UNIVERSITI TEKNOLOGI MARA

PROSIDING



Seminar INSIGHTS 2002
Universiti Teknologi MARA

BRC (Biro Penyelidikan & Perundingan), Universiti Teknologi MARA, 40450 Shah Alam

Biro Penyelidikan dan Perundingan
Universiti Teknologi MARA
40450 Shah Alam, Selangor
Malaysia

© 2001. Biro Penyelidikan dan Perundingan. Hak cipta Terpelihara.

Sila majukan sebarang pertanyaan kepada:

Penolong Naib Canselor(Penyelidikan)
Biro Penyelidikan dan Perundingan
Universiti Teknologi MARA
40450 Shah Alam
Selangor, Malaysia

Tel : 603 5544 2094 / 2093 / 2092
Fax : 603 5544 2096
e-mel : azniz132@salam.uitm.edu.my



Jawatankuasa Penyunting

Penaung	:	Y. Berbahagia Datuk Prof. Dr. Ibrahim Abu Shah Naib Canselor Universiti Teknologi MARA
Penasihat	:	Yang Berbahagia Dato' Prof. Dr. Abdul Halim Mohd.Nawawi Timbalan Naib Canselor (Pembangunan dan Penyelidikan Universiti Teknologi MARA
Ketua Penyunting	:	Prof. Dr. Azni Zain Ahmed Penolong Naib Canselor(Penyelidikan) Universiti Teknologi MARA
Penyunting	:	Prof. Madya Dr. Zainon Mohd. Noor Koordinator Penyelidikan (Sains dan Teknologi) Prof. Madya Dr. Rosmimah Mohd.Noor Kooordinator Penyelidikan (Sains Kemasyarakatan dan Kemanusiaan)
Lembaga Penyunting:		Prof. Madya Ir. Dr. Hj. Abdul Rahman Omar Dr. Rashidah Abd. Rahman Cik Dapeah Ahmad

SISP, NETWORKING FRAMEWORK PROPOSAL FOR ISLAMIC BANKING

Isa Samat,
Faculty of Information Technology and Quantitative Sciences.

ABSTRACT

In order to compete with larger financial institutions, commercial banks must use both emerging technological capabilities in networking as well as advanced management techniques to meet the needs of their customers. In order to provide a good service to the customers, telecommunication and networking is one of the important parts to look into. This research will study on the network structure and the network technology that is being implemented in Islamic banks and conventional banks. Interviews were conducted with top management people in several banks to gain information on the technical parts, which is concerning to the network structure and network design of the banks. A better network design strategies to Islamic banking for the future use in order to achieve their goals are proposed after making a comparison with several banks. Information System Planning (ISP) is a way of improving the information system. Information becomes more efficient and reliable. In Information System Planning approach used whereby to understand the system processes and business goals, analyses the current issues, and purpose new plan for the information system according to customer's needs and business goals. Analysis on the current issues and future demand of the system from the customers are done. This Study comes out with the planning to solve the current issues made in the field of hardware and software of networking. It can be concluded that from the research, several problems are found from the current system and processes, and it can be solved by the involvement from all level of workers.

INTRODUCTION

BIMB Background

Bank Islam Malaysia Berhad (BIMB) was established in 1983 under the Islamic Banking act as the first Islamic bank of Malaysia. As a subsidiary of Bank Islam Malaysia Holdings, it offers range of Islamic banking products, covering retails banking, corporate loans, and treasury and trade finance. Apart from banking products, services like Insurance, Capital Markets and Unit Trust are also offered by BIMB Holdings through its group companies.

Problem Background

The title of this project is Strategic Islamic Information System (SIIS): Framework Proposal on Networking for Bank Islam Malaysia Berhad. This project is a new project, which have never been implemented in other banks in Malaysia. This project that was started in the middle of year 2001.

The system has been divided into 9 different areas, which are networking, telecommunication, ATM, services, security, e-commerce, ethics, syariah and legal aspect and zakat. All of the areas are integrated to each other to make the system more efficient and systematic.

Problem Description

Even though banking institutions play an important role in stimulating, enhancing and developed the economy, their existence with old banking method does not guarantee their role in the competitive world. The financial system as the responsive stimulation of development must update itself in order to survive in the coming era.

The most effective way to overcome this problem is through the full exploitation of networking system with the strategic planning focusing on the proper functioned of information system. The problem to be solved in this research project is to identify and understand the networking architecture of Islamic banking. This research project will also looked into the management challenge such as the network security and contingency plan.

Project Objectives

The objectives of this research project are:

- To implement what has been study and understand the concepts of Islamic Banking (IB), and SISP. The detail information about all of the concepts will be understood completely and the relation of the networking system with all of the concepts can be identified.
- To study and analyze the existing network structure design of Islamic banking.
- To identify how they utilize the networking system to achieve their business objectives.
- To measure the effectiveness of the networking system in term of speed, security and contingency plan.
- To identify the problems of the existing networking system.
- To identify a network technology that will support the network services.

LITERATURE REVIEW

Introduction

In Malaysia economy, services industry such as stock investment, banking, insurance and finance are growing successively. As the quick rate of business cycles and change demand is more robust, financial institutions are seriously looking into better applications in information technology. It is important that any system implement should enhance customer service efficiently and increase the organization profit. Urgent research is needed to

identify the strength and weakness of current systems and adopt the right strategy to promote Islamic banking in global market.

Islamic banking was introduced to practice banking and financing activities based on the *Shariah* principles derived mainly from Al-Quran and Al-Sunnah. Products and services offered by Islamic banking are as comprehensive as that of conventional banking, ranging from deposit mobilizations, equity and debt financing, trade financing to international banking, all these to serve the needs of Malaysians, Muslims and non-Muslims alike.

METHODOLOGY

Introduction

All of the information in this research project was gathered from several sources. The data have been divided into two types, which are primary and secondary data. The primary data is a data, which gathered from an interview, while the secondary data is the data gathered from several printed resources. In this chapter, it describe on how the data being gathered. This case study, which is on networking, deals with the comparative studies among the banks in Malaysia that are implementing Islamic Banking. The focus is on the network structure or network diagram of the bank and the technology that being used. The data collection method, characteristic of data and procedures employed are the way to finalized the data. Currently there are only two banks that fully implement the Islamic Banking scheme, that is Bank Muamalat and Bank Islam Malaysia Berhad (BIMB). In this case study, the method that being used was taken from primary source and secondary source. The data collection method use to gather the information. Both the primary source and secondary source is used to collect the data.

RESULTS AND FINDINGS

Current Network Architecture

The BIMB'S network architecture is Frame Relay as shows in Figure 4.1. The structure of the bank network is based on client/server networking, where the servers manage file server and print servers while clients are PCs or workstations on which users can run banking applications. Hitech Padu, originally known as PNB IT, the subsidiary of PNB Berhad provides the services.

Selayang Production Centre, Darul Takaful and branches are linked through lines provided by Telekom to Hitech Padu Frame Relay network. The topology in used is a STAR network and TCP/IP is its protocol. For Internet and network security purpose, BIMB was using Firewall and encryption. BIMB was using McAffee as anti-virus software. Uninterruptible Power Supplies (UPS) with 6 KVA have been used for power backup and it can stand up to 12 hours. BIMB is using fiber optic and UTP cable CAT 5 for the

connection. The network operating system is Windows NT Ver. 4.0 and SQL to access database. The bank was standardised to MS-Office 2000.

Selayang Production Centre as a data and control centre has four lines with 128Kbps of speed. Two of the lines are used as backup lines connect to Darul Takaful in case of any contingency at Selayang Production Centre. The two lines used in branches are joined to two nodes, NCC and NRC. The NRC is performing as an alternative route. When a normal route goes through node NCC encounters a problem, the node NCR will be used. From Frame Relay network, data transmissions will router to workstations, server and ATM host. BIMB is using a high security server, IBM AS/400. This server is widely used in Retail Banking System (RBS), ATM, Trade Finance and Office Automation (OA). Selayang Production Centre used a high-end Motorola MP6520 router because it can handle a lot of incoming calls.

The function of Darul Takaful is as a head office, Recovery and Contingency Planning (RCP) Centre and for the purpose of testing and other activities. It also performs a back up role if any problems occur. The AS/400 server is used for Retail Banking and Human Resource (HR) application. The transmission speed of the lines is 128Kbps including the backup. Most of the hardware and the software equipment and the configurations are same as the Selayang Production Centre.

Branches are used a low-end VanGuard 300 router suitably designed for lower capacity or bandwidth. The speed for branch network is 64Kbps. An analog dial backup line speed is 28.8Kbps. From frame relay network, data transmissions will router to workstations, server and ATM machine. The network operating system is Windows NT Ver. 4.0 and SQL to access database.

Other network services provided to the customer are IBG (Interbank GIRO) and MEPS. For MEPS network, the BIMB will route from TCP/IP to other router under X.25 network protocol with the speed of 19.2 Kbps before it reach to other ATM MEPS machine at other banks. For IBG service, the network service operation is link to router first than it connects to IBM mainframe for funds transfer from BIMB to other bank institutions with the speed of 64Kbps. BIMB applied three Interbank systems, which are RENTAS, Finite and FISS.

BIMB is connects to BNM by using other network called COINS network. The purpose of using this network is to send reports to BNM via network. This COINS network is also shared with other bank institutions. The speed of the line is 64 Kbps by using the router between the COINS network. Table 4.1 shows the speed of the network line in BIMB networking system.

Table 4.1: Networking Line Speed

Connection	**Line (Kbps)**	**Backup Line (Kbps)**
Selayang Production Centre	128	128
Darul Takaful Head Office	128	128
Branches	64	28.8
InterBank Giro	64	-
MEPS	19.2	-

Source: Halim 2001

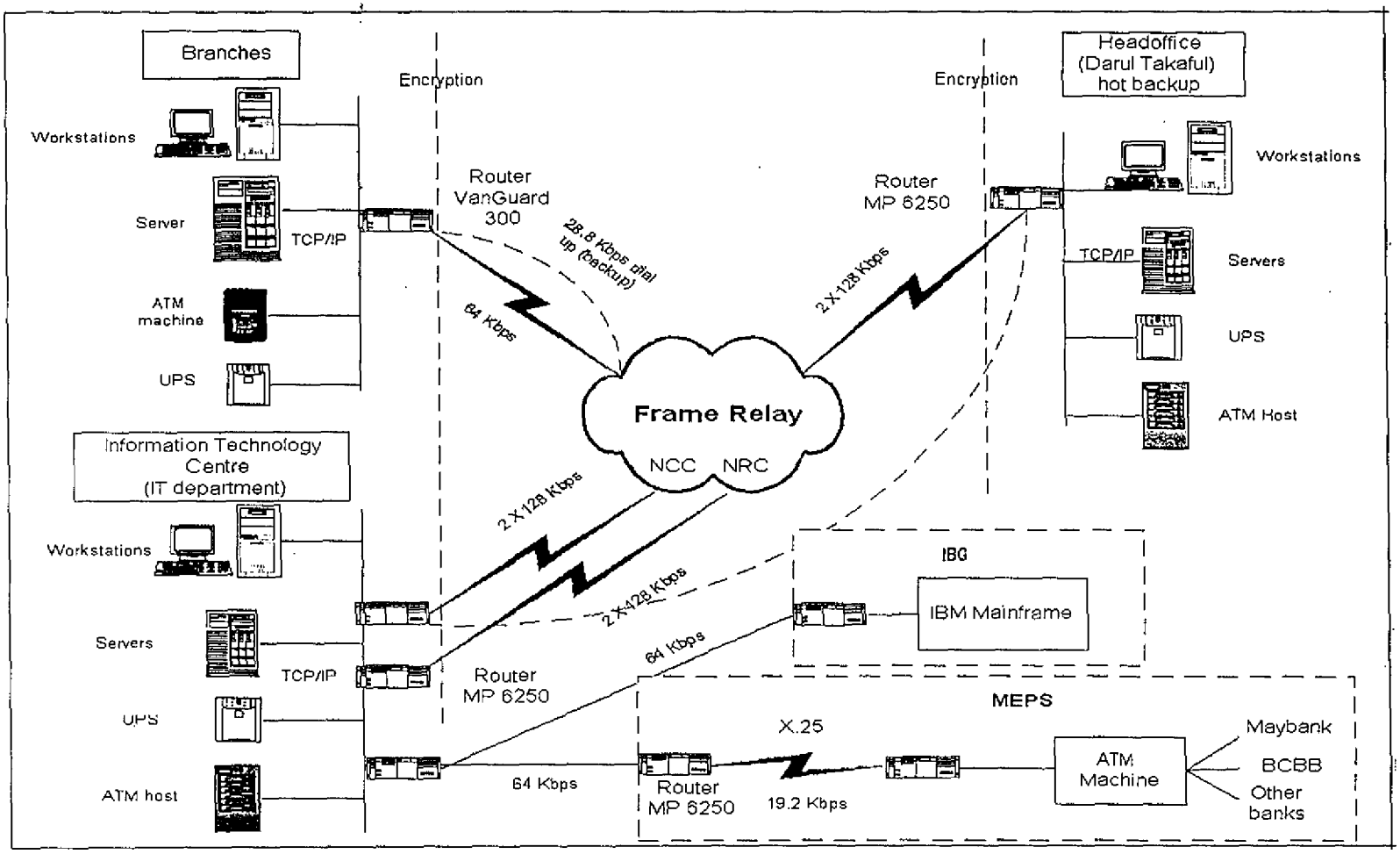
Application Architecture

The current applications in BIMB are based on client/server architecture. The applications available are Silverlake System, Treasury System and SAP as shows in Table 4.2

Table 4.2:Current Applications Architecture

Product System	**Retail Banking**		**Corporate Banking**			**Corporate GL**	**HR**
	Deposit	Loans	TF	Corp. Loans	Treasury	Finance	
Silverlake	X	X	X	X			
Dynamix/Matrix					X		
SAP						X	X

Source : Rahman 2001



Source: Halim

Figure 4.3 BIMB Network Configurations

Network Advantages

Here are the advantages of the final BIMB network configuration as in figure 4.3:

- Provide better speed transmissions, which are 128 Kbps and reduce accessing time. It means that data transmission process and access is faster.
- Reduce maintenance cost by reducing the quantity of routers and standardizes network operating system.
- Backup system. Darul Takaful was set as BIMB backup which is known as System Disaster Recovery Planning
- Frame relay supports higher bandwidth with less overhead and latency compared to the X.25

Network Disadvantages

Here are the network disadvantages of BIMB:

- There is no separate node that connects from branches through the frame relay network cloud. If something happen at the branches, there are no alternative nodes to go through.
- The bank does not have any special software for network monitoring. It has to be done manually.

Table 4.4 shows the comparison of network infrastructure between Bank Islam Malaysia Berhad (BIMB), Bumiputra Commerce Berhad (BCB) and Bank Rakyat.

Table 4.4 Comparison of Network Infrastructure

Network Infrastructure	BIMB	BCB	BR
WAN protocol	Frame Relay	SNA/SDLC	TCP/IP
LAN protocol	TCP/IP	TCP/IP	TCP/IP
Line Speed	28.8 Kbps (retail banking and branches) 128 Kbps	64 Kbps (retail banking & branches) 128 Kbps & 512 Kbps (central node)	128 Kbps (trunk) 64 Kbps & 32 Kbps (branches to trunk) 2 Mbps (backup/recovery)
Operating System	Windows NT	Mix environment	Windows NT
Mainframe	AS 400	IBM 3090	SUN Enterprise Server model E6500
Cables	UTP Cat 5	UTP Cat 5	UTP Cat 5
Security	AS 400 & router	RACF II	Firewall

Backup Line	ISDN & Dial-up	ISDN & Dial-up	ISDN & dial-up
Topology		Star	Star
Hardware (just to name a few)	Server Router Switch Mainframe	Server Router Hub Switch Mainframe	Server Router Hub UPS Mainframe

REFERENCES

Abdul Rahim Abdul Razak & Mahdi Mohd. Ariffin. 1995. Overview Of Information System Processing In Banking. 26 July - 30 August.

Al-Bunook Al-Islamiyah Islamic Bank. 1988. The Distinctive Nature of Islamic Banks (April/May): No.59, 37-45.

Bank Islam Malaysia Bhd. 1997. *Islamic Banking.* Retrieve July 21, 2001, From the www.bankislam.com.my/index_info.html.

Bank Islam. 1999. WebPages. Bank Islam Malaysia Berhad. Retrieved April 20, 2001 from the World Wide Web: http://www.bankislam com.my.

Bank Negara Malaysia Bhd. 1996. *General.* Retrieve July 21, 2001, From the www.bnm.gov.my/about/index.html.

Bank@Home On The Web. No year. WebPages. Union Bank Of California. Retrieved April 20, 2001 from the World Wide Web: http://www.uboc.com.

BIMB. 2000. *Organization Structure.* Bank Islam Malaysia Berhad Bank Annual Report.

Black, U.1995. Frame Relay Networks: Specifications and Implementations. Second Edition, United States of America: Irwin/McGraw-Hill

COINS 2001. *Inside COINS.* Retrieve November 20, 2001, From the www.telekom.com.my/coins/frame_htm.

Datapro Information Services. 1993. WebPages Managing Data Networks. Retrieved May 24, 2001 from the World Wide Web: http://www.gartner.com/public/static/datapro.

Day G.S. & Wensley R. 1998. Accessing Advantage: A Framework For Diagnosing Competitive Superiority, *Journal of Marketing* **52**: 1-20.

Evans, P. B. & Wurster, T. S. 1997. Strategy And The New Economics Of Information. *Harvard Business Review* **Sept/Oct**: 71-82.

Fitzgerald, P.E. 1993. Success measures for information systems strategic planning. *Journal of Strategic Information Systems.*

Forouzan, B. 1998. *Data Communications And Networking.* Boston: Mcgraw-Hill.

Frame Relay. 1998. Frame Relay Resource. Retrieve November 20, 2001, From the www.frame_relay_resources.com.

Hackett, G. 1990. Investment in technology: the service sector sinkhole. *Sloan Manage. Rev.,* (Winter). p 97.

Hassan, M. Kabir. 1999. Islamic Banking In Theory And Practice: The Experience Of Bangladesh. *Managerial Finance* **25** (5): 60-113.

Held, G.1999. Frame Relay Networking. United States of America: Irwin/McGraw-Hill.

IDF-Net. 1999. WebPages. Islamic Banking And Finance Network. Retrieved July 13, 2001 from the World Wide Web: http://www.idf.net.

Internet Banking. No year. WebPages. Security First Network Bank. Retrieved July 13, 2001 from the World Wide Web: http://www.sfnb.com.

Islamic Banking 2001. *General.* Retrieve July 21, 2001, From the www.dpscsoftware.com/ibanking.html.

Laudon, K. C. & Laudon, J. P. 1996. *Management Information System.* New Jersey: Prentice Hall.

Laudon, Kenneth C. & Laudon, Jane P. 1999. Essentials Of Management Informations System. Third Edition. New Jersey: Prentice Hall, Inc.

Lederer, A. L. & Sethi, V. 1992. Meeting The Challenges Of Information System Planning. Long Range Planning 25(2): 53-70.

Lederer, A.L. & Gardiner, V. 1992. Strategic information systems planning: The method/1 approach. *Strategic Information Management,* (Summer). p13 19.

Lederer, A.L. & Sethi, V. 1992. Meeting the challenges of information system planning. *Long Range Planning* **25**(2): 53 70.

Lipis, A. H, Marshall, T. R. & Linker, J. H. 1985. *Electronic Banking.* United States of America. Prentice Hall.

Martin, J. 1988. *Data Communication Technology.* New Jersey: Prentice Hall.

Mc Bryan, O. A. No year. WebPages. Introduction To Networking. Retrieved August 23, 2001 from the World Wide Web: http://ftp.yggdrasil.com.

McCume, J. C. 1989. Silencing An Information Age Tower Of Babel. *Management Review* **78** (12): 37-39.

McKenna, T. 1998. WebPages. Optical Networking Comes To Developing Countries. Retrieved August 23, 2001 from the World Wide Web: http://www.telekomnet.com.

Ramos. E. 1996. Computer Networking Concepts. New Jersey: Prentice Hall, Inc.

Ryan, S.D. & Bordoloi, B. 1997. Evaluating security threats in mainframe and client/server environments. *Information & Management.*

Saima A. Ahmed 2001. Global Need For A New Economic Concept: Islamic Economics. *Islamic Financial Services* **1** (4). .

Simon A.R. 1998. *Implementing the Enterprise,* Multiscrenes Press.

Spohn R. 1997. Data Network Design. United Stated of America: Addison Wesley.

Stickman Productions. 1998. WebPages. Client-server. Retrieved September 13, 2001 from the World Wide Web: http://www.faqs.org/faqs.

Sutton. K. 1997. Windows NT Security Guide. New Jersey: Prentice Hall, Inc.

Teeixeira, D.B. & Schmergel, G. 1992. The banking industry cope with technology change. *Journal of System Management* **43**(5): 13 18.

Telekom Malaysia Berhad. 2001. WebPages. Corporate Information Superhighway. Retrieved September 9, 2001 from the World Wide Web: http://www.telekom.com.my.

Terplan, K. 1993. *Communication Networks Management.* New Jersey: Prentice Hall.

Terplan, K.1996. Effective Management of Local Area Networks. United States of America: Prentice Hall.

Vaughan, J. A. & Porat, A. M. 1969. *Banking Computer Style The Impact Of Computers On Small And Medium-Sized Banks.* United States of America. Prentice Hall.

Walford, R. B. 1990. Network System Architecture. United Stated of America: Addison Wesley.

Wilmot, R. W. 1987. Change In Management And Management Of Change. *Long Range Planning* **20** (6): 23-28.

Wittmann, A. 1999. WebPages. Designing-And Redesigning-Today's Local Area Network. Retrieved September 16, 2001 from the World Wide Web: http://www.networkcomputing.com.

Zeffri M. Yusoff. 1997. Basics-of LANs And Obi-WANs. *The Star,* September 18.