

# Advantages and disadvantages of remote working system computer science essay

[Technology](#), [Computer](#)



## **Introduction**

The following report will be based on providing potential requirements of the basic scenario and a through explanation of advantages and disadvantages of updating the current network of the EERP Company. By analysing the key requirements it is clearly explained that the EERP is having two major employee classes as senior staff and junior staff.

Junior staff works in the office which mean that they worked on fixed places. This will result them to have personal computers with LAN (Local Area Network) connectivity. Depending on the budget this can vary up to a wireless network by implementing wireless interfacing cards to their personal computers and having WIFI zones on the working area.

Senior staff on the other hand, they work in their homes. From their they should be able to do various kind of functionalities E. g. deliver company's message via ProwerPoint presentations, compile, print documents, perform quires on existing customer records, send and receive email and complete sales orders. These functionalities should be done online or through the WIFI network at the company. It is clarified that the management has decided to equip the senior staff with a mixture of wireless enabled portable notebook PCs, printers and Personal Digital Assistants (PDAs) to get the maximum benefits out of their senior staff.

To achieve these desired functionalities it is a must to implement a Virtual Private Network (VPN) between the senior staff and the Office network of the office. This will result them to connect their office even though they are

remotely connected. They will be able to perform same kind of functionality which they perform in their office environment. When they work in the office they can connect to the WIFI network without connecting to the VPN. This network architecture will provide the senior member to be connected on their office network every time whenever they want.

When it comes to wireless connectivity or VPN, security is a must. It is important to implement necessary security methods and protocols to connect any of the networks. With respect to the following requirements no of WIFI and VPN users should be defined and should be expandable with the growth of the company. Depending on the budget, suitable VPN provider should be selected.

With the basic understanding of the key requirements it will be possible to prepare a network system with remote networking functionality.

Advantages and Disadvantages of having remote working system

Pros,

It will be easier to implement and maintain.

High reliability and availability.

Network cabling will be reduced.

Employees can stand on their work place dynamically without staying on one location

Can easily configure the security of the network.

Can easily divide departments as blocks of network access points.

Expansion of the network will be easier than a Traditional wired LAN.

Cons,

Network connectivity will be lower than a wired LAN.

VPN implementation will be expensive.

Company should be facing a higher security threat when implementing a VPN.

In order to enhance the security, firewalls and other third party tools have to be purchased.

Employees should be well trained to use VPNs and wireless networks to avoid any sort of interruptions.

Failure of a VPN will result some employees to not to cooperate with the company until it is fixed.

Benefits to the company

This system will allow employees to work interactively without any disruption. Employees who work on the office will have the WIFI connectivity.

This means that they can work on their office desk as well as when they are not. They might be interacting with the customers even so they can connect

with the network. They can share information, print documents and can query the information database. This will result interactive and efficient communication with their customers.

Senior staff on the other hand can work in home as they are in the office. Because of the VPN they will gain almost all of the network capabilities as they are in the office. Email services, document sharing, print documents and even online presentation facilities can be provided. When they visit the office they can connect to the wireless network using their wireless enabled notebooks and PDAs. As a result they can have almost the same functionalities.

Estimate of the cost

NETWORK CABLE; BULK CABLE - 1000M - UNSHIELDED TWISTED PAIR (UTP)  
= ? 315

RJ45 Connector Network Cable CAT5 Crimp Ends Plug x 100 = ? 4. 98

D-Link DES-1024D 24-Port 10/100Mbps Network Switch =? 61. 00

D-Link DSL-2640R Wireless G ADSL2 - Wireless router - DSL - 802. 11b/g = ?  
56. 00

NETGEAR ProSafe Quad WAN Gigabit SSL VPN Firewall SRX5308 Router = ?  
254. 00

RJ45 Network Crimp Tool = ? 20. 00

Mercury Multi Network Tester = ? 7. 00

Test UM WP150 Wi Net Window Wireless Analyzer = ? 150. 00

Task 2.

Set up a network with 2 wireless nodes and 1 wired node.

192. 168. 248. 57 -Default GatewayC: UserssonyDesktopNWinternet. jpgC:  
UserssonyDesktopNWwifi signalC: UserssonyDesktopNWLlinksys-router-  
wireless. jpg

C: UserssonyDesktopNWlaptop. jpg

192. 168. 248. 61

C: UserssonyDesktopNWpc. jpgC: UserssonyDesktopNWwifi signalC:  
UserssonyDesktopNWlaptop. jpg

192. 168. 248. 62

192. 168. 248. 63

Wireless Router

A router is a device that forwards data packets along networks. A router is connected to at least two networks, commonly two LANs or WANs or a LAN and its ISP's network. Routers are located at gateways, the places where two or more networks connect, and are the critical device that keeps data flowing between networks and keeps the networks connected to the Internet.

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When data is sent between locations on one network or from one network to a second network the data is always seen and directed to the correct location by the router. The router accomplishes this by using headers and forwarding tables to determine the best path for forwarding the data packets, and they also use protocols such as ICMP to communicate with each other and configure the best route between any two hosts.

### Network Interfacing Card

A network interface card, more commonly referred to as a NIC, is a device that allows computers to be joined together in a LAN, or local area network. Networked computers communicate with each other using a given protocol or agreed-upon language for transmitting data packets between the different machines, known as nodes. The network interface card acts as the liaison for the machine to both send and receive data on the LAN.

The most common language or protocol for LANs is Ethernet, sometimes referred to as IEEE 802.3. A lesser-used protocol is Token Ring. When building a LAN, a network interface card must be installed in each computer on the network and all NICs in the network must be of the same architecture. For example, all must either be Ethernet cards, Token Ring cards, or an alternate technology.

### WIFI Cards

A wireless network adapter allows a computing device to join a wireless LAN. Wireless network adapters contain a built-in radio transmitter and receiver.

Each adapter supports one or more of the 802. 11a, 802. 11b, or 802. 11g Wi-Fi standards.

Wireless network adapters also exist in several different form factors.

Traditional PCI wireless adapters are add-in cards designed for installation inside a desktop computer having a PCI bus. USB wireless adapters connect to the external USB port of a computer. Finally, so-called PC Card or PCMCIA wireless adapters insert into a narrow open bay on a notebook computer.

One example of a PC Card wireless adapter, the Linksys WPC54G (compare prices) is shown above. Each type of wireless network adapter is small, generally less than 6 inches (0. 15 m) long. Each provides equivalent wireless capability according to the Wi-Fi standard it supports.

Some notebook computers are now manufactured with built-in wireless networking. Small chips inside the computer provide the equivalent functions of a network adapter. These computers obviously do not require separate installation of a separate wireless network adapter.

### Setting up wireless Connectivity

I have used TP\_LINK as the router. To connect to the router I have used one of the LAN ports.

At the browser type `http://192. 168. 1. 1/` to view the login page.

Default username and password ' admin' and ' admin' are used to log in.

If successful administration page of the router will be loaded.



Navigate to the Wireless -> Wireless Settings.

Change the security Type to WPA-PSK/WPA2 -PSK

Change the PSK PassPhrase (Password) : ' pillarboxx'

Save and reboot.

C: UserssonyDesktopNWTP\_Link\_Login. jpg

C: UserssonyDesktopNWWap. jpg

Setting up Default Gateway and DHCP Server

Please use previously mentioned steps to login to the router.

Navigate to the Advanced Settings -> DHCP -> DHCP Settings.

Enable the DHCP server

Change the start IP address to : 192. 168. 248. 60

Change the End IP address to : 192. 168. 248. 90

Change the default gateway address to : 192. 168. 248. 57

Save and reboot. C: UserssonyDesktopNWDHCP configuration. jpg

Change the SSID of the Wireless access point

Please use previously mentioned steps to login to the router.

Navigate to the Wireless -> Wireless Settings.

Change SSID : ' PTLJJC'

Save and reboot. C: UserssonyDesktopNWSSID. jpg

1. View Available Wireless screen

C: UserssonyDesktopNWNEW SSID. jpg

2. List of connected nodes from the router

Please use previously mentioned steps to login to the router.

Navigate to the Advanced Settings -> IP and MAC Binding -> ARP List

C: UserssonyDesktopNWconnected nodes. jpg

This will show all the connected devices together with their IP and MAC Addresses.

Two of the devices are connected via wireless 192. 168. 248. 61, 192. 168. 248. 63. and the other device is connected via LAN connection 192. 168. 248. 62.

NOTE: All the above mentioned configurations are explained in detail at each step.

Copy a file from a shared folder from machine 1 to machine 2 via wireless network

Go to My Computer.

Select the Network from the Left menu.

This will allow you to view all the available devices.

Select the device which the file wants to be copied. (Figure 2)

It will appear all the available shared devices and folders of that device.

(Figure 2)

Navigate to a shared folder.

Figure 1 Paste the file which wants to be copied. C: UserssonyDesktopNWfile

Sharing 2. jpg

C: UserssonyDesktopNWfile Sharing. png

Figure 2

Figure 3 C: UserssonyDesktopNWfile Sharing 3. jpg

Task 3.

Link Systems D-Link Xtreme N Gigabit Router DIR-655 Wireless router

Price: ? 60. 00

Features:

gaming and phone calling (VoIP) experience.

Ideal for streaming HD video or streaming multiple applications

simultaneously.

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Dual active firewall protection (SPI & NAT) helps block malicious attacks on networks from the Internet.

Includes the latest wireless security (WEP, WPA & WPA2) features that help prevent unauthorized access.

Virtually no wireless dead spots.

Advanced Parental Controls.

Supports Windows® Connect Now (WCN) for easy wireless setup.

Automatic Firmware Update Notification.

E-mail Notification for Triggered Events.

Integrated Wireless Security Wizard.

Removable Antennas for Flexible Installation Options.

Wall Mountable to Save Desk Space.

Linksys E1000 Wireless-N Router Wireless router

Price: ? 49. 00

Features:

128-bit encryption, NAT support, State full Packet Inspection (SPI), MAC address filtering, VPN pass through, firmware upgradable, wall mountable, Wi-Fi Protected a^|

Linksys's E1000 Wireless-N Router is best for basic wireless Internet usage and home office productivity.

Speed up your wireless network with a router that connects your computer, game consoles and other Wi-Fi devices at high transfer speed.

Cisco Connect software has three simple steps to get you set up and your secure wireless network is ready to go.

A streamlined user interface allows you to choose from simple to advanced settings with no hassle.

Keep Wi-Fi freeloaders and Internet threats at bay with WPA/WPA2 security settings.

ETGEAR Wireless-N Router WNR2000 Wireless router

Price: ? 33. 00

Features:

Firewall protection, NAT support, State full Packet Inspection (SPI), DoS attack prevention, Intrusion Detection System (IDS),

Simple and secure way to share your high-speed Internet connection Push ' N' Connect securely connects at the touch of a button Wireless-N technology delivers exceptional range and speed Easy setup with Smart Wizard Installation CD Push ' N' Connect using Wi-Fi Protected Setup (WPS) allows you to add computers to the network quickly and securely .

Automatically checks and upgrades to latest software for optimal performance Internal antennas deliver maximum performance and range Convenient on / off switch helps save energy when not in use Energy Star-compliant efficient power supply Packaging manufactured with at least 80% recycled materials