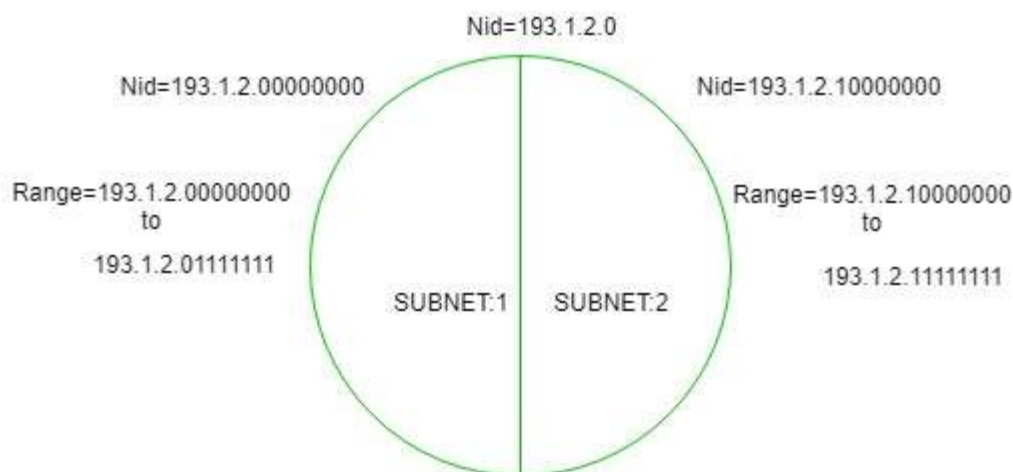# Subnetting

When a bigger network is divided into smaller networks, to maintain security, then that is known as Subnetting. So, maintenance is easier for smaller networks. For example, if we consider a class A address, the possible number of hosts is 2^{24} for each network, it is obvious that it is difficult to maintain such a huge number of hosts, but it would be quite easier to maintain if we divide the network into small parts.

Uses of Subnetting

1. Subnetting helps in organizing the network in an efficient way which helps in expanding the technology for large firms and companies.
2. Subnetting is used for specific staffing structures to reduce traffic and maintain order and efficiency.
3. Subnetting divides domains of the broadcast so that traffic is routed efficiently, which helps in improving network performance.
4. Subnetting is used in increasing network security.

The network can be divided into two parts: To divide a network into two parts, you need to choose one bit for each Subnet from the host ID part.

Nid=193.1.2.0

Nid=193.1.2.00000000   Nid=193.1.2.10000000

Range=193.1.2.00000000   Range=193.1.2.10000000
to   to
193.1.2.01111111   193.1.2.11111111

SUBNET:1   SUBNET:2

In the above diagram, there are two Subnets.

In subnetting, a class A or class B block is divided into several subnets. Each subnet has a larger prefix length than the original network. For example, if a network in class A is divided into four subnets, each subnet has a prefix of nsub = 10. At the same time, if all of the addresses in a network are not used, subnetting allows the addresses to be divided among several organizations. While subnetting was devised to divide a large block into smaller ones, supernetting was devised to combine several class C blocks into a larger block to be attractive to organizations that need 3 RCS-601 Computer Network Notes Unit 3 Page 3 more than the 256 addresses available in a class C block. This idea did not work either because it makes the routing of packets more difficult.