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Case Study CCNA 2

For the required network the ABC Research Company provided a logical diagram which was partly completed. We used packet tracer to simulate the provided networking equipment. And since packet tracer can'ät actually connect to the internet we used a loopback to simulate those kind of requests. The address used for the loopback is 62.20.224.53, this was successfully pinged from all networks.

The devices have all been configured with the RIPv2 and all subnets are advertised with the exception of the serial links between the routers. This is because if there is no need to access these from the user networks. If they need to be configured this can be done by setting up VLANs or via console cable.

Research and Development

With the requested size of 18 devices and the standard doubling of addresses to secure easy expansions in the future the network ended up with 36 needed addresses. To house all these addresses the 200.88.202.0/26 subnet was used with space for 62 addresses in total. If the extra 26 addresses turns out to be excessive the subnet could be changed to a /27 with addresses for only 30 devices.

Sales and Marketing

For the Sales and Marketing division the number of allocated addresses has been set to 30 with the 200.88.202.64/27 network to house the 18 addresses that would have been expected with a 100% increase of devices.

Branch Building

The requested size for the devices in the remote sales branch was 5 and to secure future expansion we doubled that to 10. To house 10 addresses the subnet mask /28 which allocates 14 addresses in total.

Administrative Building

The network for the administrative building has been allocated as the 200.88.202.96/28 network with 14 available addresses allowing for a doubling of the devices in the network for future expansions.

Tech Building

The technicians is said to need 4 addresses in size. We account for 100% possible expansion so we want to have at least 8 address for the Tech Building. For a subnet to house at least 8 addresses we need to have a subnet mask /28. This will give the Tech Building 14 assignable ip addresses.

Discussion

Since research and development is the largest network we started by placing the ips for that network that is why RnD got 200.80.202.0/26 as network address. We then continued with sales and marketing, being the second largest network, and assigned 200.80.202.64/27 to the S&M network. Moving on with the admin, tech and remote branch networks, all allocating the same amount of addresses. Lastly we set the networks for the 3 inter router connections, serial cables and highspeed ethernet cable.

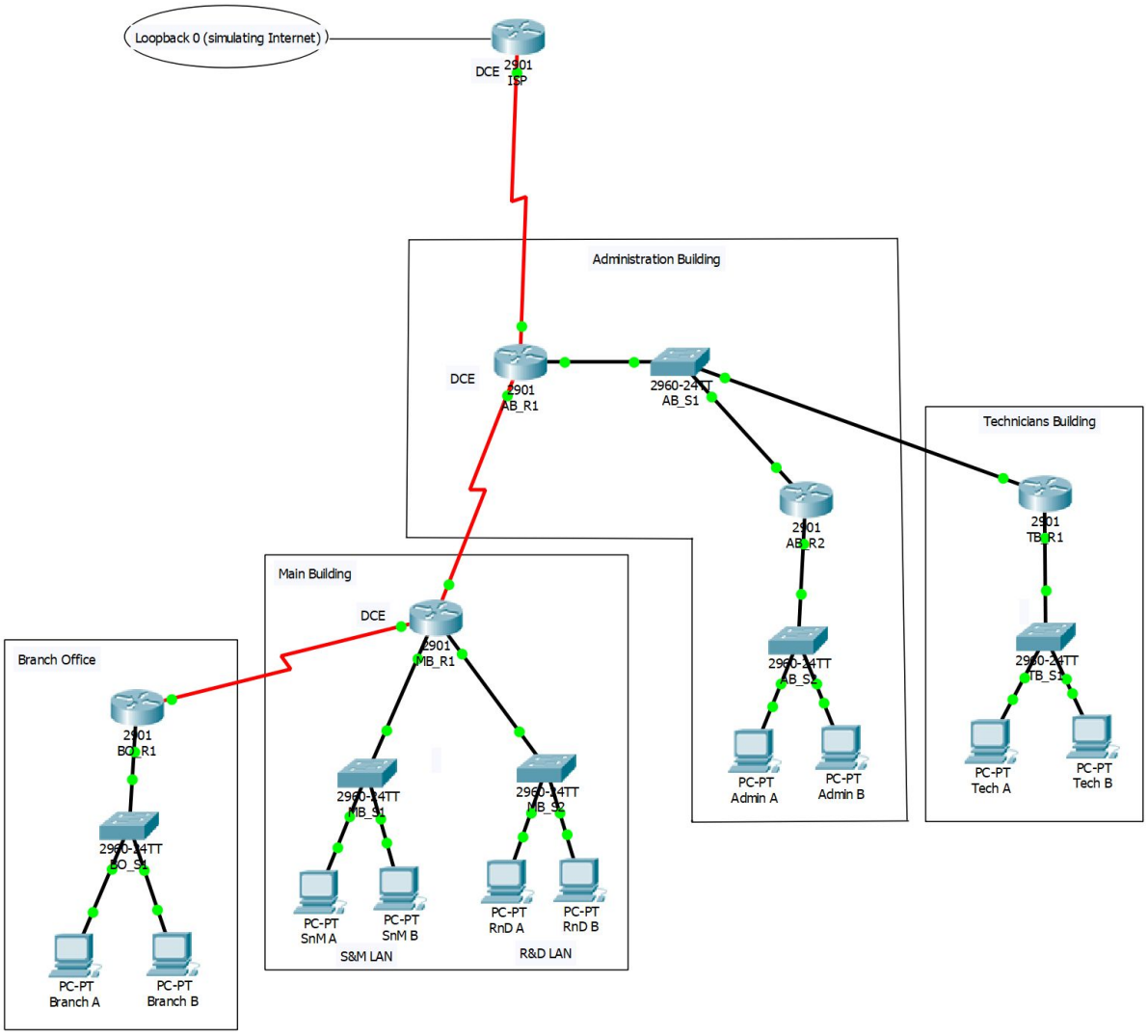
The routers are configured with RIP, this was one of the ABC Research Companies requirements. The main networks are all added to the RIP while the inter router networks are left out. The ISP gateway is set as the gateway of last resort.

To ensure security we configured an encrypted EXEC password so unauthorized users won't have access to configure the routers. We also added passwords for login by console or ssh. When trying to access the router a message is displayed:

****
AUTHORIZED ACCESS ONLY
****

While configuring the router we also added logging synchronous to make it less confusing to configure the router. The command disables state changes to interrupt while typing commands.

However the switches has only been configured with hostname. Passwords and encryption was not stated as requirements by the ABC Research Company but could easily be implemented.


Loopback 0 (simulating Internet)
DCE
2901
ISP
Administration Building
DCE
2901
AB_R1
2960-24TT
AB_S1
2901
AB_R2
2960-24TT
AB_S2
PC-PT
Admin A
PC-PT
Admin B
Technicians Building
2901
TB_R1
2960-24TT
TB_S1
PC-PT
Tech A
PC-PT
Tech B
Main Building
DCE
2901
MB_R1
2960-24TT
MB_S1
2960-24TT
MB_S2
PC-PT
SnM A
PC-PT
SnM B
S&M LAN
PC-PT
RnD A
PC-PT
RnD B
R&D LAN
Branch Office
2901
BO_R1
2960-24TT
BO_S1
PC-PT
Branch A
PC-PT
Branch B