WSWT Revision
Semester 1, 2014
Dushan Karovich-Wynne

Subnetting

Internet Protocol addresses are used for routing traffic on the internet.
IPv4 addresses are 32 bit numbers commonly represented by four octets.
Each octet can have 256 possible values (0 – 255)
EG: 192.168.100.100

There are several classes of IP address, one way we can determine the class is by looking at the range it falls into.

Class	Start	End	Mask
A	0.0.0.0	127.255.255.255	255.0.0.0
B	128.0.0.0	191.255.255.255	255.255.0.0
C	192.0.0.0	223.255.255.255	255.255.255.0

There is also a Class D and E, but we won't worry about those since they exist for special reasons.

You will notice there is a subnet mask, this defines the size of the network. What this actually means is how many unique host addresses we can have

Let's use a Class C for our example

Network: 192.168.100.0
Subnet Mask: 255.255.255.0

What this means is that the first three octets define the network.
And the last one defines the hosts

So this network can uniquely address 254 hosts

Wait... Shouldn't it be 256 hosts?

No, the first address is special, it is the network address (192.168.100.0)
The last address is also special, it is the broadcast address (192.168.100.255)

Something I want you to look into in your own time is “IPv4 Address Waste”.
It is important as part of the reason we subnet is to minimise this.

So what if we get given a class C network by our internet provider but we want to separate it into smaller networks?

We Subnet... Which I will now demonstrate on the white board.
(If we don’t have time, watch this video instead)

https://www.youtube.com/watch?v=AJPZxXwOc-4

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Revision

You've spent a lot of time configuring Apache for your assignment, so it should be fresh in your mind, you know how to configure Virtual Hosts, the basic Apache directives, how to configure various authentication schemes and how to configure some common modules.

What I suggest you revise for the exam are the following areas:

DISCLAIMER: I do not have access to the exam, I do not know what will be on the exam, this is my advice based on my experience teaching this course.

Tute Sheet 1 and 2:

- Layer 2 (MAC) and Layer 3 (IP) addresses
- DNS (forward and reverse lookups)

Tute Sheet 4:

- What is HTTP
- HTTP Requests and Responses (headers)
- HTTP Codes (200 class, 300 class, 400 class, 500 class)

Tute Sheet 7:

- How SSL works and why we need it, what are the issues it solves
- Symmetric Key Cryptography
- Public Key Cryptography
- Hashing Functions/Message Digests and Digital Signatures/Certificates
- SSL Handshake
- Certificate Authorities (understand the trust issue too)

Tute Sheet 10:

- All caching algorithms mentioned in this sheet