

# Avoiding Data Center Disasters

How to Address IT Service Continuity Risk Factors | June 23, 2016

#### Agenda

- Introduction and Housekeeping
- Avoiding Data Center Disasters with Jim Nelson
- How to Respond to a Data Center Disaster with Vincent Geffray
- Q&A Session with the Speakers





#### Questions





#### 🔰 @ITAlerting #ITAWebinar



#### Speakers



#### Jim Nelson

President Business Continuity Service, Inc. (BCS)



#### Vincent Geffray

Senior Director Product Marketing Everbridge



# Avoiding Data Center Disasters



# Avoiding Data Center Disasters



- Main Causes of Downtime
- Challenges we face Complexity & Risks
- Some Warning Signs/ Indicators
- Some suggestions, Quick Fixes/ Interventions/ Mitigations
- References

## Who has..



- A data center that is brand new-less than 2 years old?
- A data center that is 5 years old?
  - A data center that is 10 years old?
  - A data center that is 15 years old?
  - A data center that is 20 years old?
  - A data center that more than 20 years old?

## Who has....



Experienced an <u>unplanned</u> outage in the last 12 months?

Experienced an <u>Scheduled</u> outage in the last 12 months?

Updated your BIA/ RA in the last 12 months?

Completed a limited recovery exercise in the last 12 months?

Completed a comprehensive recovery exercise, including business units in the last 12 months?

# Ponemon Institute



- According to our new study, the average cost of a data center outage has steadily increased from:
  - □ \$505,502 in 2010
  - □ \$690,204 in 2013
  - □ \$740,357 in 2016 (or a 38 percent net change).
- Maximum downtime costs increased 32 percent since 2013 and 81 percent since 2010.
- Maximum downtime costs for 2016 are \$2,409,991.

## Ponemon

UPS failures are the #1 cause of unplanned data center outages

□ accounting for one-quarter of all such events.

- Cybercrime fastest growing cause of data center outages.
  - 2 percent in 2010, 18 percent in 2013, 22 percent in the latest study. Cost impact \$981k
- Human error 22%. Cost impact \$489k
- IT equipment failure root cause of 4%.
   Cost impact \$995k

## Gartner Report



- 80% of outages impacting mission-critical services will be caused by people and process issues, and
- more than 50% of those outages will be caused by change/configuration/release integration and hand-off issues.

## Gartner



- The study highlights 7 items, I highlight 3:
- 1. How well are standards defined and followed?
- 2. How well are IT services documented or tracked
- What is the degree of business risk that IT organizations will tolerate

## D&B



According to Dunn & Bradstreet, 59% of Fortune 500 companies experience a minimum of 1.6 hours of downtime per week - See more at:

http://www.businesscomputingworld.co.uk/a ssessing-the-financial-impact-ofdowntime/#sthash.KQaVtyLh.dpuf

## Challenges



- BIG DATA (structured, unstructured)
- "Cloud" issues
- Green, PUE, efficiencies
- Competitive Intelligence, Analytics, Dashboards
- Social media, wikis, blogs, video,
- Regulatory, compliance
- IA, Data Security, Cyber
- Customers, Budget, resources, \$\$\$, Time



A IS	A LOT
0	F DATA
PETABYTE	20 MILLION    FOUR-DRAWER FILING CABINETS    FILLED WITH TEXT
РЕТАВУТЕ	13.3 YEARS
1.5 PETABYTES	
15+ PETABYTES	INTERNET USER'S DATA BACKED UP ON MOZY.COM
20 PETABYTES	THE AMOUNT OF DATA PER PROCESSED BY GOOGLE DAY
20 PETABYTES	TOTAL HARD DRIVE SPACE 1995
50 PETABYTES	THE ENTIRE WRITTEN WORKS OF MANKIND FROM THE BEGIN- NING OF RECORDED HISTORY. IN ALL LANGUAGES

Quantities of bytes								
(	Common	prefix	Binary prefix					
Name	Symbol	Decimal SI	Binary JEDEC	Name	Symbol	Binary IEC		
kilobyte	KB/kB	10 <sup>3</sup>	2 <sup>10</sup>	kibibyte	KiB	2 <sup>10</sup>		
megabyte	MB	10 <sup>6</sup>	2 <sup>20</sup>	mebibyte	MiB	2 <sup>20</sup>		
gigabyte	GB	10 <sup>9</sup>	2 <sup>30</sup>	gibibyte	GiB	2 <sup>30</sup>		
terabyte	тв	10 <sup>12</sup>	2 <sup>40</sup>	tebibyte	TiB	2 <sup>40</sup>		
petabyte	PB	10 <sup>15</sup>	2 <sup>50</sup>	pebibyte	PiB	2 <sup>50</sup>		
exabyte	EB	10 <sup>18</sup>	2 <sup>60</sup>	exbibyte	EiB	2 <sup>60</sup>		
zettabyte	ZB	10 <sup>21</sup>	2 <sup>70</sup>	zebibyte	ZiB	2 <sup>70</sup>		
yottabyte	YB	10 <sup>24</sup>	2 <sup>80</sup>	yobibyte	YiB	2 <sup>80</sup>		







# Is all DOWNTIME the same?

- Unplanned downtime: The Oopsie!...
- Scheduled downtime:

Backups, hardware, software upgrades, preventative maintenance, capacity upgrades, EOL, retiring old systems, network upgrades, cabling changes.... The great majority of system and data unavailability is the result of <u>planned</u> <u>downtime</u> that occurs due to required maintenance.

<u>Unplanned</u> downtime accounts for only about 10% of all downtime, its unexpected nature means that any single downtime incident may be more damaging to the enterprise, physically and financially, than many occurrences of planned downtime.

# Warning Signs



Data Center Location and Design

Building codes, CRAC/ CRAH units on the raised floor, cleaning, vibration, UPS, fire detection / suppression, architectural ceilings, raised floor, walls

## **Data Center Access**

Staff in room, packing materials, combustibles, service personnel, vendors, customer tours...

# Location hazards, risks evaluation

#### Sample list of potential natural hazards Lions and tigers and bears oh My!

Severe weather, Sandy, lighting, flood, hurricanes, typhoons, super storms, tornado, brush / forest fires, drought, earthquake, Nor'easter, blizzard, ice storm, tsunami, typhoon, slapping wires, etc

#### Potential man-made hazards

Violence in the Workplace, Boston lock down (SIP), Fukishima, Gulf oil spills, terrorism, flight paths, neighbors, rail, hazmat, chemical spills, pollution, EMF, human error, terrorism, denied access, occupy "everything", cyber attacks, RAID controller failure, bad power supplies, UPS failure, battery failures, cooling failure, change control problem, violence in the workplace, bridge collapse, etc

## **Proximity Evaluation**





## Building Evaluations



### Rent / Buy / Build / Cloud Hybrids / Consolidation

Building codes, existing building history, capacity, # of floors, stacking, security, wind speed, high speed network access, power quality, expansion space and %, architectural features, floor loading, open vertical / slab height, transportation, parking, detention/retention ponds, backup water, cooling capacity, heat sinks, acoustical, bargaining unit or right to work, access to technical talent, access to physical plant / facilities talent, tax breaks, tax incentives, etc, etc

## TCO: Design, Build, Operate, Decommission or repurpose

## Causes of Outages

#### Human Error



Reaching design limits, poor change control, weak documentation, Lack of standards / processes / best practices, no training, tours and visitor access, accidents, water incursion .....

#### **Power Quality issues**

Poor voltage / current / frequency regulation, common mode noise, grounding problems, harmonic issues, EMF, RFI, wireless...

#### Design and operation

Most design are fine, operations and changes compromise the design intent, poor or deferred maintenance, generator, UPS and batteries, mechanical moving parts, transfer switches, breakers, belts, pumps, capacitors, filters,

#### Environment

Temperature / Humidity, contamination, corrosion, pollution....

## Cabling Standards?





## Cabling Standards?











## Ideas, suggestions and approaches to address the integration and pervasiveness of technologies throughout the organization.

## Get help!



- The risks of positioning yourselves (ICT) as the "experts" on all things is you will be viewed and held accountable (read as blamed!). This can be a "resume updating event".
- I did NOT say it was your fault-I said I am going to BLAME you.

# Suggestions and strategies



- Engage Top Management
- Timing is appropriate
- Engage the "Business"
- Establish a Steering Committee
- Update, conduct a Business Impact Analysis (BIA), Risk Assessment (RA)
- Use standards approach-ISO, TIA, BCSI etc.

## Have a Plan



- Align to standards!
- Backups are fine
- Restores are minimum
- Testing is Critical
- Alignment with Business-BCM, RM, IA, Resilience,
- The "traditional" BIA and RA falls short unless done well!

## Review



- Location
- Process control
- Documentation
- Train your people
- Mind the little things
- Project Management / Change Control
- Engage the Business
- KYP-Know your personnel

# Organizational approach



- Leverage other organizational areas (such as Risk, Information Assurance, BCM, Internal Audit, EH&S, Security, Insurance)
- Hire it done---engage some experts
- DIY-do it yourself
- What are trade-offs?
- Disruption –vs- Cost Benefit
- Document!



- A tidy shop is a happy shop-Keep a clean facility
- Hire a technical writer
- Train your people—cost versus benefit
- Noah (2x2) escort everyone
- Clearly define expectations, procedures to define "what to do" and "not do"
- Manage / Monitoring -Immediate response



- Take readings and monitor the environment
- Integrate with CAB
- Keep Copper Communication Cables away from power cables, motors, transformers
- Handheld devices –distance from EDP equipment



- Define and ENFORCE policies & procedures
- No emergency deliveries-keep spares
- No packing / unpacking inside the data center
- No food, drinks, people if possible.
- AVOID rushing, running and moving too quickly
- Contractor selection & specifications before and after work
- Walk off mats
- Anti static procedures-USE them!



- Communicate with your teams
- If you do not define expectations-they will make them up
- Leverage your vendors
- Talk with PEOPLE-yes that is allowed
- Go outside your "comfort zone"
- Look for choices





## Gartner

http://www.rbiassets.com/getfile.ashx/4211 2626510

## Ponemon

http://www.emersonnetworkpower.com/en-US/Brands/Liebert/Documents/White%20 Papers/data-center-costs\_24659-R02-11.pdf

## ICOR



http://theicor.org/

http://www.theicor.org/art/pdfs/ICORCEBroch ure-Web.pdf

Business Computing Week <u>http://www.businesscomputingworld.co.uk/a</u> <u>ssessing-the-financial-impact-of-downtime/</u>

Symantec Dennis Wenk



# Thank you

- Jim Nelson-BCS, Inc. 866-629-6327
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- International Consortium for Organizational Resilience (ICOR) 866-765-8321
   www.theicor.org

# How to Respond to Data Center Disasters

#### Vincent Geffray | Ever**bridge** |@Vgeffray



#### What are the Root Causes of an unplanned outage?

#### Bar Chart 9: Root causes of unplanned outages

Comparison of 2010, 2013 and 2016 results



#### What's the cost of an unplanned data center outage?







# An unplanned outage IS O Business issue



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#### Define Major Incidents with your business

# Disruption of service?

→ Severe disruption or Interruption

Impact to the business operations?

→ Large

Urgency to restore

→ High



#### Assess the business impact of each mission-critical service





#### Create a Major Incident Response Virtual Team



#### Major Incident Response Team

Major Incident Response team may include members from:

- Network engineering, Application support, DB support, Middleware team, Server/infrastructure team, ERP support, EMR support team
- Service Desk manager
- Customer service manager
- Change manager
- IT Service Director
- 3<sup>rd</sup> Party vendor (technical contact)

Assign someone to be the Major Incident Manager



#### Create a Communication Strategy

- + Who will you be contacting?
  - Your IT experts
  - Senior management
  - Impacted customers
- + How will you be communicating?
  - Text, SMS,
  - Voice, text to voice
  - Emails
  - Mobile app, etc...
- + How/where do you keep contact information up-to-date?
  - Individuals
  - On-call personnel
  - Static groups
  - Dynamic groups
  - Subscriptions



- + What content will be communicated, to whom ?
  Notification templates
- What's the escalation rule if your IT experts don't respond

+ How often will you be communicating during the crisis?

#### Identify Your Contacts and Stakeholders

Cyber attack leading to data breach

IT ALERTING



#### Have Virtual Crisis Rooms Available

- + You need at least 2 conference bridges:
  - Your IT experts
  - Senior Management
- Provide collaboration tools (Lync, Skype for Business, Slack...)

- + How will you be contacting Your IT experts?
  - Manually
  - From your ticketing system
  - From your Monitoring tools





#### What You Need To Do:

Definition of Major Incident
 Assess the Business Impact
 Create Major Incident Response Team
 Define Communication Strategy
 Have 2 Virtual Crisis Rooms



#### All-inclusive IT Communications solution

Unlimited Global Voice & SMS
 Intelligent Notification Templates
 On-call Schedules and Rotations
 Automatic Escalation
 1-click Conference Call
 Integration with Ticketing Systems
 99.99% true uptime
 Open APIs



#### Questions





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#### Learn more

## www.ITAlerting.com

