Know Everything About IP Address Allocation for Private Networks

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In brief

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When it comes to internet networking, the private network is a system network using the particular address space of the Internet Protocol (IP) addresses. Such addresses are generally used for the LAN in the enterprise, work, and residential environments. Both IPv6 and IPv4 specifications define the private Internet Protocol address ranges.

The classified network addresses are not commonly permitted to any particular company. Any person can use such IP addresses without any approval from the local or regional internet registries. The spaces of private IP addresses were initially defined to help in obstructing IPv4 address exhaustion. The Internet Protocol packets that begin or attend to the private IP address will not be routed via the public internet connection.

IP address allocation for private networks

The IP address space is globally allocating the unique addresses to the private hosts in your computer network. However, according to the RouterCtrl website, users can still permit complete network layer connectivity between all types of hosts in the computer network and between all the public hosts on the internet. It is because the hosts are using the internet protocol fall into various categories.

The hosts don’t need access to the hosts on the internet or other enterprises at large. Such hosts will use the unique IP addresses within their computer network but might not be exclusive among the outside networks. The hosts require access to the limited set of external services such as FTP, email, remote login, and the gateways of the application layer can handle.

Most hosts will not require unrestricted external access given through the IP connectivity for security or privacy reasons. As the hosts in the first category, the users can use unique addresses within their computer network but not with outside networks. At the same time, there are also several numbers of hosts which require access to the network layer outside the organization through IP connectivity. Such hosts only need globally unique IP addresses.

Advantages of using private address space

IANA (Internet Assigned Numbers Authority) has reserved the different blocks of the IP address space for the private networks. These blocks of IP addresses include,

- 10.0.0.0 - 10.255.255.255
- 172.16.0.0 - 172.31.255.255
- 192.168.0.0 - 192.168.255.255

The first block of the IP address is a single class A network number, the second block of IP address is the set of 16 adjacent class B network numbers, and the 3rd block is the set of 255 adjacent class C network numbers. Thus, if the users have decided to use the private address space, you will never require coordinating with Internet Assigned Numbers Authority or an internet registry.

The IP addresses within this private address space only will be unique within your computer network. If the individuals globally require unique address space, you should get the addresses from the internet registry. To make use of the private address space, the users have to establish which hosts don't require having the connectivity of the network layer to the outside. Such hosts are using the private address space because they are private hosts. These private hosts will communicate with all other hosts within this network whether you are using the private or public network.

- The major benefit of using the private space for your IP address to use the internet connection at large is to protect the unique address space globally.
- With the help of the private address space, it will give you a higher range of flexibility in the network design. So, the users can have a different address space available than you might globally obtain from the unique pool.
- The next important thing is the design consideration for private address space allocation.
- The users should have to design the private part of your computer network initially and use the private address space for all the links of your internal network range.
- Then, you can plan the subnets in public and also design the external connectivity.
- If the suitable scheme of subnetting will be designed and carried by your requirement, you can use the private address space of the 24-bit block and make an address plan with the best growth path.
- If you have any problem with subnetting, you can make use of the 16-bit class C block.
- Changing the host from private to public needs some important changing its address. In most cases, it will have physical connectivity.
- The routers that connect to the external networks would be set up with the suitable packet & routing filters at both ends of the link to prevent leakage.
- The users also have to filter any private computer networks from the routing inbound information to avoid uncertain routing situations if routes to the private address space point outside the computer network.

The group of companies that predict a requirement for mutual communication should design the general address plan. If the two websites have to be connected with the help of the external service provider, they will consider using the IP tunnel to prevent the leakage of the packet from the private network. The external server determines queries from the resolvers from outside and is commonly linked to the global DNS.

References

1. kinsta.com - blog / ipv4-vs-ipv6 - https://kinsta.com/blog/ipv4-vs-ipv6/
2. routerctrl.com - https://routerctrl.com/
3. iana.org - https://www.iana.org/
4. superuser.com - questions / 1338775 - https://superuser.com/questions/1338775/where-is-ip-address-of-my-ethernet-settings-stored-in-registry