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MODELING INFORMATION SYSTEM DISASTER RECOVERY PLANNING IN MULTI BUILDING ENVIRONMENT

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Abstract

Disaster Recovery Planning (DRP) as one of the main key in information system reliability has been widely used nowadays. There are abundant ways to implementing disaster recovery planning, such as remote backup, human training etc. DRP itself is not the responsibilities of IT Department in an organization or a firm; however, it should be handled by high level management to assure information system sustainability. Especially, when an organization or a firm is located at multi building environment, whether the building is short distance away or settled at other area, DRP must be planned differently than ordinary DRP. This paper tried to model DRP solution prototyping, particularly for an organization or firm that located in multi building area. Thus, the model can be a reference for IS manager as well as other high level management position in firm to be more aware for DRP in their environment. Model in this paper is using UML notation, hence it can be implemented and modified in many ways for the managers.

Keywords: Disaster Recovery Planning, Modeling, Multi Building

Introduction

It already known well that information system implementation rarely care about disaster recovery planning. Even though data from the application is very important for company, high level management seems ignoring all of the risk that can be happened in their organization when the disaster come. In winter of 2000 Gartner conducted a survey of IT managers and discovered that over 60% of the businesses surveyed did not have a basic plan to mitigate the effects of a disaster. (Emery, 2003).

Some of them assume that disaster can only be happen from nature anger, for example: earthquake, tsunami and flood. However, the disaster can also happen from non-technical factors, for instance: electricity failure, hardware failure, virus or even human errors (Fullmer, 2005). Therefore, disaster recovery plan should become important aspect in information system reliability that will impact also in corporate data reliability. When disaster recovery planning going well, this will improve customer trustworthiness for company.

There are no organizations or firms hope that disaster will strike them all of sudden. However, disaster can happen anytime with many ways. Everyone must remember how 9/11 hit without any warning. In Indonesia, there are also so many nature anger strike (and it almost happen every year) that break down information system as well as its backup. However, disaster also can happen because of human error, whether that is done with or without accident.

However, for a business, an IT outage is not the real issue, but the consequences that are associated with it. Disaster recovery planning defined as the management activity to define the necessary actions for disaster recovery and that governs their implementation (Schmidt, 2006). Therefore, good disaster recovery planning will produce high availability, which means that it will be the availability of the computer systems at the times when they are needed (Gunda, 2001).

A good organization or firm will not accept "bad image" just because they do not care about DRP. Especially for organization that fully depends on information system in their daily operation. Thus, their information sustainability is one of big thing to keep in present and future.

Many high level management also thought that DRP is just "another job" for their IT manager to be planned of. However, this assumption is completely wrong, since that DRP need high commitment and support (and also great caution) from high level management to be implemented. IT department and high level management should sit together to discuss their DRP in order to assure their business continuity planning (Snedaker, 2007).

Each organization has unique needs due to their location, culture etc. Hence, disaster recovery planning should be customized to meet the requirements of each company and the values of data. Company must perform risk assessment to identify the real needs of the business and direct the creation of their disaster recovery planning (Rennel, 2006).

Some organizations and firms have exceptional location that settled in multi building environment. In this case, when information system integration

already implemented, then DRP will face new problem due to the separation. Therefore, DRP should be planned more carefully and differently than common DRP for organization that located in only one building.

This paper tried to model DRP solution prototyping, particularly for an organization or firm that located in multi building area. In order to make the prototyping can be widely used, prototyping is being made using UML (Unified Modeling Language), thus it can be modified and adapted by managers fitting in their own unique organization. On the other hand, UML representation will help non-IT manager to understand how the mind path of model in this paper will work.

Disaster Recovery Planning

A disaster can best be defined as the occurrence of any event that causes a significant disruption in IT capabilities. It is typically an event that disrupts the normal course of business to the extent that monetary losses can be quantified (Maiwald, 2002). Disaster also defined as a disruption that causes critical information resources to be inoperative for a period of time, adversely affecting business operations (Keeler and Motlier, 2005). There are many disaster that can hit an IT system for example, equipment failure, windstorm, earthquake, flooding, loss of passwords, network failure, hazardous attack etc (Fullmer, 2005).

Disaster recovery is the ability to continue with services in the case of major outages, often with reduced capabilities or performance (Gunda, 2001). Disaster recovery usually has several discreet steps in the planning stages, though those steps blur quickly during implementation because the situation during a crisis is almost never exactly to plan (Snedaker, 2007).

Disaster recovery is part of business continuity, therefore, company must have a disaster recovery planning that can guarantee trustworthiness in customer relationship, whether the company doing manufacturing business or services business. The reliability of IT system also undertaking business continuity planning that should come afterward disaster recovery planning (Maiwald, 2002).

Continuous availability is a special subset of high availability that combines it with continuous operation. The system must not have outages and service delivery must be ongoing, without interruptions (Schmidt, 2006). A business continuity plan can be considered the all-encompassing corporate plan that describes the processes and procedures an organization puts in place to ensure all aspects of business can resume and be recovered should a disruption occur (Rennel, 2006). Therefore, disaster recovery planning must ensure that there will be a high availability in shortest time frame whenever the information

system crash or having major outage or minor outage (Schmidt, 2006).

In DRP must include risk assessment to assure that DRP will have right sensitivity during its implementation. Risk assessment is a careful, systematic, examination of the environment and the physical, technological, or human components that could cause harm to the organization, staff, or product (Wells et al, 2007).

Risk assessment itself only one of part from risk management. Other parts from risk management are risk mitigation and evaluation-assessment. Risk management is the process that allows IT managers to balance the operational and economic costs of protective measures and achieve gains in mission capability by protecting the IT systems and data that support their organizations missions (Stoneburner, 2001).

Modeling System

Organization that located at separated building (close or far away) has difficulties to arrange their DRP. Since that their data will spread out in many places, thus its backup cannot be easily recovered when the disaster strike. So, DRP must include integrated team from each building, and also must include intensive training for fast recovery process.

General prototyping of DRP is describing using use case system as the picture followed. So, at general DRP, there is only one IT department and one group of DRP requirement system. There are also one process of DRP training and implementation, after publish DRP activity from IT department. As we can see at the use case system, general DRP process can be described below:

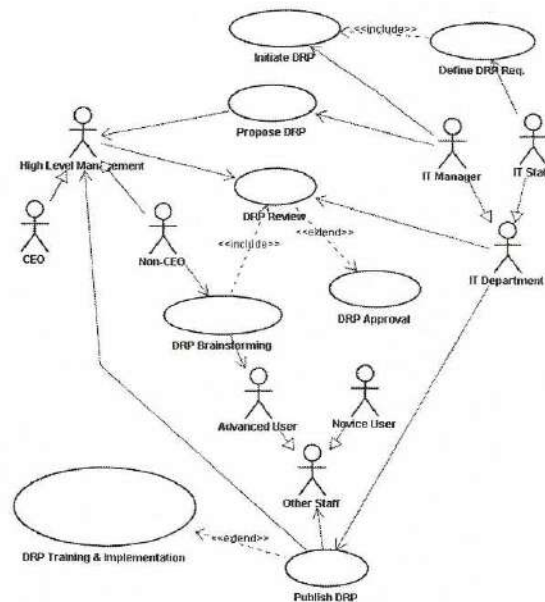


Figure 1. Use Case System of General DRP

1. First of all, IT manager initiating DRP while their staff also defines DRP requirements. Using those requirements, IT manager will propose DRP for high level management and explain (or present) it briefly.
2. After learning DRP proposal, high level management together with IT department (manager and its staff), review it in two perspectives, IT perspective and managerial perspective. In this manner, it must include brainstorming activity for advanced user. So, it can dig more hidden problems that may occur in daily activity.
3. If DRP review assumes to be finished, then DRP must be approved by side, IT department and also high level management. This approval will lead to DRP publication to all staff, whether it categorized as advanced user or novice user. DRP must also be published to all high level management, including CEO, thus the implementation will have full support from all organization element.
4. Then, DRP can not only be just document or just another operating procedure, however, it must be passing through training process to all relevant staff (and also management).

Now, when organization or firm is located at multi building environment, then use case system will change as new use case system next:

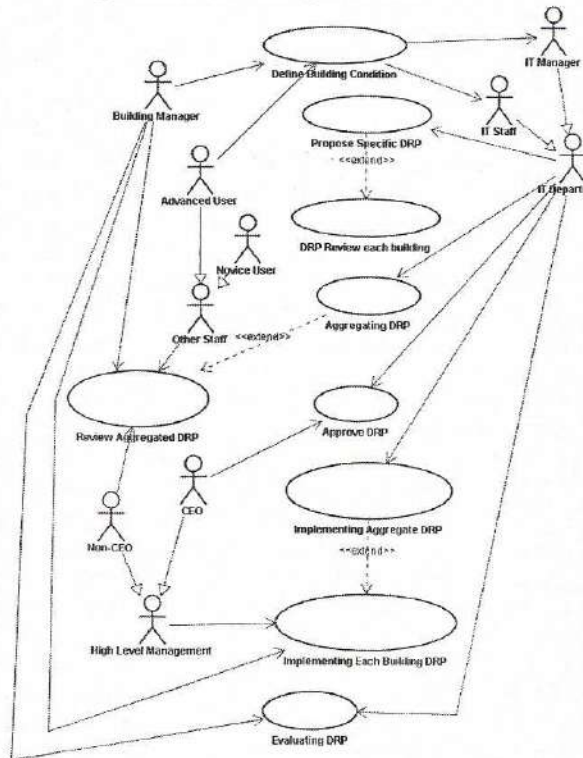


Figure 2. DRP Use Case System at Multi Building Environment

If we take a look shortly to second use case, the most significant differences with the first one is about aggregating DRP from each building. DRP in multi building environment must include specific condition for

Suppose that each building has its own manager (even though building manager could be someone that responsible for building management, not always a *real* building manager), then it must be the one who know the building condition better than others. This person will be the ultimate source for building DRP, beside of advanced user and (of course) IT department personnel.

Other differences are at implementation process after DRP is being approved by high level management. In this case, implementation must be done for each building but in aggregating way. Aggregating way means that there is actually one big *blue print* of DRP, however, each building is taking its own part of DRP.

Risk Assessment

Thus, after the big picture is already defined, let's take a look of risk assessment for this case. There are actually nine steps to do risk assessment methodology (Stoneburner, 2001), however, since that this paper only do prototyping process, then there is only one step to be done.

Prototyping phase or initiation phase only include risk identification step in whole risk assessment process. The other phases such as development, implementation, operation and disposal must include detail survey at location. And, of course, phases beside of initiation phase need more time and more people include inside it.

In multi building environment, risk identification must include two steps which are called information gathering and threat identification. Information gathering is activity which must include all high level management along with IT department to collect all relevant information in boundary of potential threat in whole organization.

At this step, it is obliged to include neutral IT expert to review all information gathering. IT expert in this context is not compulsory come from format IT consultant; however IT expert must be one of the kinds that really understand how to collect deep and hidden information that might be unexposed by both side (high level management and IT department).

Second step is called threat identification that actually extension of first step. This step must include building manager in its activity, thus each building that have each own specification can be more detailed in its identification. In this step, also need high level management support in order to make all possible threat can be identified.

Since that human nature (optimism bias) to believe that all will be well, which is why process-

based risk management cannot be truly effective without management support and staff acceptance (Galorath and Evans, 2006). So, even in second step level, high level management still must include in its activity.

Threat in each building definitely different one from another. For example, when a building has a pantry room inside, then it should be not close enough with server room. Another example is when height of building is just two floors will have different threat that a building that have more than ten floors. In this case, of course, building manager or manager that has responsibility in that building must really understand the condition of their own building.

If these two steps already passed, than it means that next step must be accomplished for organization. Next big step is implementation and development for its DRP prototype. Then when it's all finished, organization must do training and also evaluation for its DRP.

Conclusion

As a result of this paper, the conclusions are:

1. Disaster Recovery Planning or DRP should begin with prototyping phase, especially when it come to organization or company that lay on multi building environment.
2. There are differences between DRP for organization that only located in one integrated building and multi building environment. There must be building manager that responsible in identifying threat in each building.
3. Risk assessment in this case includes two steps which are information gathering and threat identification. One most important thing in first step is to include external IT expert that will collect deep and hidden facts in modeling DRP. In second step, most important thing is to differ each building in each condition, thus each building must assume as unique model of DRP.
4. Modeling DRP in multi building environment must embrace high level management support in order to fasten and insure that DRP model can continue to next step. Particularly in risk assessment matter that usually most staff hiding their weaknesses, assumption that risk assessment is just uncover their secret must eliminated by high level management.

In the next research or improvement of this prototype, there should be some additional considerations such as:

1. DRP model can take example to real organization which is located in multi building environment, thus it can prove that this model is really adaptable.
2. DRP modeling process might be has addition in security area. This will be in very technical prototyping that includes network condition

and also software application that being used by organization.

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