

BUSINESS CONTINUITY FOR UNDERSEA CABLE OPERATIONS

David James-Brown (JBTGlobal)

Brian Hart (Southern Cross Cable Network)

Email: david@jbtglobal.com

JBTGlobal, Australia and UK

Abstract:

The presentation considers some of the challenges that Southern Cross identified and overcame as it addressed the integration of Business Continuity into the organisations operational culture. These findings and resolutions may help other organisations to resolve their Business Continuity challenges.

Challenge 1. “We manage our risks to make sure we don’t have a catastrophe; and if we were unfortunate enough to (have a catastrophe), we have insurance. Why then do we also need Business Continuity Management? Isn’t this belt; braces; AND an elasticised waistband?”

Challenge 2. “Things break all the time, that’s the nature of electronics. Components wear out, they malfunction, and we fix them; that’s our way, why then do we need Business Continuity Plans?”

The presentation provides evidence that can be used to:

- Gain the boards attention that “it can happen to us”;
- Confirm that preventative controls and insurance do make a significant contribution; and
- Verify that recovery planning and preventative measures combined will reduce asset losses.

1 INTRODUCTION

Our business operates a protected and diverse routed network across the Pacific Ocean. Despite the built in resilience, the requirement for effective continuity plans is driven by two key factors: If a marine segment suffers a catastrophic failure this would lead to a partially unprotected circuit for the duration of the repair, and; the remaining (unprotected) circuit presents a potential single point of failure for the remaining parts of the network for the duration of the repair.

Business Continuity makes a valuable contribution to the whole governance

framework because prevention and insurance implemented exclusively cannot lead the recovery of service.

There are inevitable challenges that lie in resource prioritisation and often a realignment of organisational culture will be required, but the benefits of completing a continuity program are greater and more far reaching than might be at first obvious.

2 THE REALITY OF CATASTROPHE

For our purposes we consider a network catastrophe to be an abnormal event affecting major network elements; which is

beyond the capability of cable stations staff to adequately respond to within acceptable timeframes – without a structured and coordinated response capability.



Such an event would impact or threaten to impact network/customers revenues and asset base.

Ovum analyst Matt Walker said undersea cable networks are highly vulnerable to deliberate attack and need enhanced security.

"If ports, railways, gas pipelines and other types of networks are being secured against possible sabotage, we must similarly increase the security of undersea optical highways," Walker said.

The (recent cable) cuts also underlined the threats that Internet disruptions could pose to organizations and businesses worldwide. Large-scale Internet disruptions are rare, but East Asia suffered nearly two months of outages and slow service after an earthquake damaged undersea cables near Taiwan in December 2006.

"The economic cost of losing, or even just slowing down, international communications is extremely high," said Walker. *"This risk has to be factored into the calculations behind the investment level and design of undersea optical networks."*

Network catastrophe is not exclusively or necessarily a result of cable break or cable

failure. It can be due to failure of routing and cross connect equipment, power feed, multiplexing equipment and so forth. It could also extend to IT type Support System disaster which could affect the way the network is operated. It could be due to failures in facilities, human resources (workforce), the operating environment, local and international regulation, political activity, nearby hazards, contamination, sabotage etc.

The network must be viewed as an assortment of strategic and potentially systemic risks as well as the risks we are constantly reminded of by component failure and problem management.

Cable operations are particularly susceptible to threats posed by natural occurrences – earthquake, tsunami, sea level rise due to climate change, cyclone etc. – that form significant drivers for business continuity. It is critical that we understand these threats and their potential impact on assets and business operations.

Additionally we cannot afford to ignore the notion of 'risk creep' when reviewing vulnerabilities within service delivery. This occurs where a risk has been addressed and its profile on the risk register reduced but the constantly changing operating environment may have weakened some of the controls in place and the risk is now represented by a falsely low rating.

According to Robert Ritter *"Risk creep is the simple principle that if you are not actively seeking out potential problems and dealing with them, the overall risk (to your operation) will rise."*

It involves believing the following assumptions:

- *Things go wrong – mistakes will be made and everything will not run smoothly without effort to remove them*

- *The longer mistakes are left unfixed, the bigger impact they have*
- *The overall chance problems will occur rises when nothing is being done to check for them*

3 THE CHALLENGES TO BE OVERCOME

Minimising the risk of a catastrophe occurring is different to recovering from a catastrophe. Investing resources into preventing something happening is more intuitive and often more easily justified than investing in procedures to recover from something we hope will never happen. This dynamic is often overlooked and gaining Board level and senior management support is crucial if sufficient emphasis is to be placed on resumption. Gaining Board and senior management support for resumption planning requires the strategic drivers to be articulated.

Gaining operational support is equally important and the benefits of preparations must also be articulated in terms of their operational value.

Both the strategic and operational drivers must be in place before capability can be built and the organisations culture influenced.

At a strategic level the benefits of preparedness can be realised in the protection of countries economies; at the operational level the benefits can be realised in terms of the quality of service to customers, efficiency in operations and the ability to quickly adapt to changes in the political, economic, social and technological environments.

Potential event scenarios may help to focus stakeholder attention; anchor drag and sabotage, undersea seismic activity, tsunami and cable station compromise conjure up powerful images.

4 CONTROLLING RESIDUAL RISK:

4.1 Preventative Controls

A comprehensive program needs to continuously evaluate preventative controls which are being iteratively measured and enhanced. These controls aim to pre-emptively manage exposures in the broad areas of building structures, building internals, resources, physical and passive security, power, geographical considerations, the marine environment and so on. So; nothing new there - but it's how this initiative links with the business continuity program to address issues of culture, priority and cost control and to influence behaviours that is key.

$$\text{Residual Risk} = \frac{\text{Likelihood}}{\text{Preventative Controls}} \times \frac{\text{Consequence}}{\text{Continuity Capability}}$$

4.2 The Limitations of Preventative Controls and Insurance

The limitations of preventative controls means that it is just not feasible to implement the maximum level of preventative control for a combination of viability, logistical or capability reasons.

Insurance is problematic for critical infrastructure assets, how will the asset be covered, and what of the associated business loss or quantification of the loss to the local economy? We may wish to consider how long our organisation can operate after a major event, immediate expenses are significant and insurance may take years to settle. Do we have a plan to systematically document the post event situation? A photographic record can be helpful.

The time lag between incurring post event expenses and the time to receipt the insurance payout can be years. How do you manage in between? There are immediate significant expenses to clean,

repair and restore.

4.3 Further Controlling Residual Risk: Continuity Planning

Challenge 1. *“We manage our risks to make sure we don’t have a catastrophe; and if we were unfortunate enough to (have a catastrophe), we have insurance. Why then do we also need Business Continuity Management? Isn’t this belt; braces; AND an elasticized waistband?”*

Challenge 2. *“Things break all the time, that’s the nature of electronics. Components wear out, they malfunction, and we fix them; that’s our way, why then do we need Business Continuity plans?”*

Recovery plans need to focus on what is ‘the business’. Using this approach we consider what assets are critical to the continuation of services.

We need to consider the assets significance or the circumstances surrounding its development. Understanding the asset then sets the direction for recovery planning.

Valuation of critical infrastructure assets is difficult. This is particularly problematic where no monetary value can be placed on the asset, but it is of economic, industry and community significance.

Events do sometimes occur that are more than just extremely inconvenient. They may affect our operations to such an extent that we don’t have the human resource, mechanical or geographical capability to fix a major problem.

Understanding the asset sets the direction for recovery planning. We create a list of the most significant assets that will receive priority attention. This can be a difficult task.

The planning and knowledge gained assists to strengthen and further mitigate the likelihood of severity and impact of a repeat, therefore improving our resilience.

A documented recovery plan enables speed; this is of advantage when the incident affects more than one organisation. You may need to sand-bag a cable station or require industrial pumps to dry data centre space. Speed enables you to leverage suppliers quickly to assist your recovery. To enable speed, you may want to consider agreeing special delegations that will enable you to contract and purchase quicker.

The evaluation and prioritisation of assets can be extremely helpful to assist in focussing on items of greater significance before and during an incident. Identifying a location for temporary operations in advance is helpful as this usually requires a risk assessment.

The strategic placement of ‘crisis’ resources (or battle-boxes) around the network is also valuable. It requires focussed intellectual investment but the financial, maintenance and administrative cost once the store is established is modest. Contents may include supplies of generators, bottled water, tools, protective clothing, emergency lighting, cooling fans, common appliances, patching supplies and the like in carefully chosen secure storage facilities.

The presentation discusses how we addressed an already ‘can-do’ culture to embrace the benefits (including some less obvious ones) and how Business Continuity planning has resulted in the voluntary change to some day to day activities.

4.4 Challenges differ from constraints

The challenges faced by the business continuity program need to be overcome, the constraints on the other hand must be acknowledged and worked within. These constraints include financial, operational priorities, resourcing, understanding (prevention vs response) and the building of expertise.

4.5 What can we conclude?

Gaining Board and senior management support is paramount – the argument needs to be compelling and strategically valid. The increasing susceptibility of communities and economies to major infrastructure damage is driving up insurance costs – governance, risk and continuity planning can have a levelling effect. Strong governance underpins organisational resilience which is reflected in perceived exposure by insurers and in turn the cost of insuring the business.

Operational support is critical to achieving recovery capability. Organisational culture relies on the combination of attitudes and beliefs that drive behaviours. Once a strong operational governance culture is ingrained the organisation becomes increasingly aware of its vulnerabilities, more nimble in its approach to change and more confident in its service delivery and quality.

There is a marked difference between merely developing a plan and being able to demonstrate organisational resilience, although the two activities are in many ways symbiotic. The planning process forms the basis of our recovery skills, the exercising of these skills demonstrates the capability to recover.

4.6 The combination of planning and exercising

By combining planning with exercising we consider a perspective on network operations that could be readily transferred to day-to-day operations. The organisation can derive the following benefits:

- It can leverage an active problem management culture to help with lateral planning to protect the broader business.
- It can consider the challenges and uncertainties that are part of planning for events that haven't

happened yet, and events that therefore have no precedent.

A subtle by-product of planning and exercising is the ability of the organisation to appreciate the notion of station autonomy versus partial network custodianship and be able to use this to bring clarity when normal business communications are interrupted.

5 LESSONS LEARNT

Many lessons have been learnt during implementation of the business continuity program.

For instance, when considering relocating critical operations we need to define what is critical and plan to relocate only those activities that qualify.

Re-planning based on experience. The experience gained from an incident is invaluable to inform future planning. Should an incident occur in the future, the improved plan could lead to reduced loss and improved management.

We have found regular exercise and review is required to maintain focus and build the skills necessary in the incident team.

Opportunities to support the teams working together through exercises have proved invaluable.

There is enormous benefit to be gained by operational staff from their involvement in Business Continuity Plan exercises. This includes awakening awareness within staff as to what constitutes a crisis and how they would handle a crisis. BCP exercises also increase the speed of recovery as staff know what resources and equipment is required for the recovery. They can also be empowered to act autonomously and with confidence in situations that are 'business not as usual' – such as opting to power down equipment to spare it from further damage even though this might be contrary to business as usual practices.

6 CONCLUSION

A successful business continuity program requires strategic and operational commitment. The benefits of working through the plan development process go beyond developing a recovery capability, to the extent that the activity can positively influence day to day operations.

If the program is working well it will have:

- Gained the boards attention that “it can happen to us”;
- Confirmed that preventative controls and insurance do make a significant contribution to resilience; and
- Verified that recovery planning and preventative measures combined can reduce asset losses, positively influence insurance costs and increase operational efficiency.

7 REFERENCES

Reference to pictures and quotes....

Matt Walker (Ovum analyst); February 2008.

<http://www.reallyrocketscience.com/node/872>

Robert Ritter - Risk Creep – How Issues Multiply - by Robert Ritter Posted on September 13, 2012

<http://robertjamesritter.com/blog/2012/09/risk-creep-how-issues-multiply/>

Landslides and earthquakes

Japanese quake: impact on the telecom network; David Kennedy/Ovum | March 23, 2011
(<http://www.telecomasia.net/content/japanese-quake-impact-telecom-network>)

Taiwan 2009 - Subsea cable breaks 'as bad as 2006 quake', Robert Clark | August 20, 2009, telecomasia.net

(<http://www.telecomasia.net/content/subsea-cable-breaks-bad-2006-quake>)

The [2006 quake off southern Taiwan](http://www.telecomasia.net/content/subsea-cable-breaks-bad-2006-quake) cut eight cables in 16 places, leaving China and Southeast Asian internet users with no offshore connectivity for two days. It took more than a week to restore capacity and months to repair all the cables.
<http://www.telecomasia.net/content/subsea-cable-breaks-bad-2006-quake>

Anchor drag and fibre cuts

Three cables cut in Mediterranean (anchor drag suspected) **19 Dec 2008**, affected (*Three cable systems carrying more than 75 percent of traffic between the Middle East, Europe and America were damaged*, <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aBa0lTN.dcoQ>)

Cable cut by anchor drag north of Alexandria in **January 2008** (the January incident brought down 70 percent of the Internet network in India and the Middle East.

<http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aBa0lTN.dcoQ>)