

Linux子網域分割之設定與觀察

VirtualBox複製硬碟

- 複製硬碟

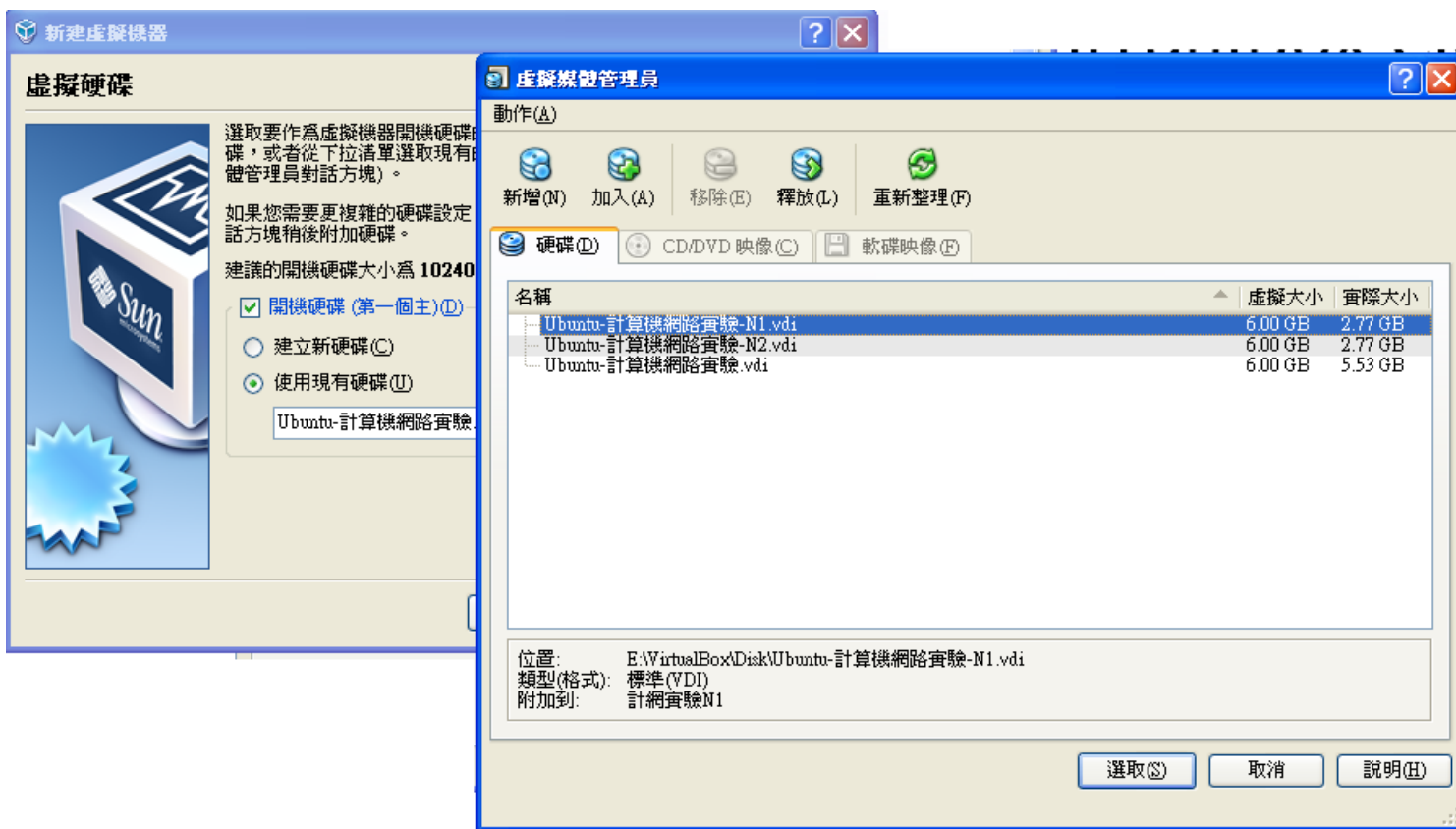


- 更改硬碟UUID

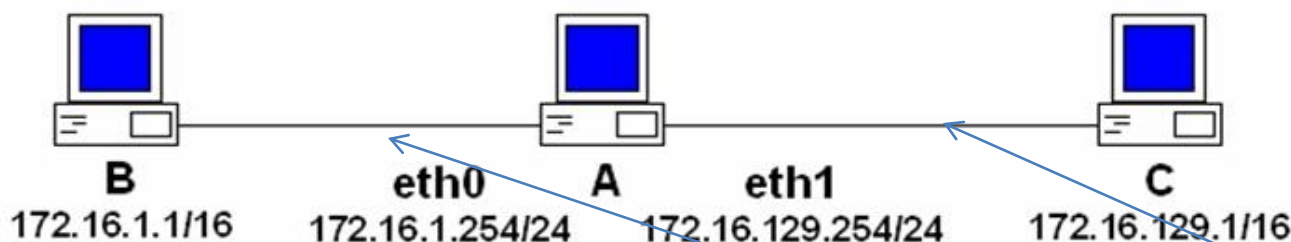
- VBoxManage.exe internalcommands setvdiuuid X.vdi

建立複製版VM

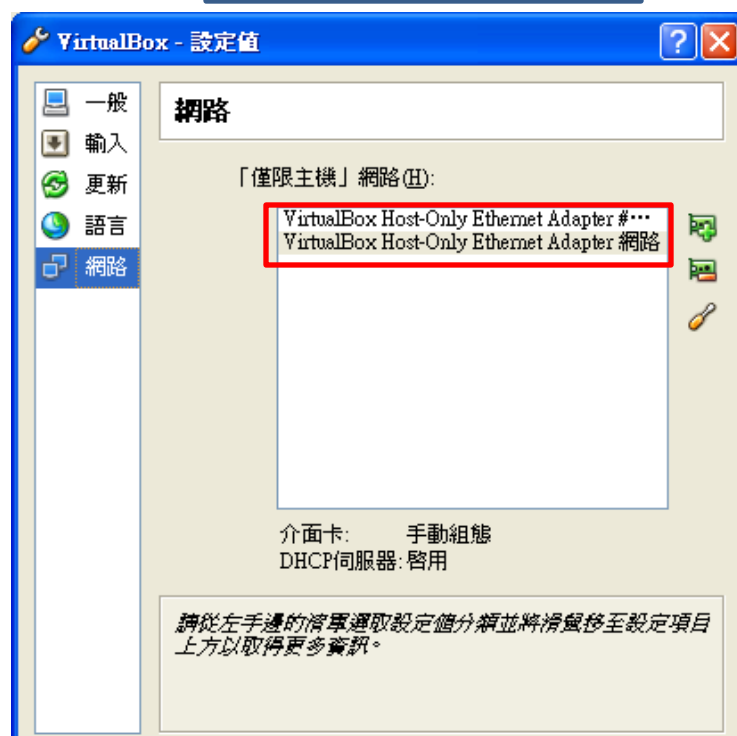
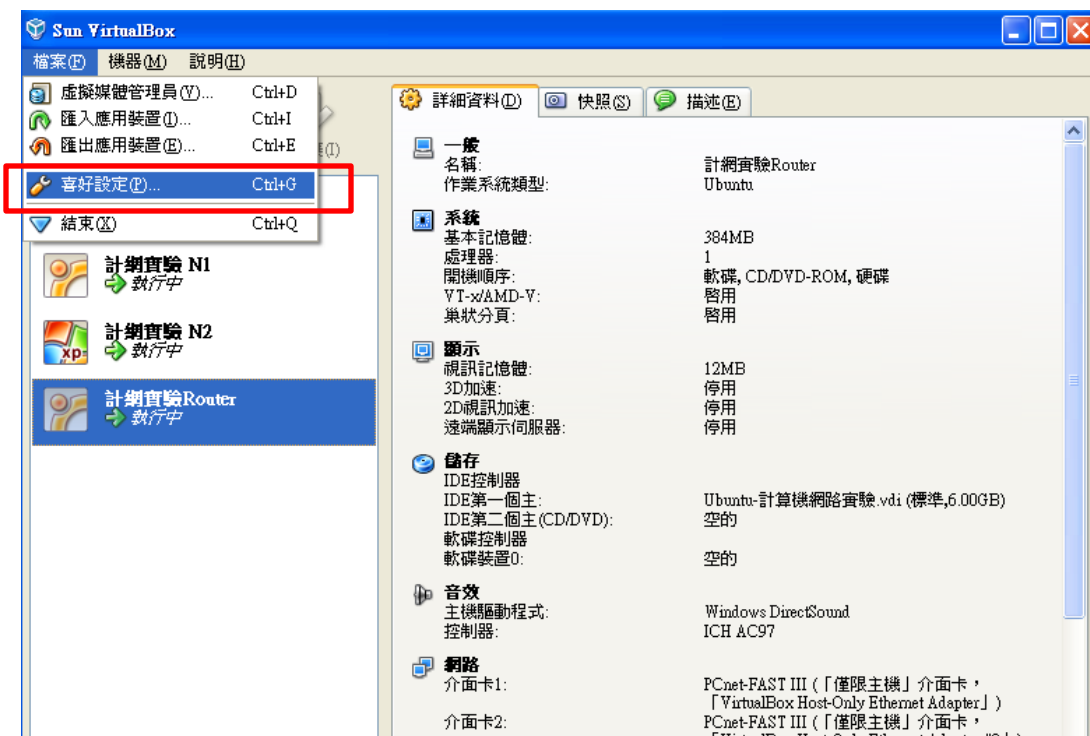
- Create Virtual Box 並指定新的硬碟



VirtualBox 建立內部網路

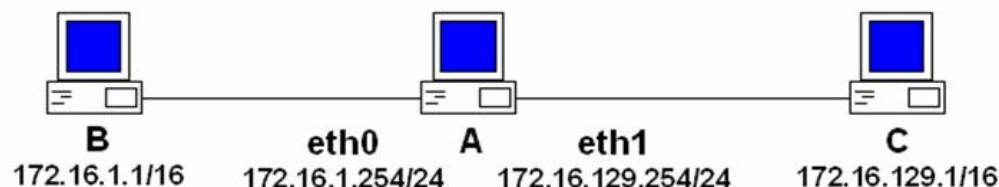


新增兩個內部網路



VM 網路設定

- 電腦A(Router) 使用兩張接面卡 分別加到建出的網路
- 電腦B 與 電腦C 分別加入其中一個內部網路



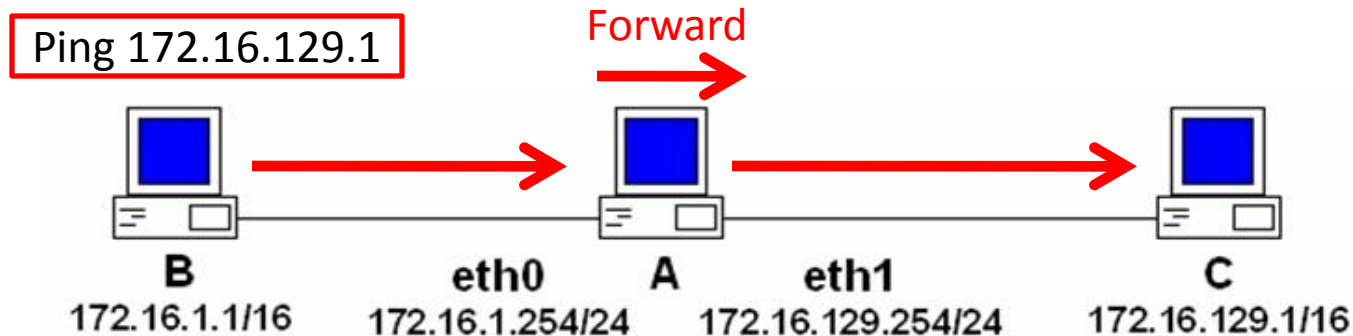
tcpdump

- 需使用root權限
- 常用options
 - [-i] 指定介面卡
 - [-c num] 接收固定數量
 - [-w/-r file_name] 儲存/讀取檔案
 - [-e] 顯示MAC資訊
 - [-n] 不做IP到 domain name轉換

```
root@tony-desktop:/root# tcpdump -n
tcpdump: verbose output suppressed, use -v or -vv for full protocol decode
listening on eth1, link-type EN10MB (Ethernet), capture size 96 bytes
17:36:24.918479 IP 172.16.225.1 > 172.16.255.1: ICMP echo request, id 6459, seq 1, length 64
17:36:24.918911 IP 172.16.255.1 > 172.16.225.1: ICMP echo reply, id 6459, seq 1, length 64
```

- *Reference*
 - TCPDUMP/LIBPCAP public repository <http://www.tcpdump.org/>
 - 鳥哥的Linux 私房菜-- Linux 常用網路指令介紹
http://linux.vbird.org/linux_server/0140networkcommand.php

實驗一 (Proxy-ARP)



Net Mask 255.255.0.0

Subnet 172.16.0.0

eth0:

ARP proxy for C

Forward packets from B to C

- More Reference

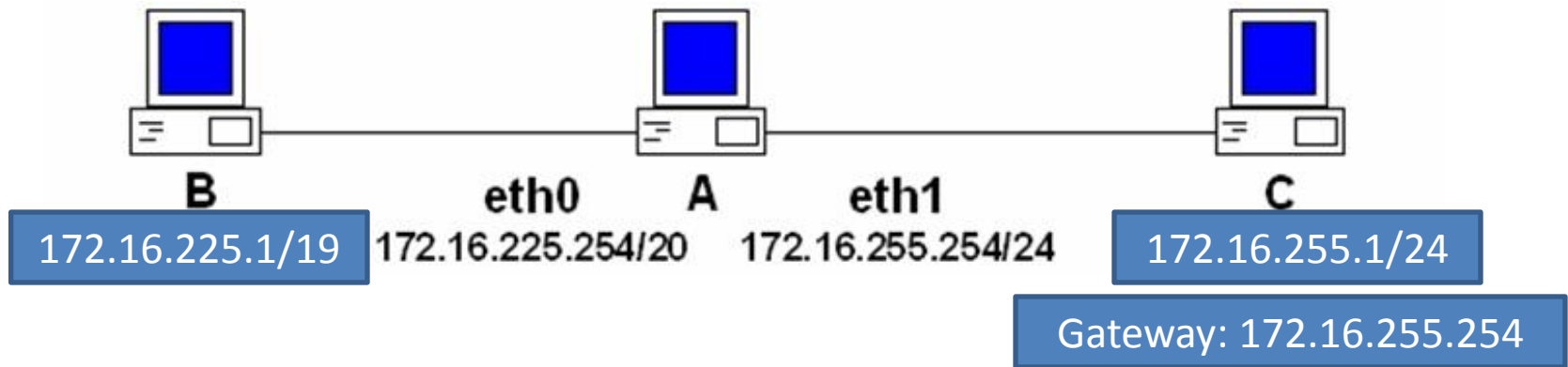
- Proxy ARP with Linux

<http://www.sjdjweis.com/linux/proxyarp/>

- 路由器 Router 設定

http://linux.vbird.org/linux_server/0230router.php

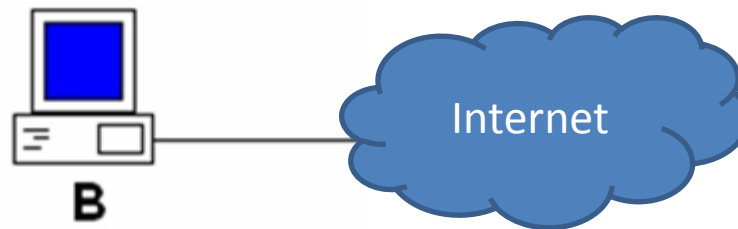
實驗二 (Routing functions)



- Kernel functions
 - 請參考lab 3 (課本第45頁)的表格
 - 封包經過Linux 路由器的繞送分析
<http://speed.cis.nctu.edu.tw/~ydlin/pdf/sidebar/Buzz-ProfileLinuxRouter.pdf>
 - fn_hash_lookup()
 - lp_route_input()
- 由電腦 C ping 電腦 B
- 根據log指出封包在Kernel大略流程

實驗三 (廣播封包)

Ping broadcast address



- 使用tcpdump 觀察 ARP packet & ICMP Reply
- ifconfig

```
root@tony-desktop-t: /tmp
-bash: ifconfigi: command not found
root@tony-desktop-t:/tmp# ifconfigi
-bash: ifconfigi: command not found
root@tony-desktop-t:/tmp# ifconfig
eth0      Link encap:Ethernet  HWaddr 
          inet addr:140.113.88.197  Bcast:140.113.88.255  Mask:255.255.255.0
          inet6 addr: fe80::20e:a6ff:fe08:11d8/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:446870 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2745 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:46274002 (46.2 MB)  TX bytes:961183 (961.1 KB)
          Interrupt:22
```