

RTO and Recovery Location Strategy in the Financial Industry

Yasutake Sayanagi

*Graduate fellow in Nagoya Institute of Technology
Gokiso-cho, Showa-ku, Nagoya, Aichi, 466-8555 Japan*

*Head of BCM in Barclays Security Japan Limited
6-10-1 Roppongi, Minato-Ku, Tokyo 106-6131, Japan
E-mail: web.yasu@gmail.com*

Keywords

Finance, BCM, Bank, Backup office, Data Center

Abstract

Business continuity (BC) in the Financial Industry (FI) is very reliant on system availability not only in the Data center but also in the main office and the backup offices. All systems used by the FI need reliable electrical supplies to ensure continuous business operation. By reviewing the incident of scheduled power outages by Tokyo Electric Power Company (TEPCO) after the 2011 Tohoku Pacific Earthquake (known as the Great East Japan Earthquake in Japan) and RTO (Recovery Time Objective) as a benchmark, this study seeks to address, why and how important it is for the FI to have resilient office buildings. Then from the perspective of two case studies, one for the main office and the other for the backup office, discusses the potential solutions.

Due to the strict confidentiality in the Financial Industry especially within the banking sector as well as with the data center vendors, not all details can be disclosed but enough information is available in this study to highlight the issues.

1 Introduction

J-FSA (Financial Service Agency, Japan) and BOJ (Bank of Japan) suggest that RTO is one of the most critical targets in BC. Business Continuity Institute (BCI) also states that RTO is an important benchmark in BCM and should regularly test the BC strategy and methodology to check if it can meet RTO target. This importance of the RTO's has been further highlighted in regulation such as the recent Technology Risk Management Notice and Guidelines issued by the Monetary Authority of Singapore (MAS) on 21st June 2013. In this new guideline, one of the

topics the MAS focuses on is RTO and its testing processes. According to the MAS, as the RTO is one of the most important benchmarks of business recovery capabilities, which should be regularly tested to check if it can meet with the level that is defined in the BC strategy.

Although organisations realised that there are dependencies between the RTO and supporting resources, due to the cost and time restrictions, they are not all tested regularly. However the new regulation requires having a regular testing to ensure if the BC strategy and the methodology can support RTO.

The need to thoroughly test RTO's became apparent to the FI after the Tohoku Pacific Earthquake. Many of societal function in the FI such as the ATMs were interrupted for a few hours and many days despite their RTO being much shorter than that, suggesting the impact of the supporting resources losses were not properly tested for.

2 Incident Review with the Business impact with the FI by the Tohoku Pacific Earthquake

After the Tohoku Pacific Earthquake, the total capacity of electrical power generation in Tokyo Electric Power Company (TEPCO) was 40% down from 52GW/h to 31GW/h across Tokyo and Kanto district (Tokyo metropolitan area). In the Tokyo metropolitan area, a 10GW gap was anticipating between demand and supply of the electricity power. To manage this shortfall TEPCO divided Tokyo metropolitan area into 5 zones and stopped providing electricity for each zone for 2-3 hours a day one after another. In total over 57million households were impacted and 73hours and 50 minutes of outage happened in the first 9 days.

There were many ATMs in Tokyo metropolitan area which were affected by these scheduled power outages. Japan Post Bank, one of the biggest retail bank in Japan, announced that they should shut down approximately 3,000 ATMs in Tokyo Metropolitan area. This also effected the foreigners working in Tokyo because some of them were using Japan Post Bank ATMs for their saving accounts of Citi bank etc. Sumitomo-Mitsui Bank also decided shut down 360 off-branch ATMs among 660 and 240 branch ATMs among 460. Similar situations were seen with other banks, such as Mizuho Financial group, Tokyo-Mitsubishi-UFJ Financial group and many local banks.

Information of these problems were disclosed because of the public service impact caused by the unavailability of ATMs. While internal operational issues caused by the discontinuity of power supply in the banks are not in the public domain, it can be assumed that FI organisations had many challenges with their business area due to the lack of electrical power supply. The Tohoku Pacific Earthquake especially reminded the banks about the importance of having a

sufficient level of electrical power as an essential supply within their BCM. Though, each bank had been conducted BC exercises every year as well as taking part in the street wide exercise that are run by the Japan Bankers Association (JBA) etc, few appreciated the situation of power outage for such a long term thus it was not tested it in their plans. As the banking sector has huge dependencies on IT systems, lack of electricity must be given high priority in their BCM programme.

It is also important to note that this situation occurred even though Tokyo metropolitan area didn't suffer significant physical damage with the Tohoku Pacific Earthquake.

3 Review RTO and Recovery location strategy

The next step, considers the relationship between the typical RTO and their Recovery location strategies in the FI to discuss the resource requirements of the RTO. Some of the firms in FI have a BC strategy with an office specification to meet the business needs. By using the information gathered by interviews with the international FIs in Tokyo, this study is to identify the relations between RTO and potential recovery locations but due to the strict confidentiality in FI, name of the firms and more detailed contents cannot be disclosed.

Assumption with the study;

- Firms have a main office in Tokyo CBD (Central Business District)
- These firms have a primary backup office at 20-30km from the main office to avoid simultaneous damage with the same incident in CBD
- Some of the firms also have a secondary backup office at 200-500km from the main office to avoid simultaneous damage in a catastrophic wide incident around CBD
- Both primary and secondary backup offices are in warm standby site and no one is working there until the BCP has been invoked.
- Typical Business RTO periods are 0-2 hours, 2-6 hours, 6-12 hours, 12-24 hours, 24-36 hours and more than 36 hours.
- RTO includes the idling time for system and facility set up and transportation of the recovery staff

RTO 0-2 hours:

Some critical business such as the dealing, the trading and the settlement in the FI are required 0-2 hour recovery time due to avoiding impacts with the market and counterparties. This means that no time can be allocated for the critical staff for recovery operation to travel from the main

office to the backup office. Thus recovery strategy should be either be based at the main office or rely on the dual operation in other offices.

Two essential requirement need to be considered. Firstly, main office should be resilient such as having an electrical power generator. Secondly, dual operations should be implemented in daily operations prior to the incident.

RTO 2-6 hours:

The majority of businesses in the FI are in this category, which is challenging as to meet with the requirement of 2-4 hours recovery is still very hard. This range of recovery time allows recovery staff to move from the main office to the backup office if the main office is not available. Thus recovery strategy is either staying at the main office or moving backup office. Of course, dual operation can also help but analysis of the cost vs. the coverage of dual operations must be taken into account.

From the lessons learned from the Tohoku Pacific Earthquake, the secondary office should also have back up power generators in addition to the main office and data center.

To meet with this requirement, there are three approaches; 1) have a resilient main office, 2) a backup office within 20 km-30km from the main office 3) dual operation with the other offices. Note, a 20 km-30km range is a 1-1.5 hour commute by bicycle. This type of backup office is sometimes called “Near recovery site”.

RTO 6-12 hours:

Three options can be used with RTO 6-12 hours recovery requirement, either stay at the main office as far as it is safe and resilient, or move part of or whole operation to the near site, or invoke the secondary backup office (if available) located 200-500km away from the main office. Backup office of this distance is sometimes called “Far recovery site”.

RTO 12-24 hours:

Same option can be used with RTO 6-12 hours but sending recovery staff to the overseas office to support recovery work also becomes an option.

RTO 24-36 hours:

Same as RTO 12-24 hours.

RTO more than 36 hours:

Businesses that are given more than 36 hours recovery time are normally categorized as a low priority or non-critical business during the incident. Should consider suspend those and allocate

staff to support critical business operation. Proper training to support critical business needs to ideally be done in advance.

4 Analysis with RTO and Recovery location strategy in FI

In FI, the business with <RTO 0-2 hours> requires very stable and resilient main office as well as dual operation that must be implemented as a day-to-day operation well before the incident. For the business with <RTO 2-6 hours>, it is essential having a near recovery site that can be accessed within a few hours from the main office. A far recovery site can be used only when there is time for transportation.

Needless to say, <RTO 0-2 hours> business is the most critical ones in the firm and should be given highest priority and resources. However according to this study, less options with BC recovery location strategy can be taken with <RTO 0-2 hours> business, simply because time cannot be allocated to traveling to another location.

Thus, the primary business recovery site for those most critical businesses is potentially the main office. This is the reason behind why members of the FI should have a resilient main office against power outages. Also dual operation is needed to prepare the scenario of loss of the main office. If a near recovery site is located 20-30km from the main office, same requirement is applied.

When the catastrophic incident damages wide area around CBD, J-FSA (Financial Service Agency, Japan), BOJ (Bank of Japan) or the Exchanges might consider a special suspension period with the business or market to protect financial market. Then a far recovery site becomes an option with the business recovery of normally <RTO 0-2 hours> business.

Note***

RTO requirement will change according to the timing of the incident

In a business unit the RTO might be differ depending on the timing of the incident. For example, if the incident happens out of hours or on weekend, it allows more time for business recovery. But if incident happens just before the cut off time of settlement etc the RTO requirement might be shorter than normal unless no market wide cut off time extension is announced. Thus RTO's should be checked if based on the worst scenario.

5 Case study

Required spec with the Main office of FI in Japan

A few years before the Great East Japan Earthquake, Barclays Securities Japan and Barclays Bank Tokyo branch (Barclays) located their main office in the Roppongi Hills building complex.

Roppongi Hills was considered the most resilient building in Tokyo as it has a co-generator power plant at the lower grand level. As Barclays' main office has many RTO 0-2 hours business, this resilience was a key point in selecting Roppongi Hills. Barclays prefers the option of staying at the main office, rather than move to a backup office, though most of their critical operation can be supported from the other offices abroad by dual operation.

The Roppongi Hills co-generation power plant has 6 sets of 6.4MW gas turbine that consists of <N+1> spec resilience (adding a spare machine on the required capacity). It runs 24 x7 to supply all the electricity, cooling and heating services for offices and residential area in Roppongi Hills. The primary backup of this co-generator power plant is TEPCO and the secondary backup is fuel. So, in view of the electrical and cooling spec, Roppongi Hills is about the same level of data centre, which is why Barclays selected it as their main office.

In fact during the period of the power supply restrictions done by TEPCO after the Tohoku Pacific Earthquake, the Roppongi Hills co-generator power plant worked without any issues and on the top of that kept providing electricity to TEPCO to support minimizing demand-supply gap in Tokyo.

An additional benefit of the Roppongi Hills site is that it has one of the most advanced earthquake resistance mechanisms in it. Each floor has semi-active oil dampers to minimize the damage by shaking. Due to both this earthquake resilience and backup power generation facility, Roppongi Hills announced that they could accept about 5,000 people when disaster happens around Tokyo. Comparing with the premises of other banks in Tokyo, level of resilience in Roppongi Hills is much higher than others. Because, 1) it has the 1st and the 2nd backup power supplies, 2) it runs 24x7 and 3) it stores 400,000 litres of fuel.

Required spec with the backup office of FI in Japan

The primary backup office with the Barclays in Japan is located about 30km away from Tokyo. It is easy to access during the disaster as well as can avoid simultaneous damage with CBD.

The primary backup office (a near recovery site) is in an Earthquake isolation structured data centre building (on the rubber damper) that has <N+1>spec power generator in it to meet with the business needs of the BCM policy. The secondary backup office (a far recovery site) is in Kansai, 500 km a way from Tokyo. It is also in the data centre building with <N> spec power generator.

Mainly due to the security reason, Japanese DC vendors do not want customer using data centre for purposes such as backup office, so Barclays case is very rare.

Nomura Research Institute (NRI) recently completed a unique data centre in the suburb of Tokyo, 60 minutes access from CBD. This data centre has an earthquake isolation mechanism and multi backup with power generator and cooling systems. It is notable that Nomura built

another building for the office space on the same structure. Thus the data centre and office building stands side by side and share resilient infrastructure of a power generator and the earthquake isolation mechanism.

In the Japanese office rental property market, all most all offices come without power generator backup. But after the Great Eastern Japan Earthquake, this market is going to have to adapt reflect customer needs for resilience. However data centre venders are going to move the same direction as Nomura to support FI organisations. From the FI point of view this combined solution of backup office and data centre is more cost effective than owning a resilient backup office by themselves.

6 Conclusion

Among many lessons learned after the Tohoku Pacific Earthquake, it is very essential that the FI organisation reconsider their dependency on electrical power supply. FI's main offices must have facilities for resilience such as the generator backup with the power supply, the cooling capacity, the multi-way telecommunication etc. After the Tohoku Pacific Earthquake, many of new offices buildings in the market have been developed with an earthquake resisting stricture but that alone is not enough for FI's business operation. Having an office with the facility that is about the same spec as a data centre is the ideal solution because of the dependence on power supply to meet with the RTO requirement.. The experienced power outages, after the Tohoku Pacific Earthquake has awareness was raised on the need to be better prepared. But it is neither easy or cheap to find building in the market like the Roppongi Hills complex, and creation of a backup power generator after completion of the building requires huge investment to enhance resilience.

To save the cost and improve social function capabilities of FI's, one potential solution is a bilateral shared use of infrastructure, of data center with offices, and offices with hospitals. If FI's can share the initial investment and running cost of creating resilient infrastructure such as power generator among the interested parties, the cost can be reduced. But it takes time to get agreement among the possible interested parties. The quickest but rather expensive way is creating some office spaced when building a data centre like Nomura has done.

Other potential solution is creating special districts for disaster recovery (DR) and BCM, where the resilient infrastructure will be provided as the basic requirement of that area. A few areas have already built for DR purposes that cater for public services facilities such as a city hall a post office and hospital. But if this could be extended to cover the commercial services such as the FI's operation center and provide the shared infrastructure services to cover these as well, FI's can improve BCM capability at a societal level with less investment.

Before the Tohoku Pacific Earthquake, when conducting a BCM testing, it was just assumed that electrical power supply would be restored quickly and no actions needed to be taken. But now it is widely recognized that, unless there are solutions for extended power outages, RTO targets cannot be met and the BCM programme won't work.

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Author Biography

Name:

Yasutake Sayanagi

Affiliation:

Graduate fellow in Nagoya Institute of Technology

Vice President, Business Continuity Management, Barclays Security Japan Limited

BCM committee member of Cabinet Office, Japan

Brief Career:

2011 Joined Barclays (Head of BCM Japan)

2002 Joined Standard & Poors (Head of IT & BCM Asia Pacific)

1985 Joined Fuji Bank (Manager in Tokyo and London)

Selected Publications:

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