Analysis and evaluation of peer-to-peer search methods

Technology, Information Technology

A peer-to-peer network is a computer networking approach that allows the data exchange between several networking devices to communicate directly with eacëh other [1]. Peer to peer networking is different from other types because there is no server within the network. The devices within the network communicate without any centralized control [2]. The devices are equivalently responsible for data processing. Peer to peer networks are characterized by;

- Scalable and Secure Peer Name Resolution
- Efficient Multipoint Communication
- Distributed Data Management
- Secure Peer Identities
- Secure Peer-to-Peer Groups

The difference between peer to peer networks and client-server networks is based on the design architecture. In client-server networks, it’s designed that the clients request for services while the server provides the services but in the peer to peer architecture, the different peers provide the services and use the provided services [1]. Another difference between peer to peer networks is based on file storage and access; Client-server networks depend on a central dedicated server for file storage the clients then access the files from the server whereas in peer to peer networks file storage is in the different peers on the network. The security of the files in peer-to-peer networks is dependent on the end-users while that of client-server networks is dependent on the server administrator. The server on a client-server network provides secured access to the client thus providing better levels of

security. Implementation of peer to peer network is much cheaper as compared to client-server because no centralized server is required [3]. Peer to peer networks have various benefits over other network architectures, they include; Peer to peer networks are cheaper to install as compared to other network architecture because no dedicated server is required for the network. Peer to peer is allowed the sharing of resources such as printers, therefore, saving on costs [4]. Installation and maintenance of peer to peer networks is easier because no network configurations are required. The peers on the network use individual operating systems. Peer-to-peer networks are more reliable because the devices on the network are independent i. e. they do not depend on a central server, therefore, the failure of one peer does not affect the performance of the other peers [1]. Peer to peer networks saves on time and resources because there is no need for a full-time system administrator to manage a server [4]. The use of peer to peer networks has its own drawbacks, the disadvantages of these networks include; The security levels in peer to peer networks are limited thus there is likely to be the transmission of viruses spyware and malware across the network [2]. In case of data loss, it may be very difficult to recover because each peer on the network has its own backup system. Due to a lack of centralized administration, it’s difficult to manage all the activities on the network. Peer-to-peer networks are good for small networks where a high level of security is not required [3]. Some of the peer to peer tools currently available in the market include; Oversim- It’s an open-source high-performance simulation framework for peer to peer networks. It has an interactive user interface that visualizes network topologies messages and

routing tables. Oversee simulation framework is flexible in its operations because it simulates both structured and unstructured overlay networks. Due to its high-performance capability, Oversim can be used to simulate large networks of up to 10000 nodes and also has a network scheme that allows configuration of network topology with realistic bandwidths and packet relays which enhances its high performance [2].