Integrated Action Learning Project
Final Report

Implementation of an Upgrade of the Local Area Network for Sugar Land Bible Church

David Sandlin

TS4992 Integrated Action Learning II – Project Development and Final Report

Instructor, Dr. Sharon L. Bender

June 12, 2005

Project Description

My IAL Project has been to upgrade the local area network infrastructure for Sugar Land Bible Church. The purpose of this project was to improve network performance and availability, increase network security, provide in-house e-mail services and consolidate accounting functions to one application.

Project Objectives

The project objectives in producing my IAL Project have been to:

1. Create a stable, secure and scalable network infrastructure.
2. Enhance the performance of the network.
3. Provide a computing environment that fosters collaboration
4. Improve the ability to share information and data.
5. Increase the efficiency of accounting functions.

I was able to meet these objectives except for increasing the efficiency of accounting functions. The network infrastructure is now more secure with the addition of a full function Internet firewall and Microsoft Internet Security and Acceleration Server (ISA Server). The infrastructure is more scalable because devices can easily be added due to the implementation of wireless networking and the ability to easily add new wireless access points to provide additional wireless network coverage. The network performance is improved with the addition of higher performance server and web-proxy provided by ISA server. The implementation of Microsoft SharePoint Server and Microsoft Exchange Server creates an environment that will make sharing information and data easier and enhance collaboration through the use of an Intranet provided by SharePoint and Exchange Public Folders. The objective of increasing the efficiency of accounting functions was not met because the product chosen for the task, Microsoft Office Small Business Edition, did not meet the needs of the church. Having a majority of the project objectives met has provided Sugar Land Bible Church with a greatly enhanced computing environment.

The learning objectives in producing my IAL Project have been to

1. Apply my professional experience as well as knowledge gained from the variety of courses I have completed as part of my Capella University degree program.
2. Improve my understanding of network security and project management.
3. Develop a better understanding of how churches and non-profit organizations operate.

I was able to meet these objectives. Implementing the wireless network, the new server hardware, the new server and desktop operating systems and applications were direct applications of my experience and knowledge. Implementing the wireless network, the new firewall and ISA server forced me to gain additional knowledge and understanding of network security and how to properly implement it. Managing the project improved my understanding of project management through the variety of communications required as well as the need to plan and adjust to meet the ever-changing needs of a project. My knowledge of church functions was greatly increased because I was able to see first hand the accounting requirements and the number of people, paid and unpaid, who are required to keep the church operating. This project has contributing greatly to my learning as it relates to my degree specialty.

Tasks and Schedule

The following timeline represents the schedule of events accomplished in producing my IAL Project:

Tasks	Duration	Resources
Research Phase • Determine budget • Interview users • Identify other ongoing projects • Discover all aspects of existing LAN • Document user requirements • Document existing LAN	4/4/05 – 4/10/05	• D. Sandlin • Deacon board • Elder board • All pastors • All users
Design Phase • Design network infrastructure • Identify hardware requirements • Identify software requirements • Develop upgrade and migration processes	4/11/05 – 4/24/05	• D. Sandlin • Hans Meinardus • Deacon board

Proof of Concept Phase
• Order hardware
• Order software
• Build test network
  o Configure wireless LAN
  o Configure new server
  o Configure new PC's
  o Install configure applications
    ▪ MS Exchange
    ▪ MS ISA Server
    ▪ MS Sharepoint
    ▪ MS Money
• Test upgrade and migration processes
• Test functionality
• Modify design and upgrade and migration processes as needed
	4/25/05 – 5/8/05	• D. Sandlin
		• Hans Meinardus
		• Jim McGowan
		• Deacon board
		• All users

Implementation Phase
    • Move test wireless LAN into production environment
    • Install new server
    • Install new PCs
    • Migrate data
        o Documents
        o E-mail
        o Accounting data
        o Misc. data
    • Test Implementation
    • Train Users
	5/9/05 - 5/29/05	• D. Sandlin
		• Jim McGowan
		• Hans Meinardus
		• All Users

Documentation Phase
    • Develop wireless LAN configuration documentation
    • Develop server and operating system configuration documentation
    • Develop application configuration documentation
        o MS Exchange
        o MS ISA Server
        o MS Sharepoint
        o MS Money
	5/30/05 – 6/5/05	• D. Sandlin

Project Completion Phase • Develop and present final project report	6/6/05 – 6/12/05	• D. Sandlin

I followed this schedule as closely as possible throughout the project. This schedule allowed for logical progression of tasks from beginning to the end of the project. One major deviation from the project schedule occurred. This occurred during the documentation phase. Due to issues that arose during the implementation phase, I required an additional week to perform troubleshooting which caused the final implementation tasks to be delayed one week resulting in documentation not being completed by the end of Unit 10 of this class.

Risk Management

Several risks were identified in performing a risk assessment of my IAL Project. They were:

Risk Factor Checklist			
Risk Considerations	**Low Risk**	**Med. Risk**	**High Risk**
Funds not available for hardware			X
Technology is too difficult to use and maintain	X		
Accounting data lost or corrupted			X
Project schedule does not meet church needs		X	
Critical data is lost during file server upgrade			X
Wireless network does not provide adequate coverage	X		
E-mail delivery is unavailable for extended period of time		X	

High Risk Solutions	
Risk Considerations	**Problem and Solution**
Funds not available for hardware	The variable income of the church may result in a shortage of funds for new hardware purchases. Existing hardware will be utilized as best as possible and the timeline adjusted to accommodate future purchases.
Accounting data lost or corrupted	The migration of data from Quicken to Money results in data loss. All accounting data will be backed up twice prior to conversion to ensure roll-back is possible.
Critical data is lost during file server upgrade	Upgrading the hardware and operating systems results in data being lost. The entire file server will be backed up twice and a test restore performed to ensure recovery is possible.

I did not need to resort to my contingency plan because all the highest risks were properly mitigated.

Research

The research materials I used in producing my IAL Project and what purpose they served follows. Included is a brief discussion of what I learned from each of the resources.

[Books/Publications

1. Bender, S. L. (2003). *Producing the capstone project*. Dubuque, Iowa: Kendall/Hunt Publishing Company.

This textbook was used as a reference for producing my project. It provided several helpful tips on producing documents and tracking my project progress.

2. Stanek, W. R. (2003). *Microsoft Windows Server 2003 Pocket Consultant.* Redmond, WA: Microsoft Press.

This handbook was used to provide implementation and troubleshooting tips during the server implementation.

3. White, G. (2003). *All-in-One Security+ Certification Exam Guide.* Emeryville, CA: McGraw-Hill/Osborne

This textbook was used as a reference for implementing proper security measures to protect the network from unauthorized access.

Internet

1. Microsoft, Corp. (2004). *Microsoft Windows Small Business Server 2003 Getting Started Guide*. Retrieved February 21, 2005, from http://www.microsoft.com/technet/prodtechnol/sbs/2003/plan/gsg/sbsgsgab.mspx.

This online guide provided detailed instructions on planning for and implementing Windows Small Business Server 2003. It was a valuable resource for configuring the various services bundled with Windows Small Business Server.

2. Microsoft, Corp. (2004). *Windows XP Service Pack 2 and Windows Small Business Server.* Retrieved February 21, 2005, from http://www.microsoft.com/technet/prodtechnol/sbs/2003/deploy/sbs_xpsp2.mspx.

This document was used as a reference for properly configuring the user workstations to work with Windows Small Business Server 2003.

3. Microsoft, Corp. (2004). *Best Practices for Windows Small Business Server 2003.* Retrieved February 21, 2005, from http://download.microsoft.com/download/f/b/a/fba7f737-bdd3-4570-8873-43cab9c6e1db/SBS_BP.htm.

This document was used to ensure the proper configuration of Windows Small Business Server 2003 and its bundled services.

4. Ochs, B. (2003). *Migrating from Small Business Server 2000 or Windows 2000 Server.* Retrieved February 21, 2005 from http://www.microsoft.com/technet/prodtechnol/sbs/2003/deploy/sbs2k203.mspx.

This online guide was used to ensure proper techniques and methods were followed during the upgrade of the church's server operating system from Windows 2000 Server to Windows Small Business Server 2003.

Lessons Learned

The major lessons learned in producing my IAL Project include:

- Configuration of an Internet firewall
- Installation and configuration of a wireless network with a wireless repeater
- Configuration of wireless security to support a repeater device
- Installation, configuration and update of Windows Small Business Server 2003
- Migration of Windows 2000 Server to Windows Small Business Server 2003
- Configuration of Microsoft ISA Server 2000
- Project scheduling and management techniques
- The importance of communication with all parties involved in the project

The kinds of feedback I received were from the users concerning their needs and their issues, the project sponsor regarding project direction, scheduling and management, the system administrator in the configuration of the various systems, and Dr. Sharon Bender concerning proper research techniques. The feedback helped me to focus my efforts on the needs of the users, properly manage the project, provide useful project status updates and complete the project successfully. I learned that helpful feedback comes from all parties involved in a project and that it is this feedback that keeps the project on target and meeting objectives that are relevant to everyone. When this happens, projects are more likely to be viewed as a success by everyone impacted by the changes.
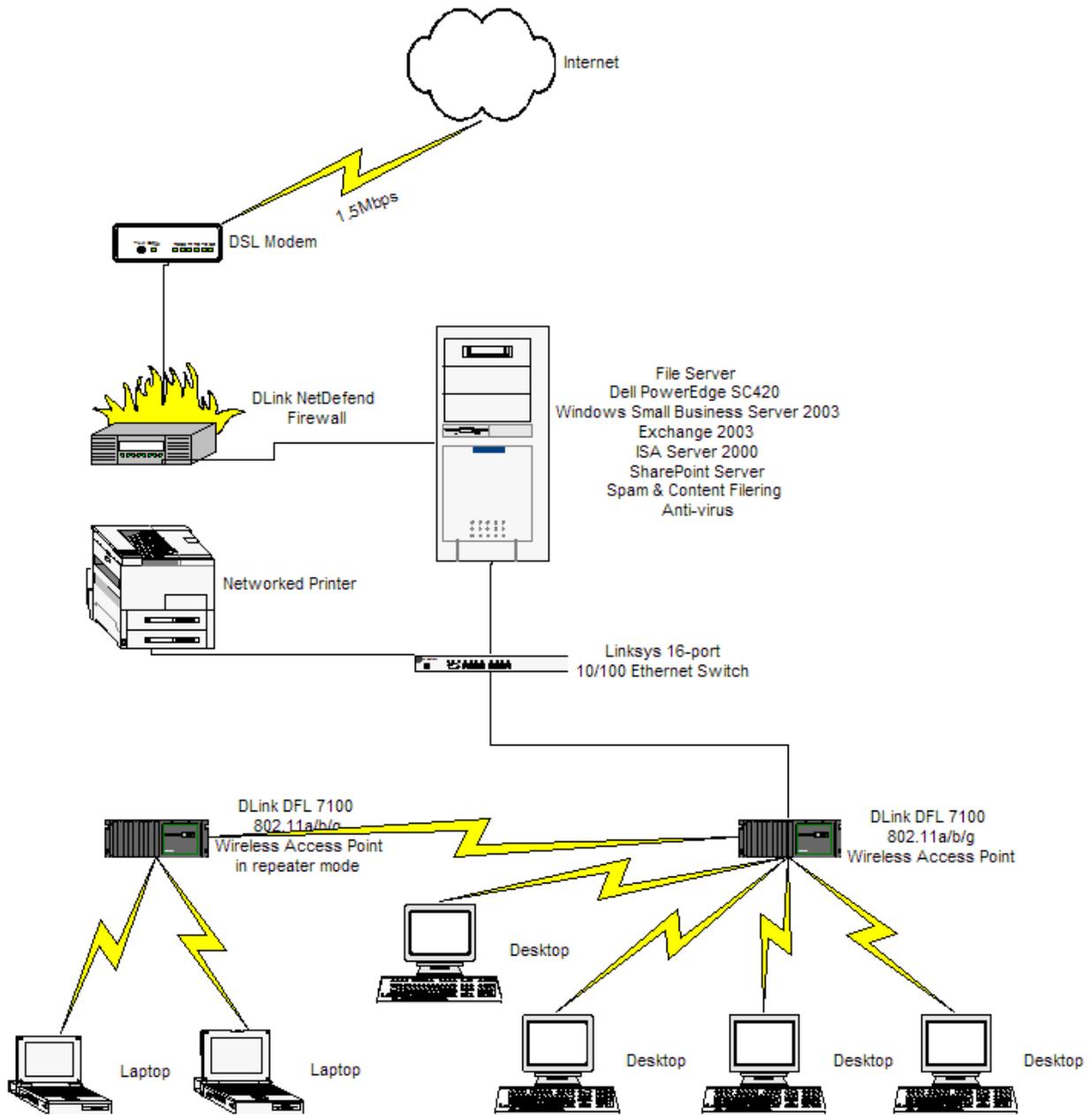
Appendix

The following appendixes evidence project completion and provide a sample of my work:

Appendix A: Schematic of the Sugar Land Bible Church Network
Appendix B: Letter of Project Completion from Stakeholder, Hans Meinardus

Appendix A: Schematic of Sugar Land Bible Church Network

Internet

1.5Mbps

DSL Modem

DLink NetDefend
Firewall

File Server
Dell PowerEdge SC420
Windows Small Business Server 2003
Exchange 2003
ISA Server 2000
SharePoint Server
Spam & Content Filering
Anti-virus

Networked Printer

Linksys 16-port
10/100 Ethernet Switch

DLink DFL 7100
802.11a/b/g
Wireless Access Point
in repeater mode

DLink DFL 7100
802.11a/b/g
Wireless Access Point

Desktop

Laptop

Laptop

Desktop

Desktop

Desktop

Appendix B: Letter of Project Completion from Stakeholder, Hans Meinardus

Stakeholder Confirmation of Satisfactory Project Completion (scanned image of letter)

"BRINGING THE BIBLE TO LIFE"

June 9, 2005

Dr. Sharon L. Bender
Capella University

Dear Dr. Bender:

DAVID SANDLIN'S CAPSTONE PROJECT

This letter is to certify the work performed by David Sandlin as defined in his capstone project plan.

David's project was the Implementation of an Upgrade of the Local Area Network for Sugar Land Bible Church. He completed the following tasks as part of this project:

- Installed a new Internet firewall
- Implemented a new wireless network
- Installed and configured new file server hardware
- Installed and configured Microsoft Small Business Server 2003 which includes Windows Server 2003, Microsoft Exchange Server 2003 and Microsoft ISA Server 2000
- Converted the original file server to a workstation PC to replace an obsolete PC in the church office
- Deployed Microsoft Office 2003 to all PC's in the church
- Installed an external hard drive on the server to provide enhanced backup and recovery capability

David has met most of the goals of his project, but he still needs to complete the system documentation. Also, he is still troubleshooting some minor issues following the implementation. David has done a great job and it was a pleasure to work with him.

Yours sincerely,
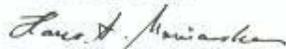
Hans Meinardus
Church Administrator

SUGAR LAND BIBLE CHURCH
401 Maclage Way • Sugar Land, TX 77478 • 281-491-7773
www.slbc.org