Introduction

Introduction Prior to OSI, networking was largely either government-sponsored or vendor-developed and proprietary standards such as SNA and DECnet. In the UK work on the Experimental Packet Switched system circa 1973, the need to define so called higher level protocols above the HDLC link level communications protocol and the content of an NCC publication 'Why Distributed Computing' resulting from considerable research into future configurations for computer systems resulted in the UK presenting the case for an International Standards Committee to cover this area at the ISO meeting in Sydney in March 1977. OSI was hence an industry effort, attempting to get industry participants to agree on common network standards to provide multi-vendor interoperability. It was common for large networks to support multiple network protocol suites, with many devices unable to interoperate with other devices because of a lack of common protocols. However, while OSI developed its networking standards, TCP/IP came into widespread use on multivendor networks for internetworking; while on the local network level both Ethernet and token ring gained prominence. The OSI reference model was a major advance in the teaching of network concepts. It promoted the idea of a consistent model of protocol layers, defining interoperability between network devices and software. OSI (Open Systems Interconnection) is a standard description or " reference model" for how messages should be transmitted between any two points in a telecommunication network. Its purpose is to guide product implementors so that their products will consistently work with other products. The reference model defines seven layers of functions that take place at each end of a communication. Although OSI is not always strictly adhered to in terms of keeping related functions together in a well-defined layer, many if not most products involved in telecommunication make an attempt to describe themselves in relation to the OSI model. It is also valuable as a single reference view of communication that furnishes everyone a common ground for education and discussion. Developed by representatives of major computer and telecommunication companies beginning in 1983, OSI was originally intended to be a detailed specification of interfaces. Instead, the committee decided to establish a common reference model for which others could develop detailed interfaces that in turn could become standards. OSI was officially adopted as an international standard by the International Organization of Standards (ISO). Currently, it is Recommendation X. 200 of the ITU-TS. The main idea in OSI is that the process of communication between two end points in a telecommunication network can be divided into layers, with each layer adding its own set of special, related functions. Each communicating user or program is at a computer equipped with these seven layers of function. So, in a given message between users, there will be a flow of data through each layer at one end down through the layers in that computer and, at the other end, when the message arrives, another flow of data up through the layers in the receiving computer and ultimately to the end user or program. The actual programming and hardware that furnishes these seven layers of function is usually a combination of the computer operating system, applications (such as your Web browser), TCP/IP or alternative transport and network protocols, and the software and hardware that enable you to put a signal on one of the lines attached to your computer. OSI divides telecommunication into seven layers. The layers are in two groups. The upper four layers are used whenever a message passes from or to a user. The lower three layers (up to the network layer) are used when any message passes through the host computer. Messages intended for this computer pass to the upper layers. Messages destined for some other host are not passed up to the upper layers but are forwarded to another host. The OSI model is a theoretical model of how protocols and standards should work together for a common understanding of network communications. It describes what happens when one packet goes from one device to another. Without the model we would not have an understanding of how to connect networks together. The standard model for networking protocols and distributed application is the OSI model -7 network layers. Background of the Study The Open Systems Interconnection (OSI) model was designed to be just that; an open system. The design features are not proprietary, meaning that complete details of the system are available and can be used freely. The OSI model is documented fully and provides hooks that can be used to develop programs, or to " enhance" the system. Source code for the various layers is available from a number of locations or vendors, and freely across the Internet. The OSI model is derived from a model set forth by the 'International Standards Organization. Each layer provides a communication service to the layer above it. The implementation details of each layer is hidden, by design, from the other layers. The objective of the OSI network model is to make the operation of the information system independent from the operation of the network. Some network designs do not clearly define all of the OSI layers. Such designs may integrate the functionality of two or more layers, or ignore some layers completely. TCP and IP were developed by a Department of Defense (DOD) research project to connect a number different networks designed by different vendors into a network of networks (the " Internet"). It was initially successful because it delivered a few basic services that everyone needs (file transfer, electronic mail, remote logon) across a very large number of client and server systems. Several computers in a small department can use TCP/IP (along with other protocols) on a single LAN. The IP component provides routing from the department to the enterprise network, then to regional networks, and finally to the global Internet. On the battlefield a communications network will sustain damage, so the DOD designed TCP/IP to be robust and automatically recover from any node or phone line failure. This design allows the construction of very large networks with less central management. Because of the automatic recovery, network problems can go undiagnosed and uncorrected for long periods of time. The TCP/IP model emphasized the use of communication principle over the layering concept fundamental to the OSI. These principles include end-to-end and robustness. The original definition of the end-to-end principle assigned the maintenance of state and overall intelligence at the edge of the network and that the Internet would connect these edges while focusing on simplicity and speed. This has evolved with the requirement for firewalls, web caching, network address translation, and the principle continue to evolve with the modern realities. The robustness principle emphasizes conversation in sending information but liberal behavior in receiving. Significance of the Study In the TCP/IP model of the Internet, protocols are deliberately not as rigidly designed into strict layers as the OSI model. However, TCP/IP does recognize four broad layers of functionality which are derived from the operating scope of their contained protocols, namely the scope of the software application, the end-to-end transport connection, the internetworking range, and lastly the scope of the direct links to other nodes on the local network. The presumably strict consumer/producer layering of OSI as it is usually described does not present contradictions in TCP/IP, as it is permissible that protocol usage does not follow the hierarchy implied in a layered model. Such examples exist in some routing protocols or in the description of tunneling protocols, which provide a Link Layer for an application, although the tunnel host protocol may well be a Transport or even an Application Layer protocol in its own right. And TCP/IP design was generally favors decisions based on simplicity efficiency and ease of implementation. Scope and Limitation To assist you in quickly comparing the layers of the OSI Model, and understanding where they are different and how they relate to each other. It shows each layer's name and number, describes its key responsibilities, talks about what type of data is generally handled at each layer, and also what the scope of each layer is in approximate terms. It also shows some of the more common protocols that are associated with each layer. OSI model layers are theoretical and do not actually perform real function and Industry implementation rarely have a layer to layer correspondence with the OSI model layers. Different protocol within the stack performs different function that helps send or receive the overall message and then a particular protocol implementation may not represent every OSI model layer. Chapter 2 Review of Related Literature and Study When last observed at year-end 1979, the International Standards Organization Technical Committee (ISO/TC 97) had just approved the OSI Reference Model as a Working Draft (WD) and had authorized Subcommittee 16 (SC16) to make the requested changes and resubmit it as a Draft Proposal (DP). Embedded in the Reference Model WD was the fundamental assumption of communications by making connections, not launching datagrams; this notwithstanding the fact that the leading LAN technologies used datagrams, not connections, to communicate between devices. Since the Reference Model WD failed to embrace datagram protocols, it could not satisfy the rapidly growing LAN community. Excerpting language from the introduction of the eventual standard: The assumption that a connection is a fundamental prerequisite for communication in the OSI environment permeates the Reference Model and is one of the most useful and important unifying concepts of the architecture which it describes. In OSI terminology, physical and virtual circuits were addressed by connection protocols whereas datagrams were considered connection-less protocols. Physical or virtual circuit architectures create connections before transmitting data whereas datagram architectures simply transmit data without establishing connections, hence, connection-less. The major LAN technologies, such as CSMA/CD and token passing, were connection-less and therefore were unaddressed by the Reference Model WD. The connection-based Reference Model satisfied the PTT's, but for those wanting reliable end-to-end communications over the public data networks or LANs, it meant creating: a transport layer protocol providing reliable end-to-end service, a change to the Reference Model to allow connection-less communications, and a connection-less network layer protocol. The omission of connection-less communications from the Reference Model WD concerned many European computer scientists as well as Rosenthal and others at the National Bureau of Standards (NBS) committed to having the U. S. Government adopt the eventual OSI standards. But since NBS's pioneering network, NBSnet, used a CSMA/CD, or connection-less, protocol. If OSI did not include connection-less protocols resembling those evolving in the U. S., NBS would have to abandon its goal of adopting OSI standards. In response, NBS pursued a multi-prong strategy. First, NBS sought help from the American National Standards Institute (ANSI), the U. S. representative to ISO. Only, ANSI's members, companies, favored proprietary technologies and questioned the economic value of international standards. NBS next approached the European Computer Manufacturers Association (ECMA). ECMA, although not a formal member of ISO, attended SC16 meetings by invitation. ECMA shared NBS's concern regarding the lack of OSI connection-less protocols for LANs. For years, ECMA had monitored or participated in INWG and IFIP discussions regarding the need for datagram protocols. So ECMA welcomed the NBS as an ally and invited NBS representatives to ECMA meetings. John Heafner, head of NBS's Systems and Network Architecture Division starting in January 1979 and responsible for all NBS networking activities, including OSI protocols, remembers wanting OSI to adopt transport protocols similar to the DOD TCP protocol. In early 1980, knowing time was of the essence, ECMA submitted a draft proposal to both ISO and CCITT recommending four classes of transport protocols, ranging from a minimal protocol for connection networks to a TCP-like protocol for connection-less networks. ECMA, however, needed an inside champion to argue their cause. In the spring of 1980, ECMA's champion emerged. The French PTT, influenced by the changing regulatory environment in the U. S. deregulation and the Computer Inquiries - and their growing awareness of the merging of computers and telecommunications, recruited Zimmerman from IRIA, a data processing research institute, to join Centre National d'Etudes des Telecommunications (CNET), the research institute for the French PTT - its Bell Labs. Zimmerman's new role ideally positioned him to bridge the differences separating ISO and CCITT. He reflects: One of the reasons for moving was the will of the French PTT to put together, or to get more, of the data processing culture. It was agreed that I would keep participating in standards, as I had done before, and from that time was in a much better position to act as a go-between ISO and CCITT. So I was, within ISO, still in charge of the OSI reference model group, and people knew that I had moved to the PTT's. They could see that it did not change my way of managing and pushing things, and it was clear that it was supported by the French PTT. In August 1980, facilitated by Zimmerman as well as the more receptive attitude within CCITT to data processing-oriented standards, CCITT and ISO jointly announced tentative support for ECMA’s transport protocol proposal. Zimmerman’s next challenge was managing the approval of the Reference Model at the upcoming SC16 meeting in Berlin. Success could not be assumed. Zimmerman knew the current version of the Reference Model had problems. How could it not? Designed as it was by an international committee in record time. Some problems were merely cosmetic, such as the correct use of the English language. Other problems were more serious. The U. S. delegation, for example, repeatedly questioned the fundamental objective of a Reference Model. They lobbied that the Reference Model be circulated as a simple technical report rather than passed as a standard with permanent consequences. Zimmerman thought the Americans undervalued the benefit of making the Reference Model hard to change. The problem that concerned Zimmerman most was whether the right balance between “ time to market" and technological elegance had been achieved. Many people, including Zimmerman, recognized that a collaborative standards process did not result in a perfect technical answer. However, for a standard to work in the real world required widespread acceptance despite technical weaknesses and conflicting requirements. At the SC16 meeting in Berlin in November 1980, an air of excitement fueled by nearly three years of hard work energized every crowded meeting room. As the estimated 200 attendees eagerly awaited the vote to approve the Reference Model as a DP, each country delegation formally presented their review of the Reference Model and recommended, or not, its passage. John Aschenbrenner of IBM led the U. S. delegation that again argued that the Reference Model should be approved as a technical report, not as a standard. The dull thud that followed hardly had time to reach the back of the room when Mike Purton of the British Standards Institute gave, as Bachman would recall: " his infamous speech, " condemning the Reference Model for its misuse of the English language. Making the OSI Reference Model a DP effectively ordered the layering of computer communication protocols even though OSI had yet to create an actual protocol standard. Then the top three layer in the OSI Model (Application, Presentation and Session layer) are combined into a single layer in the TCP/IP model in the Application layer. There are some OSI protocol application to which combine the three layers as X. 400, there is not a stated requirement for the TCP/IP protocol stack to implement a discreet structure above the Transport layer. The Session Layer corresponds to the Telnet virtual terminal functionally that is part of the text based protocols like SMTP and HTTP TCP/IP model Application Layer protocols. It also corresponds to the TCP and UCP port numbering system that is part of the Transport Layer in the TCP/IP model. There are some functions or application that in the OSI Model are located in the Presentation Layer which is located in the Internet application layer that uses the MIME stardard. This is used Application Layer protocols such as SMTP and HTTP. These issue have been cleaned up through the annexes to the original OSI model which makes protocols for the Network Layer. The IETF protocols can also be recursively encapsulated with tunneling protocols such as the GRE (Generic Routing Encapsulation). Synthesis Information hiding, Decoupling changes, Breaks up complex problem into smaller manageable pieces, Abstraction of implementation details. They have separation of implementation and specification, Can change implementation as long as service interface is maintained. They can use functionality. It's Upper layers can share lower layer functionality Chapter III Methodology Instrumentation This study used a self-made survey form that consists of three (3) parts. The first part consists of demographic information about the participant, which include the name and his/her position. The second part of the survey form is composed of a screener question that is designed to validate the respondents' survey. The third part contains 4 core questions which gives the data needed for this study and is close ended question which resolves the thesis question. RESPONDENTS OF THE STUDY The study included two sets of respondents and answers the certain evaluation form. The researchers will provide fifteen (15) evaluation forms for I. T professionals that should be a graduate of any four (4) year computer related course, such as Bachelor of Science in Computer Science or Bachelor of Science in Information Technology or Computer Engineering. The other fifteen (15) Students that should be in related field. Validity and Reliability Pre-testing was done to determine the clarity, research adequacy. Participants in this pre-testing are people that graduate the courses of BSIT or BSCOE and students and others that have knowledge about the variables. Descriptive research was used in this thesis question in order to obtain information. There is difference between the two variables. The method involved range from the survey which describes the correlation study which investigates the relationship between variables. Chapter 4 Results After conducting a survey on some students and workers in the field of BSIT or OTHER FIELDS were able to take back 30 of the 30 surveys questionnaires. Here are the results of the survey. Questions | Yes | No | Maybe | No. 3 | 9 | 17 | | No. 4 | 13 | 14 | | No. 5 | 10 | 1 | 16 | No. 6 | 21 | 7 | | Assumptions Based from the results that the researchers came up, the study shows that most of the people understands more OSI model and other are TCP model. Because you cannot fully understand TCP model unless you understand OSI. Chapter 5 Conclusion As the researchers finish doing the entire interview, study and research we concluded that most of the people are easier for them to understand TCP model rather than OSI because OSI model is more complicated than TCP model. Recommendation