Project Report for Computer Networks (19CSE301)

**SMALL OFFICE HOME OFFICE NETWORK**

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By

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**ABSTRACT**

A company is fast-growing(scaling) it is intended to work separately from

HQ network.

Intentionally being a small network, here are the conditions

1. We used 1 router and 1 switch

2. 3 departments (HR/FINANCE/IT) only as a small company can’t manage much

3. Each dept. is in separate vlan

4. Each dept has a wireless network for the users.

5. Host devices obtain ipv4 automatically

6. All devices communicate with each

**INTRODUCTION:**

SOHO stands for Small Office and Home Office Networks. It allows computers in a home office or remote office to connect to a corporate network, or access centralized, shared resources. It is a LAN (local area network) mainly referred to as a business category involving a small number of workers usually from 01 to 10. SOHO provides a lot of features and benefits such as easy-to-use and setup networks etc. making them an ideal choice for small businesses. A virtual office is another synonym sometimes used for a SOHO network. SOHO networking is mainly used for the purpose of connecting several computing devices on a single network to share information effectively with the multiple connected users in the organization.

**PROJECT STATEMENT:**

The project consists of three different networks; The Admin/IT Dept, Finance/HR Dept and CS/Reception Dept. The aim of the project is to provide a small business setup provide the facility to do work from home. Generally the SOHO setup allow 10 to 15 employees to work on a particular business. In a small office home office SOHO devices able to exchange information with each other with the help of [switch, router](https://ccnatutorials.in/internetworking/networking-devices-concepts-for-ccna/)etc. The shared resources may be any application, videos, images, email, data storage, printers etc. Sharing of resources in a network done via flowing of network packets. Nodes are the computers, smartphones in a small office home office SOHO.

**COMPONENTS USED:**

|  |  |
| --- | --- |
| **NAME** | **TYPE OF DEVICE** |
| Laptop | End Devices |
| Smartphone | End Devices |
| Tablet | End Devices |
| Access Point | Network Devices [Wireless] |
| Switch | Network Devices |
| Router | Network Devices |
| Server | Network Devices |
| Coaxial cable | Cables |
| Copper-Straight | Cables |
| Fast-Ethernet | Cables |

**TOPOLOGY:**

The network is built on Star topology as all end devices are required to be connected to the main server and transfer messages. High efficiency with unicast communication and low signal reflection makes star topology the perfect foundation. Even when one link between an end user and server fails, the rest remain unaffected as each of them hold a separate link. For additional safety and security, the home office server is connected to another Main server on another area with the same base design to handle requests in time of a total failure of central server

**POSSIBLE SCENARIOS:**

The basic equipment are [computer, switch, router, modem, printer etc](https://ccnatutorials.in/internetworking/networking-devices-concepts-for-ccna/). If you have any financial transaction type business then a firewall is also required for security purpose.

Here we have a single internet connection from any ISP. After that a router placed to route the data according to [NAT](https://ccnatutorials.in/network-address-translation/nat-network-address-translation/)and PAT. It means the data sent to the correct user who request for data. After router a [firewall](https://ccnatutorials.in/network-fundamentals-ccna-200-301/next-generation-firewalls-and-ips/)placed for filtering the incoming and outgoing data in the network.

There is a [Server](https://ccnatutorials.in/network-fundamentals-ccna-200-301/servers-in-computer-network/)available in the network which can be used for multiple services like domain controller, [DHCP](https://ccnatutorials.in/application-layer-of-tcp-ip/dhcp-dynamic-host-configuration-protocol/)server etc. There is a Wireless Access Point to provide connectivity on [Wi-Fi to the devices](https://ccnatutorials.in/network-fundamentals-ccna-200-301/access-point-in-networking/). Except these equipment s there is a printer and IP phone. This setup is sufficient for working from home for 10 employees.

**USE CASES:**

1. **Designing and testing a network infrastructure for SOHO:**

Cisco Packet Tracer can be used to design and simulate the network infrastructure required to support a SOHO setup at home, including routers, switches, and wireless access points to connect to the server of the office.

1. **Simulating the flow of data through the network:** Packet Tracer can be used to simulate the flow of data through the network as requests are raised, ambulances are dispatched, and alert to the hospitals. This can help identify bottlenecks or other issues that may impact the performance of the network.
2. **Testing network security measures:** Packet Tracer can be used to evaluate the effectiveness of different security measures, such as firewalls and VPNs, in protecting against unauthorized access and data breaches.
3. **Evaluating the performance and scalability of the network:** Packet Tracer can be used to test the performance and scalability of the network under different workloads and scenarios, such as high request rates or the addition of new ambulances or hospitals.

**BENEFITS:**

There are many benefits of small office home office. The one is the public gathering on roads and offices. When a person work from home he do not use vehicle that save the fuel and reduce pollution. The time wastage in the traveling from home to office is vanished. So the person can spent more time on the job and increase his income. You have more time to spend with your family when working from home. So you remain stress free with your family.

It is more comfortable to work from home then in a corporate office. You have no fix time to do fix tasks. You can spare time and also give extra time to your job. The resources for working can be chosen by you. I mean the make and model of devices like printer, computer, furniture etc. The best thing is that you are your own boss, you can take your own decision. Your health and living style can be improved by doing work from your home.

**OUTPUT:**















