

Business Continuity Management & Disaster Recovery Capabilities in Saudi Arabia ICT Businesses

Eng. Thamer Al Hamed
Risk Management & Business Continuity Execution Director
STC

Agenda

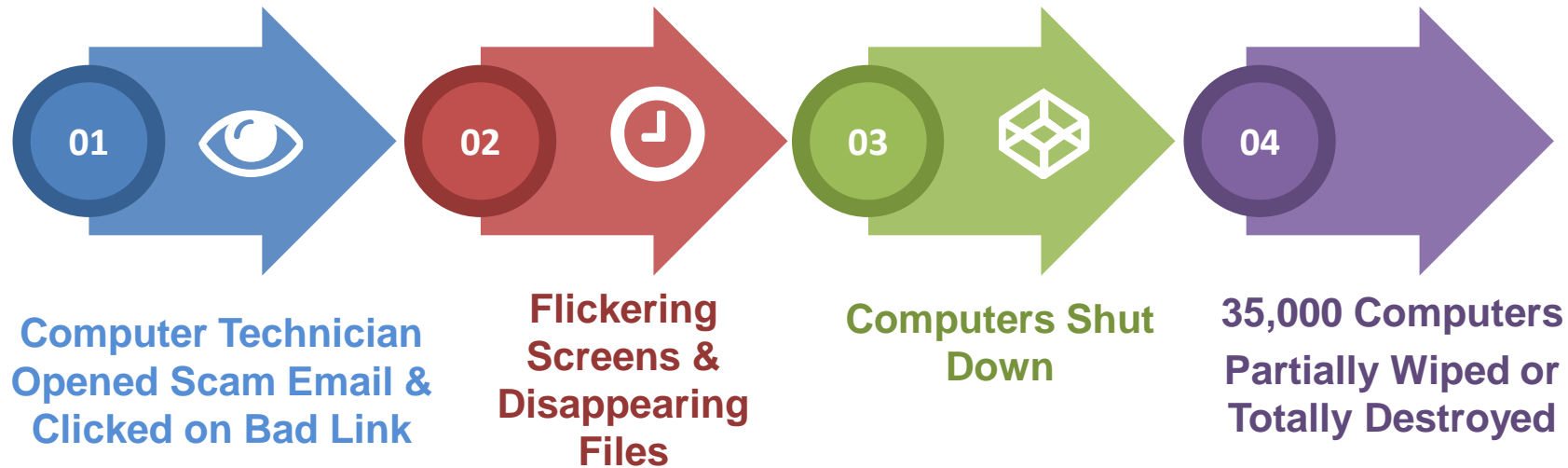
- Background and Problem Statement
- Motivation
- Research Problem
- Overview of BCM/DR Model
- The need and significance of BCM/DR
- Methodology
- Maturity Models
- Case Study
- Benchmarking
- Our Model
- Contributions and Recommendations
- Conclusion

Background and Statement of the Problem

- The telecommunication industry remains as one of the legitimate targets in the eyes of terrorists and other organized crime groups, particularly cyber criminals
- Information and Communication Technologies (ICTs) are considered to be the most vulnerable components in delivering uninterrupted services
- Telecommunication companies, ISPs and e-government has have an obligation to assure continuous and reliable digital services by implementing the right level of protection for its IT systems.
- Despite the fact that many companies in the KSA are aware that some measures must be taken to assure business continuity, there is a gap on how to implement BCM/DR programs effectively because BCM/DR is still developing

- In 2011 heavy rains fell on Jeddah with quantification up to 114 mm according to Department of Meteorology Permit and Environmental Protection
 - This was the largest quantity recorded in the history
 - This resulted from the rain and movable flooded area in Jeddah
 - Building complex of the country (214), which is considered one of the company's most important buildings
 - Multiple systems control the traffic of voice and data through international gateway.
- In 2012, Saudi Aramco was a victim of the first extensively documented cyber-attack in the Gulf.
 - In reference to various cyber security experts and open media reports, an individual with access to the company compromised Aramco's network by accessing to the company's network illegally

Saudi Aramco: 2012 Attack Massively



The company temporarily stopped selling oil to domestic gas tank trucks. After 17 days, the corporation relented and started giving oil away for free to keep it flowing within Saudi Arabia.

- Research Problem:
 - To design and develop a maturity model for BCM/DR programs, which can be used to measure the capability of business continuity management and disaster recovery for KSA ICT companies

Overview of BCM/DR

- Business continuity management (BCM) is a continuous process rooted to disaster recovery planning (DRP)
- BCM includes management processes meant to prevent severe disruptions in the critical business processes or operations against the impact of disasters or disruptions.
- BCM an integrated approach - Helps companies to respond to any unprecedented event timely and effectively.
- BCM focuses on risks that can cause a sudden or severe disruption.
- International Organization for Standardization (ISO) standard 22301- BCM is a comprehensive process that identifies potential risk to an entity the impact of those threats to business operations

The Umbrella of Business Continuity



Under the umbrella of
Business Continuity Management



The Need and Significance of BCM/DR

- To guarantee the business continuity of processes and operations
- Pressure on companies to guarantee continuity of core operations
- Increasing threats
- Increasing regulatory requirements
- Increasing demand and supply chain integration
- Surging competition and increasing demands of customers

Maturity Models

- Capability Maturity Model (CMM) - Maturity refers the extent to which a business process is defined, measured, controlled and managed
- Built on a stepwise structure of maturity level
- Based on CMM and Gartner's definition, maturity model is:

A staged structure of maturity structures that defines the extent to which a business process is measured, defined, controlled and managed, assuming that the entity develops and adopt new practices and processes from which it learn and optimises as it moves from one level to the desired level.

Existing Maturity Models

- Three existing maturity models:
 - Virtual Corporation BCMM, Smit's Maturity Model for BCM
 - Sheth, McHugh and Jones' BCMS Capability Model
 - Gartner BCP
- The research settled on these maturity models because of their popularity and wide usage.
- They also have a considerably distinct design and focus.

Objectives and Significance of Maturity Models

- **Central objectives:**
 - To deliver insights into the maturity of processes or programs within a business or an entity in a business
 - To benchmark the maturity of BCM/DR processes
 - To assure their customers about the availability and quality of these processes
- **Significance:**
 - Support the management of process

Proposed Model Requirements

- Easily applicable assessment tool
- Easily communicable outcomes
- Based on industry accepted best practice methodology
- Comply with governmental agencies (e.g., CITC)
- Validated judgement of BCM maturity
- Suitable for Benchmarking

- Country – The Kingdom of Saudi Arabia
- Focus company – Saudi Telecom Company
- Telecom Company
 - The leading telecommunication operator in KSA.
 - Majority-owned by the Kingdom of Saudi Arabia
 - telecommunication service provider in the Middle East and Northern Africa
- Issues that need attention: cybercrime, economic espionage, rebellions and intellectual property rights infringement
- Failure of similar companies to a disaster would lead to unprecedented losses.

Risk matrix criteria

RISK LEVEL CRITERIA: STC FORMAT

5x5

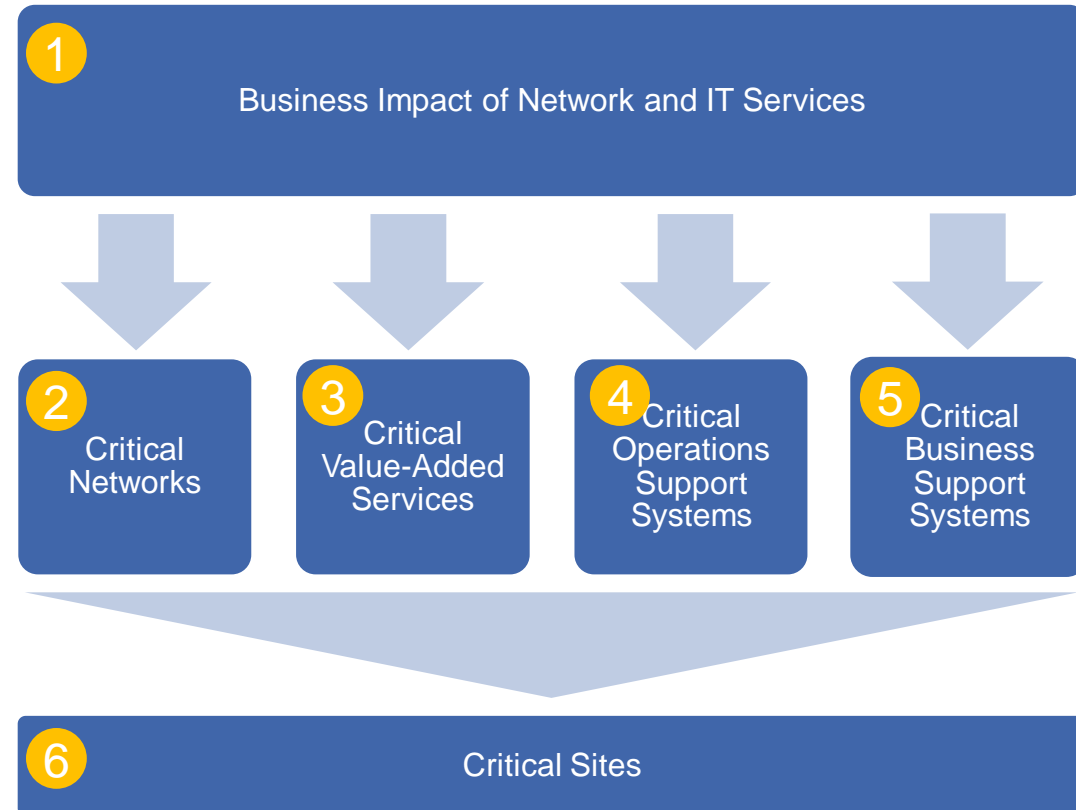
		LIKELIHOOD					
		REMOTE	NOT LIKELY	LIKELY	HIGHLY LIKELY	EXPECTED	
		1	2	3	4	5	
CONSEQUENCE	SEVERE	5	HIGH	EXTREME	EXTREME	EXTREME	EXTREME
	MAJOR	4	HIGH	HIGH	EXTREME	EXTREME	EXTREME
	MODERATE	3	MODERATE	MODERATE	HIGH	HIGH	EXTREME
	MINOR	2	LOW	LOW	MODERATE	HIGH	HIGH
	INSIGNIFICANT	1	LOW	LOW	LOW	MODERATE	HIGH

Likelihood				
Level	Description	Interpretation	Indicative Probability [%]	Indicative Frequency
5	Expected	Expected to occur in most circumstances or occurs regularly	≥75 <100	Almost yearly
4	Highly likely	Will probably occur	≥40 <75	Every 2-3 years
3	Likely	Might occur at some time	≥15 <40	Every 4 – 9 years
2	Not likely	Small chance of occurring at some time	≥1 <15	Every 10 – 19 years
1	Remote	Will only occur in exceptional circumstances	<1.0	<1 per 20 years

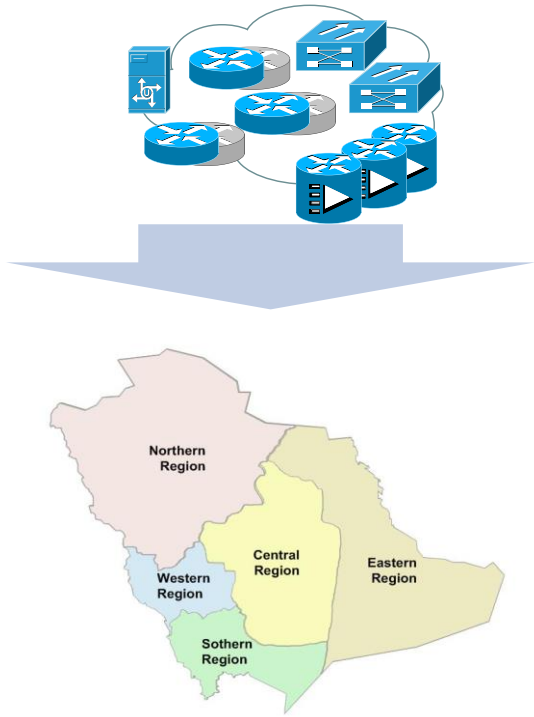
Consequence			
Level	Description	Interpretation	Correlation with Corporate BIA
5	Severe	Beyond current response capability	<p>People: Loss of 20% of department workforce, and creation of workload that will require more than 1 week to resuming normal workload.</p> <p>Operational: Interruption to key services that will affect 20% of customers.</p> <p>Financial: Loss of 10% of daily sales and delivery of services.</p>
4	Major	Response requires integrated management focus	<p>People: Loss of 10% of department workforce, and creation of workload that will require more than 48 hours to resuming normal workload.</p> <p>Operational: Interruption to key services that will affect 10% of customers.</p> <p>Financial: Loss of 5% of daily sales and delivery of services.</p>
3	Moderate	Response capability exists within context	<p>People: Loss of 5% of department workforce, and creation of workload that will require more than 24 hours to resuming normal workload.</p> <p>Operational: Interruption to key services that will affect 3% of customers.</p> <p>Financial: Loss of 3% of daily sales and delivery of services.</p>
2	Minor	Readily rectified	<p>People: Resource constraints that will require less than 24 hours resuming normal workload.</p> <p>Operational: Delayed services, affecting less than 1% of customers.</p> <p>Financial: Loss of less than 1% of daily sales and delivery of services.</p>
1	Insignificant	Absorbed within day-to-day operations	<p>People: Resource constraints. Unplanned absence of key personnel.</p> <p>Operational: loss of some services creating small backlogs, or requires additional time or resources to catch-up.</p> <p>Financial: Reduction of sales and minimum losses of new services.</p>

BIA Approach

- To understand the business impact of network and IT services and to identify the critical components of these services, we have
 - 1) Assessed the business impact of network services
 - 2) Mapped network services on networks and identified the critical underlying networks
 - 3) Identified critical Value-Added Services platforms and assessed impact
 - 4) Identified critical Operations Support Systems and assessed impact
 - 5) Mapped Network & IT Services to IT Applications to identify the impact on business services and identify the criticality of the applications
- Based on the above analyses we have
 - 6) Assigned weights to network elements that are part of the above services, mapped them to network and IT sites and ranked the sites according to weights of network elements hosted



Critical sites are ranked based on the criticality of hosted network components



All sites hosting network components



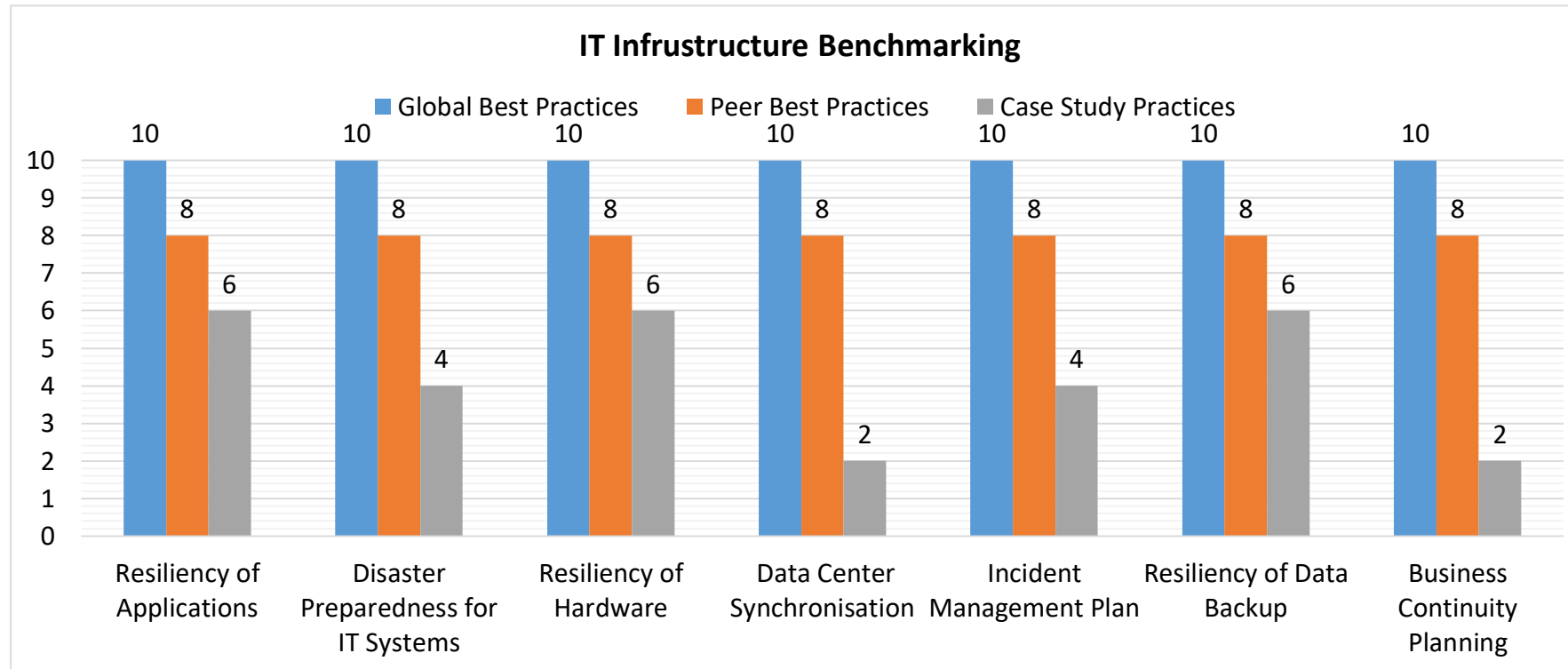
- Criticality of element in service chain
 - Impact on customer facing service
 - Relative number of customers affected
 - Control plane more important than transport plane
- Criticality of service affected
 - Estimated number of subscribers
 - Enabler for other (critical) services
 - Impact on reputation in case of failure

Ranking of sites with scores indicating site criticality from a network services perspective

The worksheet will be delivered as a separated document.

Benchmarking continuation

- Significant gap between capabilities of BCP and those of peers and the global standards.



Scope Capability Descriptions of the Developed Model

Scope Capability Level	Proposed Model
1. Unit-based	<ul style="list-style-type: none">• BCM in the company is constrained to a single or few business units. Typically, BCM is limited to the IT department.• Not all departments or business units relevant to the company's core business operations is included in the scope of BCM.• The focus of business continuity is narrow.
2. Enterprise-wide	<ul style="list-style-type: none">• All internal business units and department are covered in BCM. Typically, the covered units and department support core business operations• Characteristically, the company does not strictly require its supply chain partners to implement BCM measures.• The company still falls on the unit-wide level if the continuity plan of department or business unit are misaligned in a manner that fails to protect the core processes across the company
3. Supply chain-wide	<ul style="list-style-type: none">• BCM program extends to cover entities in the external environment of the company, including outsourcing and supply chain partners. The expansion is based on the dependency of these external entities to the core business functions and processes.• BCM is an integral part of contract negotiation with external stakeholders

Process Maturity Level Descriptions Of The Proposed And Final Model

Maturity Level	Final Model
Initiated	<ul style="list-style-type: none"> ▪ Defining the scope, formulating a BCM policy and assigning the roles and responsibilities ▪ Further, the company identifies the core business processes ▪ Management demonstrates commitment and leadership competency in line with the initiated BCM program ▪ Clear owner of the BCM, who has the influence and power to ensure that BCM-related tasks.
Planned	<ul style="list-style-type: none"> ▪ The company performs risk assessment and BIA to create a BC strategy. ▪ Based on the formulated BCM policy, and continuity plans are implemented to achieve the predefined BC objectives. ▪ The confidentiality, integrity and availability of the created documents is ensured.
Implemented	<ul style="list-style-type: none"> ▪ A company establishes and implements BC procedures, including BCPs and incident response structure. ▪ Plan are documented and protected. ▪ Competences and resources required to implemented the formulated BC strategy are acquired and allocated effectively. ▪ BCM awareness exist and is highly promoted among employees. All staff members are aware of their roles and responsibility. ▪ Validity of plans is ensure through planned and executed exercises or initial tests. ▪ The deliverable of this level is the BCM as a project but not as an ongoing process.
Integrated	<ul style="list-style-type: none"> ▪ BCM is considered as a process instead of a project. ▪ Companies on this level of process maturity measures, analyses and evaluates their BCMS's. ▪ Importantly, BCM awareness is high among staff. ▪ Communication plans for crisis in the internal and external environment is also integrated. ▪ The deliverable of this stage is business continuity management as a process.
Optimized	<ul style="list-style-type: none"> ▪ As the final maturity level of a company, the goal is to progressively improve adequacy, effectiveness and suitability. Management reviews and internal audits are performed regularly to identify opportunities for improvement and need for changes. Typically, companies at this level can used BCM as to gain strategic and improve operational excellence. The deliverable of this level is business continuity management as mature process.

Final Model Grid

- Vertical axis represents the maturity path concerning the quality of a BCM process. It outlines six maturity stages of a BCM program: (1) initiated, (2) planned, (3) implemented, (4) controlled, (5) integrated, and (6) optimized.
- Horizontal axis determines the scope of the BCM/DR process. The three stages are unit focus, facility focus and supply chain focus.
- Both scales are cumulative – Each level builds from the preceding stages.

Process Quality Dimension ↑	Optimized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Integrated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Controlled	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Implemented	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Planned	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Initiated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Unit focus	Enterprise focus	Supply chain focus
Scope Capability Dimension →				

Contributions and Recommendations

- BCM program maturity assessment model can be used to develop intelligent responsive systems .
- The companies can set the cost to build the real DR in complex technology.
- Engagement with CSPs and public authorities.
- Industry trends such as social media, mobility and cloud computing are some of the key drivers that motivate BCM/DR professionals to be responsible for governing their companies'
- BCM programs should be considered as entities that adapt their BCM programs and associated DR plans

Conclusion

- The complex landscape that ICT businesses and government agencies operate today demands an adaptive BCM programs that discuss an array of threats.
- The process of planning for disasters or interruptions can only begin after a thorough assessment of these threats and their impacts.
- Besides internal pressure, top-management may be motivated to enhance BCM/DR programs by external pressure or requirements from customers, industry regulatory bodies and government.

