	種類	指令

General	**VTY&**
	Console&enable pwd
		VTY passwd
		Router(config)#line vty 0 4
		Router(config-line)#password password
		Router(config-line)#history size 35 (history buffer)
		Router(config-line)#exec time-out 60(六十秒不用就斷線)
		Router(config-line)#login
		使用 **ACL** 控制 **VTY** 連線
		Router (config)#access list 11 permit host 192.168.1.1
		Router(config)#line vty 0 4
		Switch(config-line)#**access-class** 11 in
		Console passwd
		Switch(config)#line console 0
		Switch(config-line)#password password
		Switch(config-line)#login
		Enable passwd
		Router(config)#enable password password
		Router(config)#enable secret password
		會在 **show run** 密碼加密
		Router(config)#service password-encryption（weak Cisco Type 7 encryption method）
		建立帳號 會產生 **local authentication database**
		Router(config)#username cm password ming
		Router (config)#line console 0
		Router (config-line)#login local
		使用 **SSH** 連線
		Router(config)#username cm password ming
		Router(config)#ip domain-name cisco.com
		Router(config)#crypto key generate rsa
		Router(config)#ip ssh version 2
		Router(config)#line vty 0 15
		Router(config-line)#login local
		Router(config-line)#transport input telnet ssh (只允許 telnet 連線到 vty)
		登入時顯示提示訊息
		Router(config)#banner motd # TEXT #
		Router(config)#banner login %TEXT %
		設定預設路由
		Router(config)#ip route 0.0.0.0 0.0.0.0
		logging synchronous
		In order to keep the unsolicited output separate from your input, enter line configuration mode for the consoled port and add the logging synchronous command,

	Backup &	R2#show version

	Upgrade	R2#show flash **下載新的 os** R2#copy tftp flash **指定下次開機檔案名稱，重新載入新的 os** R2(config)#boot system flash:/c1841-ipbasek9-mz.124-12.bin R2#copy running-config startup-config R2#reload **備份檔案到 tftp server** R2#copy flash tftp
	IOS image Recovery	**在 ROMMon 下設定 tftp IP** rommon 7 > IP_ADDRESS=192.168.1.2 (router ip) rommon 8 > IP_SUBNET_MASK=255.255.255.0 rommon 9 > DEFAULT_GATEWAY=192.168.1.1 rommon 10 > TFTP_SERVER=192.168.1.1(server ip) rommon 11 > TFTP_FILE=c1841-ipbasek9-mz.124-12.bin (iso filename) rommon 12 > tftpdnld(download) rommon 12 > reset(reload)
	Enable Password Recovery	**Router Password Recovery:** **Step1: 強迫進入 ROMMon** Press “Crtl+Break” on the terminal keyboard within 60 seconds of power up **Step2: Bypass Startup configure** rommon 1> confreg 0x2142 rommon 2 > reset **Step3: Access NVRAM configure file** R1#copy startup-config running-config **Step3: Reset Password** R1(config)# enable secret cisco R1(config)#config-register 0x2102 R1#copy running-config startup-config **Switch Password Recovery：** **Step1: 強迫進入 Flash 模式** 按下 switch 面板上的 mode 按鈕 會出現下列模式 **Switch:** 再執行 flash_init **Step2: 更改 config.text 名稱** Switch: rename flash:config.text flash:config.text.old 載入 os **Switch:boot** **Step3:複製** config.text.old config.text Switch#copy flash:config.text system:running-config 修改密碼後 存到 startup 重新開機 Switch#c**copy running-config startup-config**

		Switch#reload
		關閉 DNS name resolution no ip domain-lookup **殺掉 startup-config** #erase nvram: or #erase startup-config **default settings for Terminal Configuration** Bits Per Second = 9600 Data Bits = 8 Parity = None Stop Bits = 1 Flow Control = None
Switch	**Vlan**	**啓動 vlan** (config)#vlan 20 (config-vlan)#name student (config)#interface fa0/18 (config-if)#switchport mode access (config-if)#switchport access vlan 20 **啓動 trunk** (config)#interface fa0/1 (config-if)#switchport mode trunk **取消 vlan** (config)#interface fa0/18 (config-if)#no switchport access vlan **刪除 vlan** #no vlan 20 #delete flash:vlan.dat **查看 vlan** #show vlan brief #show vlan summary #show vlan vlan 20 #show interface vlan 20 #show interface trunk #show interface fa0/1 switchport **啓動 port security** S1-Central(config-if)#switchport mode access(一定要 access mode) S1-Central(config-if)#switchport port-security S1-Central(config-if)#switchport port-security mac-address 0000.0c9b.d2d8 S1-Central(config-if)#switchport port-security mac-address sticky S1-Central(config-if)# switchport port-security violation shutdown S1-Central#show port-security int fa0/24
	VTP	**啓動 VTP** (config)#vtp mode server (config)#vtp domain cisco

		(config)#vtp version (config)#vtp password xxxx **Reset Revisiom number(更改 domain 名稱後 再更改回來)** (config)#vtp domain **tesd** (config)#vtp domain **cisco** **查看 VTP** #show vtp status **啓動 pruning** (config)# vtp pruning
	SPT	**變更 switch 優先權(用來決定選舉 root bridge)** (config)#spanning-tree vlan 1 priority xxxxx (config)#spanning-tree vlan 1 root primary(second) **變更 port cost(用來決定最佳路徑到 root, root port)** (config)#interface fa0/1 (config-if)#spanng-tree cost 24 Pathcost 一樣時 比較 port priority (config-if)#spanng-tree port-priority 124 同一個 segment 的倆個 designate port, 比較各自 switch BID, BID 小的爲 designate port, 另外則爲 non-designate port **更換 spaning-tree 版本** S1(config)#spanning-tree mode rapid-pvst **查看 Spannig-Tree** #show spanning-tree #show spanning-tree summary **啓動 portfast** (config)#interface fa0/1 (config-if)#spanng-tree portfast #show run (查看 portfast)
	Router-on-a –Stick(Inter-Valn Rrouting)	**在 switch 端中 fa0/5 接到 router fa0**/1，此 port 設定 trunk S1(config-if)#interface fa0/5 S1(config-if)#switchport mode trunk **在 router 端中 fa0/1 設定 subinterface 來對定兩各 vlan** R1(config)#interface fa0/1.10 R1(config-subif)#encapsulation dot1Q **10(vlan id)** R1(config-subif)#ip address 172.17.10.1 255.255.255.0 R1(config-subif)#interface fa0/1.30 R1(config-subif)#encapsulation dot1Q 30 R1(config-subif)#ip address 172.17.30.1 255.255.255.0
Router	**RIP**	**啓動 RIP1** (config)# router rip (config-router)# network 172.16.1.16 **將此路由器的 default route 傳出**

		(config-router)#default-information originate 查看 **RIP** #show ip protocols 除錯 #debug ip rip #undebug all 停止 **fa0/0** 送出 **update** 訊息 (config)# router rip (config-if)# passive-interface fa0/0 停止某各網段位置 (config-if)# no network 192.168.4.0 限制傳送與接收的版本 Router1(config)#interface FastEthernet0/0 (Rip 傳送介面) Router1(config-if)# ip rip send version <1 | 2 | 1 2> Router1(config-if)# ip rip receive version <1 | 2 | 1 2> 停止 **rip** (config)#no router rip

	RIP2	啓動 **RIP2**
		R(config)# router rip
		R(config-router)#version 2
		R(config-router)# network 172.16.1.16
		加密傳送
		Router1(config)#key chain ORA
		Router1(config-keychain)#key 1
		Router1(config-keychain-key)#key-string oreilly
		Router1(config-keychain-key)#exit
		Router1(config)#interface FastEthernet0/0 (Rip 傳送介面)
		Router1(config-if)#ip rip authentication key-chain ORA
		Router1(config-if)#ip rip authentication mode text(or md5)
		Router1(config-if)#exit
		Router1(config)#end
		
		手動 **summarization**
		R3(config)#interface serial0/0/0
		R3(config-if)#ip summary-address rip 192.168.0.0 255.255.252.0
		
		更新路由協定的 **AD** 值
		R(config-router)#distance 200(內部) 100(外部)
		更新靜態路由的 **AD** 值
		R(config)#ip route 192.168.0.0 255.255.255.0 s0/0 **200**

	EIGRP	啓動 **EIGRP**
		R1(config)#router eigrp 1
		R1(config-router)# network 192.168.10.4 0.0.0.3(wildcard)

		R1(config-router)# network 192.168.11.1 0.0.0.0(只有這個界面參予 eigrp)
		
		設定頻寬
		R3(config)#interface serial0/0/1
		R1(config-if)#bandwidth 1024
		
		設定傳送佔用頻寬比
		Router1(config)#interface Serial0.1
		Router1(config-subif)#ip bandwidth-percent eigrp 55 40 (最高使用 40%)
		
		修改 **hello** 的傳送時間
		Router1(config)#interface Serial0.1
		Router1(config-subif)#ip hello-interval eigrp 55 3
		Router1(config-subif)#ip hold-time eigrp 55 9
		
		Add loopback addresses
		R3(config)#interface loopback1
		R3(config-if)#ip address 192.168.2.1 255.255.255.0
		
		將此路由器的 **default route** 傳出
		Redistribute static or ip default-network
		EIGRP 不支援 default-information originate
		
		關閉自動 **summarization**
		R1(config)#router eigrp 1
		R1(config-router)#no auto-summary
		
		手動 **summarization**
		R3(config)#interface serial0/0/0
		R3(config-if)#ip summary-address eigrp 1 192.168.0.0 255.255.252.0
		
		設定爲末端路由
		R1(config-router)# eigrp stub
		router# show ip eigrp neighbor detail
		
		過濾從 **Serial0/0** 進來的路由資訊
		Router2(config)#access-list 34 deny 192.168.30.0
		Router2(config)#access-list 34 permit any
		Router2(config)#router eigrp 55
		Router2(config-router)#distribute-list 34 in Serial0/0
		
		加密傳送
		設定鎖的名稱

		Router1(config)#key chain ORA 設定開鎖的第一把鑰匙 Router1(config-keychain)#key 1 Router1(config-keychain-key)#key-string rocket 設定可以開鎖的時間 Router1(config-keychain-key)#accept-lifetime 00:00:00 Jan 1 1993 00:15:00 Nov 1 2006 Router1(config-keychain-key)#send-lifetime 00:00:00 Jan 1 1993 00:00:00 Nov 1 2006 設定開鎖的第二把鑰匙 Router1(config-keychain-key)#key 2 Router1(config-keychain-key)#key-string martian 設定那個介面要使用 Router1(config)#interface Serial0/1 Router1(config-if)#ip authentication mode eigrp 55 md5 Router1(config-if)#ip authentication key-chain eigrp 55 ORA
	OSPF	啓動 **ospf** (config)# router ospf 1 (config-router)#network 172.16.1.16 0.0.0.15 area 0 查看 **ospf** #show ip protocols #show ip ospf neighbor #show ip ospf database #show ip ospf interface serial 0/0/0 用 **lookback 設定 router ID** (config)#interface lookback 0 (config-if)#ip add 10.1.1.1 255.255.255.255 直接設定 **router ID** R1(config)#router ospf 1 R1(config-router)#router-id 10.4.4.4 改變**ospf priority** Router(config-if)#ip ospf priority **DR and BDR election:** 1. compare with each router interface priority 2. compare with each router-id 將此路由器的 **default route** 傳出 (config-router)#default-information originate 重新啓動**OSPF** R1# **clear ip ospf process** 改變 **Metric** 值 (config)#interface serial 0/0 (config-if)#bandwidth 64 (config-if)#ip ospf cost 144

		一般加密傳送
		RTA(config)#router ospf 1
		RTA(config-router)#area 0 authentication
		RTA(config-router)#exit
		RTA(config)#int s0/1/0
		RTA(config-if)#ip ospf authentication-key cisco (cisco:passwd)
		Md5 加密傳送
		RTA(config)#router ospf 1
		RTA(config-router)#area 0 authentication message-digest
		RTA(config-router)#exit
		RTA(config)#int s0/1/0
		RTA(config-if)#ip ospf message-digest-key 10 md5 cisco (10: key-id, cisco:passwd)

	NAT SERVCIE	啓動 NAT SERVCIE 設定那些內部 IP 要使用 Internet R2(config)#ip access-list standard R2NAT R2(config-std-nacl)# permit 192.168.10.0 0.0.0.255 R2(config-std-nacl)# permit 192.168.20.0 0.0.0.255 R2(config-std-nacl)# permit 192.168.30.0 0.0.0.255 設定可用合法 IP 範圍 R2(config)#ip nat pool R2POOL 209.165.202.128 209.165.202.130 netmask 255.255.255.252 設定 static Nat R2(config)#ip nat inside source static 192.168.20.254 209.165.202.131 對應內部 IP 與合法 IP R2(config)#ip nat inside source list R2NAT pool R2POOL overload 對內的 Interface 設定 inside R2(config-if)#int s0/0/1 R2(config-if)#ip nat inside 對外的 Interface 設定 outside R2(config-if)#int s0/1/0 R2(config-if)#ip nat outside 查看 NAT 狀況 R2#show ip nat statistics R2#show ip nat translationis
	DHCP Service	啓動 DHCP Service 排除不被分配的 IP R1(config)#ip dhcp excluded-address 192.168.10.1 192.168.10.9 設定要分配的 IP 範圍 R1(config)#ip dhcp pool R1LAN R1(dhcp-config)#network 192.168.10.0 255.255.255.0 R1(dhcp-config)#default-router 192.168.10.1

		R1(dhcp-config)#dns-server 192.168.20.254 R1(dhcp-config)#domain-name span.com 查看目前 IP 分配狀況 R1#show ip dhcp binding R1#show ip dhcp server statistics

WAN	**ACL**	利用數字方式啓動 **Standard ACL**
		R1(config)#access-list 10 deny 192.168.10.0 0.0.0.255(wildcard)
		R1(config)#interface fa0/1
		R1(config-if)#ip access-group 10 out/in
		利用命名方式啓動 **Standard ACL**
		R3(config)#ip access-list standard NO_ACCESS(naming)
		R3(config-std-nacl)#deny host 192.168.30.128
		R3(config)#interface fa0/0
		R3(config-if)#**ip** access-group NO_ACCESS in/out
		利用數字方式啓動 **Extended ACL**
		R1(config)#access-list 110 deny tcp 192.168.10.0 0.0.0.255 any eq telnet
		R1(config)#access-list 110 permit ip any any
		R1(config)#interface fa0/0
		R1(config-if)#ip access-group 110 in
		利用命名方式啓動 **Extended ACL**
		R2(config)#ip access-list extended FIREWALL
		R2(config-ext-nacl)#permit tcp any host 192.168.20.254 eq www
		R2(config-ext-nacl)#permit tcp any any established (任何 tcp 的連線)
		R2(config-ext-nacl)#permit icmp any any echo-reply(任何 ping)
		R2(config-if)#ip access-group FIREWALL in
		加入註解
		R1(config)#access-list 110 **Remark** permit ip any any
		Or
		R2(config)#ip access-list extended FIREWALL
		R2(config-ext-nacl)#**Remark** permit tcp any host 192.168.20.254 eq www
		Support Establish Traffic
		R1(config)#access-list 101 permit tcp any any established
		R1(config)#access-list 101 permit icmp any any echo-reply
		R1(config)#access-list 101 permit icmp any any unreachable
		ACL Time-Range
		R2(config)#time-range xxxx
		R2(config- time-range)#periodic Monday Friday 8:00 to 17:00
		R1(config)#access-list 110 permit ip any any time-range xxxx
		Reflexive Access-Lists(You MUST use named access lists)
		interface Serial0/0/0
		description Internet connection
		ip access-group INBOUND in
		ip access-group OUTBOUND out

		ip access-list extended OUTBOUND permit tcp host 122.22.22.1 any **reflect** PROXYTCP permit udp host 122.22.22.1 any eq domain **reflect** PROXYUDP ip access-list extended INBOUND **evaluate** PROXYTCP **evaluate** PROXYUDP !查看 **ACL** 內容 #show access-lists
	HDCL	**EnableHDLC Encapsulation** (config)#interface serial 0/0 (config-if)# encapsulation hdlc
	PPP	**Enable ppp Encapsulation** (config)#interface serial 0/0 (config-if)# encapsulation ppp (config-if)# compress (啓動軟體壓縮 會影響效能) (config-if)# ppp quality 80(LQM 監控傳輸效能 低於 80%就關閉連線) (config-if)# ppp multilink（啓動多個連線傳輸） 設定 **PAP(R1 and R2, R2 也一樣設定)** R1(config)#username R2 password cisco123 R1(config)#interface s0/0/0 R1(config-if)#encapsulation ppp R1(config-if)#ppp authentication pap R1(config-if)#ppp pap sent-username R1 password cisco123 設定 **CHAP（R3 and R2, R2 也一樣設定）** R3(config)#username R2 password cisco123 R3(config)#interface s0/0/1 R3(config-if)#encapsulation ppp R3(config-if)#ppp authentication chap
	Frame-relay	**Enable Frame-Relay Encapsulation(R1-R2)** R1(config)#interface serial0/0/0 R1(config-if)#encapsulation frame-relay R1(config-if)#frame-relay map ip 10.10.10.2**(R2)** 102**(DLCI)** broadcast R1(config-if)#frame-relay lmi-type ansi 查看 **frame-relay ip mapping** #show frame-relay map #show frame-relay lmi #show frame-relay pvc 另一種 **Frame-relay 封裝 IETF** R2(config-if)#encapsulation frame-relay ietf