You have been assigned 172.31.0.0/16 network. You need to need to create 1500 networks, 20 hosts per network?

1st step: convert to binary:

10101100.00011111.00000000.00000000 = 172.31.0.0

11111111.11111111.00000000.00000000 = 255.255.0.0

2nd step: determine new subnet mask for given scenario?

11111111.11111111.00000000.00000000 = 255.255.0.0

3rd step: determine new network IDs, using every possible combination of the new added subnet bits.

10101100.00011111.00000000.00000000 = 172.31.0.0

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.00100000 = 172.31.0.32

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.01000000 = 172.31.0.64

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.01100000 = 172.31.0.96

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.10000000 = 172.31.0.128

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.10100000 = 172.31.0.160

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.11000000 = 172.31.0.192

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000000.11100000 = 172.31.0.224

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.1.0

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00100000 = 172.31.1.32

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.01000000 = 172.31.1.64

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.01100000 = 172.31.1.96

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.10000000 = 172.31.1.128

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.10100000 = 172.31.1.1**60**

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.11000000 = 172.31.1.192

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.11100000 = 172.31.1.224

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.2.0

11111111.11111111.11111111.11100000 = 255.255.255.224

You should be able to follow the rest.

10101100.00011111.00000001.00000000 = 172.31.2.?

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.2.?

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.2.?

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.2.?

11111111.11111111.11111111.11100000 = 255.255.255.224

10101100.00011111.00000001.00000000 = 172.31.2.?

11111111.11111111.11111111.11100000 = 255.255.255.224