OPTIMAL MODEL FOR IMPLEMENTATION CYCLE OF COMPUTER NETWORKS

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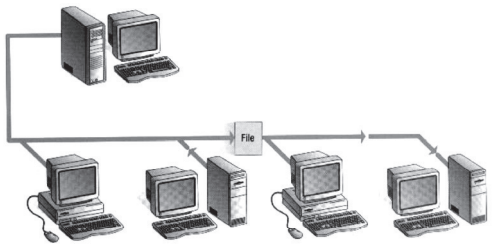
Abstract
With the new technology the network, networks have become more complex and play a vital role in helping business performance. Taking advantage of advances in technology, with the help of computer network can add new services, and thus increase productivity.
In this work will include data on the importance of computer networks for the implementation, execution and delivery of information based on the importance of computer networks.
On this day, computers and data are critical to information system. From computer networks could gain some good such as the possibility of sending information, success in business growth, support of different applications, the possibility of access to different sources, etc. Different requirements and many have become more complex computer networks.
Here will present the fundamental design goals of the network from the beginning, that is the agreement with the client, identification of technical requirements, designing hierarchical physical topology, logical, choice of technology and equipment, etc.
The entire study will be that within the description of the network installation will be the comparison of different models of the design.

Introduction

Today, economy is based on time and computer networks, where these two elements are very valuable. Plan should be designed to make the best of network taking into account these two elements. Also, under the appearance of network design, will also be a comparison of network models that leave the possibility for selecting the best model for implementation. Good network is the result of network designers and technicians who identify customer requirements, technical requirements, and determine the best resolution and appropriate business needs.
Technology services are designed to support the development of networks. Action required for the creation and deployment of new technology is divided into several stages. At each stage are presented in the detailed performance of new technologies into the net.

Type of Network Design

One of the many types of network design is the peer-to-peer, where is the sense of connection devices sequentially. In network peer-to-peer, devices connected directly to each other without any additional equipment between them. Each device has equal capacity and responsibility. Individual users are responsible for their own resources and decide which records and peripheral devices to share. Users Accounts are responsible for individual resources on their computers, there is no central point of control or network administrator.



The model of network peer-to-peer

Peer-to-peer networks have some disadvantages:
Networking is not centralized and administered, no centralized security, each user must have separate security measures for the protection of dates, networks become more complex and more difficult to manage as the number users, preservation or backup to the financial statements must be maintained, where the responsibility lies with the user individual.
This type of network design is only for small size networks, for home or small businesses.

Hierarchical Topology Network

Good networks do not happen by accident. They are the result of hard work by network designers and technicians, who identify network requirements and select the best solutions to meet the needs of a business.
Network users generally do not think in terms of the complexity of the underlying network. They think of the network as a way to access the applications they need, when they need them.
Within the physical design hierarchy, the same hierarchy should be designed for logical reasons better use of IP (Internet Protocol) address.
IPv4 address is divided into classes:

- ***A****: 1-127; SM: 255.0.0.0; /8*
- ***B****: 128-191; SM: 255.255.0.0; /16*
- ***C****: 192-223; SM: 255.255.255.0.0; /24*
- ***D****: 224-239; Multicast*
- ***E****: 240-255*; Experimental

Each user in the network must have a unique IP address. Logical hierarchy of the network enables the IP address used in the most efficient manner, saving IP addresses, as well as better management of them.

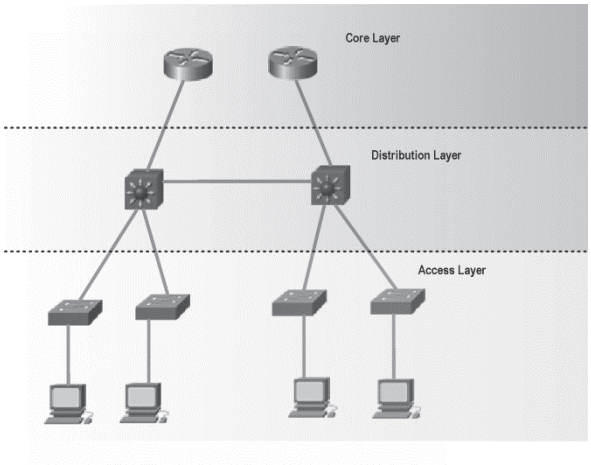
Example:
IP address 192.168.0.0 255.255.255.0 /24.
From this we can have a total of 256 IP addresses that can be used 254 for the first user is 0 network and 255 is broadcast.

In this example we will subnet that address the four networks, each of which must be from thirty users 255.255.255.0 the binary number is:
11111111.11111111.11111111.00000000
2^3=8 *(Netowrk)*
2^5-2=30 *(Host)*
192.168.0.0 255 255 255 224/27

From this example we can see how it can be implemented subnet addresses, which aims to have rational use of IP addresses, and manage them easily.

Designing physical hierarchical topology
The main goal of network design is that project meets all requirements. Recently, the entire economy based on information technology, especially in computer networks. Should therefore, that in designing new plans that include network access or services in large proportion, the possibility of expanding the network, preventing incidents and various attacks, etc.
Some of the fundamental requirements for computer networks are:
- Should have thought that goal all the time;
- Networks must be reliable and stable at all times;
- Be easy modification, adaptation and it has a tendency to increase;
- Four main goals of network design are: Scalability, Availability, Security and Manageability

Hierarchical Network
To mellow main design goals, nets should be designed in a hierarchical manner based on three tiered model:
Core layer
Distribution Layer
Access Layer



Hierarchical Network

Networks designed hierarchical model divides the network into blocks managed. Only traffic that has destination to move to another network layer high.
Technology services are designed to support the development of networks. Action required for the creation and deployment of new technology is divided into several stages.This paper will present the design of network divided into five phases, which are:
- The Prepare Phase;
- The Plan Phase;
- The Design Phase;
- The Implement Phase;
- The Operate Phase.

The Prepare Phase
During this phase, set the case for improving the network. Based on the required core goals and adding financial reasons for new services and technologies. In the preparatory phase indicated financial reason for the network strategy and evaluation of the proposal network.
Some of the goals defined for the new network:
- Improve Customer Experience;
- Reduce Costs;
- Add additional Services;
- Support Compan Expansion.

These goals provide a foundation for a business case. The business case is used to justify the financial investment required to implement the technology change. The company considers possible business constraints, including budget, personnel, company policies, and schedule limitations.
This strategy identifies:
- Advanced technologies that support the new network solution;
- Current and planned network applications and services, and their priorities based on business goals;
- People, processes, and tools required to support the operations and management of the technology solution.

The Plan Phase
The Phase Plan, including identification of network applications based on the goals, objects, user requirements and other factors. This stage involves the characterization and assessment positions of the existing network. The plan plan is useful to help manage tasks and a minimum responsibilities to implement changes in the network.
At this stage, the network designer also made estimates of the actual network. Identify all equipment and electrical modifications. Assess current capabilities and operations management, technology and new infrastructure. Before the installation of new technology, changes should be made in infrastructure, personnel, processes, tools, etc. The network designer prepares draft plan that summarizes all the requirements for network design.
The project plan includes:
- Tasks;
- Timelines and critical milestones;
- Risks and constraints;
- Responsibilities;
- Resources required.

The plan needs to be within the scope, cost, and resource limits established in the original business goals.

The Design Phase

The design requirements document supports the specifications identified in the Prepare and Plan phases for:

- Availability;
- Scalability;
- Security;
- Manageability.

The design must be flexible enough to allow for changes or additions as new goals or needs emerge. The technology must be integrated into the current operations and network management infrastructure.

At the end of the Design Phase, the network designer creates plans that guide the installation and ensure that the end result is what the customer requested. Plans include:

- Configuring and testing connectivity;
- Implementing the proposed system;
- Demonstrating the functionality of the network;
- Migrating network applications;
- Validating network operation;
- Training end users and support personnel.

During the Design Phase of the network upgrade, the design of the network is completed. Any new equipment and technologies are specified and tested. A review of the proposed design confirms that the business goals are met. A final proposal is generated to continue with the implementation of the network upgrade.

The Implement Phase

The Implement Phase begins after the design and the customer approves it. The network is built according to the approved design specification. The Implement Phase verifies the success or failure of the network design.

Testing all or part of a new network solution in a controlled environment helps to identify and resolve any implementation issues before the actual installation.

After the issues have been resolved, the Networking Company installs the new solution and integrates it into the existing network. When the installation is complete, additional testing is done.

System-level acceptance testing checks that the new network meets the business goals and design requirements. The results of this test are recorded and become part of the documentation provided to the customer. Any training required for the clien staff needs to be completed during this phase.

Faza e operimit

The Operate phases are ongoing. They represent the day-to-day operations of a network. The staff monitors the network and establishes a network baseline. This monitoring helps the company achieve maximum scalability, availability, security and manageability.

After the new network is installed, client personnel manage the network to ensure that it is performing to the design specifications outlined in the Prepare and Plan phases.

Policies and procedures are needed to handle network issues, such as:

- Security incidents;
- Configuration changes;
- Equipment purchases.

Updating these policies and procedures after an upgrade reduces downtime, operating costs, and change-related issues. If there are no policies and procedures in place, it is important to create them.

Optimizing the network is a continuous process. Its purpose is to improve network performance and reliability by identifying and resolving potential network problems before they happen. Doing this ensures that the business goals and requirements of the company are maintained. Common network problems that could be discovered in the Optimize Phase include:

- Feature incompatibilities;
- Insufficient link capacity;
- Device performance problems when multiple features are enabled;
- Scalability of protocols.

Responding to the Request

When a business or organization decides to upgrade or replace their existing network, they usually generate a Request for Proposal (RFP) or a Request for Quote (RFQ). In the PPDIO model, this occurs at the end of the Prepare phase. RFPs and RFQs include specifications that define the format and content of the expected responses from the potential contractors. It is critical for contractors to follow the instructions contained within the document as accurately as possible. Not following the directions or missing sections of the request could mean that the project is awarded to another contractor.

Document (material tenderer)

Each section of the response document should be as detailed as possible. Unless otherwise indicated, the section numbers of the response document should correspond with the section numbers of the request. The response should be written with the target audience in mind. Technical terms and concepts need to be explained where necessary.

To ensure that the response document is easy to read, a table of contents is used to organize the material. An introductory letter is included to introduce the material.

Pre-bid Meeting

Tender document shall be prepared in the form of a manual, which serves as a presentation on the project, design and implementation of the network. In each section should respond and be properly documented all possible details. Contents of the notes to those responsible must match the contents of the records of the applicant. The answer should be written bearing in mind the target audience. To explain where necessary, technical terms to ensure that the document to be easily understood, set entry and content.

This document is divided into several sections: the first entry sheet, content, solution proposal, price proposal, the signature section and appendix.

The first page, entry
Document prepared by the company contains all the information of the company, the name of the responsible person, telephone numbers of personnel that is on the list and brief summary of the contents of the proposal.

Content
Define the problems and requirements of the client, the reasons why this is the right company for the job.

Proposal for resolution
Detailed description of the solution, project management and team performance timeline, description of technical support. It is important to guarantee the inclusion of parts, which covered equipment, repairing or changing procedures, response time, commitment to repair the problem identified, etc.

Proposal for price
In this section should be given details of the price of the equipment as well as the overall project. This may include hardwere parts, softwere applications, licensing requirements, training costs, warranty, maintenance costs, transportation costs, energy costs, payment terms etc.

Section for signature
This section is provided for the signatures between authorized persons for the project.

Appendix
In this section marked additional information, company information, etc.. Some of this information may be: company size and number of employees, services and procedures performed by the company, previous references, brief information for employees who will work on the project, education and diplomas.

The meeting between the client and the company
Before submitting the document for presentation, the customer can schedule an informative meeting. The meeting will discuss and ensure that the entire plan is in order before the end. The goals of this meeting are:

- Opportunity to be viewed by the client project;
- Additional information;
- Clarification of the project format and deadlines.

The meeting allows the contractor to get estimates of a large number of companies that are interested in designing.

Description of the role of finance manager
When the company's network accepts the proposal from the client, it is the responsibility of the finance manager to respond. Finance managers in the company are responsible for the ongoing relationship between the company and its customers. Clients rely on the expertise of finance managers to assist in the determination of net requirements. The finance manager of the company's network and the finance manager of the company's clients are responsible for the good working relationship. Finance Manager serves as the company's network manager to manage main personnel. Good manager must have good communication skills and knowledge to customers. Finance Manager communicates with client management through phone, email, face to face meeting or more methods, depending on customer preferences.
In some companies, the network manager is responsible for contacting customers and clients in the area and in different countries. Some of the responsibilities that have financial manager:

- Meeting certain sales targets and revenue;
- Information and communication technology for new products;
- Direction of points of sale, service and support teams;
- Answer of project to customers, demonstirmet, questions and information;
- Negotiations to continue selling or contracted services;

Description of the role of the network designer
A network designer needs a thorough understanding of the capabilities of all types of networking technologies and equipment. These skills enable the designer to provide customers with a network design that meets the customer requirements for scalability, availability, security and manageability. The designer is involved in the Plan and Design phases of the PPDIOO network lifecycle. In some smaller companies, a pre-sales systems engineer may also perform the role of network designer. In larger companies, there may be a team of network designers working on a single project. In this course, a single network designer will be used.
A good network designer takes the time to learn about the customer's business, in addition to the customer's network requirements. This helps the designer anticipate changes that might occur as the business grows and succeeds. A designer is responsible for:

- Analyzing customer goals and constraints in order to determine the technical requirements for the new design
- Evaluating the current installed network
- Selecting the technologies and equipment capabilities to meet the defined network requirements
- Diagramming the placement and interconnection of various network devices and services
- Designing and supervising proof-of-concept testing
- Assisting the account manager in preparing presentations to the customer

At the NetworkingCompany, the design staff is made up of highly skilled network professionals. The network designer must stay up to date about technologies, as well as new design recommended practices.

The Importance of Interpersonal Skills
Good interpersonal skills are critical when interacting with customers. A calm and courteous manner instills confidence in customers. The customer believes that the

NetworkingCompany designer and staff can perform the necessary tasks.
The following skills are essential when working with clients:

- Listening and accurately summarizing information
- Corresponding with clients in a style, format, and level of detail appropriate for the intended audience
- Presenting well-organized technical material in a logical fashion

The ability to develop a good rapport with a client is crucial. Establishing a trusted business relationship eliminates many potential problems and contributes enormously to the success of the project for both companies.
To create a comprehensive plan, the network designer needs to understand how the network users interact with the network resources and services. The designer gathers information about all internal and external access to the existing network infrastructure. Without full knowledge of who has access to the network, the designer may overlook some user requirements. As a result, the designer may present a design that is incomplete. Failure to submit an adequate design generates delays and increased costs.

Finalize the proposal
The company's network manager gets information to complete the implementation and collection of the price. Components are connected in bookbinding proposed based on the criteria and content.
Covers contain information relevant to the proposal description, customer contact information and contract information.
At the end of the proposal are the requirements for acceptance and signature country. These terms describe the necessary contract, supply supporting it loads and related services in network assessment and installation.
The main items in these conditions include:

- Details of the proposal and the deadline;
- Obligations of the customer obtain the permit, or other approvals within their organization;
- When the client indicated amounts may cancel any equipment or service;
- Details of the guarantee;
- Details on the graduation and completion unbundling;

If the proposal is accepted by the client, the client appointed the representative signed.
Presentation of proposal
If there is no written RFP, or if the written RFP does not specify an outline or format, the designer can determine the layout and design of the proposal. In such cases, the proposal layout should be highly readable and aid the reader in locating information. Graphics enhance the readability of a proposal and convey information as well. Text should be legible, typically a serif typeface such as Times Roman, at 10-point to 12-point type. Page margins should be at least 0.5 inches, and page numbers should be included at the top or bottom of each page.
At this point in the client project, the NetworkingCompany account manager and the network designer develop a proposal to respond to the RFP of the client. Most source material for the proposal is already available, except for the implementation plan and the cost estimate.
The designer edits and organizes the existing information prior to developing the implementation plan and the cost estimate.
After completion of the proposal, the network designer's proposal to review all of the company's network management. Designer usually presents in the form of illustrated with slides proposal presented graphically. Presentation, along with the proposal document is vital to ensure the successful meeting and the possibility to increase customer sign.
Content and presentation are very important in terms of business.
Types of presentation:

- Each slide should contain the title that summarizes the information presented in the slide;
- Presentation software should not contain the full text. Bullete formats used or drawn;
- All types should be clear. Large fonts used, due to the small fonts are often difficult to read;
- The use of contrasting colors, dark background and qelta letters or vice versa;
- Do not use all capital letters. Use is unprofessional and can be difficult to read;
- Include combinations of words, pictures and graphics. Sorts of interesting presentation made;

Conclusion

The porpuse of this study is the importance of building good network infrastructure. Implementation cycle is divided into several stages, starting from the preparation stage is meeting with the client and obtaining the client's requirements while continuing to plan, design to implementation and operation of the network and verify that meets the required from the first stage of preparation.

The main purpose of this paper is presenting the implementation cycle through the network which enables the transmission of information, be in business growth and development, and increase communication.

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