GENERALITAT VALENCIANA
Conselleria d'Educació, Cultura i Esport
ceedcv CENTRE ESPECÍFIC D'EDUCACIÓ A DISTÀNCIA DE LA COMUNITAT VALENCIANA

UT09 Network Architecture and Components

Computer Systems

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Cicles Formatius

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EXERCISE ONE 1

Given the next IP addresses, fill up the next information about them:

- 191.168.1.55

  CLASS: _____

	BYTE 1	BYTE 2	BYTE 3	BYTE 4
NETWORK ADDRESS:	10111111	10101000	00000001	00110111
MASK:	11111111	11111111	00000000	00000000

  SLASH FORMAT MASK: /16

- 172.22.156.32

  CLASS: B

	BYTE 1	BYTE 2	BYTE 3	BYTE 4
NETWORK ADDRESS:	10101100	00010110	10011100	00100000
MASK:	11111111	11111111	00000000	00000000

  SLASH FORMAT MASK: /16

- 10.240.20.10

  CLASS: A

	BYTE 1	BYTE 2	BYTE 3	BYTE 4
NETWORK ADDRESS:	~~10101100~~	~~00010110~~	~~10011100~~	~~00100000~~
MASK:	~~11111111~~	~~11111111~~	~~00000000~~	~~00000000~~

  SLASH FORMAT MASK: /8

EXERCISE 2

Given the network ip address 192.168.0 first divide it in 2 subnets and then in 4. Take into account that the mask is the one of its class. For each subnet define:

- First network addresss with mask.
- First host.
- Last host.
- Broadcast address.
- Maximum nuber of host per network.

Dividing the network into two subnets

	SUBNET 1	SUBNET 2
NETWORK ADDRESS	192.168.20.0 / 25	192.168.20.128 / 25
MASK	255.255.255.128	255.255.255.128
FIRST HOST	192.168.20.1	192.168.20.129
LAST HOST	192.168.20.126	192.168.20.254
BROADCAST ADDRESS	192.168.20.127	192.168.20.255
MAXIMUM DEVICES	126	126

Dividing the network into 4 subnets

	SUBNET 1	SUBNET 2	SUBNET 3	SUBNET 4
NETWORK ADDRESS	192.168.20.0 / 26	192.168.20.64 / 26	192.168.20.128 / 26	192.168.20.192 / 26
MASK	255.255.255.192	255.255.255.192	255.255.255.192	255.255.255.192
FIRST HOST	192.168.20.1	192.168.20.65	192.168.20.129	192.168.20.193
LAST HOST	192.168.20.62	192.168.20.126	192.168.20.190	192.168.20.254
BROADCAST ADDRESS	192.168.20.63	192.168.20.127	192.168.20.191	192.168.20.255
MAXIMUM DEVICES	62	62	62	62

EXERCISE 3

Given the network address 202.127.20.0, first divide it in 2 subnets and then in 4.Take into account that the mask is the one of its class. For each subnet define:

- First network addresss with mask.
- First host.
- Last host.
- Broadcast address.
- Maximum nuber of host per network.

Dividing the network into two subnets

	SUBNET 1	SUBNET 2
NETWORK ADDRESS	202.127.20.0 / 25	202.127.20.128 / 25
MASK	255.255.255.128	255.255.255.128
FIRST HOST	202.127.20.1	202.127.20.129
LAST HOST	202.127.20.126	202.127.20.254
BROADCAST ADDRESS	202.127.20.127	202.127.20.255
MAXIMUM DEVICES	126	126

Dividing the network into 4 subnets

	SUBNET 1	SUBNET 2	SUBNET 3	SUBNET 4
NETWORK ADDRESS	202.127.20.0 / 26	202.127.20.64 / 26	202.127.20.128 / 26	202.127.20.192 / 26
MASK	255.255.255.192	255.255.255.192	255.255.255.192	255.255.255.192
FIRST HOST	202.127.20.1	202.127.20.65	202.127.20.129	202.127.20.193
LAST HOST	202.127.20.62	202.127.20.126	202.127.20.190	202.127.20.254
BROADCAST ADDRESS	202.127.20.63	202.127.20.127	202.127.20.191	202.127.20.255
MAXIMUM DEVICES	62	62	62	62

EXERCISE 4

Given the network address 10.20.20.26/24, first divide it in 2 subnets and then in 4. For each subnet define:

- First network addresss with mask.
- First host.
- Last host.
- Broadcast address.

Maximum nuber of host per network.

Dividing the network into two subnets

	SUBNET 1	SUBNET 2
NETWORK ADDRESS	10.20.20.0 / 25	10.20.20.128 / 25
MASK	255.255.255.128	255.255.255.128
FIRST HOST	10.20.20.1	10.20.20.129
LAST HOST	10.20.20.126	10.20.20.254
BROADCAST ADDRESS	10.20.20.127	10.20.20.255
MAXIMUM DEVICES	126	126

Dividing the network into 4 subnets

	SUBNET 1	SUBNET 2	SUBNET 3	SUBNET 4
NETWORK ADDRESS	10.20.20.0 / 26	10.20.20.64 / 26	10.20.20.128 / 26	10.20.20.192 / 26
MASK	255.255.255.192	255.255.255.192	255.255.255.192	255.255.255.192
FIRST HOST	10.20.20.1	10.20.20.65	10.20.20.129	10.20.20.193
LAST HOST	10.20.20.62	10.20.20.126	10.20.20.190	10.20.20.254
BROADCAST ADDRESS	10.20.20.63	10.20.20.127	10.20.20.191	10.20.20.255
MAXIMUM DEVICES	62	62	62	62