

Fiction corporations network design term paper samples

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Executive summary

This report provides the network design of the Fiction Corporation project. The report follows the project management book of knowledge (PMBOK) processes and propose an organized study of the problem. The report provides an approach to solve the problem in a comprehensive manner. It starts with the study of the current network design and the technologies that deployed in the system. The management and network team will closely analyze the current system and propose a plan, how to migrate the data center of the organization from the old site to the new site (headquarter). The network design and engineers team will consider the Fiction Corporation business requirements and propose design accordingly. Financial constraints and required uptime will also be considered. In the end, it will discuss the return on investment.

Project Management Body of Knowledge

Project Management Body of Knowledge is the group of processes and knowledge areas that are accepted as the set of best practices for the project management profession. PMBOK recognizes mainly 5 process groups and 10 knowledge areas. The basic concepts of these process groups and knowledge areas can be applied to programs, projects, and operations. The five process groups are:

- Initiating
- Planning
- Execution

- Monitoring and Controlling
- Closing

The ten knowledge areas of project management are:

- Project integration management
- Project scope management
- Project cost management
- Project time management
- Project quality management
- Project communications management
- Project human resource management
- Project risk management
- Project stakeholder management
- Project procurement management

Most of the knowledge areas includes the same project management processes; for example, project procurement management includes planning, conducting, administration, and closing procurements phases .

Considering the case of Fiction Corporation, the project will go through the same basic process areas, i. e. initiating, planning, execution, monitoring and controlling, and closing.

Project Initiating

During the first phase of initiating, the basic project goals and scope of the Fiction Corporation project will be discussed.

Project goals

This project not only aims at fulfilling the basic requirements of the Fiction

Corporation but also but also adds in advancements to the new system.

- The first and primary goal of this project is to migrate data center of Fiction Corporation from current location to new headquarter, which is located several miles away. It requires that, during shifting, daily operational activities should not be affected and be done in a smooth manner.
- There must be a data storage duplication at remote location. The old site of the Fiction Corporation is dismantled only when the new site is all ready for hosting operations. This will keep daily operations unaffected.
- While shifting the organization's network to another site, there is an opportunity for the Fiction Corporation to upgrade infrastructure at the same time. Latest network technologies and architecture can be implemented during the migration of infrastructure. During this process, various other teams will also take part in the project, i. e. Wide-IP's team that would analyze the current network design and make improvements to it. It would optimize and improve the quality of operations at the organization.
- There is limited budget for the migration and upgrade of the network design and infrastructure, i. e. \$500, 000 provided by the Executive Committee of Fiction Corporation. The management team is responsible for all requirements and upgrades adjustments within the provided amount. In order to ensure that the plan will work, cost effective and provide short and long-term benefits, return on investment or (ROI) will also be considered.

Project scope

The network infrastructure and the data center of the company have a great impact on the operations of the business. There are the number of tasks that

are more or less dependent on the networking and data management of the company. However, not all aspects and tasks can be accomplished using the same architecture of the network. Therefore, it is important to set priorities and tasks which are more important and then design the data management and network infrastructure accordingly. Here, the scope of infrastructure and network of the Fiction Corporation will be discussed.

- During the process of migrating network design and infrastructure of the organization, the Wide-IP team will analyze the current portfolio of the network and provide the improvised design and infrastructure. Thus, costs can be saved on the implementation of newly developed network design.
- New data center or storage infrastructure will be deployed at the new site that would fulfill the latest technological requirements and also set up inter-networking with other sites of the organization, i. e. call center, retail stores etc.
- Testing and quality check processes will be carried on the new inter-network system. It is because; daily activities and operations of the organizations cannot be disrupted by performing these tests on the old site network. The provided uptime is quite high, therefore, testing and quality check can be performed rigorously.
- Management can host business from the new site only when the old site is completely migrated to a new site and when inter-networking and other operations are tested.
- New technologies, network design, and infrastructure will be implemented by the Wide-IP team for the new site. This design would require expertise for later use as well; therefore, Wide-IP team will provide training and support to

the Fiction Corporation's Network Managers. This training will be provided until to the managers until they are skilled to steer up the updated operations. However, the period of training cannot be more than 4 months because it would increase the cost.

Project Planning

Design requirements

After an analysis of the current organization network and infrastructure, network and design engineers propose design requirements. Based on these requirements, network designers and engineers develop an infrastructural design. They provide the expected capabilities and requirements of the proposed design. Here, some of the Fiction Corporation's design requirements will be discussed.

- Complete Security of Local Area Network

Like any other Enterprise, Fiction Corporation is also concerned about the security of its network system and infrastructure. The design should ensure that intruders are unable to attack the network of the organization and thus secures the data and intellectual property of the organization. Some of the basic aspects of security includes port security, VLAN configuration, Firewalls, and antivirus security programs.

- Backup Readiness

Besides the high security and reliable network system and infrastructure, it is important to maintain the recent backup. Since, there is always a certain percentage of risk of system failure; therefore, there should always Plan B ready for implementation. In the case of failure, Fiction Corporation must has

the functional backup ready for installation. It would minimize the chances of loss for the organization.

- Bandwidth Availability

As discussed earlier, Fiction Corporation has some remote sites in the network too. Some are physical sites that are supposed to be consistent with the local area network or LAN. T-1 links and frame relay are mainly used to establish inter-network of the organization. The choice of T-1 links and frame relay is made based on anticipated traffic. In the case of heavy traffic, it is important to have enough bandwidth to support daily tasks and operations of the organization, including retail stores, warehouses, and call centers.

- Provision for Network Monitoring

Network management is a key requirement in the case of remote inter-network. Since, Fiction Corporation has a number of remote and physical sites and, therefore, it is unable for the organization to deploy management team at every site. It would be a better idea to centralize the inter-network system and let managers monitor entire functions through one location. For such design, remote monitoring has to be included in the network design. Therefore, SNMP provision for failure detection should be included. Wide-IP team can use different technologies like RMON to develop centralized network monitoring infrastructure.

- Cost Effective Design

Fiction Corporation's Executive Committee has allocated \$500, 000 investment for this project. It is the business decision, which takes into consideration the returns that project will bring to the organization. The

network designers, Wide-IP team, and engineers need to consider the budget and plan the design infrastructure according to the cost constraints.

Business Goals

Business goals of this project usually leaves an impact on the operations of the Fiction Corporation Business. It is because; this project requires changes or improvements in the current operations of the business. Fiction Corporation management has laid various objectives pertaining to this project which are discussed as follows

- Fiction management seeks certain long-term benefits in migrating data center or headquarter to a new site and, therefore, is willing to invest in this project.
- Fiction Corporation cannot compromise on its daily operations and, therefore, the management team has led this condition for the implementation of this huge project. It also requires that the company's customers and employees should not be interrupted because of the migration of headquarter to the new site. Performance and reputation is very important for the organization management team and, therefore, it is very serious about maintaining that.
- The network design and infrastructure of the organization requires that there should not be any transformation in the processes and functions during the migration phase. Furthermore, it should not change the habits of organization employees and customers. It is because; the company does not have enough budget to afford training and development of its employees for the new system. They can only provide them with the back-end practice.

Moreover, the system should also not change the way it interacts with its customers.

- Management is concerned about the network management systems due to changes in infrastructure. Wide-IP team will take care of the organization concerns and implement only those technologies that will assist in easy network management.

- New network infrastructure should not degrade the uptime rather it should improve it.

Technical goals

Wide-IP team has laid down various technical goals based on the business goals set by the Fiction Corporation Management. Upon the accomplishment of these mentioned technical objectives, our business goals and project aims will also be achieved.

- Wide-IP team will analyze the current system in detail and figure out the requirements for data processing. This detail analysis will also help the team to identify any issues and bugs like low response time, and scalability scope etc. The design of new data center will be free of any such performance related bugs and thus improve business operations.

- Wide-IP team will set up advance RS/6000 AIX application servers, UPS Systems, virtualized servers, and computer systems at the new data center location.

- Many remote locations need to be connected for setting up inter-network.

Wide-IP's technical team has to lease or set up T1 links between data center and remote locations for this purpose.

- It is not possible to put T1 links everywhere in the design, as it would raise the budget. Therefore, Wide-IP team would set up frame relay network on ISDN back up at locations. At these locations, little compromise on the low bandwidth is possible. Such infrastructure can considerably decrease the budget of network design.
- The Fiction Corporation does not compromise on the quality and reputation therefore; Wide-IP focuses on clearly stating the quality uptime. Any case of downtime or failure can affect the reputation and profitability of the organization. Therefore, Wide-IP team will set up ISDN and T1 lines as primary backup .
- One of other concerns of the organization is network management. Currently, organization operations are running at different sites; therefore, it is important for the Wide-IP team to centralize all these sites or access remotely. This centralized design would require SNMP network-monitoring system for the network design and infrastructure.
- Data security and protection is one of the major concerns of the organization. For this purpose, VLAN configuration is required on switches. This configuration will help in managing network and limiting unauthorized access.
- Rigorous Testing of inter-network system should be done. The project team cannot take risk to migrate until and unless the performance of the new infrastructure is ensured.
- Data should be migrated from old data center to new data center when backup of all applications and data is taken.

User communities and data stores

Fiction Corporation Enterprise has different departments. It hosts a number of users of various categories as daily business operations. Some of these customers are network administrators, call center users, retail store administrators, support team, and warehouse administrators.

Network applications

There are various applications operating on the 7th layer of OSI model. Some of the Fiction Corporation's network are Email programs, Telnet, FTP, call center management application, network management application, LAN and WAN network monitors, network analyzer applications, and Firewall .

Current Network Design

In the current network, 10 routers connect retail stores, and warehouses.

These routers are connected to retail stores and remote places by means of frame relay over ISDN back up. The current data servers maintain the storage. Data center facility include routers that connect remote sites over a frame relay link.

Proposed Network Design

T1 links and Frame relay are the necessary items in Fiction Corporation's network design. An organization can take various benefits if T1 links and frame relay are designed smartly. The design should be based on the requirements of the data centers and other sites. For example, in case of call center, facility frequently access data center and experience high traffic.

Data center supports call center software database. Executives would access

data servers frequently. Therefore, considering the requirements of call centers, high bandwidth link is required between call center and data center. It would be most suitable to place T1 link at this point.

In the case of warehouses, and retail stores remote places, little bandwidth would be enough. As at these sites, traffic is under control and accesses are not as frequent as in the case of call centers. Therefore, remote locations can be connected using frame relay over ISDN whereas, T1 in case of call center. By means of this new setup, the bandwidth issues would be resolved that are present in the current network system. T-1 links will replace the frame relay over ISDN between the data center and remote locations.

Network Testing

It is highly important to test the new network design before implementing it to ensure profitability and risk-free infrastructure. Various tests are followed for this purpose. These include:

- T-1 links and ISDN lines are also tested for the bandwidth they are providing to the data centers and other remote locations. It is important to test the bandwidth usage to ensure that all users are being facilitated.
- Test for the firewall setting, port security etc.
- The system should ensure that it is set on auto backup so that in case of failure, the latest information and data is available for use.
- Data centers are flooded with the dummy data to check for the scalability support .

Implementation plan

Wide-IP team will schedule all tasks within period of 1 month and 20 days or 51 days. During the implementation phase, various tasks will be performed in parallel to each other.

During the first month, activities related to setting up data center and network hardware will be performed. The next 20 days will be allocated for the software configuration of networking devices and data servers. Switches, routers, and virtual machines will be set up and configured during the same period. Other tasks will be performed on dedicated basis.

Closing of Project

In the closing process group of the project, all activities across the project management process groups are concluded. This section deduce the product, service, or output through the results of the project. In this project, closing phase is concluded by means of return on investment analysis .

Return on Investment

New data center establishment would require following costing measures:

- Set up cost of the data center
- Networking cost including T1 links + Frame Relay + ISDN back up costs
- Expertise cost or Wide-IP team cost
- Operational cost including migration + testing + support and so on.

ROI analysis:

Expert cost = \$20/hour

Cost of frame relay lease = \$200 per month (per 1.5 Mb)

Investment = \$350, 000

Return on Investment (ROI) = profit / investments = Revenue/ \$ 350, 000

This is an estimated cost. However, these estimates show up right direction of decisions.

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