CHAPTER 5

IMPLEMENTATION TECHNOLOGY

5.1   Implementation Strategy

The implementation of Blackberry Enterprise Service and BlackBerry Enterprise Server as parts of the BlackBerry services in PT. Excelcomindo Pratama that includes technical requirement, architecture design implementation, time, procedure and analysis of the implementation will be described in this chapter.

5.1.1   Technical Requirement

The technical requirement for the implementation of blackberry services are given by the Research In Motion that needs to be preoccupied by any telecommunication service who are intended to provide BlackBerry services within their network.

The first requirement and most critical requirement is to have a physical connection from PT. Excelcomindo Pratama wireless network centralizing in PT. Excelcomindo Pratama headquarters to BlackBerry Research In Motion network in Canada. Each of the wireless telecommunication provider who provide BlackBerry services, and have connection to the BlackBerry network have their own set of IP address range and group of staff network administrator in BlackBerry headquarter.

The requirement stated above considered as critical factor in the procurement of the BlackBerry service said staff from NCCIT (Network Control Centre Information Technology)-Data Communication department in PT. Excelcomindo Pratama, Rizqon Fauzan.

As it already mentioned, all packet data with the exception of text messaging, multimedia messaging and voice call, coming to or from blackberry devices trough

Telecommunication service provider using both BlackBerry Internet Service and BlackBerry Enterprise Server are directed trough the BlackBerry infrastructure in the BlackBerry network by default. It is probably the main reason that the requirement for having a physical connection is critical, he mentioned in the interview.

The connection to BlackBerry network by the wireless telecommunication provider is done using IP address by point-to-point link from router to router in each of the network. In, addition there are also a default protocol used for the point-to-point link connection to BlackBerry network which are done trough the GRE tunneling protocol to create a virtual point-to-point link. The use of IP address connection to create point-to-point link, and the use of GRE tunneling protocol comes as another requirement for connection to the BlackBerry network.

Following the creation of connection between wireless provider and Research In Motion network, a wireless provider can provide BlackBerry Internet Service. Specifically for BlackBerry Enterprise Server service, a BlackBerry Enterprise Server software and license needs to be purchased and a specific technical requirement for different messaging platform in Organization is needed.

As mentioned earlier, BlackBerry Enterprise Server offers solution for three different messaging platforms that includes Microsoft Exchange, Lotus Domino, and Novell Group Wise. In this thesis, the technical requirement described based on Microsoft Exchange platform. It is based on the PT. Excelcomindo Pratama's specific messaging platform, as the organization intended to use the BlackBerry Enterprise Server in their environment. Specifically for other organization that intended to use BlackBerry Enterprise Server, PT. Excelcomindo Pratama only provide the licensed software and management training, and the network.

In addition, Microsoft Exchange platform is also the commonly used messaging platform in an organization said Rizqon Fauzan, the Network Control Centre IT staff. To support the statement, from a corporate market analysis done by [42], that there are a significant difference for the market share between Microsoft and IBM Lotus, that shows that more organization are using Microsoft software corporate messaging, where throughout the years the market shares for IBM Lotus keep decreasing, while the Microsoft corporate messaging software market share for is increasing. The following illustration shows the market share between IBM Lotus and Microsoft Exchange for the period 2004 - 2008 [42]:
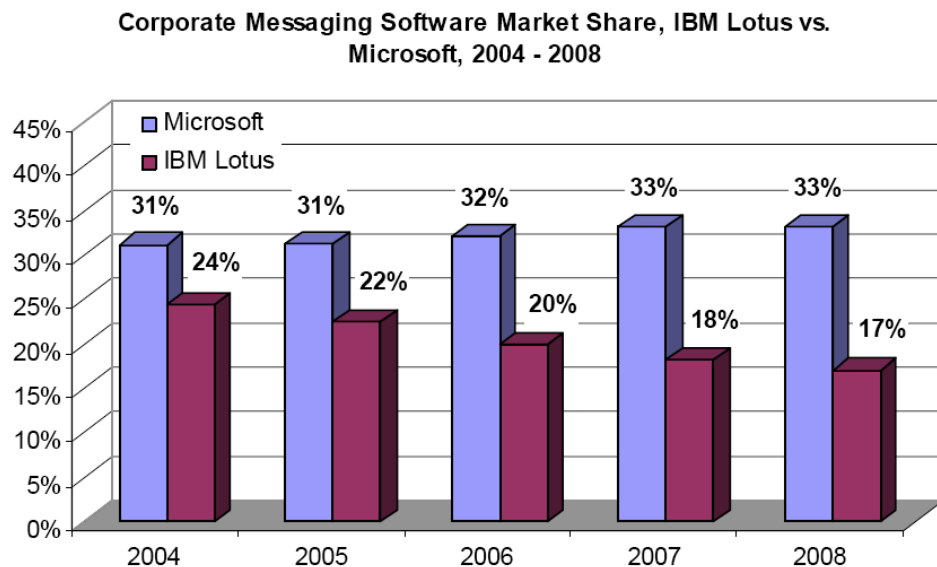

Figure 5. 1 Microsoft V.S. IBM Lotus Market Share

Along with the BlackBerry Enterprise Server software itself, the technical requirements for the BlackBerry Enterprise Server specific for Microsoft Exchange corporate messaging platform summarizes in the following table [43]:

Hardware Requirement:

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Table 5. 1 BlackBerry Enterprise Server Hardware Requirements

Hardware Requirement	
• BES supporting up to 200 users.	• Single Processor, 2.0 GHz Intel Xeon. • 2 GB of memory. • 2 Drives, RAID 1.
• BES supporting up to 500 users.	• Two processors, 2.0 GHz Intel Xeon. • 2 GB of memory. • 2 Drives, RAID 1.
• BES supporting up to 1000 users.	• Two Processors, 2.0 GHz Intel Xeon. • 3 GB of memory. • 2 Drives, RAID 1.
• BES supporting up to 2000 users.	• Two processors, 2.8 GHz Intel Xeon or two processors, 1.86 GHz Intel Xeon 5100 Series (Dual Core). • 4 GB of memory. • 2 Drives, RAID 1 or 4 drives, RAID 1+0.

System requirements:

Table 5. 2 BlackBerry Enterprise Server System Requirements.

	System Requirement
• Operating System:	Any of the following OS: • Windows Server 2003 SP2 (32-bit or 64-bit). • Windows Server 2003 R2 SP2 (32-bit or 64-bit). • Windows Server 2008 SP2 (32-bit or 64-bit).
• Microsoft Exchange system tools:	• Microsoft Exchange 2003 SP2 System Manager. Or, • Microsoft Exchange Server MAPI client and CDO 1.2.1
• Microsoft Exchanging organization of the system tools for the messaging server:	• Use the same Microsoft Exchange organization with the messaging server.
• CDO library:	• Latest CDO library that applies to that version.
• Unicode support for calendars:	• Microsoft hotfixes: 913643 on messaging server. • Microsoft hotfixes: 923537 on

	the computer that hosts the BES.
• Database condition for BlackBerry MDS:	• Database server that hosts the configuration database.
• Static IP address for the computer:	• A static IP address for the computer hosting the component.
• Browser:	• Windows Internet Explorer version 6.0 or later with language preferences configured to display encoded web pages.
• Media player:	• Windows Media Player.
• Network Proximity:	• A high speed, switched connection between BES and messaging servers.
• Monitoring:	• Running SNMP.

5.1.2 License Requirement

Aside from the technical requirement, PT. Exelcomindo Pratama also needs to obtain a license as mutual agreement from Research In Motion to be the official BlackBerry service network provider, and be the official reseller of BlackBerry handheld device that locked the device with PT. Excelcomindo Pratama network.

By having the license, PT. Excelcomindo Pratama acts as official partner for BlackBerry service provider and official handset distribution within Indonesia. The handset that locked with PT. Excelcomindo Pratama Network cannot be transferred to another network provider and used PT. Excelcomindo Pratama network by default.

The license that PT. Excelcomindo needs to obtain from Research In Motion other than mutual agreement license as partner includes BlackBerry Enterprise Server Software License Agreement, BlackBerry End User Agreement license, BlackBerry Software License agreement, and BlackBerry Internet service End User Agreement.

Moreover specific for BlackBerry Enterprise Server is the need to obtain a CAL (Client Access License) for each specific user in the BlackBerry Enterprise Server to obtain the full service provided in the service. Note that, the CAL license needs to obtain only for the usage of BlackBerry Enterprise Server in a corporation, separated from the license for obtaining BlackBerry service in PT. Excelcomindo Pratama.

5.1.3   Implementation

5.1.3.1 Procedure and Process

This sub chapter describes all of the process and procedure taken by PT. Excelcomindo Pratama for the BlackBerry service implementation in their environment. The procedure regarding BlackBerry implementation, obtained from several interview with PT. Excelcomindo Pratama manager and staff from various department.

Upon the decision of incorporating BlackBerry service in PT. Excelcomindo Pratama approved from the upper level management of BlackBerry service proposed by Marketing department, Network Service department, the concept and implementation phase of BlackBerry service implementation was started.

Contacting Research In Motion as the service provider for the BlackBerry service is the initial procedure, as Research In Motion is the provider that will be

providing the BlackBerry Service through PT. Excelcomindo Pratama as a bearer and also providing the handheld device.

ICR (International Connection Roaming) and IT- Planning and Operation gather the entire technical and non-technical requirement from Research In Motion following the BlackBerry service implementation. ICR department deals with the non-technical requirement, and IT-Planning and Operation deals with the technical requirement.

Following this, a mutual agreement between Research In Motion and PT. Excelcomindo Pratama represented by the ICR department was created to obtain the license needed for the BlackBerry service and acknowledge PT. Exelcomindo Pratama as the official partner of Research In Motion.

During the settlement agreement the development of the solution design model for the BlackBerry services begin to be developed by two sub departments of the IT-Planning and Operation departments, based on the technical requirements. The two related departments are the IT-Data Services and IT-Infrastructure.

IT-Data Services sub department acts as the telecommunication model designer that deals with designing network solution model for both of the BlackBerry service and estimate also deals with the estimation budget. IT-Infrastructure focuses on the BlackBerry Enterprise Server implementation in PT. Excelcomindo Pratama infrastructure that includes hardware, software, and budget as well within PT. Excelcomindo Pratama headquarters environment.

From the technical requirements stated in the earlier chapter, PT. Excelcomindo Pratama needs to provide a physical connection router to router to the Blackberry network using point to point IP address connection with Research In Motion default protocol, all the process regarding the BlackBerry service remain

hidden by the Research In Motion. Research In Motion provides a simple way for their network provider partner, to providing BlackBerry service into their network provider partners.

IT-Data Service sub departments, took all possible way in designing solution models into consideration to connects their network into BlackBerry infrastructure located in Canada, which will lead to PT. Exelcomindo Pratama to be able to provide the BlackBerry services as one of their services. The initial and simplest design was to provide the physical connection straight away using fiber optic cable from PT. Excelcomindo Pratama main network in Jakarta to BlackBerry network in Canada, but will cost extremely expensive. The decision to provide connection trough a carrier network as a mediator was made to decrease the cost of implementation.

The connection to BlackBerry network created as an additional connection through PT. Excelcomindo Pratama existing GPRS core network, subsequent to the decision of having a connection to BlackBerry network in Canada, the detail solution design diagram by IT-Data Service can be seen in figure 4.7 in sub-chapter 4.2.

PT. Excelcomindo Pratama's IT-Data Service department decided to creates the connection to BlackBerry network through the carrier network in Singapore to provide IPLC (IP Lease Connection) as the connection to BlackBerry service created trough IP address. The decision was made after putting several factors into consideration following the decision. PT. Excelcomindo Pratama already have a connection to network in Singapore, and PT. Excelcomindo Pratama already have an agreement with Aicent Company, a GRX network provider based in Singapore which already have a connection to network in Canada and also as the only carrier network that provide connection to Canada at that time.

Subsequent to the decision of using Aicent GRX network, ICR and IT-Data Service department made contact with Aicent to create mutual binding contract based on the monthly rates IP leased connection and also all the technical manifestation regarding a specific connection to BlackBerry network in Canada through Aicent.

Responsibilities were divided between Aicent and PT. Excelcomindo network to establish the connection to BlackBerry network. The illustration on Figure 5.2 on page 79 shows the solution diagram for the connection establishment following the cooperation between both parties:
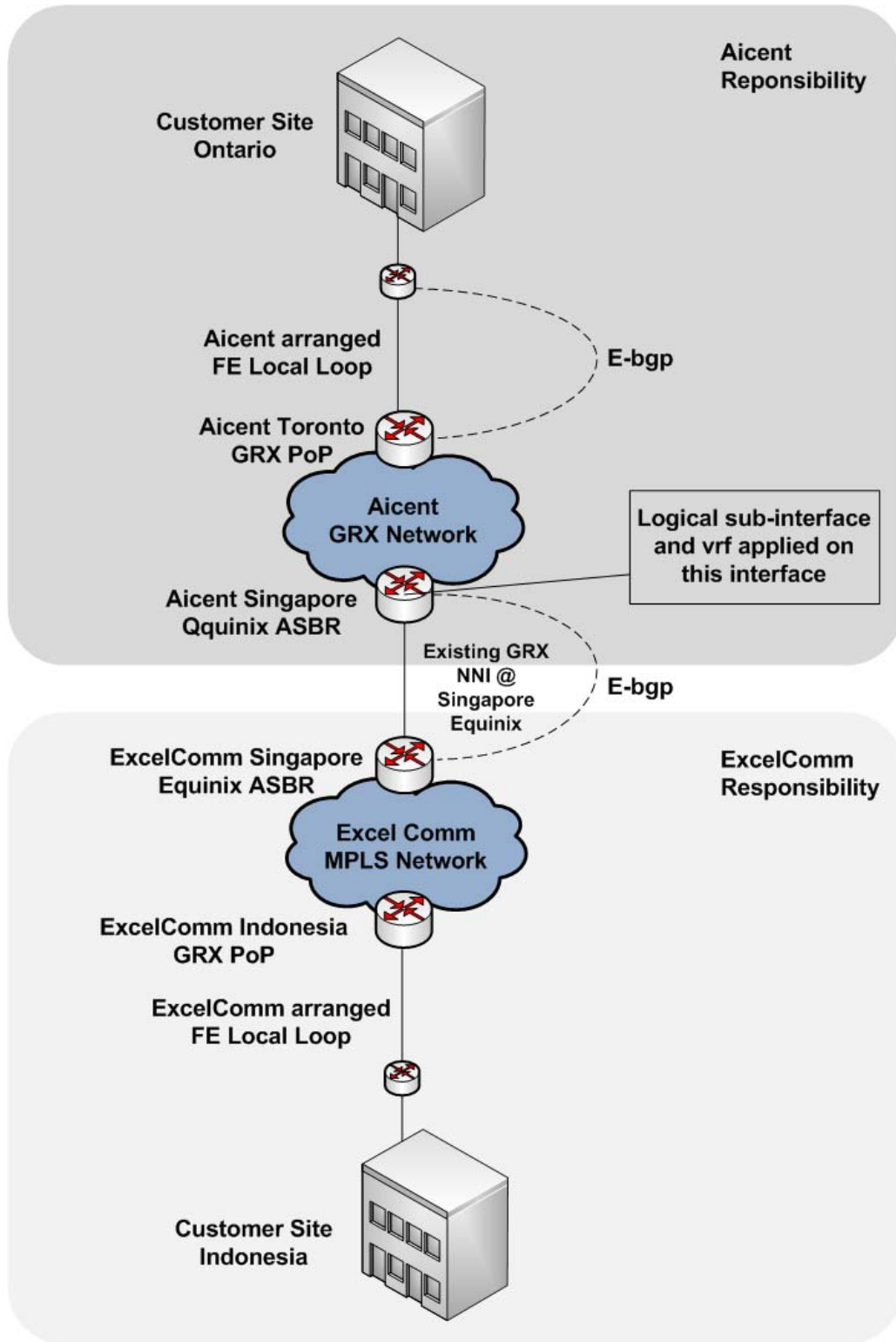
Figure 5. 2 GRX Network Solution Design

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After the solution design and responsibility agreed between both parties, the network solution design model and PT. Excelcomindo Pratama responsibility for the GRX network solution were given to IT-Design Coordination department who will coordinate the design into reality. IT-Design Coordination department supervise the Central Project Management Office (CPMO) to create the GRX solution design from IT-Data Service department and Aicent network. All of the project management knowledge areas were incorporated for the project following the solution design model that includes the cost, human resource, and time management to name a view.

Teguh Nugraha, the manager of IT-Data Coordination in PT. Excelcomindo Pratama said that the process of realizing the connection through Aicent GRX network considered as the first project as parts of the BlackBerry implementation service. He added that he received the big picture of job description subsequent to the solution design model with aicent network from IT-Data Service department.

He added that he supervise the CPMO to do the job description, and do the follow up regarding the complex technical details. "IT-Design coordination do the implementation and closing phase in the project lifecycle following the concept and development phase done by the IT-Data Service, that includes the planning, executing, monitoring and purchasing", Teguh said. All of the process of realizing the solution based on the model, budget and time falls into IT-Design coordination departments.

The tasks detail of the connection establishment to Research In Motion as cooperation project with Aicent GRX network according to the solution model in figure 5.2, can be seen from the table below (in a chronological order):..

Table 5. 3 Connection Establishment RIM-AICENT-PT.Excelcomindo Pratama tasks detail.

No	Task Details
1	• Purchasing all the necessary hardware (Fiber Optic cable, copper fast Ethernet cable and routers).
2	• Fiber Optic (single and double) connection from SGSN to GGSN specific for BlackBerry connection.
3	• Back to back transmission from transceiver and GRE tunnel activation process. • Transmission connection through Batam network with Aicent.
4	• Provide public point-to-point IP from Aicent and PT. Excelcomindo Pratama. • Provide point to point IP, virtual route forwarding (VRF), and port • Provide point-to-point between border gateways. • Transmission and integration NNI between Aicent – PT. Excelcomindo Pratama at equinix (the existing connection).
5	• Final integration tests PT. Excelcomindo Pratama with Aicent.
6	• Transmission configuration Aicent with Research In Motion for PT. Excelcomindo Pratama, followed by integration test PT. Excelcomindo Pratama to Research In Motion via Aicent.
7	• Live Traffic

After the closing phase for the Research In Motion-AICENT-PT. Excelcomindo Pratama connection project was established, IT-Design Coordination inform IT-Data Services to cross check for the final outcome of the project. Subsequent to that, IT-Design Coordination responsibility stops here, and for the

daily operation and maintenance regarding the connection and data communication between Research In Motion, Aicent, and PT. Excecomindo Pratama were given to NCCIT-Data Communication Network departments. At this point, Research In Motion regarding both BlackBerry services trained staffs from NCCIT-Data Communication Network departments for BlackBerry administration support that includes technical support and management.

After the connection established to Research In Motion, PT. Excelcomindo Pratama able to provide the BlackBerry Internet Service and BlackBerry Enterprise Server to their customers. Before that, following the cross check connection system done by IT-Data Services, the responsibility for IT-Data Services ends, and the responsibility were given to IT-BSS (Billing Support System). IT-BSS provide the billing system requested by Marketing- BlackBerry Product Management regarding BlackBerry service end product, subsequent to the pricing strategy to gain profit and reach breakeven points with the discussion with IT-BSS department.

IT-Design Coordination manager stated that, after that project PT. Excelcomindo Pratama able to provide both BlackBerry service, but specifically for BlackBerry Enterprise Server service in PT. Excelcomindo Pratama organization environment, a different project was started.

IT-Design Coordination department following the request from IT-Infrastructure department who design the entire internal technical requirement for BlackBerry Enterprise Server within PT. Excelcomindo Pratama started the project for BlackBerry Enterprise Server. This project considered as the second part for the BlackBerry implementation service. IT-Design Coordination coordinates the entire requirement from IT-Infrastructure that includes needed hardware and software purchasing, and installation based on infrastructure design model, along with

NCCIT-Data Communication Network department. Following this, the management of the BlackBerry Enterprise Server for the organization was given to trained BlackBerry support NCCIT-Data Communication Network department staffs to provide daily management and operation.

Moreover, following the implementation of both BlackBerry service all of the management, support, technical support in regards of the BlackBerry services connection network, billing services are managed by NCCIT-Data Communication Network and IT-BSS.

For a simple understanding, an illustration regarding the process flow regarding an implementation of new services and technology in PT. Excelcomindo Pratama can be seen below:
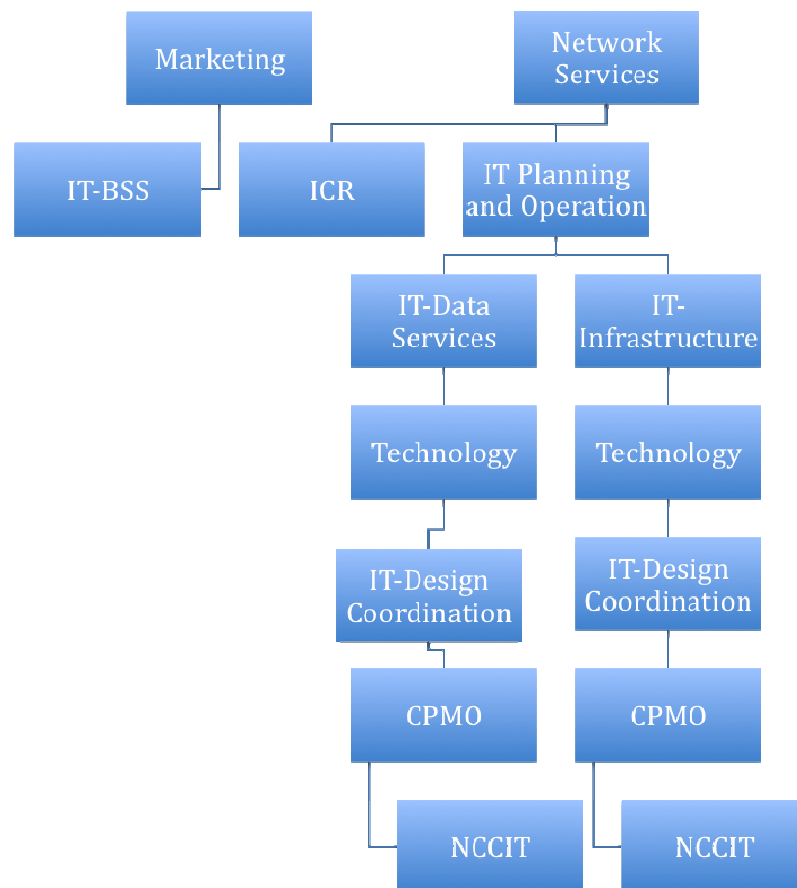

Figure 5. 3 PT. Excelcomindo Pratama Implementation Process Flows.

5.1.3.2 Timeline

The timeline for Research In Motion-Aicent-GRX connection establishment project given by IT-Data Services department to IT-Design Coordination agreed with Aicent Network is estimated for three months. The project are created with both parties coordination to finish their specific responsibility, starts on 10th July 2006 and finished on the 1st of September 2006. The delivery date to PT. Excelcomindo Pratama from Aicent network for the establishment of the connection is on 28th of August 2006, to follow by the service handover date on 1st September 2006.

For the BlackBerry Enterprise Server installation in PT. Excelcomindo Pratama is estimated for one month, with the BlackBerry Enterprise Server in their environment fully functioned and managed on the end of October of 2006

5.1.3.3 Testing

In each project all testing was created regarding the BlackBerry services implementation services. Integration test, transmission test, and a live traffic test between BlackBerry network in Canada and PT. Excelcomindo Pratama network in Indonesia through the carrier partner Aicent GRX network in Singapore were held during the connection establishment project.

For BlackBerry Enterprise Server in PT. Excelcomindo Pratama corporate messaging environment project, performance test for the BlackBerry Enterprise server were held. That includes each component of the BlackBerry Enterprise Server according the each functionality being tested for their performance. According to Andhika Nursatria, the manager of IT-Infrastructure in PT. Excelcomindo Pratama, the performance test regarding the performance of the BlackBerry Enterprise server held in several different environments. He added the performance test were held

under several different occasion, that includes processing concurrent requests, processing large attachments, processing complex attachments, user access, application access and several other test to fully functioned the use of BlackBerry Enterprise Server in PT. Excelcomindo Pratama.

Following the launch of the BlackBerry services end product, several tests also created to prevent any problem after the product service launched. The tests include retesting the connection to Research In Motion, unit testing for the end product, and also test for the billing system. These tests conducted by NCCIT-Data Communication and IT-BSS at this stage considered the final test stage before the end product services launched.

5.2   End Products

After the technology implementation of the BlackBerry services technology in PT. Excelcomindo Pratama network environment established, the marketing department and IT-Billing Support Service department needs to establish an attractive end products and billing system for the return on investment and also to attract customers to use the product.

The billing system, and the end product was planned by both departments during the implementation of the technology as a separate part of the implementation, and after implementation the actual product and billing system from was created to reach the breakeven point, gain profit from the implementation.

From the interview with the manager of the BlackBerry product management and post paid, Redi Rindayani Ahmad, there are three main concerns regarding the telecommunication market for product, services or technology. The three main concerns include the coverage and quality, billing and customer care, and flexible service delivery. Redi also said that these three concerns needs to be addressed

before the product launched in the market, in order to attract customers to use the new product.

The following illustration shown the telecommunication market evolution model that PT. Excelcomindo Pratama used for ever product and services offered by the company:

Telco Market Evolution Model
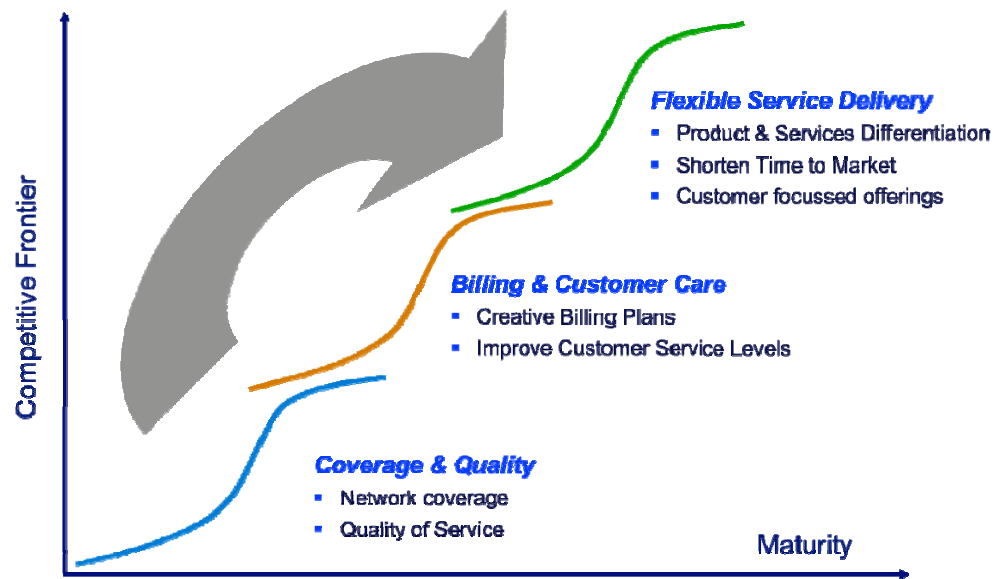
Figure 5. 4 Telecommunication Market Evolution Model [44].

Redi Rindadi said that, referring to the market evolution model, a good end product with the presence of the three main concerns, resulting in a competitive product in the telecommunication market.

In addition to that, Redi also said that pricing in the telecommunication market plays a very crucial role. It is because most of telecommunication network providers have a similar product and service offered to their customers, which makes the competition is mostly based on price. Redi added to support his statement regarding price, that back in 2007, in which the BlackBerry service for PT. Excelcomindo were launched, the telecommunication mobile industry stage was in the mass market stage due to the increasing rate of penetration, in which more

competitors entering the market, the competition was mainly based on the price, and the ARPU (Average Revenue Per Unit) begin to approach fixed levels.

He also gave the writer of the thesis the illustration of the mobile stage industry in Indonesia following his statement. The following illustration, illustrate the stage of mobile industry:

Figure 5. 5 Mobile Market Stage [44].

The marketing product management department did market survey and segmentation for local trend market, research for global trend and products prospect, and feasibility studies regarding the BlackBerry services for PT. Excelcomindo Pratama, as stated by Redi.

Competitor's product and services also considered as a threat to the end product and marketing department look for an opportunity in the product that was already offered by their competitors to exceed their competitor's performance regarding their BlackBerry services. All of the supporting factors were being considerate following the end product decision.

In the end, PT. Excelcomindo Pratama launched the first BlackBerry product in January 2007 called BlackBerry classic. The BlackBerry classic segmented for postpaid and corporate customers in the telecommunication market.

The BlackBerry Classic divided into two main products, in which each main product is divided into another sub product. The activation method for the BlackBerry service is injected to the system network. The detail of the BB classic from PT. Excelcomindo Pratama is given below:

- BlackBerry Internet Service

    o BIS Voice Packet RP. 199.000/month (Unlimited BlackBerry Internet Service + Voice packages 100 minutes).

    o BIS Data Packet RP. 190,000/month (Unlimited BlackBerry Internet Service + Data XL-GPRS packages 50 MB).

    o BIS Packet RP. 150,000/month (Unlimited BlackBerry Internet Service)

- BlackBerry Enterprise Server

    o BES Packet RP. 199.000/month (No need to purchase BlackBerry Enterprise Server software, CAL License and server not provided, and 50 MB XL-GPRS data, and addition RP. 0.5/KB from each excess usage).

    o BES Packet RP. 285,000/month (Need to purchase BlackBerry Enterprise Server software, 100 MB XL-GPRS data, and addition RP. 0.5/KB from each excess bytes).

Specifically for BlackBerry Enterprise Server, PT. Excelcomindo Pratama also offers organizations that use the BlackBerry Enterprise Server a software installation at their organization mail server and technical support.

Following the launch of the BlackBerry product in January 2007, PT. Excelcomindo Pratama became the first telecommunication provider, who provides unlimited data on BlackBerry services in Indonesia.

5.3   Post Implementation

Following the launch of the BlackBerry classic, PT. Excelcomindo Pratama continue to increase their BlackBerry service performance by incorporating new innovation in the BlackBerry service with reference to the telecommunication market evolution model.

In June of 2007, PT. Excelcomindo Pratama launch the BlackBerry Connect, in which non-BlackBerry users can incorporate the functionality of BlackBerry handheld device.

The following year, in 2008, PT. Excelcomindo Pratama launch BlackBerry One segmented to the pre-paid customers and post-paid customers BlackBerry Internet Service. The launch of the product was based on the market demand and trends survey, feasibility studies and the condition of increasing number of BlackBerry Internet Service subscriber, from the opportunity to reach the pre-paid customers who were intended to use the service and also from the dissatisfaction of other BlackBerry operators. Redi, said that by identifying other BlackBerry operators users, we design attractive offer against it to steal their BlackBerry users to use our services.

Using BlackBerry One, pre-paid and post-paid customers have the convenience to activate the BlackBerry Internet Service on a daily basis or a monthly basis (RP. 5,000/day or RP. 150,000/month).

Aryo Moerdo Setioputro, the BlackBerry product manager said that their organization aware of the significant difference with the Pre paid customers, and post

paid customers, and saw a future potential by providing their pre paid customers the BlackBerry experience. He added that it is the basic objective following the BlackBerry one product, along with to attract non-BlackBerry users, cater current subscribers that do not need monthly BlackBerry service, increase barriers to their competitors, and to steal market share from their operators.

The launch of BlackBerry one has positioned PT. Excelcomindo Pratama to be the leaders in BlackBerry service innovation in Indonesia, as they became the first telecommunication provider to provide daily service and pre-paid service in the world. The launch of BlackBerry one also boosting the total subscribers of BlackBerry services, as the total subscribers following the launch of BlackBerry One increases by 17.5 times during the period of November 2008 and September 2009. The following illustration shows the BlackBerry service performance in PT. Excelcomindo Pratama:
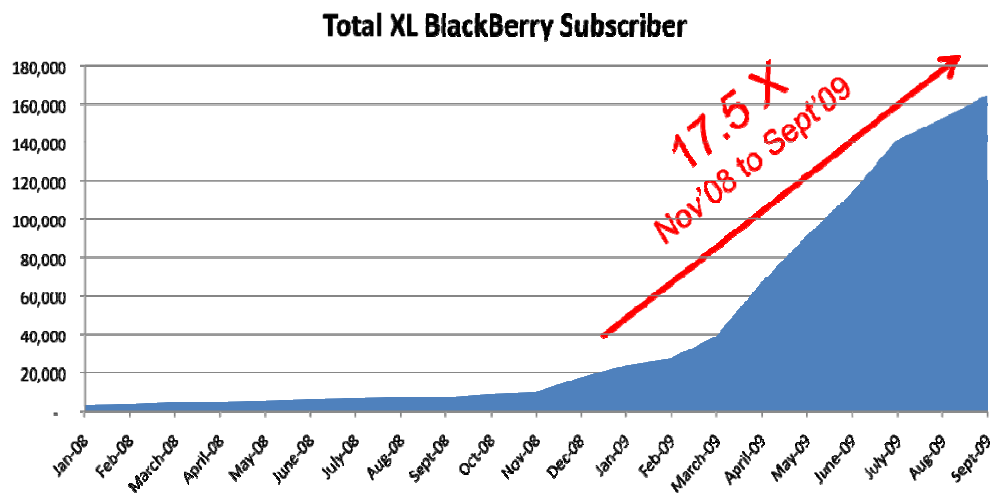

Figure 5. 6 Total XL BlackBerry Subscribers

As of 2009, PT. Excelcomindo Pratama exceed their competitors BlackBerry service performance by surpassing their subscribers, and become the number one BlackBerry service provider in Indonesia. The illustration below shows the

comparison between BlackBerry service telecommunication provider in the year 2008 and 2009:

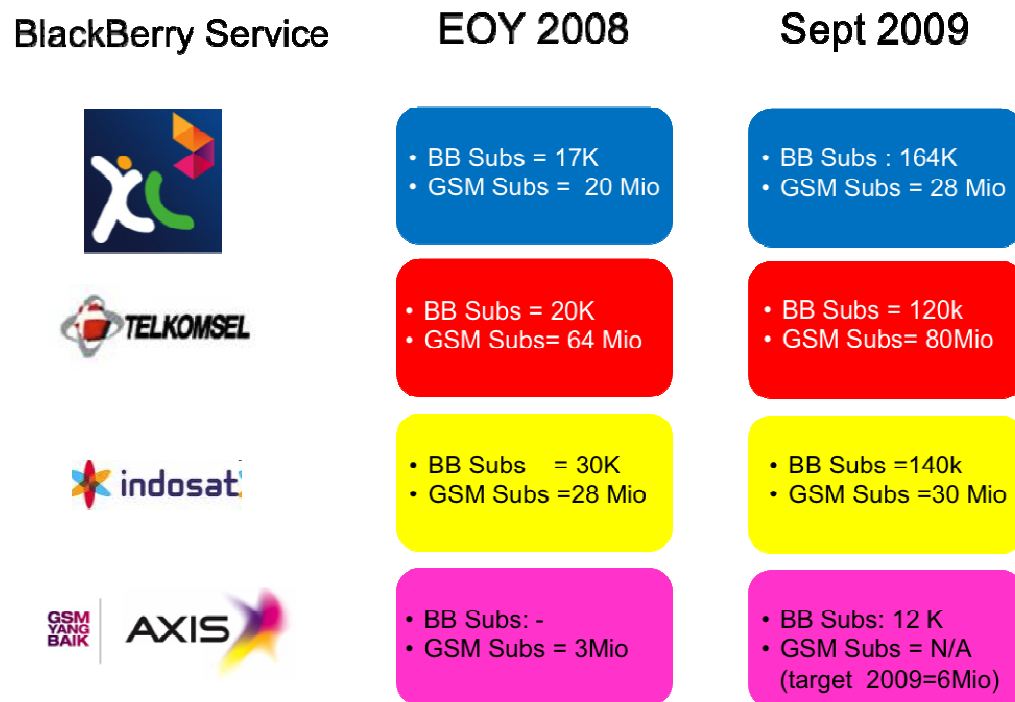| BlackBerry Service	EOY 2008	Sept 2009
XL	• BB Subs = 17K • GSM Subs = 20 Mio	• BB Subs : 164K • GSM Subs = 28 Mio
TELKOMSEL	• BB Subs = 20K • GSM Subs= 64 Mio	• BB Subs = 120k • GSM Subs= 80Mio
indosat	• BB Subs = 30K • GSM Subs =28 Mio	• BB Subs =140k • GSM Subs =30 Mio
GSM YANG BAIK / AXIS	• BB Subs: - • GSM Subs = 3Mio	• BB Subs: 12 K • GSM Subs = N/A (target 2009=6Mio)

Figure 5. 7 BlackBerry Market Comparison

Moreover, other than the competitive price that PT. Excelcomindo Pratama offers to the telecommunication, PT. Excelcomindo Pratama also emphasizing in the importance of advertising to attract customers into using the BlackBerry services. PT. Excelcomindo Pratama use a easy to remember and attractive phrase regarding their BlackBerry service, advertisement on the television, magazine and billboards to increase their subscribers number, in which will eventually led on the increase in the total profit for the organization.

In addition, PT. Excelcomindo Pratama also emphasize on their reliable customer care and customer experience. PT. Excelcomindo Pratama offers an instant experience for BlackBerry users and the prospect of future BlackBerry users by providing an instant BlackBerry service an instant activation for BlackBerry Internet Service, provided trough text messaging. PT. Excelcomindo Pratama BlackBerry

users who want to activate their daily or monthly BlackBerry one service can simply registered trough text messaging, and whenever they want to deactivate it, they can also simply deactivate their BlackBerry service through text messaging.

In term of customer care and quality of service, PT. Excelcomindo Pratama provided innovation; solution and support to make their BlackBerry customer can rely to the organization. PT. Excelcomindo Pratama provide licensed BlackBerry handset, BlackBerry service and experience centre for their BlackBerry customers, offers BlackBerry content services through XL Mall, BlackBerry accessories sales.

PT. Excelcomindo Pratama also makes their customer care and quality of service more reliable by providing double protection for BlackBerry subscribers device, that include warranties from Research In Motion, and insurance for the handheld device, that makes PT. Excelcomindo Pratama as the first telecommunication network service provider who provide their customer insurance for their devices.

Another important aspect to improve their quality of service is by improving PT. Excelcomindo Pratama quality network. From the increasing subscriber of the BlackBerry service, PT. Excelcomindo Pratama prevent the decreasing performance of BlackBerry network quality by increasing their capacity bandwidth to Research In Motion in their network.

5.4 Problem Post Implementation

An interview was conducted with IT-Infrastructure manager, Andhika Nursatria, in regards with the problem post implementation of BlackBerry services in PT. Excelcomindo Pratama. Andhika said that with the new technology implemented in the organization, problems considered as a factor PT. Excelcomindo Pratama will have.

He added that there are several problems arises following the implementation, that includes connection problem within the aicent network as a carrier network with BlackBerry network, problem from the BlackBerry network connection, but for those problem, the responsibility goes to the stakeholder who have agreement with the organization. "The main problem that PT. Excelcomindo Pratama needs to be aware of constantly regarding the BlackBerry service is the bandwidth capacity, andhika said.

He mentioned that the most recent problem was in mid 2009, when there was a network breakdown in Research In Motion headquarters specifically for PT. Exelcomindo Pratama main network and data services in Canada, that cause more than 500 BlackBerry subscribers changed into other BlackBerry service providers.

PT. Excelcomindo Pratama then followed up with Research In Motion for explanation regarding the breakdown, and found out that other than from the technical problem from Research In Motion, there is also problem from a sudden increasing usage of bandwidth that partially cause the server to crashed, although PT. Excelcomindo Pratama was just recently added additional bandwidth to the Research In Motion through their carrier network, with 120 Mbps. Following the problem, PT. Excelcomindo add more capacity bandwidth into 180 Mbps to BlackBerry network to further prevent any problem regarding exceeding bandwidth.

Staff from NCCIT-Data Communication department, Rizqon fauzan also mentioned that PT. Excelcomindo Pratama always look for a solution to decrease the total cost of operation without decreasing quality from each service that PT. Excelcomindo offers. IT department proposed a solution for using additional carrier network to create a connection to BlackBerry network.

At the time of implementation, Aicent GRX network is the only possible carrier network to the BlackBerry network, the decision to made connection trough Singapore was made because that PT. Excelcomindo Pratama have a transceiver station based in Singapore and already have a physical connection from Indonesia network to the Singapore network.

In 2009, TATA communications based in Singapore, offers connection to BlackBerry infrastructure. PT. Excelcomindo Pratama saw this as an opportunity to create an additional carrier network and also a possible opportunity to decrease the total cost of operation.

Rizqon said that TATA offers a lower cost of leased connection agreement with their network following the approach from PT. Excelcomindo Pratama. This is probably the main objective, for PT. Excelcomindo Pratama to add additional carrier network, in order to lower operational cost and prevent excess bandwidth in the future.

Rizqon also added, the connection to TATA network was recently established, and at the moment PT. Excelcomindo keeps increasing their bandwidth for BlackBerry service focusing in TATA network to prevent bandwidth problem.

The following illustration shows PT. Excelcomindo Pratama network connection design to BlackBerry network as of October 2009:
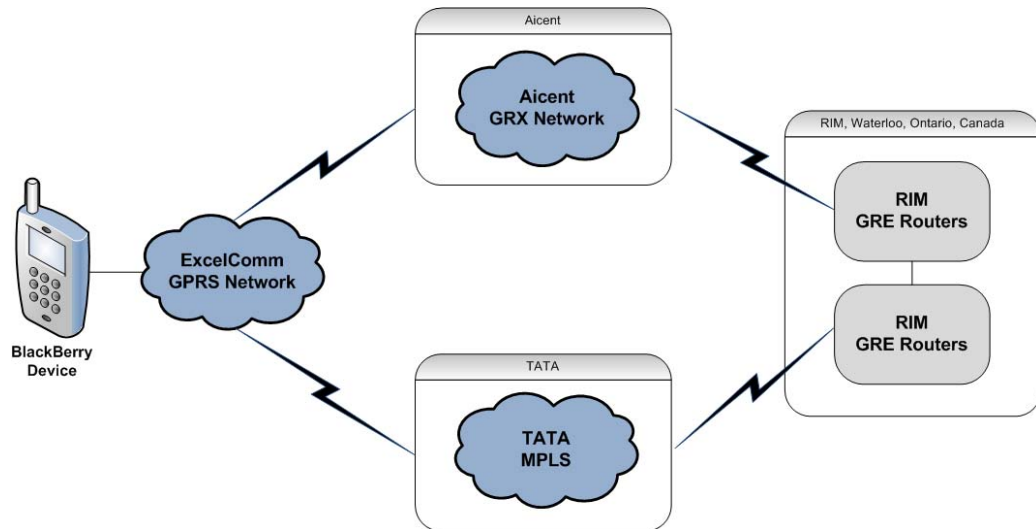
Figure 5. 8 Network Connection Design PT. Excelcomindo Pratama to date

5.5 User Acceptance

In order to analyze the telecommunication market user acceptance regarding the BlackBerry service offered by PT. Excelcomindo Pratama, the author developed several questions as a base for analyzing the performance, perception and acceptance as written below:

1) What is your reason for using Blackberry products?

    a.   Business purpose

    b.   Social status

    c.   Trends

    d.   Other (specify): _____

This question meant to know the respondent reason for using BlackBerry handheld device.

2) What is the main reason for you to choose a certain Blackberry Service provider?

    a.   Price

    b.   Extra Features

    c.   Friend/family recommendation

    d.   Other (specify): _____

This question meant to see public's initial reason for choosing telecommunication service providers for their BlackBerry service.

3) In your opinion, how important do you find the prepaid Blackberry service?

    a.   Very important

    b.   Important

    c.   It doesn't matter

    d.   Not important

    e.   Useless

This question meant to seek for public opinion in regards to the pre-paid BlackBerry service.

4) For what purpose do you use your Blackberry device (most important to you)?

    a.   Checking e-mails while on the go

    b.   Communicating with people using Blackberry messenger service

    c.   Browsing the internet

    d.   Accessing Facebook

    e.   Other (specify): _____

The author wants to see the respondent's main usage of their BlackBerry device.

5) Which of these cellular phone network providers provide the best rates in your opinion?

    a.   Indosat

    b.   Telkomsel

    c.   XL

    d.   3

e. Axis

The author wants to see the perception of the BlackBerry service subscriber for network provider who provides the best rates.

6) Which method of Blackberry service billing do you prefer?

a. Monthly

b. Weekly

c. Daily

This question is asked to see the billing method that BlackBerry subscriber prefer to use.

7) Based on question 6, why did you choose that answer?

a. Convenience

b. Economical reasons

c. Blackberry service usage frequency

d. Others (specify) : _____

The author wants to know the reason for choosing specific BlackBerry billing method.

8) How long have you been using a Blackberry device?

a. 0-6 months

b. 6-12 months

c. 1-2 years

d. 2-3 years

e. More than 3 years

9) What kind of payment method are you currently using for your Blackberry Service?

  a. PrePaid

  b. PostPaid

10)   What service provider are you currently using?

  a. Indosat

  b. Telkomsel

  c. XL

  d. 3

  e. Axis

Question 8, 9, and 10 was asked to the respondents to filter the end result of the survey and to seek the customer acceptance and performance specifically for PT. Excelcomindo   Pratama's   BlackBerry   service