Computer Network

Useful stuff?

IPV4 Addresses

In the original IPV4 scheme, there are 5 classes for IP addresses. NA= Network address, HA = host address. NA = 0 implies local network, HA = 0 implies broadcast, HA = 1 usually for gateways (router @ interface address).

1. **CLASS A** Format: 1-bit ID [0] | 7-bit NA | 3-byte HA ; Range: 1.x.x.x - 126.x.x.x (0.x.x.x & 127.x.x.x reserved) ; Net-Mask: 255.0.0.0
2. **CLASS B** Format: 2-bit ID [10] | 14-bit NA | 2-byte HA ; Range: 128.x.x.x - 191.x.x.x ; Net-Mask: 255.255.0.0
3. **CLASS C** Format: 3-bit ID [110] | 21-bit NA | 1-byte HA ; Range: 192.x.x.x - 223.x.x.x ; Net-Mask: 255.255.255.0
4. **CLASS D** Format: 4-bit ID [1110] | 28-bit multicast address
5. **CLASS E** Format: 5-bit ID [11110] | 27-bit reserved
6. **Private Net Addresses (RFC1918)** Range1: 10.0.0.0 - 10.255.255.255 ; Range2: 172.16.0.0 - 172.31.255.255 ; Range3: 192.168.0.0 - 192.168.255.255

Subnet Mask is a method used to obtain more network groups from existing classes. HA is masked with a *subnet mask* and used as NA.

In the newer IPv4 implementation, masks are no longer fixed - classes are no longer used to define a network. IPV4 notation takes the form of x.x.x.x/y where x is an 8-bit number and y gives the number of bits used to mask out the network address.

IPV6 Addresses

Dumped...

ipv6.txt

```
ipv6:
- fe80 is private net
- 2xxx or 3xxx is global unicast address (GUA)! (e.g. 2001)

https://test-ipv6.com/
```

Cisco Stuff

My experience configuring cisco device(s). I'm just dumping my text notes for now... will try to make this prettier some other time 😎

Status: At the moment, my DHCP server on 1841 is running and correctly providing machines on my switch with proper IPs. NAT works.

Cisco 1841 Router

I want to setup a LAN in my lab so that I can have a central login server for all Windows machines. One interface on the 1841 will be for LAN, while the other will be connected to Uni's network.

cisco-1841_config.txt

```
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general info
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- note that default hostname for device is 'Router'
- basic prompt is {hostname}>
- privileged prompt is {hostname}#

- to reset configuration, reboot and send break within 60 seconds?
  = on minicom, hit ctrl+a-f
  = should get rommon console (i.e. rommon {1-based index}>)
- configure router to bypass configuration
  = type 'confreg 0x2142'
  = type 'reset'
- configure router to use configuration
  = type 'confreg 0x2102'
  = type 'reset'

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configuring cisco 1841 router
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- pc serial port connect to rj45 console port on 1841
  = need usb2serial for most pc nowadays
  = need an rj45-rs232 cable!
- i use minicom on slackware
  = use 9600 8n1 with no flow control
- start router, skip all wizards/auto-config
  = should get 'Router>' prompt
  = type <command> ? for specific help
```

```
  = typing help will tell you this :p
- type 'enable' to get to global config privileged mode
  = should get 'Router#' prompt

* configure basics
- type 'conf t' to start configuring
  = shortcut for 'configure terminal'
- configurations:
  = no ip domain lookup
    - this disables domain lookup (do not use dns)
  = no logging console
    - this disables log messages display on console
  = hostname my1841
    - changes router hostname (prompt should reflect)
  = enable secret 0 my1pass
    - default level is 5? but the command above still sets 5
    - tested 20161208: show running-config | include enable
    - maybe add keyword level before 0?
  = service password-encryption
    - enables password enryption (on clear text? not needed for
secret?)
- type 'exit' in config-mode then write

* configure wan & lan ports
- type 'conf t' to start
- configurations:
  = interface fas0/0
    - prompt appended with (config-if)
    - configuring fast ethernet port 0
  = description WAN_LINK
    - just a label
  = ip address dhcp client-id FastEthernet0/0
    - set to be dhcp client
  = no shut
  = exit
    - get back to global config
  = interface fas0/1
    - configuring fast ethernet port 1
  = description LAN_LINK
  = ip address 192.168.100.1 255.255.255.0
    - set private local ip
  = no shut
  = exit
    - get back to global config
- type 'exit' in config-mode then write

* configure dhcp for lan
- type 'conf t' to start
- configurations:
  = ip dhcp pool my1dhcp
    - prompt appended with (dhcp-config)
```

```
  = network 192.168.100.0 255.255.255.0
  = default-router 192.168.100.1
  = dns-server 8.8.8.8
  = exit
    - get back to global config
  = ip dhcp excluded-address 192.168.100.1 192.168.100.9
    - 'reserve' these for network management
- type 'exit' in config-mode then write

* configure gui http server
- type 'conf t' to start
- configurations:
  = username admin privilege 15 password check
  = ip http server
  = ip http secure-server
  = ip http authentication local
- type 'exit' in config-mode then write

* link wan & lan using nat (NOT TESTED!)
- type 'conf t' to start
- configurations:
  = interface fas0/0
  = ip nat outside
  = exit
  = interface fas0/1
  = ip nat inside
  = exit
  = access-list 100 permit ip any any
    - simple access-list - just allow everything
  = ip nat inside source list 100 interface fas0/0
    - anything sourced from ACL 100 is permitted
    - outside interface (FastEthernet 0/0) is the port for PAT
- type 'exit' in config-mode then write
```

Cisco 3560 Switch

This switch actually have a layer 3 implementation (well, provided you get the correct software image) that enables routing.

I just need a simple switch configuration for now.

cisco_3560_config.txt

```
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general info
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```

```
- note that default hostname for device is 'Switch'
- basic prompt is {hostname}>
- privileged prompt is {hostname}#

* to reset
- delete flash:vlan.dat
- erase startup-config
- reload
  = do not save anything if prompted

* to check flash content
- dir flash:

* show 'show' options
- show ?

* to check boot settings
- show boot
(configure boot system)
- boot system flash: (???)

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configuring cisco 3560 switch
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* configure basics
- to start configuring
  # configure terminal
- change hostname to 'my3560'
  # hostname my3560
- set password 'my1pass' to enable
  # enable secret my1pass
- exit config-mode
  # exit
- write/save config
  # write
```

***Note**: The default 'factory' image should be `c3560-ipbase-mz.122-53.SE/c3560-ipbase-mz.122-53.SE.bin`, but the one I got has `c3560-advipservicesk9-mz.122-37.SE.bin`. I guess this is the image that provides layer 3 stuffs.*

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