Implementing an IPv4 Network

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Diagram Exercise 1

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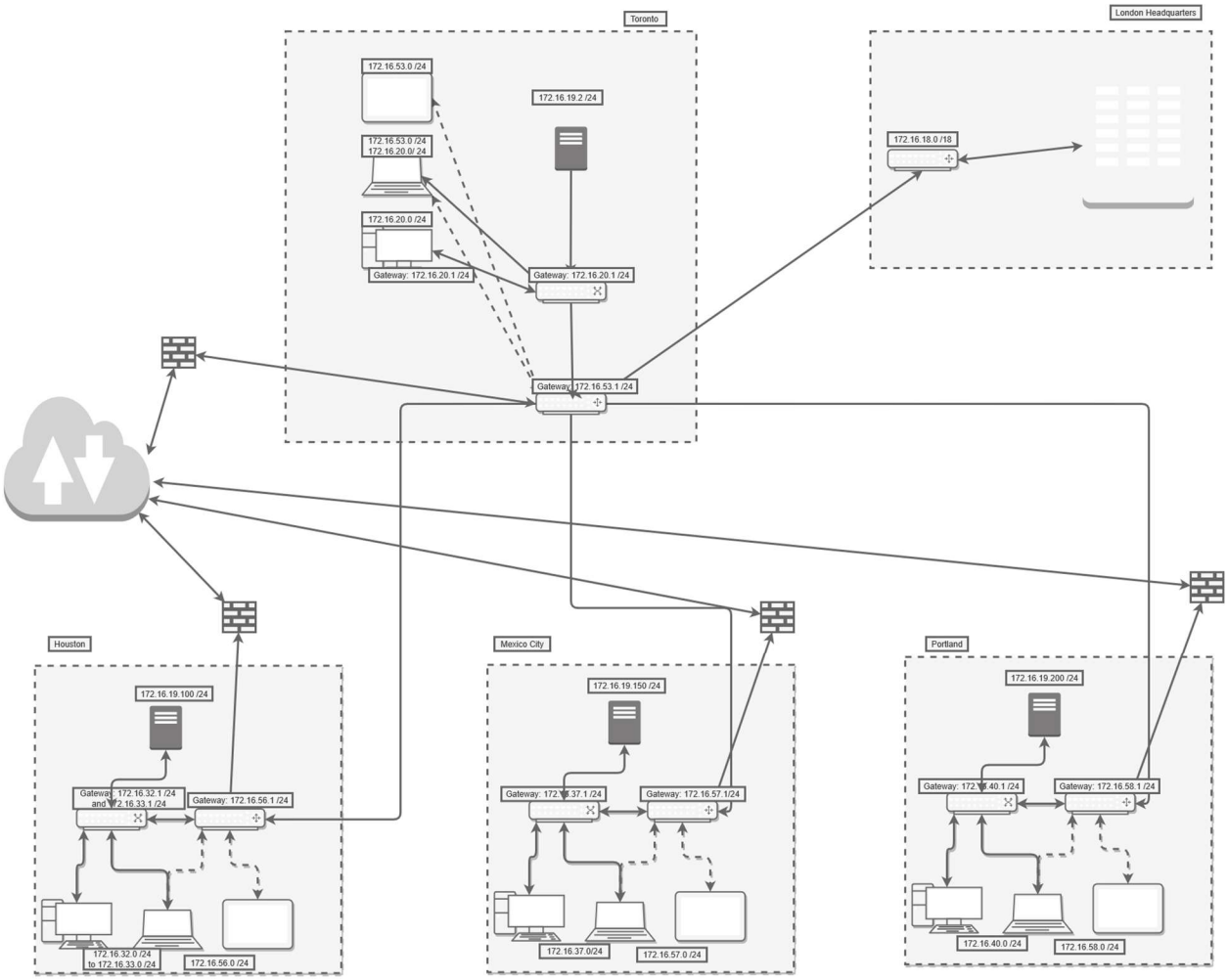
London Headquarters has assigned the IP address of 172.16.18.0 /18 to the Toronto regional office. Each site should have routers and switches to distribute traffic and have connections to the internet over the firewalls. They are also in private connections because the IP address is class C. In the regional and branch offices, the servers are under 172.16.19.0 /24. The administrator's decisions and preferences would determine the distribution of IP addresses. The admin assigned 172.16.19.2 /24 to the servers in Toronto regional office, 172.16.19.50 /24 to the Houston office, 172.16.19.100 /24 to Mexico City office, and 172.16.19.150 /24 to the Portland office.

In each site, the switches connect to the wired devices and the servers with the default gateway to send and receive packets from the public connections. In the Houston branch office, they need two subnets for wired devices because they have 400 devices when one /24 subnet can support 254 devices. Other branch offices need at least one subnet since they have fewer devices than 254. The wired devices in all offices are in the range of 172.16.20.0 /24 to 172.16.52.0 /24, whereas the wireless devices are in the range of 172.16.53.0 /24 to 172.16.60.0 /24. All the wireless devices in each office do not have more than 254 devices so that one subnet would suffice the number of assigned IP addresses.


Toronto
172.16.53.0 /24
172.16.19.2 /24
172.16.53.0 /24
172.16.20.0/ 24
172.16.20.0 /24
Gateway: 172.16.20.1 /24
Gateway: 172.16.20.1 /24
Gateway: 172.16.53.1 /24
London Headquarters
172.16.18.0 /18
Houston
172.16.19.100 /24
Gateway: 172.16.32.1 /24 and 172.16.33.1 /24
Gateway: 172.16.56.1 /24
172.16.32.0 /24 to 172.16.33.0 /24
172.16.56.0 /24
Mexico City
172.16.19.150 /24
Gateway: 172.16.37.1 /24
Gateway: 172.16.57.1/24
172.16.37.0/24
172.16.57.0 /24
Portland
172.16.19.200 /24
Gateway: 172.16.40.1 /24
Gateway: 172.16.58.1 /24
172.16.40.0 /24
172.16.58.0 /24