

# Supernetting

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## Overview

Supernetting is to add a network to create a more extensive network (supernet or supernet). Let us consider the basic definition of an IP (network) address: it consists of a network part and a host ID. For subnetting, we "borrow" bits from the host ID to create a smaller network. In contrast, we extract bits from the network part for supernets to develop a more extensive network. Supernets are usually used to route advertisements. However, it has other uses, such as building access control lists (ACLs), combining multiple static routes into one, etc.

Supernetting is mainly used for route summarization, combining the routes of multiple networks with similar network prefixes into one routing entry. The routing entry points to an excellent network that spans all networks. This continuously significantly reduces the dimensionality of the routing table and the metric of routing updates exchanged by the routing protocol. Combine multiple IP network addresses into one IP address. Supernetting minimizes the number of routing table entries in CIDR, which also targets the internal network.

## The purpose of Supernetting

The primary purpose of the supernet is to reduce the dimension of the routing table in the router. For example, instead of having eight separate routes (pointing to the equivalent next hop), a router can have an aggregate way of eight independent ways. This is usually important for the following reasons:

- It can save memory and processing resources on the routing device. They have little storage space for routing tables, and their throughput to view routing tables is also low.
- Provides network stability because fluctuations in a specific part of the network will not extend to all or any aspect of the web. That is, the changes are usually isolated.

In addition to the benefits of the routing table, it also helps prevent IP address depletion through classless inter-domain routing (CIDR). Basically, instead of distributing the Class B network to everyone who needs the equivalent of a Class C network, you can now use variable-length prefixes (like / 19, / 21, etc.) to add these Class C networks as efficiently

as possible. Finally, you will use supernets to expand the number of addresses available on the network. For example, you would add four / 24 networks (each with 254 public IP addresses) to create a / 22 network (with 1022 available IP addresses).

## Rules of Supernetting

Supernet rules are the same as subnetting. Super grids are counted in the order of 2, 2, 4, 8, 16, etc.; Once you create a supernet, you want to make sure it only covers what you want to add network, not less. Less is better, so avoid routing problems.

- Make sure the network is continuous (defined as "adjacent or together in order").
- Determine the number of networks to be added and make sure the number is two.
- The value of the leading non-public octet in the first (lowest) IP address block in the list of networks to be added is compared to the number of networks to be added (plus the order of 2). The value of the non-public leading octet must be A multiple of the number of networks to be aggregated. For example, 16 is a multiple of 8 but 8 is not a multiple of 16.