Tcp/Ip Essay, Research Paper

Introduction I will demonstrate the unique power of TCP/IP. We will explore some of the powers of this suite of protocols and understand the importance of using it. TCP/IP is actually a packet of information being sent through different servers to reach its destination. In some instances it takes only seconds and with certain programs you can actually see how many servers and seconds it actually takes to reach it’s destination. This is really a unique system this shows the power of the internet and the intricate systems the computer actually has. You will also be able to learn how TCP/IP was first developed and how these packets are actually sent. Development of TCP/IP Shared resources are a way to cut expenses. TCP/IP was developed to handle such cross network sharing. Scientists first developed TCP/IP, the Advanced Research Projects Agency network called ARPAnet. The ARPAnet is a well-known TCP/IP network. Hundreds of vendors have products that support TCP/IP, and millions of networks, with different operating systems, use TCP/IP as its protocol. TCP/IP is only two protocols in the package called “Internet Protocol Suite.” Because TCP and IP are the best known of the protocols in the suite, most people refer to the suite as “TCP/IP.” The Internet is a collection of networks; including, Local Internet Service Providers, the Defense Data Network (DDN), Colleges and Universities, Research Institutions, and countless other networks.Auxiliary Programs The Suite of protocols is not limited to TCP/IP, there is a File Transfer Protocol (FTP) which allows users on one computer to get files from another computer or to send files to another computer. Usually, a person logs in as a “GUEST” or “ANONYMOUS” to gain access to the private or restricted area on the remote computer, security is handled by the User ID and password. TELNET is a network terminal protocol that allows a user to login to any other computer on the network. Once your computer is connected to the remote system all commands that are typed locally will be executed on the remote system. Logging into a remote system using TELNET is the same as FTP; the user must furnish his/her User ID and password. How TCP works Two protocols are used to handle TCP/IP datagrams, sometimes referred to as packets. Transmission Control Protocol (TCP) is responsible for breaking up the message into manageable datagrams, reassembling them at the other end, resending any packets that are lost or corrupted, and putting them back together in the correct order. On small networks TCP is doing all the work, but on the Internet getting the datagram to its destination is a more complex job. The way the Internet is today the datagram could pass through several different types of systems. For this reason, TCP passes the datagram, with the destination address, to the Internet Protocol (IP). The only thing IP has to concern itself with is the Internet address of the destination computer. IP has a simple job of finding a route for the datagrams to get from the source computer to the destination computer.

Detailed analysis of TCP TCP/IP looks at the size of the information to be sent and breaks it into smaller, more manageable packets called datagrams. TCP then attaches a header to the datagram. The Port number is used to keep track of different conversations. If three people are transferring files, TCP might allocate port numbers 1000, 1001, and 1002. The SOURCE PORT is assigned by your machine and the DESTINATION PORT by the remote machine. The header contains a SEQUENCE NUMBER that is used by the destination machine to build the message and to see if any datagrams are missing. The CHECKSUM is a number that is computed by adding up all of the octets in the datagram, and the result is put in the header. Once the computer at the remote end receives the datagram and verifies the checksum, it places an Acknowledgment number in the header and sends it back to the source computer. So, now is when TCP hands it off to IP. The amount of datagrams depends on the file size. Details of IP The main things in this header are the SOURCE and DESTINATION address, and they are the same as the TCP header. The PROOL tells IP which protocol to deliver it to, either TCP or one of the other protocols that use IP. The CHECKSUM in the IP header is verified at the other computer to make sure the datagram was not damaged in transit. The time to live field is how long the packet will live before it’s erased. The reason for this is not to have stranded packets clogging up the network. For File transfers, mail sending and retrieval, and remote logins TCP/IP is the protocol of choice. It has the minimum lose of data, while insuring pinpoint delivery. TCP/IP is invisible to the user; therefore, the user doesn’t have to worry about configuring TCP/IP.