

NETWORK ADMINISTRATION AND MANAGEMENT

A network administrator maintains network infrastructure such as switches and routers, and diagnoses problems with these or with the behavior of network-attached digital devices. These administrators work in small or large organizations in the commercial and public sectors, offering wide range of IT services which are critical for the operation of daily business. Any ‘downtime’ is costly for an organization and therefore the Administrator has arduous responsibility to work professionally and interactively with users in order to meet their needs and ensure continuance of the systems and service levels they require to perform their roles effectively.

The Administrator also offers advice and guidance on the development of systems and services to take the organization forward. He or She works in diverse environments including network operations centres, internet service providers, data centres, etc, offering a wide range of services based on: user support, troubleshooting, design, installation/upgrading, and configuration of operating systems and network devices.

He or she may at some stage in their career specialize in user support, design, installation of operating systems or configuration of networking devices.

Irrespective of this, work organization and self-management, communication and interpersonal skills, problem-solving, a dedication to research/keeping up to date with industry developments and a consistently methodical and investigative approach are the universal attributes of the outstanding Network Administrator.

In a mobile labour market, the Network Administrator may work in teams, or alone, or both from time to time in order to achieve desired results. Whatever the structure of the work, the trained and experienced Administrator takes on a high level of personal responsibility and autonomy. From ensuring businesses remain consistently in operation, with limited IT systems breakdowns, to contributing to the design of new systems, every process matters and mistakes are costly to the business money.

With globalization of IT systems and the international mobility of people

Administrators face rapidly expanding opportunities and challenges. For the talented Administrator there are many commercial, public sector and international opportunities; however, these carry with them the need to understand and work with diverse cultures, and to keep up to date with fast changing industry developments. The diversity of skills associated with administration is therefore likely to expand.

Roles of the Network Administrator

Among many other roles as organizations may define from time to time and deem fit, the following are some of the universal roles of a network administrator:-

1. Design a network to be established in an organization.
2. Establish a budget of equipment to implement a network in an organization.
3. Procure and/or purchase equipment to establish a network.
4. Establish and/or supervise the establishment of a network.
5. Establish a configuration framework for an organizational network.
6. Implement and/or supervise the implementation of the configuration framework.
7. Maintain and/or upgrade the network within an organization.
8. Add network nodes on to the network.
9. Custodian of any network performance monitoring or enhancing software and/or tools.
10. Responsible for all network resources such as data in communication, the internet and shared resources such as computers, printers, folders, etc.

11. Responsible for network security

Network Design.

It is the responsibility of a network administrator to establish a design of a network to be implemented in an organization. The network administrator is required to put in mind the following factors as they design the network:-

- i) The geographical area of the organization. Here, the administrator is required to establish if the organization is spread over a certain geographical area or is enclosed within a building. This helps in coming up with the topological structure to establish and the equipment necessary to establish a reliable, secure and efficient network.
- ii) The capacity of the organization. This enables the administrator to establish a configuration framework that would accommodate growth of the network either in the near or far future.
- iii) Environmental status. This helps the administrator know the type of equipment to go for when establishing a network. For example, if the organization is located in an environment that has low cloud cover, then wireless could be not the best option for interconnectivity. If is in

a facility where there are heavy motors, then cabling should be shielded from electromagnetic fields, etc.

Once the factors have been considered, then the administrator establishes a topology to be implemented. There are four main topologies that the administrator can embark on to:-

1. Bus topology
2. Star topology
3. Token ring topology
4. Mesh topology

Class Work I

- i) Stating an advantage and a disadvantage in each case, discuss the **FOUR** network topologies.
- ii) When it comes to establishing a network, the communication media is classified in to two; Wireless and cable communication media.
 - a. Briefly describe the wireless communication media.
 - b. Discuss in details the cable media types, the associated connectors and the topologies they implement.
 - c. Briefly discuss the network interconnecting devices

Lab Work I

SCAI, Kibabii University

The school of computing and informatics (SCAI), Kibabii University has six computer labs which the dean wants networked. You are required to pay a visit to the labs and come up with a design to establish a network.