Lab 9

Revision of Content

Lab 9 - Task

Task 1;

Different Between “Sub-Netting & Super-Netting”, with Example (draw structure in cisco)

Subnetting is the procedure to divide the network into sub-networks or small networks, these smaller networks are known as subnets. The subnet is also defined as an internal address made up of a combination of a small network and host segments. In a subnet, a few bits from the host portion are used to design small-sized subnetworks from the original network. In subnetting, network bits are converted into host bits.

Advantages of subnetting

- **Effective IP address use**: Subnetting enables the division of a large network into smaller subnets, which aids in the efficient use of IP address allocation. It lessens IP address wastage and enables organizations to allocate IP addresses in accordance with their unique requirements.
- Subnetting can help reduce network congestion and enhance overall network performance by breaking up a large network into smaller subnets. Smaller subnets improve the efficiency of routing and switching operations and allow for better network traffic control.
- **Increased network security**: Subnetting makes it possible to implement security measures more precisely. Organizations can improve security by controlling access between subnets and implementing firewall rules by isolating various subnets from one another.

Disadvantages of subnetting

- **Complexity:** Subnetting can make network configuration and design more complicated. It can be difficult, especially for large networks, to choose the right subnet sizes, plan IP address ranges, and manage routing between subnets.
- Subnetting requires more administrative work, especially when adding new subnets or changing the configuration of existing ones. In addition to maintaining routing tables and ensuring proper connectivity between subnets, it entails managing IP address ranges.

Supernetting is the procedure to combine small networks into larger spaces. In subnetting, Network addresses' bits are increased. on the other hand, in supernetting, Host addresses' bits are increased. Subnetting is implemented via Variable-length subnet masking, While super netting is implemented via Classless interdomain routing.

Advantages of supernetting

- Supernetting enables the consolidation of several smaller networks into a single, larger network block, which reduces the size of the routing table and maximizes the use of IP address space.
- Routing can be made easier by combining several smaller networks into a supernet because fewer routing updates and table entries are required. This may result in increased routing effectiveness and decreased router overhead.
- A reduced number of routing lookups needed for packet forwarding thanks to supernetting can help improve network performance. As a result, packet processing may be accelerated and latency may be decreased.

Disadvantages of supernetting

- Loss of network granularity: Supernetting involves aggregating multiple networks into larger network blocks. This can result in a loss of granularity, making it more challenging to implement fine-grained network management, security policies, and traffic control.
- Increased risk of network failures: If a single supernet experiences a network failure, it can affect multiple smaller networks within that supernet. This makes troubleshooting and isolating network issues more complex.
- Limited flexibility: Supernetting requires careful planning and coordination to ensure that the aggregated networks have compatible address ranges. It may limit the ability to make independent changes to individual subnets within a supernet without affecting the entire supernet.

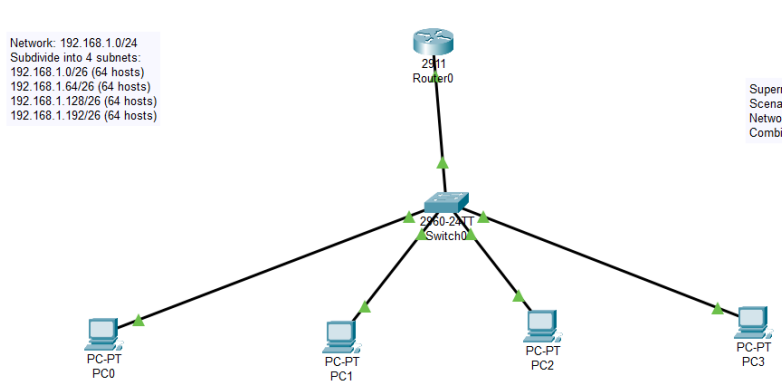
Which Method Should You Use for Your Business?

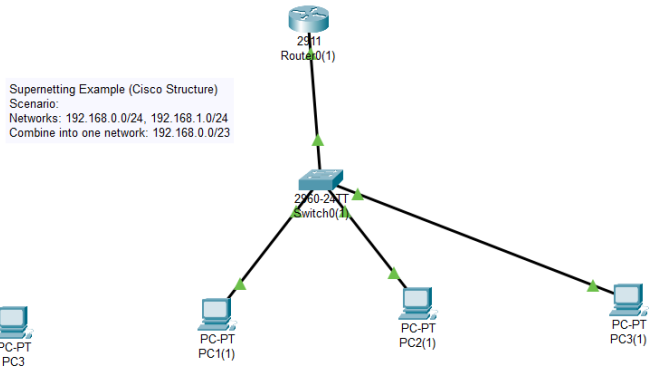
Both of these methods have their own advantages and disadvantages, so it's important to understand which one is best for your network.

Subnetting can be used to create more efficient networks by allowing for better control over traffic flows, as well as providing more security.

On the other hand, **Supernetting** can provide an easier way to manage large networks and provide a cost-effective solution for companies that need to manage many different subnets.

The decision on which method you should use depends on your specific needs and requirements. If you have a large network with many different subnets, then Supernetting may be the best option for you.


Network: 192.168.1.0/24
Subdivide into 4 subnets:
192.168.1.0/26 (64 hosts)
192.168.1.64/26 (64 hosts)
192.168.1.128/26 (64 hosts)
192.168.1.192/26 (64 hosts)
2911
Router0
2960-24TT
Switch0
PC-PT
PC0
PC-PT
PC1
PC-PT
PC2
PC-PT
PC3


Supernetting Example (Cisco Structure)
Scenario:
Networks: 192.168.0.0/24, 192.168.1.0/24
Combine into one network: 192.168.0.0/23
2911
Router0(1)
2960-24TT
Switch0(1)
PC-PT
PC1(1)
PC-PT
PC2(1)
PC-PT
PC3(1)