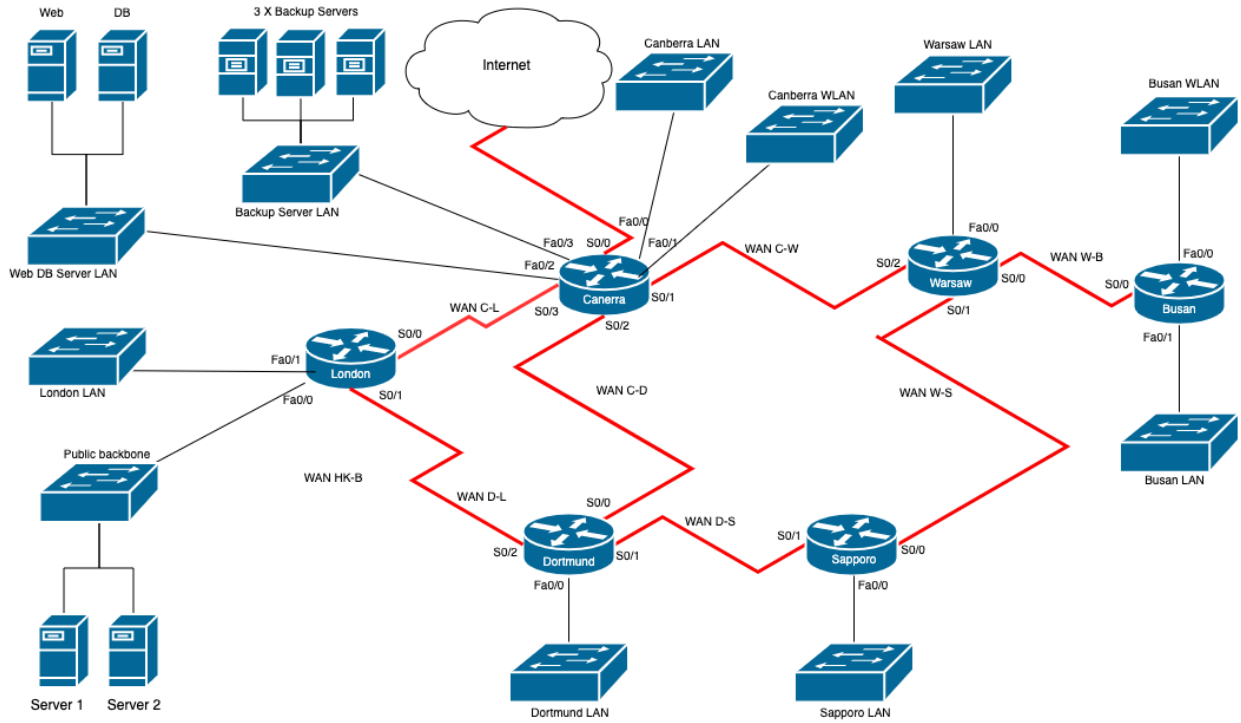
CP1402 Assignment - Networking Case Study

Scenario

myNetwork Services Inc., an Australian data analytics company, has asked you to assess and redesign their network. They are opening a new branch in Adelaide, which will require new equipment. They have existing contracts and hardware to maintain fibre-optic leased line WAN links between sites.

PART 1 - Network diagram



PART 2 - Subnet the network and assign IP addresses to the appropriate devices

Each location has the following number of hosts

Sapporo, London, Warsaw, and Dortmund each include a wireless LAN for clients to use.

Location	Workstations	WLAN addresses
Canberra	480	110
Busan	55	12
Sapporo	64	
London	85	
Warsaw	22	
Dortmund	30	

Subnetting

Use VLSM to subnet the network topology using a public class B network. You are to use the table format below to provide the subnet details.

Table 1. Subnets (including WAN subnets)

Spreadsheet Columns: Subnet name, subnet address, subnet mask (in slash format), first useable address, last useable address, broadcast address, static address range and DHCP address range (all addresses to be in dotted decimal notation)

Subnet	Hosts	Subnet Size	Number of Host Bits Required	Subnet address	Subnet mask	First useable address	Last useable address	Broadcast address	Static address range	DHCP address range
Canberra LAN	480	512	9	169.100.16.0/23	/23	169.100.16.1	169.100.17.254	169.100.17.255		
Canberra WLAN	110	128	7	169.100.18.0/25	/25	169.100.18.1	169.100.18.126	169.100.18.127		
London LAN	85	128	7	169.100.18.128/25	/25	169.100.18.129	169.100.18.254	169.100.18.255		
Sapporo LAN	64	128	7	169.100.19.0/25	/25	169.100.19.1	169.100.19.126	169.100.19.127		
Busan LAN	55	64	6	169.100.19.128/26	/26	169.100.19.129	169.100.19.190	169.100.19.191		
Dortmund	30	32	5	169.`100.19.192/27	/27	169.100.19.193	169.100.19.222	169.100.19.223		
Warsaw LAN	22	32	5	169.100.19.224/27	/27	169.100.19.225	169.100.19.254	169.100.19.255		
Busan WLAN	12	16	4	169.100.20.0/28	/28	169.100.20.1	169.100.20.14	169.100.20.15		
Canberra Backup Server LAN	3	8	3	169.100.20.16/29	/29	169.100.20.17	169.100.20.22	169.100.20.23		
WAN C-W	2	4	2	169.100.20.24/30	/30	169.100.20.25	169.100.20.26	169.100.20.27		
WAN C-D	2	4	2	169.100.20.28/30	/30	169.100.20.29	169.100.20.30	169.100.20.31		
WAN C-L	2	4	2	169.100.20.32/30	/30	169.100.20.33	169.100.20.34	169.100.20.35		
WAN W-B	2	4	2	169.100.20.36/30	/30	169.100.20.37	169.100.20.38	169.100.20.39		

WAN W-S	2	4	2	169.100.20.40/30	/30	169.100.20.41	169.100.20.42	169.100.20.43		
WAN D-S	2	4	2	169.100.20.44/30	/30	169.100.20.45	169.100.20.46	169.100.20.47		
WAN D-L	2	4	2	169.100.20.48/30	/30	169.100.20.49	169.100.20.50	169.100.20.51		
Canberra Web Server LAN	1	4	2	169.100.20.52/30	/30	169.100.20.53	169.100.20.54	169.100.20.55		
Canberra DB Server LAN	1	4	2	169.100.20.56/30	/30	169.100.20.57	169.100.20.58	169.100.20.59		
London Server 1	1	4	2	169.100.20.60/30	/30	169.100.20.61	169.100.20.62	169.100.20.63		
London Server 2	1	4	2	169.100.20.64/30	/30	169.100.20.65	169.100.20.66	169.100.20.67		

Table 2. Router Interfaces

Spreadsheet Columns: Location, interface, IP address, subnet mask (in slash format)

Location	Interface	IP address	Subnet mask
Canberra	Fa0/0	169.100.16.1	/23
	Fa0/1	169.100.18.1	/25
	Fa0/2	169.100.20.53	/30
	Fa0/3	169.100.20.17	/29
	S0/0		
	S0/1	169.100.20.25	/30
	S0/2	169.100.20.29	/30
	S0/3	169.100.20.33	/30
London	Fa0/0	169.100.20.61	/30
	Fa0/1	169.100.18.129	/25
	S0/0	169.100.20.34	/30
	S0/1	169.100.20.49	/30
Sapporo	Fa0/0	169.100.19.1	/25

	S0/0	169.100.20.41	/30
	S0/1	169.100.20.46	/30
Busan	Fa0/0	169.100.20.1	/28
	Fa0/1	169.100.19.129	/26
	S0/0	169.100.20.37	/30
Dortmund	Fa0/0	169.100.19.193	/27
	S0/0	169.100.20.30	/30
	S0/1	169.100.20.45	/30
	S0/2	169.100.20.50	/30
Warsaw	Fa0/0	169.100.19.225	/27
	S0/0	169.100.20.38	/30
	S0/1	169.100.20.42	/30
	S0/2	169.100.20.26	/30

Table 3. Servers

Spreadsheet Columns: Location, server name, IP address, subnet mask (in slash format)

Location	Server name	IP address	Subnet mask
Canberra	Web Server	169.100.20.53	/30
	DB Server	169.100.20.57	/30
	Backup Server 1	169.100.20.17	/29

	Backup Server 2	169.100.20.18	/29
	Backup Server 3	169.100.20.19	/29
London	Server 1	169.100.20.61	/30
	Server 2	169.100.20.65	/30

Part 3

Requirement	Cost	Port	Speed	Manageable	Total Weighted Score
Description	<$500	>10	>1000Mbps	yes/no	
Weight	**5**	**5**	**2**	**0**	
Score - TP-Link AX6600	6	3	4	0	53
Score - GL.iNet GL-AR750	6	5	4	0	63
Score - ASUS 4G-AX56 Cat.6	4	4	6	0	52
Score - TP-Link AX72	4	5	4	0	53

AX5400					

Requirement	Cost1	Port	Speed	Manageable	Total Weighted Score
Description	<$1000	>100	>1000Mbps	yes/no	
Weight	**5**	**3**	**5**	0	
Score - Aruba Instant On 1930	6	4	6	0	72
Score - USW-48-POE Ubiquiti	4	4	6	0	62
Score - NETGEAR 48-Port Gigabit	6	4	4	0	62
Score - NETGEAR (GS348)	4	6	6	0	68

Requirement	Cost1	Port	Speed	Manageable	Total Weighted Score
Description	<$200	/	>1000Mbps	yes/no	
Weight	**5**	**0**	**5**	0	
Score - NETGEAR WAX214	4	0	6	0	50
Score - Ubiquiti UniFi AP AC PRO	6	0	4	0	50
Score - TP-Link EAP610	6	0	6	0	60
Score - TP-Link AC1750	6	0	6	0	60