vlan by port (把port 1 and port 2至VLAN2)

```
d - 超級終端機  
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C]  
[H3C-vlan2]vlan 2  
[H3C-vlan2]port g1/0/1 to g1/0/2  
[H3C-vlan2]dis vlan 2  
VLAN ID: 2  
VLAN Type: static  
Route Interface: not configured  
Description: VLAN 0002  
Name: VLAN 0002  
Tagged Ports: none  
Untagged Ports:  
GigabitEthernet1/0/1 GigabitEthernet1/0/2  
[H3C-vlan2]
```

連線 00:15:46 自動偵測 9600 8-N-1 SCROLL CAPS NUM 摺 列印

802.1Q(例如:把port 24 加入 VLAN 2, 且讓每個vlan都放行)



```
d - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]
[H3C-GigabitEthernet1/0/24]quit
[H3C]
[H3C]
[H3C]
[H3C]1
[H3C]int g1/0/24
[H3C-GigabitEthernet1/0/24]port link-type tr 2
[H3C-GigabitEthernet1/0/24]port link-type trunk
[H3C-GigabitEthernet1/0/24]port tr
[H3C-GigabitEthernet1/0/24]port trunk permit vlan all 3
Please wait..... Done.
[H3C-GigabitEthernet1/0/24]dis this
#
interface GigabitEthernet1/0/24
port link-type trunk
port trunk permit vlan all
#
return
[H3C-GigabitEthernet1/0/24]_

連線 00:22:37 自動偵測 9600 8-N-1 SCROLL CAPS NUM 攝 列印
```

Figure 1: A screenshot of the Windows XP desktop environment. The taskbar at the bottom shows the Start button, a search icon, and several application icons including Internet Explorer, a folder named 'd - 超級英雄', and a folder named '檔案(F)'. The 'd - 超級英雄' folder is open, displaying a menu with options: 檔案(F), 編輯(E), 檢視(V), 呼叫(C), 轉送(T), and 說明(H). The main window area is currently blank.

```
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]
[H3C]int bridge-aggregation 1
[H3C-Bridge-Aggregation1]link-aggregation mode dynamic
[H3C-Bridge-Aggregation1]
[H3C-Bridge-Aggregation1]int g1/0/47
[H3C-GigabitEthernet1/0/47]port link-aggregation group 1
[H3C-GigabitEthernet1/0/47]quit
[H3C]
[H3C]int g1/0/48
[H3C-GigabitEthernet1/0/48]port link-aggregation group 1
[H3C-GigabitEthernet1/0/48]
[H3C-GigabitEthernet1/0/48]int bridge-aggregation 1
[H3C-Bridge-Aggregation1]port link-type trunk
[H3C-Bridge-Aggregation1]port trunk permit vlan all
Please wait..... Done.
Configuring GigabitEthernet1/0/47..... Do
ne.
Configuring GigabitEthernet1/0/48..... Do
ne.
[H3C-Bridge-Aggregation1]_
```

Switch WEB操作

- ↯ 設定帳號與密碼登入WEB
- ↯ CLI Command Levels
- ↯ Wizard
- ↯ NTP時間設定
- ↯ 新增帳號
- ↯ 修改admin登入密碼
- ↯ 刪除nick帳號
- ↯ 查看CPU、溫度、記憶體使用率
- ↯ 查看Switch port up or down
- ↯ 新增VLAN 2
- ↯ 移除VLAN 2

Switch WEB操作

- ⚡ Add vlan by port (把port 1 and port 2至VLAN2)
- ⚡ 802.1Q(把port 24 設定成trunk port)
- ⚡ Detail(查看VLAN 2 的port 1、2、24)
- ⚡ 假設我的vlan 2是管理ip的話，如何在vlan 2新增管理ip

設定帳號與密碼登入WEB 與console-3

1

http://10.63.99.1/web/device/login?lang=0

Web user login

檔案(F) 編輯(E) 檢視(V) 我的最愛(A) 工具(T) 說明(H)

鉅晶國際股份有限公司 M86 Security Web and ... H3C H3C - 华三通信技术有限... Google 台北市立圖書館 中國科技大學圖書館 Yahoo! 奇摩 PChome Online 網路家庭 【金榜函授】

2

Web User Login

User Name

Password

Verify Code U2T8

Language

Login

無半

CLI Command Levels

- 0 -> Visitor
 - ping, traceroute
- 1 -> Monitor
 - Basic read-only commands
- 2 -> System
 - Services configuration commands
- 3 -> Manager
 - System(files, users) management commands

博鉅資訊 BGIC Wizard-1

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

檔案(F) 編輯(E) 檢視(V) 歷史(S) 書籤(B) 工具(I) 說明(H)

H3C S5820X-28S Software Version ... x contact - Yahoo!奇摩字典 x +

10.63.99.1/wcn/frame/x

最常用 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡

H3C Web Management Platform

Wizard Save | Help | Logout

H3C

1 Wizard

- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

IP Setup

System Parameters: Step 2 of 4

2

Sysname: H3C (1- 30Char.)

Syslocation: Taipei, Taiwan (1- 200Char.)

Syscontact: Hangzhou H3C Tech. Co., Ltd (1- 200Char.)

3

<Back Next> Cancel

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博鉅資訊 BGIC Wizard-2

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10.63.99.1/wcn/frame/x

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繁 簡 A A A + + + =

H3C Web Management Platform

Wizard Save | Help | Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

IP Setup

Management IP Interface configuration: Step 3 of 4

The IP address of a VLAN interface can be used as the management IP address to access the device.

Select VLAN Interface: 1 4 Admin status: Up 5

☒ Configure IPv4 address

☐ DHCP ☐ BOOTP ☒ Manual 6

IPv4 address: 10.63.99.1 7 MaskLen: 24 8

☐ Configure IPv6 link-local address

☐ Auto ☐ Manual

IPv6 address: 9

<Back Next> Cancel

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博鉅資訊 BGIC Wizard-3

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10.63.99.1/wcn/frame/x ☆ Google

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繁 簡 T S A A A + + + =

H3C Web Management Platform

Wizard Save | Help | Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

IP Setup

Management IP Interface configuration: Step 3 of 4

The IP address of a VLAN interface can be used.

Select VLAN Interface: 1

☒ Configure IPv4 address

☐ DHCP ☐ BOOTP ☒ Manual

IPv4 address: 10.63.99.1 MaskLen: 255.255.255.0

☐ Configure IPv6 link-local address

☐ Auto ☐ Manual

IPv6 address:

<Back Next> Cancel

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This operation may stop the connection with the device.
Continue?

10

確定 取消

博鉅資訊 BGIC Wizard-4

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H3C Web Management Platform

Wizard Save | Help | Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

IP Setup

Completing the Management IP Interface Setup Wizard: Step 4 of 4

You have successfully completed the Management IP Interface Setup wizard.

You have specified the following settings:

Sysname: H3C
Syslocation: Taipei, Taiwan
Syscontact: Hangzhou H3C Tech. Co., Ltd.

VLAN Interface: 1 Admin Status: UP

Config IPv4 address:
Method: Manual
IPv4 address: 10.63.99.1
Subnet mask: 255.255.255.0

Config IPv6 link-local address:
Method: NoChange
IPv6 address: NoChange

11

<Back Finish Cancel

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博鉅資訊 BGIC Wizard-5

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繁 簡 T S A A A + + + =

H3C Web Management Platform

Wizard

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

IP Setup

Completing the Management IP Interface Setup wizard: Step 4 of 4

You have successfully completed the Management IP Interface Setup wizard.

You have specified the following:

Sysname: H3C
Syslocation: Taipei, Taiwan
Syscontact: Hangzhou H3C

VLAN Interface: 1 Admin St

Config IPv4 address:
Method: Manual
IPv4 address: 10.63.99.1
Subnet mask: 255.255.255.0

Config IPv6 link-local address:
Method: NoChange
IPv6 address: NoChange

Current Configuration

- Configuring Sysname - OK
- Configuring Syslocation - OK
- Configuring Syscontact - OK
- Configuring Admin Status - OK
- Configuring IPv4 - OK

100%

Pause Close

<Back Finish Cancel

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12

Save Help Logout

NTP時間設定

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繁 簡 中 大 小 加 減 等 號 圖 標

H3C Web Management Platform

Device > System Time Save | Help | Logout

System Time Network Time Protocol

Clock status: unsynchronized

Source Interface

Key 1	ID	(1-4294967295)	Key String	(1-32 Chars.)
Key 2	ID	(1-4294967295)	Key String	(1-32 Chars.)

External Reference Source

NTP Server 1	220.130.158.72	Reference Key ID	
NTP Server 2		Reference Key ID	

Set System TimeZone

TimeZone

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博鉅資訊 BGIC 新增帳號

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192.168.1.1/wcn/frame/x

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繁 簡 T S A A A + + + -

H3C Web Management Platform

Device > Users Save | Help | Logout

Summary Super Password **Create** Modify Remove Switch To Management

Create User

Username nick (1-55 Chars.) Access Level Management

Password (1-63 Chars.) Confirm Password

Service Type ☒ Web ☐ FTP ☒ Telnet

4 Apply 6

Summary

Username	Access Level	Service Type
admin	Management	Web/Telnet

Note: Username cannot contain Chinese characters and any of the following characters / \ : | @ * ? " < > ' & #

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1 2 3 4 5 6

修改admin登入密碼

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192.168.1.1/wcn/frame/x

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H3C Web Management Platform

Device > Users Save | Help | Logout

Summary Super Password Create **Modify** Remove Switch To Management

Select a user and modify the selected user attributes in the fields below

Username	Access Level	Service Type
admin 4	Management	Web/Telnet
nick	Management	Web/Telnet

Username: admin Access Level: Management

☒ Password Modify

Password: (1-63 Chars.) Confirm Password: 7

Service Type: ☒ Web Service ☐ FTP Service ☒ Telnet Service

Apply 8

Wizard IRF Summary **Device** 1 Basic Device Maintenance System Time Syslog Configuration File Management Port Management Port Mirroring **Users** 2 Loopback VCT Flow Interval Storm Constrain RMON Energy Saving

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博鉅資訊 BGIC 刪除nick帳號

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H3C S5500-52C-EI Software Version 5...

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H3C Web Management Platform

Device > Users

Wizard
IRF
Summary
Device 1
Basic
Device Maintenance
System Time
Syslog
Configuration
File Management
Port Management
Port Mirroring
Users 2
Loopback
VCT
Flow Interval
Storm Constrain
RMON
Energy Saving

Summary Super Password Create Modify Remove 3 Switch To Management Save Help Logout 6

Remove User(s)

Username	Ac
admin	Ma
nick	Me

4

Are you sure you want to remove the selected item(s)?

5

確定 取消

Select user(s) from the list above and click Remove to remove the User(s).

Remove

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查看CPU、溫度、記憶體使用率

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H3C Web Management Platform

Summary

H3C

- Wizard
- IRF
- Summary**
- Device
- Network
- VLAN
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack
- IGMP Snooping
- IPv4 Routing
- IPv6 Routing
- DHCP

System Information

Device Information

System Resource State

CPU Usage	5%
Memory Usage	36%
Temperature	49°C

Recent System Logs

Time	Level	Message
Apr 26 20:36:58:678 2000	Notification	Configuration is saved success
Apr 26 20:36:58:678 2000	Notification	Configuration is saved success
Apr 26 20:36:58:678 2000	Notification	-EventIndex=6-CommandSource
Apr 26 20:36:58:678 2000	Notification	Configuration is changed.
Apr 26 20:36:34:189 2000	Notification	Console logged out from aux1.
Apr 26 20:36:33:608 2000	Notification	Exit from configuration mode.

More Logs On Device [More...](#)

Refresh Period: Manual Refresh

H3C S5500 EI - SecureCRT

Please press ENTER.

```

<H3C>
#Apr 26 20:41:29:918 2000 H3C SHELL/4/LOGIN:
Trap 1.3.6.1.4.1.25506.2.2.1.1.3.0.1<hh3cLogin>: login from console
%Apr 26 20:41:30:059 2000 H3C SHELL/5/SHELL_LOGIN: Console logged in
<H3C>
<H3C>
<H3C>sys
<H3C>system-view
System View: return to User View with Ctrl+Z.
[H3C]dis env
[H3C]dis environment
System temperature information (degree centigrade):
-----
Sensor      Temperature  LowerLimit  warningLimit  AlarmLimit  Shuto
hotspot 1   49          10          80           87
[H3C]dis cpu
Slot 1 CPU usage:
5% in last 5 seconds
5% in last 1 minute
5% in last 5 minutes
[H3C]dis mem
[H3C]dis memory
System Total Memory(bytes): 337495520
Total Used Memory(bytes): 121699852
Used Rate: 36%
[H3C]

```

Ready Serial: COM3 30, 6 30 Rows, 80 Cols VT100

Software Version 5.20 Release 1211P02

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查看Switch port up or down

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

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Google

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡 T S A A A + + + - - -

H3C Web Management Platform

Summary System Information Device Information Save | Help | Logout

H3C

- Wizard
- IRF
- Summary 1
- Device
- Network
- VLAN
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack
- IGMP Snooping
- IPv4 Routing
- IPv6 Routing
- DHCP

System Information

Member 2

1 3 5 7 9 11 13 15 17 19 21 23 25 26 27 28 S5820X

2 4 6 8 10 12 14 16 18 20 22 24

AC

Port: GigabitEthernet2/0/25
Type: 1000BASE-T
Speed: 1000M, Full Duplex
Utilization: <1%
Status: Enabled

Refresh Period: 30 seconds Refresh

Description of port number color:

- Unconnected Port.
- Connected port.
- Port that has been set to inactive by user or protocol.
- Port that has been selected by user.
- PC

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新增VLAN 2(步驟1)

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繁 簡 T S A A A + + + -

H3C Web Management Platform

Network > VLAN

Save | Help | Logout

H3C

- Wizard
- IRF
- Summary 1
- Device
- Network 2
- VLAN 3
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack
- IGMP Snooping
- IPv4 Routing
- IPv6 Routing
- DHCP

Select VLAN **Create** 4 Port Detail Detail Modify VLAN Modify Port Remove

Create:

VLAN IDs: 2 5 Example: 3, 5-10 **Create** 6

ID	Description
1	VLAN 0001

Modify VLAN description (Note: you can do this later on the Modify VLAN page)

Modify the description of the selected VLAN:

ID	Description
	(1-32 Chars.)

Apply

無半

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新增VLAN 2(步驟2)

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繁 簡 中 大 小 加 減 等 號 符號

H3C Web Management Platform

Network > VLAN

Save | Help | Logout

8

Create:

VLAN IDs: Example: 3, 5-10

Create

ID	Description
1	VLAN 0001
2	VLAN 0002

7

Modify VLAN description (Note: you can do this later on the Modify VLAN page)

Modify the description of the selected VLAN:

ID	Description
2	VLAN 0002 (1-32 Chars.)

Apply

無 半

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移除VLAN 2 (步驟1)

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10.63.99.1/wcn/frame/x

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡

H3C Web Management Platform

Network > VLAN

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN 1**
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

Select VLAN Create Port Detail Detail Modify VLAN Modify Port **Remove 2** Save Help Logout

Enter VLAN IDs to remove

VLAN IDs: **2** example:3, 5-10

Remove Cancel

Select VLANs to remove:

ID	Description
2	VLAN 0002

Select All Select None **Remove** Cancel

無半

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Add vlan by port (把port 1 and port 2 至VLAN 2)-步驟1

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10.63.99.1/wcn/frame/x

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡 T S A A A + + + =

H3C Web Management Platform

Network > VLAN Save | Help | Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN**
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

Select VLAN Create Port Detail Detail Modify VLAN Modify Port Remove

Create:

VLAN IDs: Example: 3, 5-10 Create

ID	Description
1	VLAN 0001
2	VLAN 0002

要先確保VLAN 2已經存在

Modify VLAN description (Note: you can do this later on the Modify VLAN page)

Modify the description of the selected VLAN:

ID	Description
2	VLAN 0002 (1-32 Chars.)

Apply

無半

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Add vlan by port (把port 1 and port 2 至VLAN 2)-步驟2

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

檔案 (F) 編輯 (E) 檢視 (V) 歷史 (S) 書籤 (B) 工具 (T) 說明 (H)

H3C S5820X-28S Software Version ... x contact - Yahoo!奇摩字典 x +

10.63.99.1/wcn/frame/x

Google

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡

H3C Web Management Platform

Network > VLAN

Save Help Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

3

1	3	5	7	9	11	13	15	17	19	21	23
2	4	6	8	10	12	14	16	18	20	22	24

25 26 27 28

S5820X

Select All Select None

Not available for selection

Select membership type:

☒ Untagged ☐ Tagged ☐ Not A Member ☐ Link Type ☐ PVID

Enter VLAN IDs to which the port is to be assigned:

VLAN IDs: 2 Example: 1,3,5-10

Selected ports:

Untagged Membership

XGE2/0/1-XGE2/0/2

Apply Cancel

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Add vlan by port (把port 1 and port 2 至VLAN 2)-步驟3

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10.63.99.1/wcn/frame/x

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H3C Web Management Platform

7

Network > VLAN

H3C

- Wizard
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

Select All

Select membership type:

Untagged

Enter VLAN IDs to which the

VLAN IDs: 2

Selected ports:

Untagged Membership

XGE2/0/1-XGE2/0/2

Current Configuration

Setting Ten-GigabitEthernet2/0/1..... - Please wait... Done.

Setting Ten-GigabitEthernet2/0/2..... - Please wait... Done.

Not available for selection

PVID

100%

Pause Close

Apply Cancel

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Add vlan by port (把port 1 and port 2 至VLAN 2)-步驟4

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10.63.99.1/wcn/frame/x

最常用瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡

H3C Web Management Platform

Network > VLAN

Select VLAN Create Port Detail Detail Modify VLAN **Modify Port** Remove

Select Ports

Member 2

1	3	5	7	9	11
2	4	6	8	10	12

Select All Select None

Are you sure to save the current configuration?

8

確定 取消

Select membership type:

☒ Untagged ☐ Tagged ☐ Not A Member ☐ Link Type ☐ PVID

Enter VLAN IDs to which the port is to be assigned:

VLAN IDs: Example: 1,3,5-10

Selected ports:

Untagged Member: 無半

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Add vlan by port (把port 1 and port 2 至VLAN 2)-步驟5

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

檔案(F) 編輯(E) 檢視(V) 歷史(S) 書籤(B) 工具(T) 說明(H)

H3C S5820X-28S Software Version ... x contact - Yahoo!奇摩字典 x +

10.63.99.1/wcn/frame/x

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡 T S A A A + + + =

H3C Web Management Platform

Network > VLAN Save | Help | Logout

H3C

- Wizad
- IRF
- Summary
- Device
- Network
 - VLAN
 - VLAN Interface
 - Voice VLAN
 - MAC
 - MSTP
 - Link Aggregation
 - LACP
 - LLDP
 - ARP Management
 - ARP Anti-Attack
 - IGMP Snooping
 - IPv4 Routing
 - IPv6 Routing
 - DHCP

Member 2

1	3	5	7	9	11
2	4	6	8	10	12

Select All Select None

Configuration is saved to device successfully.

9 確定

Select membership type:

☒ Untagged ☐ Tagged ☐ Not A Member ☐ Link Type ☐ PVID

Enter VLAN IDs to which the port is to be assigned:

VLAN IDs: Example: 1,3,5-10

Selected ports:

Untagged Membership

無半

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802.1Q(把port 24 設定成trunk port)-步驟1



Web Management Platform

Network > VLAN

Save | Help | Log Out

HP

Wizard
Stack
IRF
Summary
Device
Network

VLAN 1

VLAN Interface
Voice VLAN
MAC
MSTP
Link Aggregation
LACP
LLDP
ARP Management
ARP Anti-Attack
IGMP

Select VLAN Create Port Detail Detail Modify VLAN **Modify Port** Remove

Select Ports

Member 1

1	3	5	7	9	11	13	15	17	19	21	23				
2	4	6	8	10	12	14	16	18	20	22	24	25	26	27	28

HP A5120-24G SI...

Select All Select None

Select membership type:

☐ Untagged ☐ Tagged ☐ Not A Member ☒ **Link Type** ☐ PVID

Link Type: **Trunk**

Selected ports:

Link Type
GE1/0/24

802.1Q(把port 24設定成trunk port)步驟2



Web Management Platform

Network > VLAN Save | Help | Log

HP

- Wizard
- Stack
- IRF
- Summary
- Device
- Network
- VLAN
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack

Member 1

HP A5120-24G SI...

Select All Select None

☐ Not available for selection

Select membership type:

☐ Untagged ☐ Tagged ☐ Not A Member ☒ Link Type ☐ PVID

Link Type: Trunk

Selected ports:

Link Type

GE1/0/24

6

Apply Cancel

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802.1Q(把port 24設定成trunk port)-步驟3



Web Management Platform

Save Help | Log

10

Network > VLAN

HP

- Wizard
- Stack
- IRF
- Summary
- Device
- Network
- VLAN
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack

HP A5120-24G SL...

Select All Select None

Not available for selection

Select membership type:

☐ Untagged ☒ Tagged ☐ Not A Member ☐ Link Type ☐ PVID

Enter VLAN IDs to which the port is to be assigned:

VLAN ID: 1-2 Example: 1,3,5-10

Selected ports:

Tagged Membership

GE1/0/24

Apply Cancel

802.1Q(把port 24設定成trunk port)-步驟4

```
interface GigabitEthernet1/0/24
#
return
[HP-GigabitEthernet1/0/24]dis this
#
interface GigabitEthernet1/0/24
port link-type trunk
port trunk permit vlan 1 to 2
#
return
[HP-GigabitEthernet1/0/24]■
```

Detail(查看VLAN 2 的port 1、2、24)

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

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10.63.99.1/wcn/frame/x

最常用 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡 T S A A A + + + -

H3C Web Management Platform

1

Network > VLAN

Select VLAN Create Port Detail **Detail** Modify VLAN Modify Port Remove

Please select a VLAN to display:

2 - VLAN 0002

Please select a VLAN ID

2 - VLAN 0002 2

1 3 5 7 9 11 13 15 17 19 21 23 S5820X

2 4 6 8 10 12 14 16 18 20 22 24 25 26 27 28

☒ Untagged ☒ Tagged ☐ Not A Member

Untagged Membership Tagged Membership

XGE2/0/1-XGE2/0/2 XGE2/0/24

假設我的vlan 2是管理ip的話，如何在vlan 2新增管理ip-1

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

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最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡 T S A A A + + + =

H3C Web Management Platform

Network > VLAN Save | Help | Logout

H3C

- Wizard
- IRF
- Summary
- Device
- Network
- VLAN
- VLAN Interface
- Voice VLAN
- MAC
- MSTP
- Link Aggregation
- LACP
- LLDP
- ARP Management
- ARP Anti-Attack
- IGMP Snooping
- IPv4 Routing
- IPv6 Routing
- DHCP

Select VLAN **Create** Port Detail Detail Modify VLAN Modify Port Remove

Create:

VLAN IDs: **2** ¹ Example: 3, 5-10 **Create** ²

ID	Description
1	VLAN 0001

Modify VLAN description (Note: you can do this later on the Modify VLAN page)

Modify the description of the selected VLAN:

ID	Description

(1-32 Chars.) **Apply**

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假設我的vlan 2是管理ip的話，如何在vlan 2新增管理ip-2

H3C S5820X-28S Software Version 5.20 - Mozilla Firefox

檔案(F) 編輯(E) 檢視(V) 歷史(S) 書籤(B) 工具(T) 說明(H)

H3C S5820X-28S Software Version ... x contact - Yahoo!奇摩字典 x +

10.63.99.1/wcn/frame/x

☆ Google

最常瀏覽 新手上路 即時新聞 https://172.16.1.26/V...

繁 簡

H3C Web Management Platform

Network > VLAN Interface

Wizard IRF Summary Device Network

VLAN Voice VLAN MAC MSTP Link Aggregation LACP LLDP ARP Management ARP Anti-Attack IGMP Snooping IPv4 Routing IPv6 Routing DHCP

Summary Create Modify Remove

Input a VLAN ID: 2 (1-4094)

☒ Configure Primary IPv4 Address

☐ DHCP ☐ BOOTP ☒ Manual

IPv4 Address: 192.168.1.2 Mask Length: 255.255.255.0

☐ Configure IPv6 Link Local Address

☒ Auto ☐ Manual

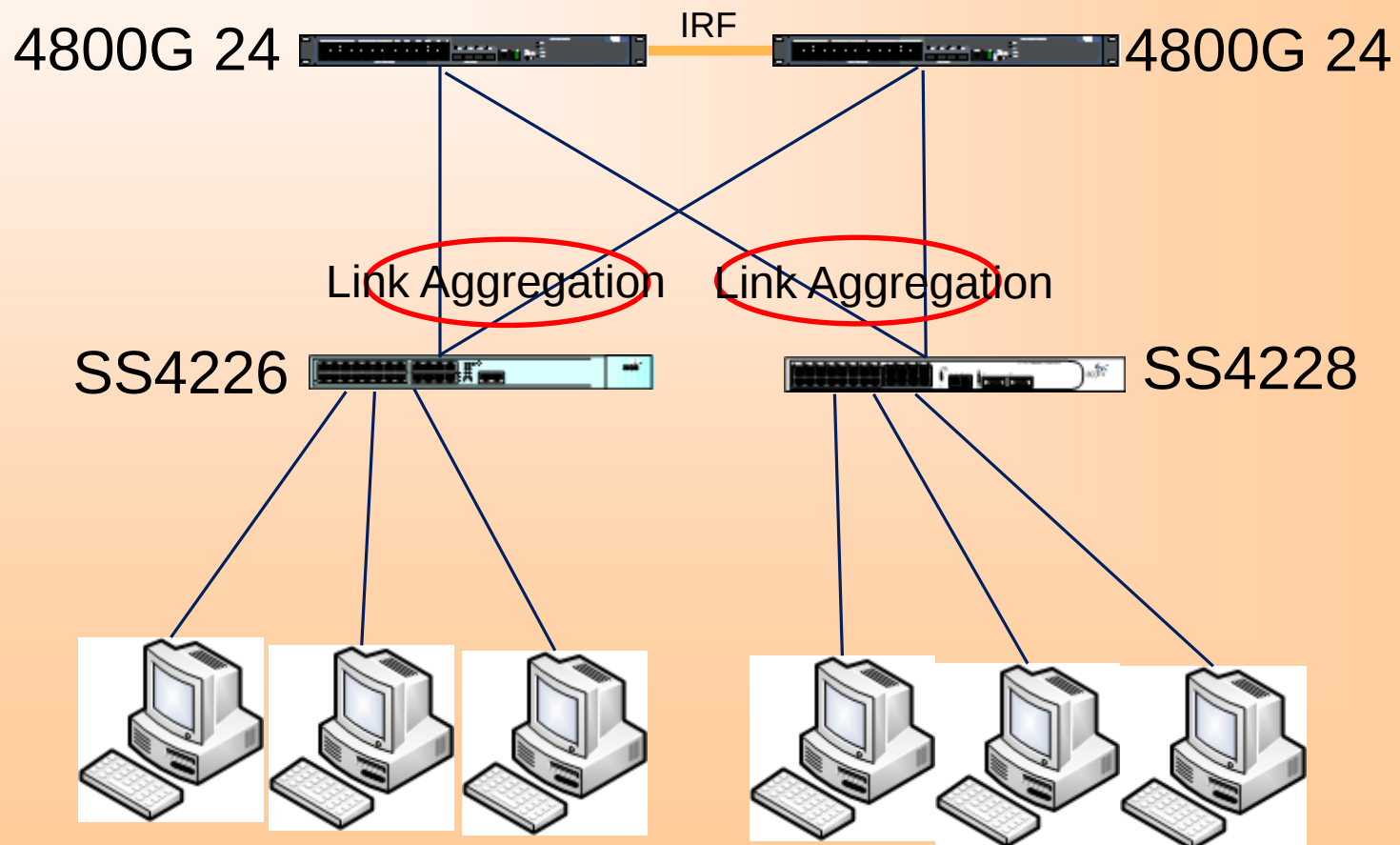
IPv6 Address:

Apply Cancel

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IRF 簡介

IRF(Intelligent Resilient Framework)架構

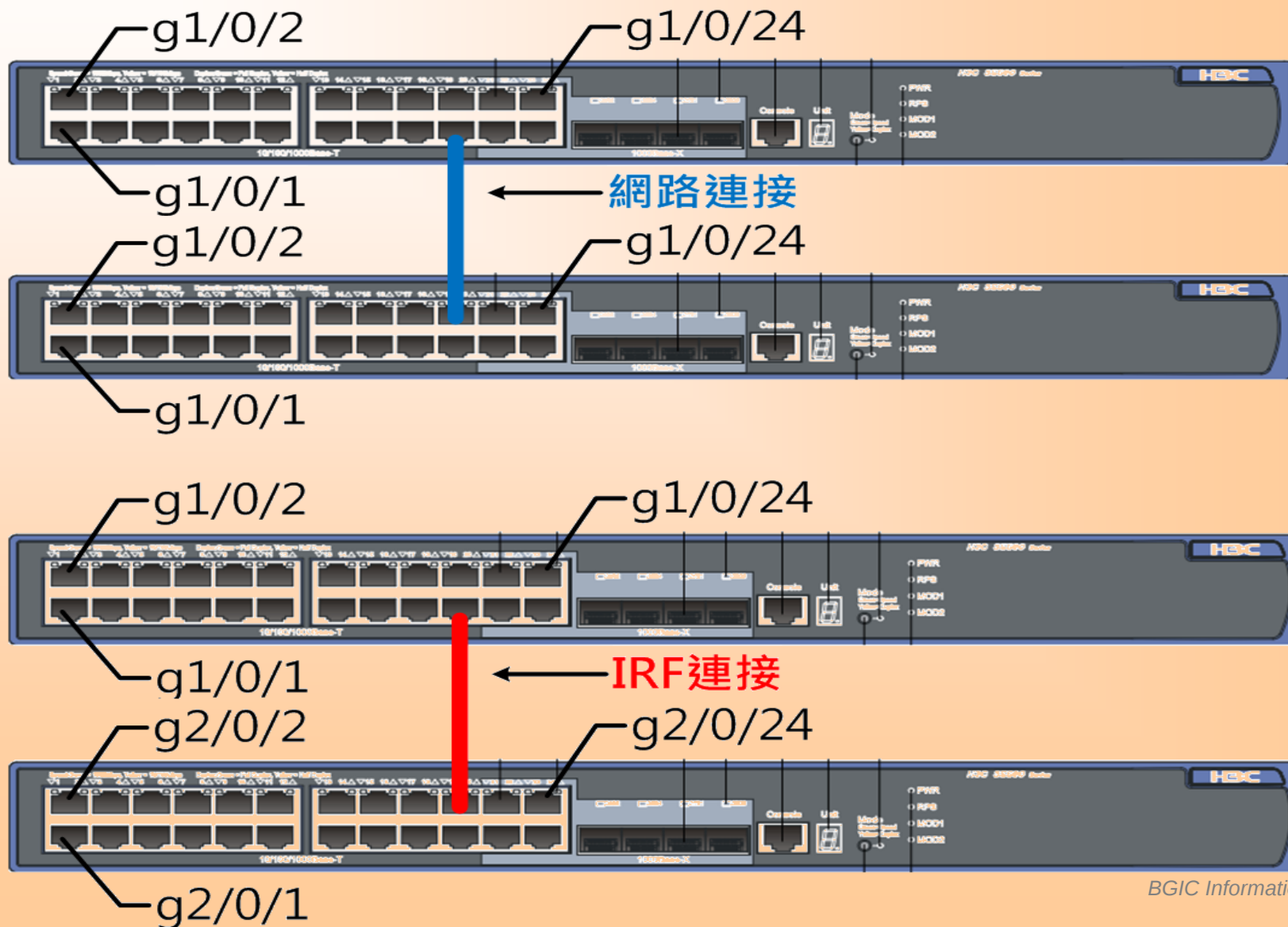


2台實體的24port的Switch



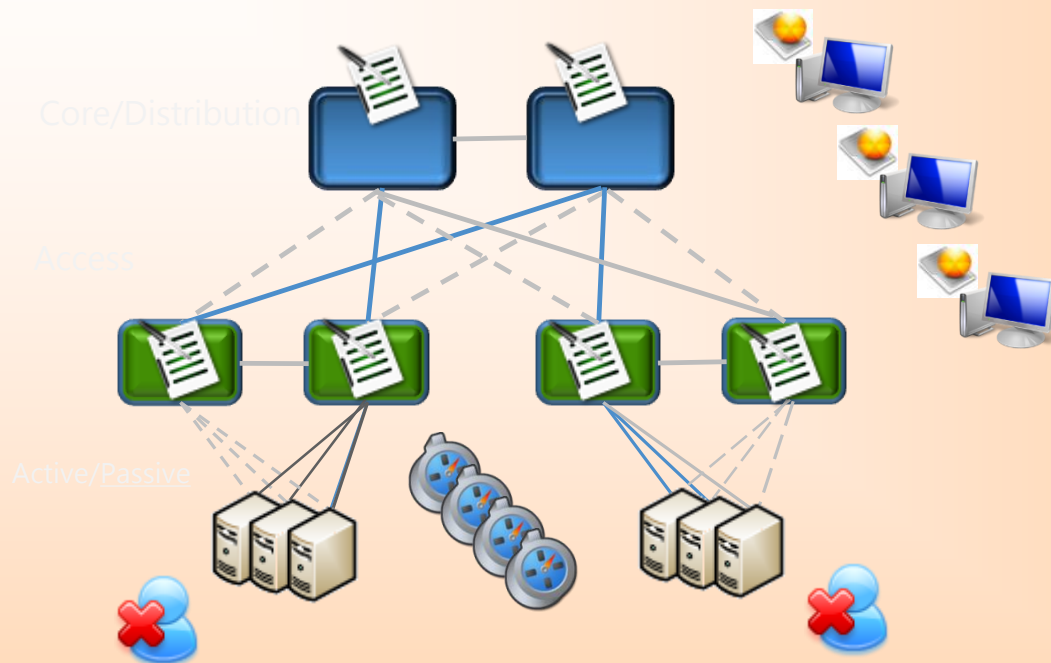
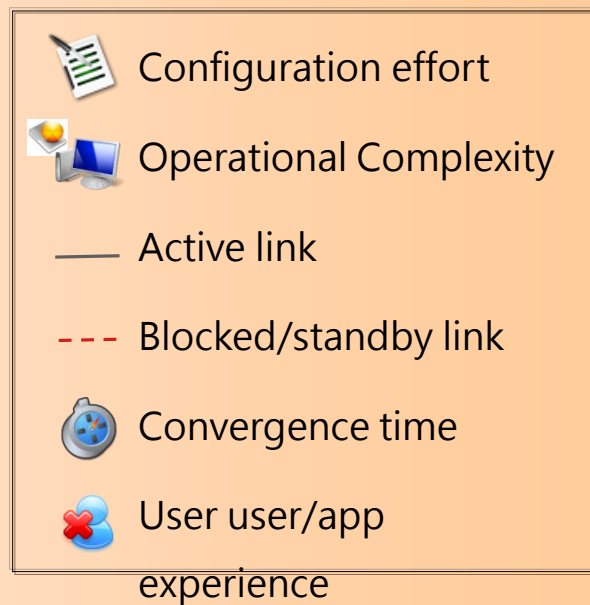
1台邏輯的48port的Switch





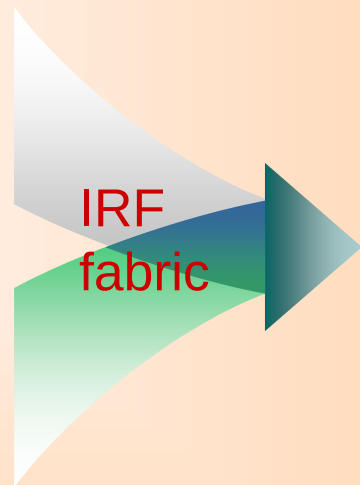
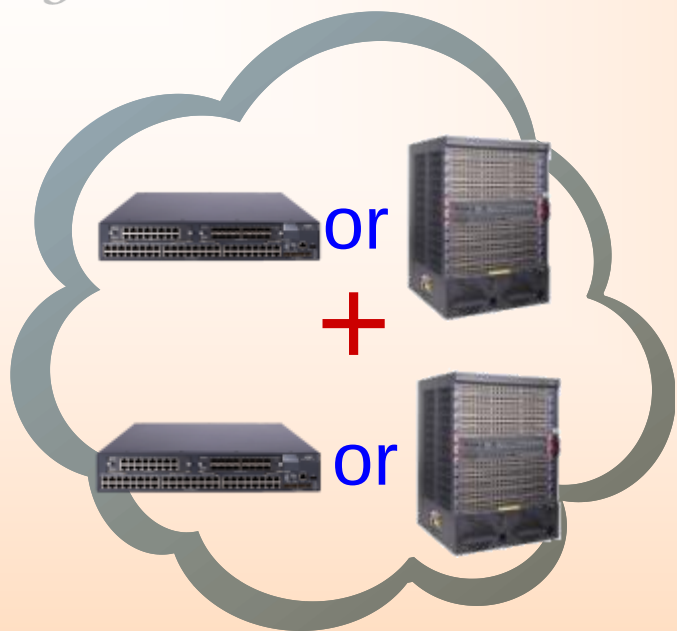
今日網路設計面臨的挑戰

Legend



- × STP stops loops, but blocks paths - reducing effective bandwidth
- × Configuration Intensive (switch by switch)
- × Operational complexity for configuration change and support
- × Slow convergence during failure can often impact business applications and users

IRF2 (Intelligent Resilient Framework)技術 -Since 2003



多台實體交換器

個別設定與管理

只負責本身封包轉發

只能點對點匯集鏈路

IRF 虛擬交換器

單一介面設定與管理(DDM)

路由同步再各自轉發(DRR)

跨交換機做匯集鏈路(DLA)

IRF與堆疊？

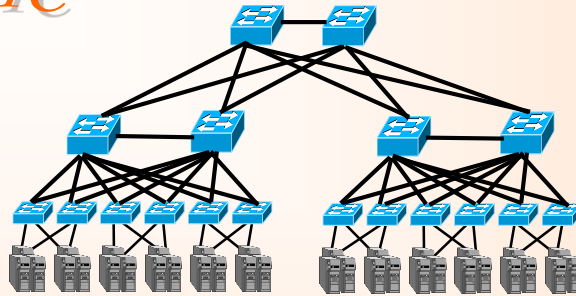
IRF2不就是堆疊麼？

IRF2比堆疊強多了。堆疊只是將設備連在一起，設備之間還是各跑各的，而IRF是真正讓多台設備虛擬化成一台統一的設備，所有的控制，路由轉發都統一進行，Active-Active模式，真正當作一台設備來運行。

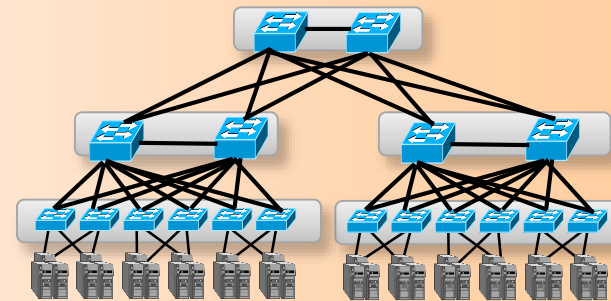
Why HP IRF?

Customer requirement; 1000 servers, GbE, 10 GbE
Core, dist and access layer, network resiliency,
Internet/extranet WAN connectivity

Other
Vendor



STP, RSTP, Rapid-PVST, VSS, vPC, RPR, Stackwise



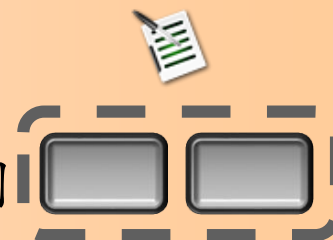
IRF

	Other	Configuration	HP	
×Active / Stand-by	136	VLANs	50	✓Active / Active
	136	IP Subnets	50	
×Various protocols	2	OSPF Area	2	✓Protocol consistency
×Failover often	42	VRRP Groups	0	✓Failover measured in
measured in seconds	88	Access switch configs	5	milliseconds seconds
or minutes	4	Agg switch configs	2	
×Highly complex	2	Core switch Configs	1	✓Simplified design and
configuration intensive	42	STP Instances	0	configuration
	196	OSPF adjacencies	8	
	250	Interfaces	50	
	94	Device configs	5	

IRF 提供什麼優勢？

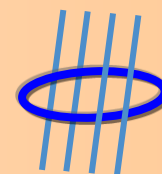
1 - 極簡化了網絡營運

通過整合多個獨立交換器到單一的管控，每一階層的網絡達到易於管理，與虛擬交換器，真正達到扁平化架構



2 - 提供超高效能

充分利用所有交換機和伺服器/匯聚層交換器之間的鏈路，可“依據需求”擴展性能和能力，以支持關鍵業務應用



3 - 確保網路與業務的高取用性

不管是鏈路或設備故障，皆能確保快速的網絡回復（以毫秒為單位），以確保應用程序和服務不間斷



Core to Edge都支援IRF

- HP Campus LAN Switch Portfolio

Data Center / Campus Core

A12500

A9500

A7500

A5820



- Up to 512 10GE/864 GE
- Application Modules (inc. multi-core)
- IRF, IPv6

Edge/Aggregation / Core

A7500

A5800/A5820

A5500



- Chassis or Flex chassis + stackable
- IRF PoE(+), 10GE, App modules, IPv6

Edge/Access

A5120

A3600-EI



- Stackable – IRF, PoE(+), 10GE uplinks, IPv6

IRF 2.0 規格

功能	A3600-EI IRF 1.0 only (Comware 3)	A5120-SI	A5120-EI	A5500-SI	A5500-EI	A5800	A5820X	A7500	A9500	A12500
堆疊介面	GE	GE	GE or 10GE	10GE	10GE	10GE	10GE	10GE	10GE	10GE
Stack Bandwidth		2*GE	4*10GE	4*10GE	4*10GE	8*10GE	8*10GE	8*10GE	12*10G	12*10G
Stack Number	8	4	4	4	9	9	9	2	2	2
Stack with different model	No	No	No	No	No	Yes	Yes	No	No	No
Geographic Connection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IRF Split Detection (MAD)	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

HPN IRF 與友商有何不同？

- 2003即研發出 XRN，一直到現在的IRF 2，技術成熟穩定，眾多成功案例
- 沒特殊限制，只要10G介面連接即可，無模組種類、韌體版本...等限制
- Core到Edge都有支援 IRF，完全扁平化網路架構
- IRF連線可以用光纖與銅線(CX4)，光纖可以跨機櫃，建築
- Failover切換速度較快
- 單機功能不會因為做IRF後，損失一些功能

非IRF的備援架構！

Switch1

STP Priority = 4096

Switch2

STP Priority = 16384

g1/0/24

g1/0/1

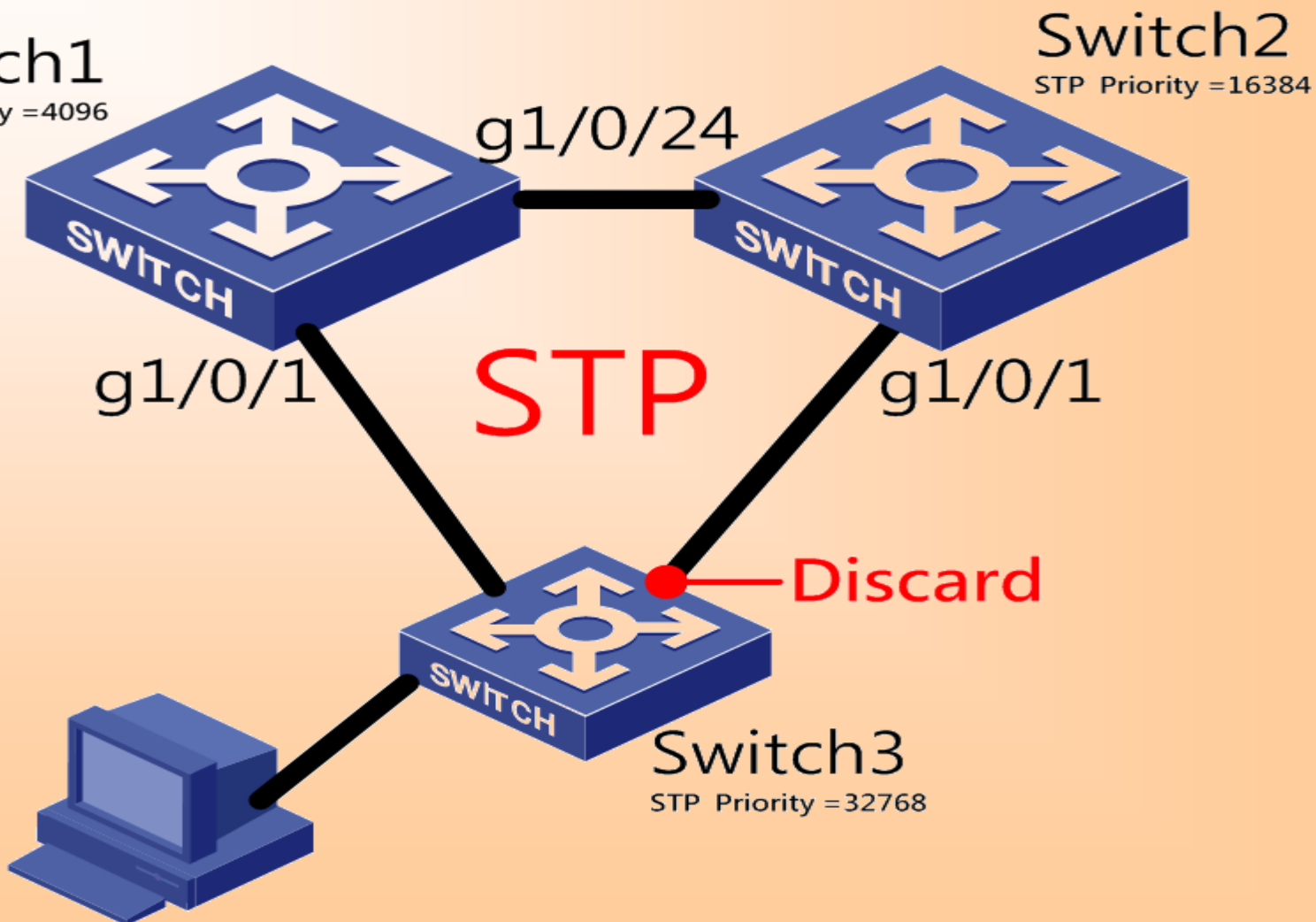
STP

g1/0/1

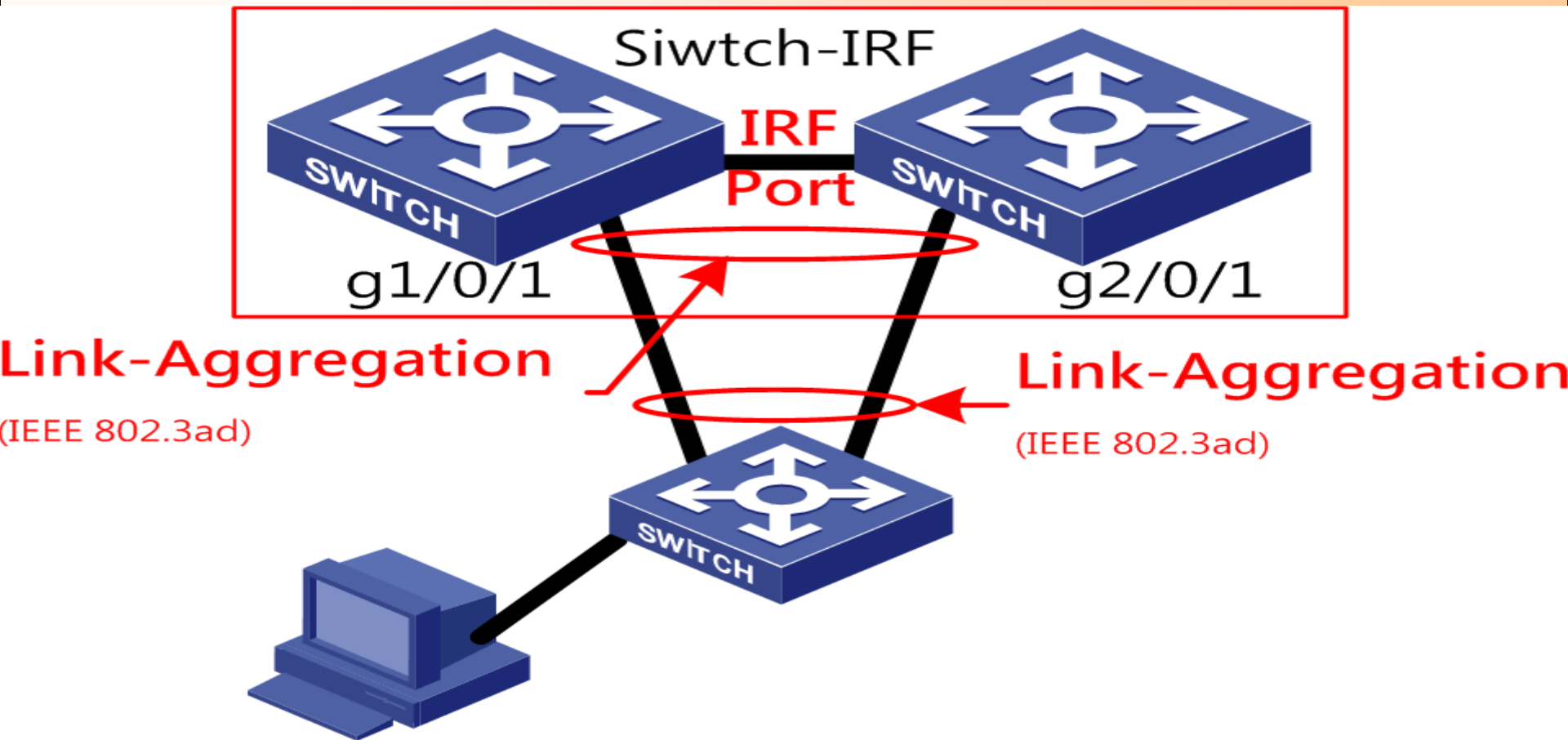
Discard

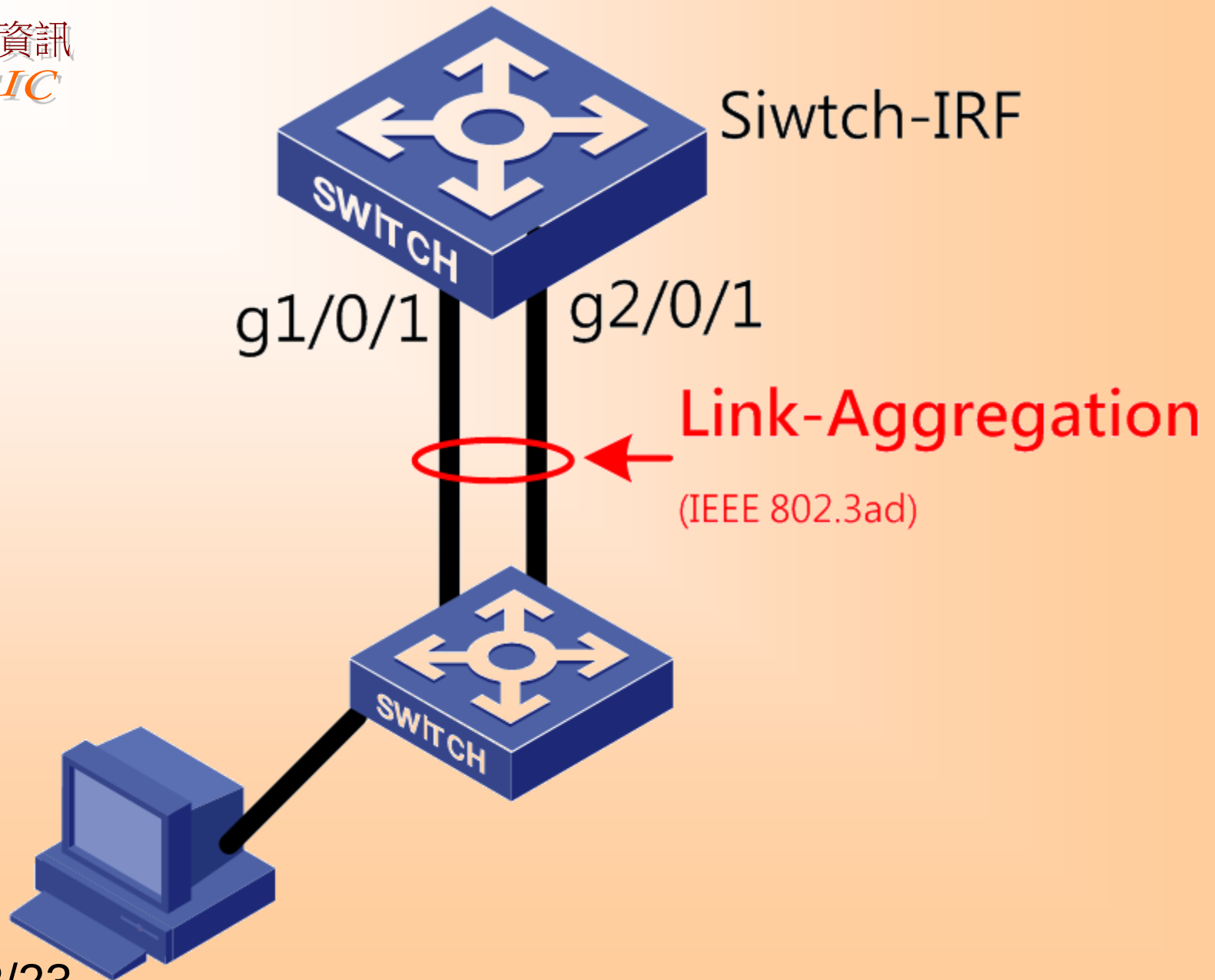
Switch3

STP Priority = 32768

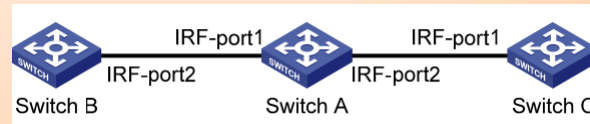


使用IRF的備援架構！

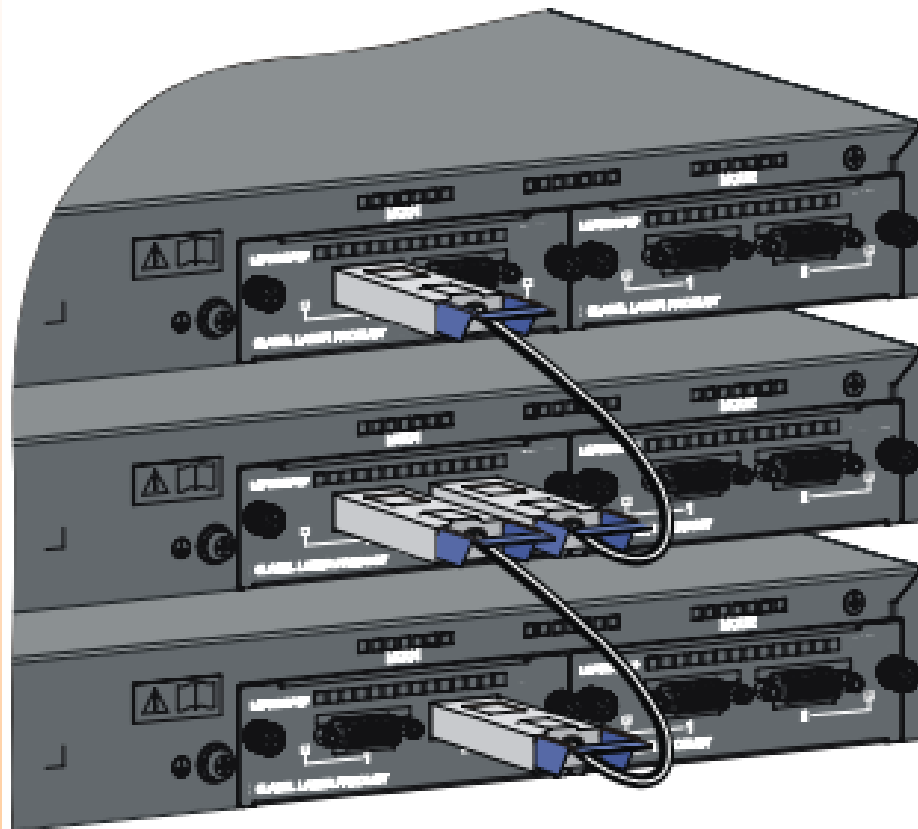




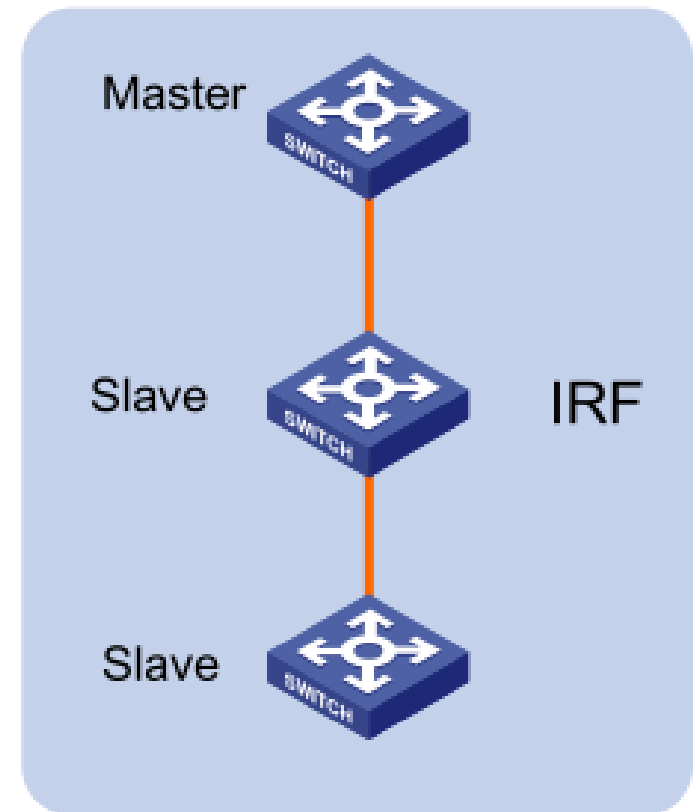
IRF-Port1接IRF-Port2



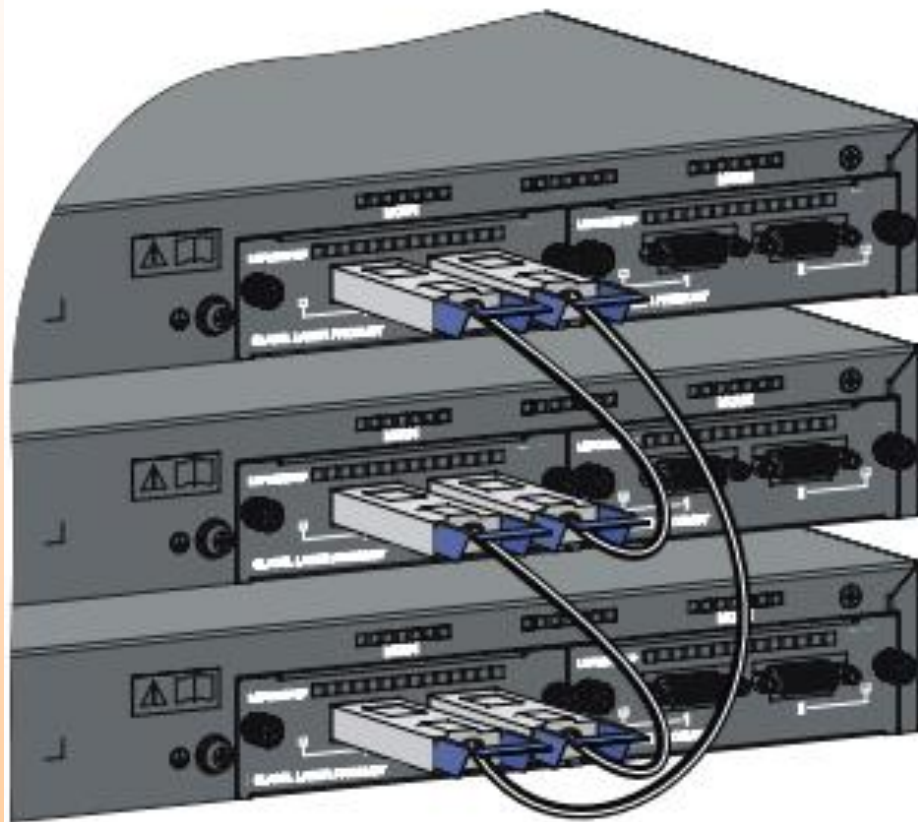
3com 4800G H3C 5500EI / 5800 鏈型



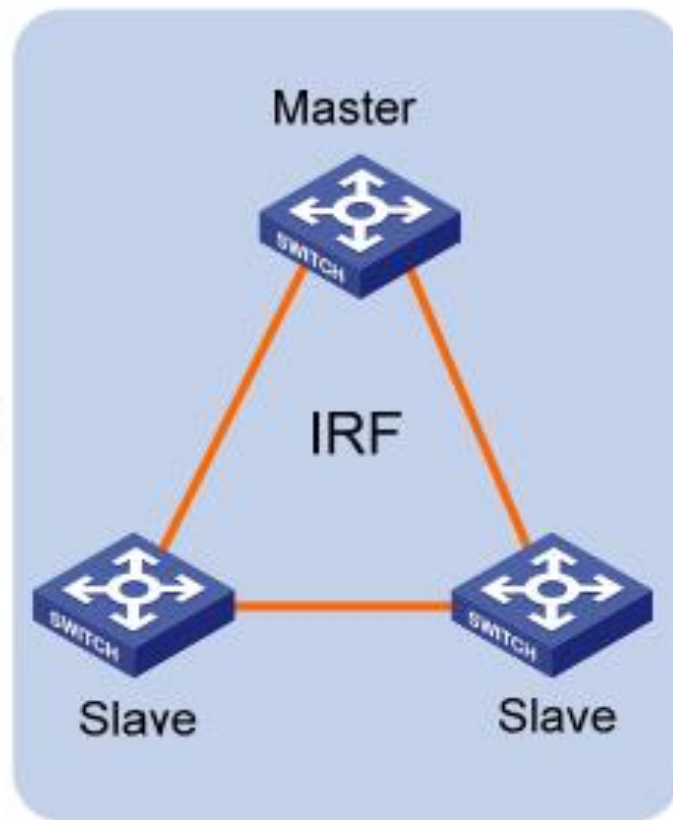
=



3com 4800G H3C 5500EI / 5800 環型



=



IRF Config(第1台)

- irf member 1 priority 32
- int Ten-GigabitEthernet1/0/25
- sh
- int Ten-GigabitEthernet1/0/26
- sh
- quit
- irf-port 1/1
- port group int Ten-GigabitEthernet 1/0/25
- irf-port 1/2
- port group int Ten-GigabitEthernet 1/0/26
- int Ten-GigabitEthernet1/0/25
- undo sh
- int Ten-GigabitEthernet1/0/26
- undo sh
- quit
- save
- y

IRF Config(第2台)

- irf member 1 renumber 2
- y
- quit
- Reboot
- Y
- int Ten-GigabitEthernet2/0/25
- sh
- int Ten-GigabitEthernet2/0/26
- sh
- quit
- irf-port 2/1
- port group int Ten-GigabitEthernet 2/0/25
- irf-port 2/2
- port group int Ten-GigabitEthernet 2/0/26

IRF Config (第2台)

```
int Ten-GigabitEthernet2/0/25
undo sh
int Ten-GigabitEthernet2/0/26
undo sh
quit
quit
save
y
```

驗證IRF運作狀況

■ Display irf

```
<CORE-A5800-1>display irf
Switch  Role    Priority  CPU-Mac      Description
*+1     Master    1        3822-d631-b22c  -----

* indicates the device is the master.
+ indicates the device through which the user logs in.

The Bridge MAC of the IRF is: 3822-d631-b228
Auto upgrade                : yes
Mac persistent               : 6 min
Domain ID                    : 0
```

Thanks