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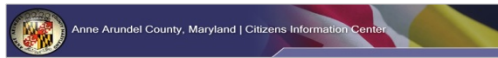
Data Recovery without Tums –
Best Practices for the Real World

Edward Lewis | Ed Coram | March 13, 2009

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Representative SAI Clients

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- **Disaster Recovery is:**
 - the ability to restore an institution's IT operations in event of the serious loss of IT resources as a result of fire, earthquake, flooding, bomb, explosion, sabotage, etc.
 - a subset of Business Continuity
 - a superset of data availability
- **Business Continuity is:**
 - the ability to continue the “core” operations in the event of a major disaster; it covers more area than simply IT Infrastructure.
- **Disaster Recovery is NOT:**
 - Used for simple failures (components)
 - Used for planned down-time

When disaster strikes, business suffers

43% of businesses impacted by a disaster never reopen.⁽¹⁾

72% of all businesses impacted by a disaster do not exist within 3 years of a disaster.⁽¹⁾

93% of all businesses that suffer a significant data loss are out of business in 5 years.⁽²⁾

(1) U.S. National Fire Protection Agency

(2) U.S. Bureau of Labor

U.S. Colleges and Universities know the damage disasters can do . . .

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2004 – Hurricane Ivan damages 90% of classrooms at the University of West Florida.

2005 – In the aftermath of Hurricane Katrina, Tulane is required to lay off 200 faculty and close 14 doctoral programs. Delgado Community College was forced to change its mission to one of workforce development.

2006 – The University of Iowa suffers significant tornado damage.

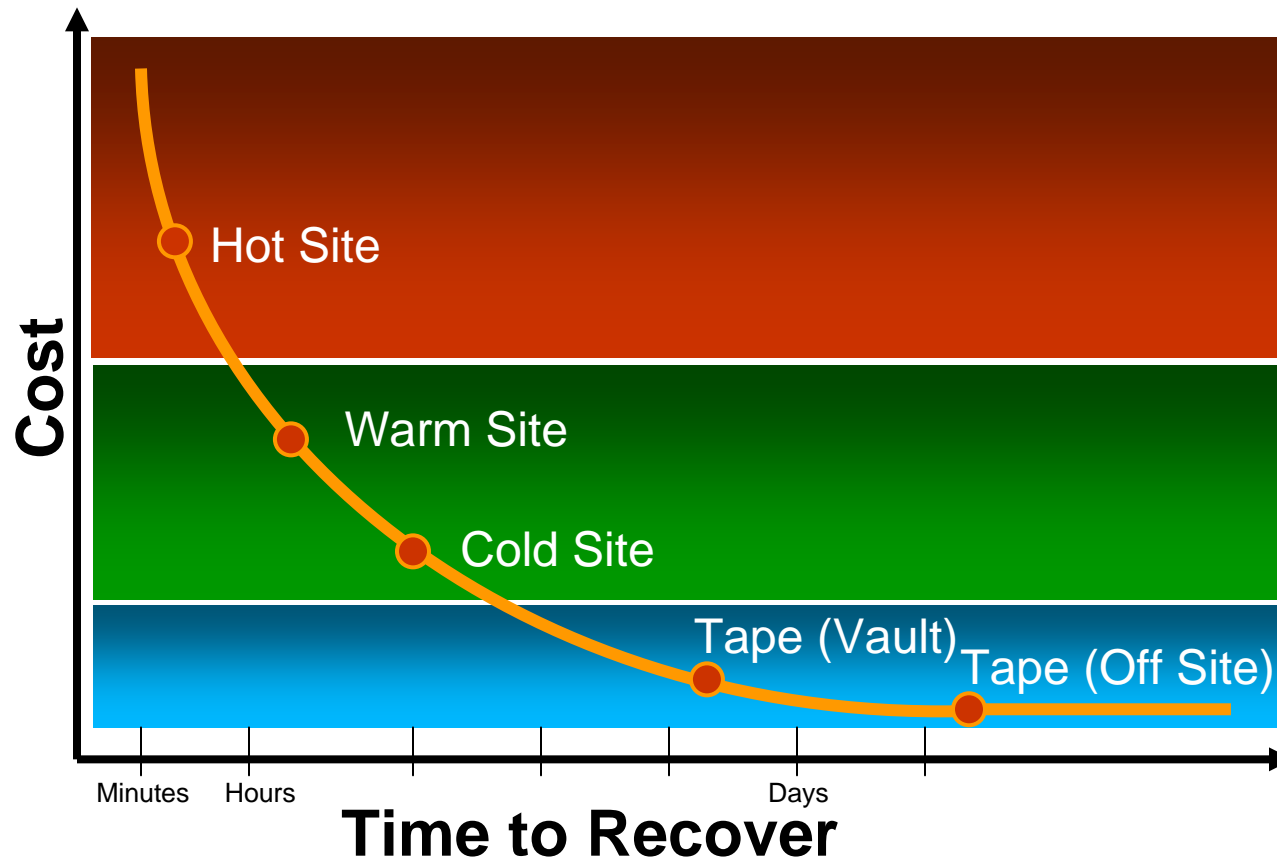
2008 – Hurricane Ike damages multiple facilities at the University of Texas

... Yet a sizeable number do not have comprehensive DR plans in place

- In 2004/2005, 49% of US colleges and universities did not have a DR plan. (*InfoTech magazine: 2005 Education Sector Benchmarking Survey*)
- Despite the fact that Disaster Recovery has been in the top 10 of the Educause Current Issues Survey for 4 of the last 5 years, the 2008 survey results showed that:
 - While approximately 50% of respondents had experienced a disruptive event that triggered an emergency response at least once in the last five years, approximately 40% did not have a strategic plan for Disaster Recovery in place.

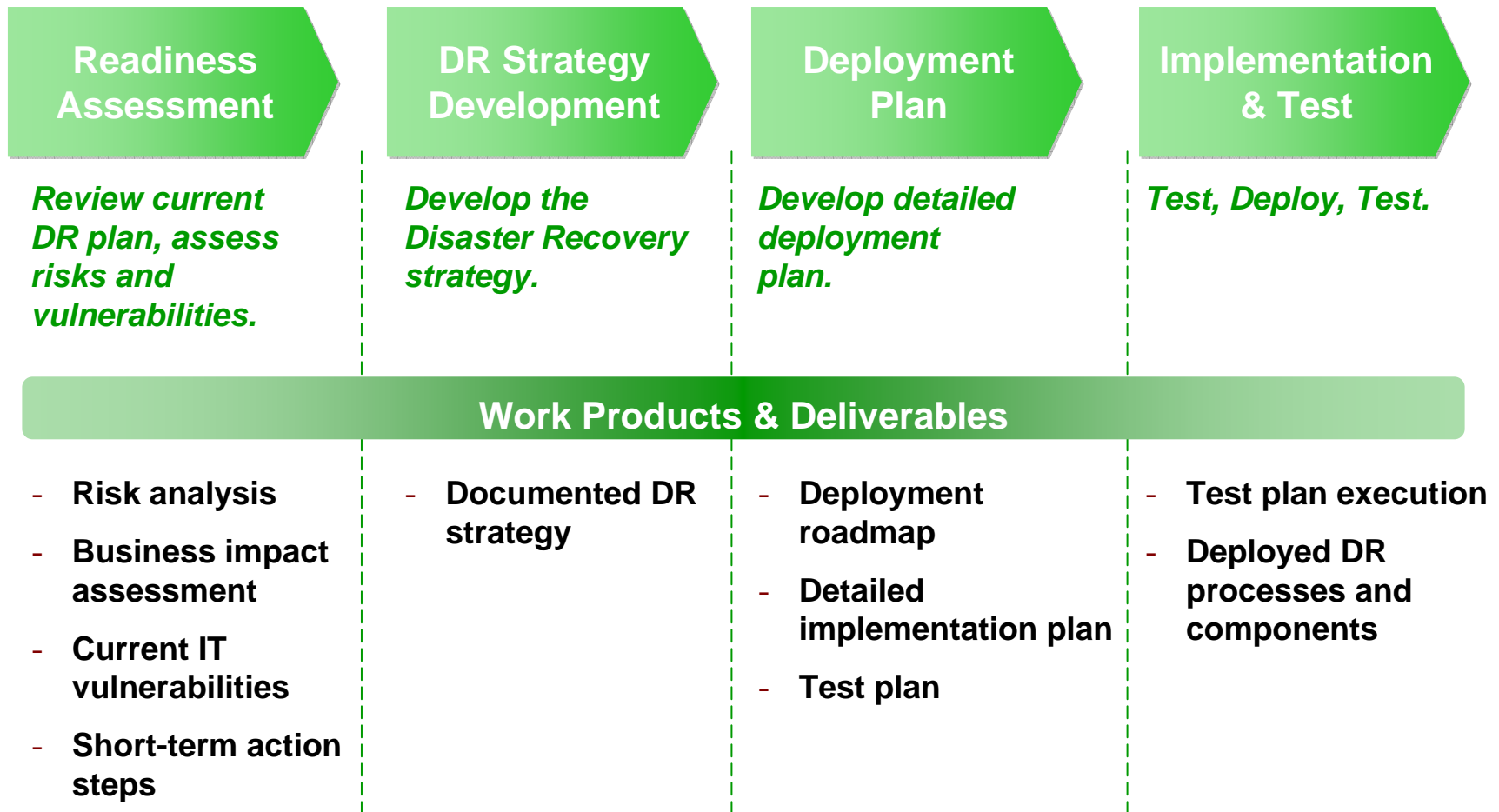
Why?

Are cost and complexity the primary inhibitors?

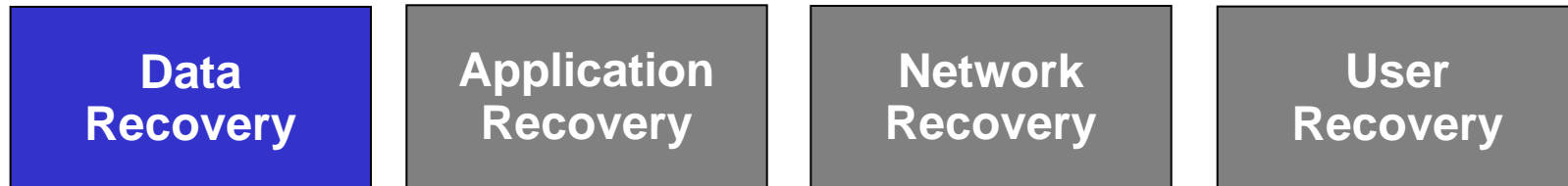


- How many of you have disaster recovery plans in place?
- How many of your plans reflect SLAs or other recovery related commitments to business stakeholders?
- How many of you have updated your plan in the last 12 months?
- How many of you have tested your plan in the last 24, 12, 6 months?

A Comprehensive Approach to Disaster Recovery



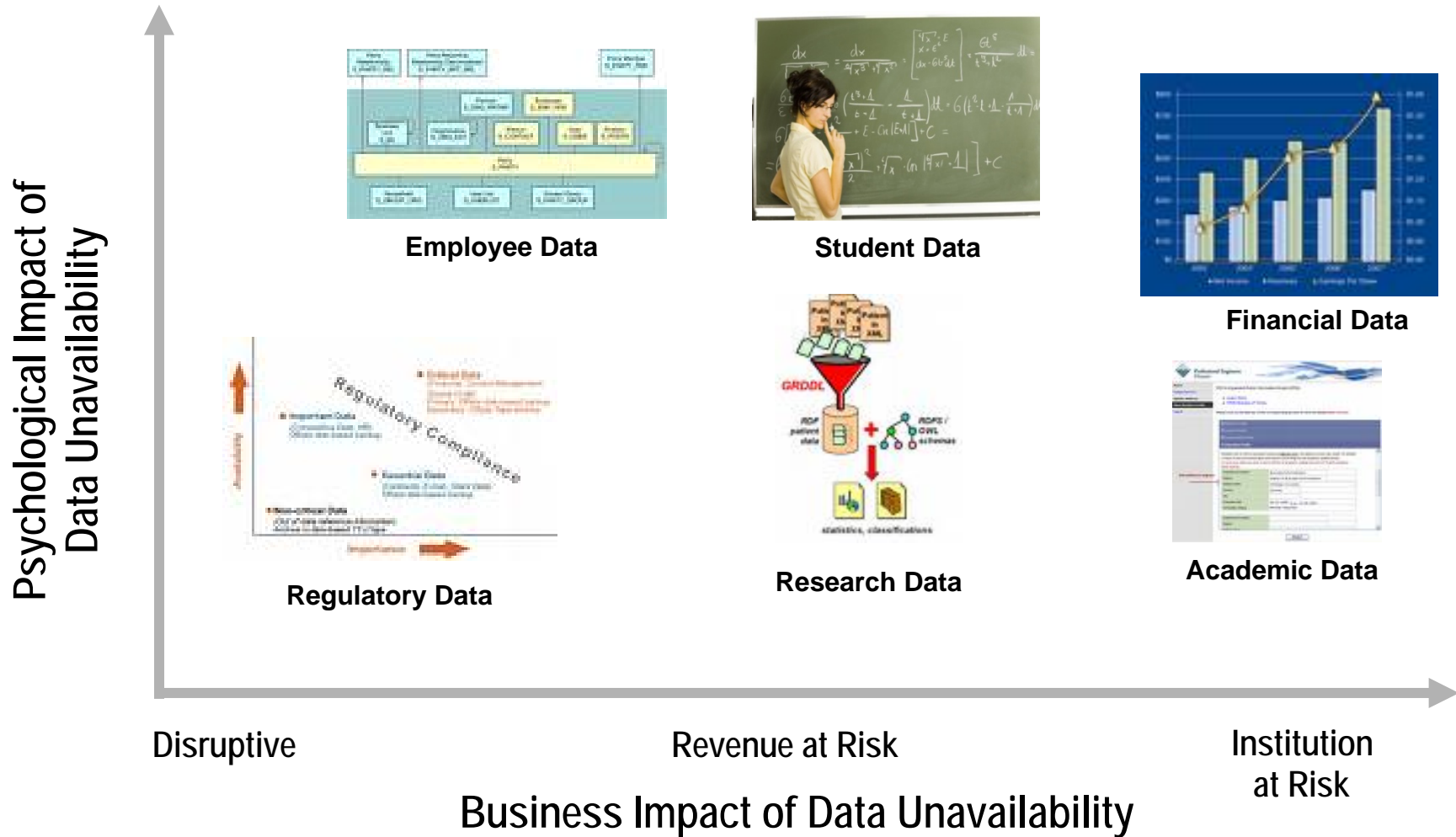
Elements of a Disaster Recovery plan



Data recovery is the process of salvaging data from damaged, failed, corrupted or otherwise inaccessible secondary media.

The remainder of the discussion will focus on Data Recovery

Not All Data is Created Equal



Recovery Requirements – Defining Objectives

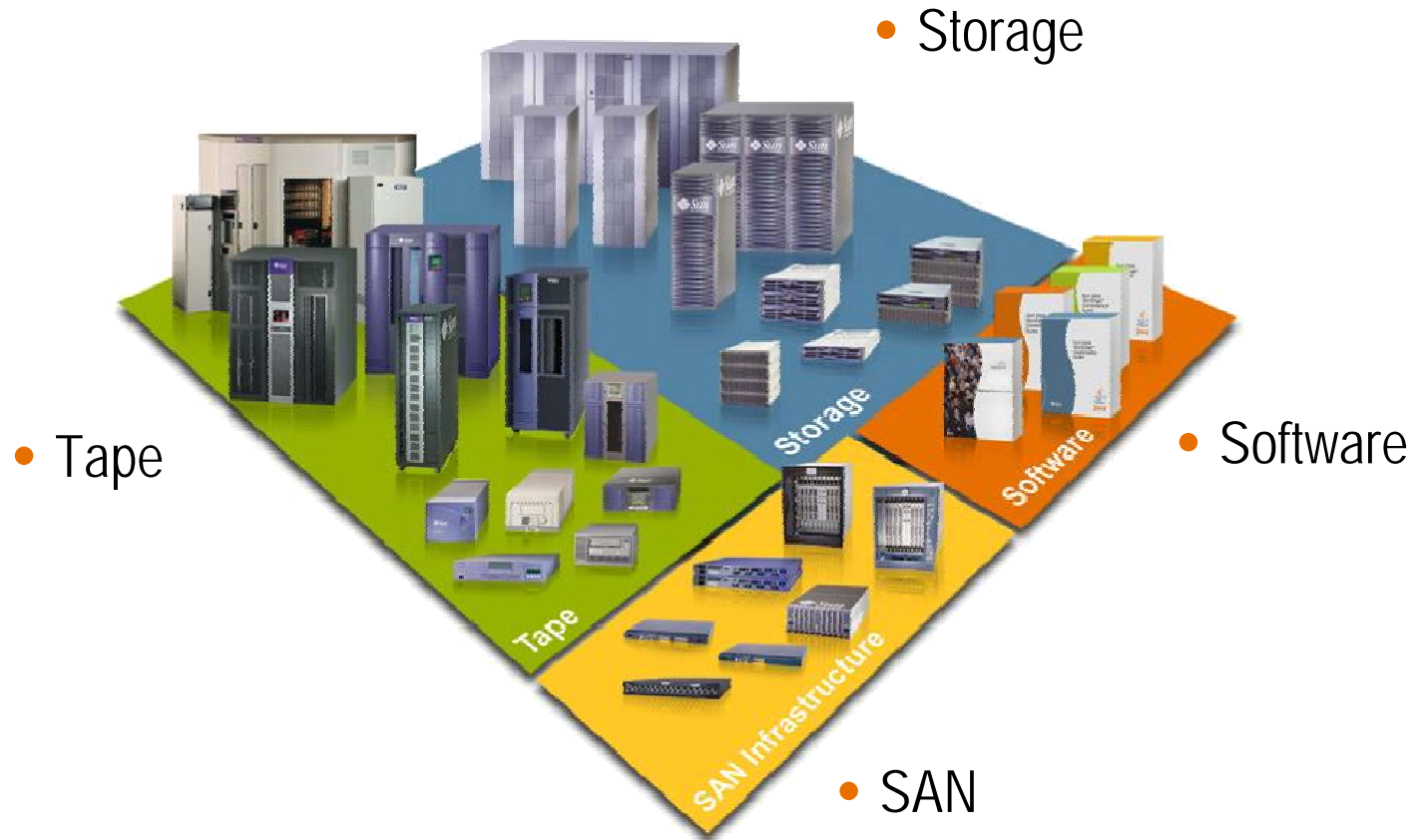
Recovery Time Objective (RTO)

- Defines the amount of time within which a system or service must be restored after a disaster is declared, in order to avoid unacceptable consequences. The time elapsed from when the disaster occurred to the resumption of normal business activities
- Important because the data must be restored within the recovery timeframe.

Recovery Point Objective (RPO)

- The amount of data loss that's deemed acceptable, defined by application, in the event of a disaster-failover scenario. This can be from zero to minutes or hours depending on the criticality of the data. Determines whether tape backup, mirroring or replication technology is appropriate
 - Tape backup – typically 4 to 72 hours
 - Async Replication/Snapshots – Minutes to hours
 - Sync Replication – Seconds to minutes

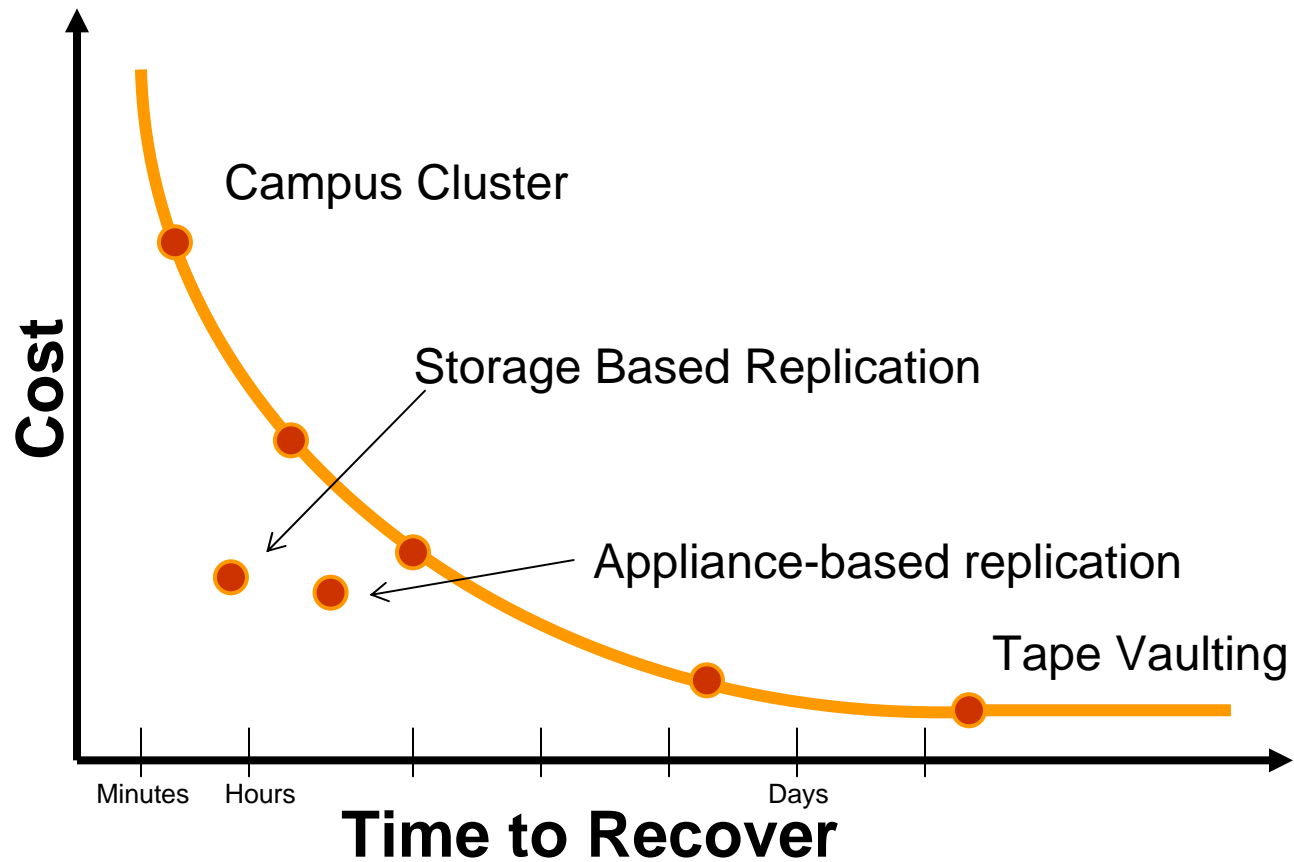
Building Blocks for Data Recovery



- Active-active HA campus cluster
- Active-passive HA campus cluster
- Remote replication
- Remote mirroring
- Tape (vault)

- SAN based
 - > Appliance-based
- Storage based
 - > On-board Data Services
 - > Data replication features
- Host based
 - > Network data replication

Moving the Curve



Storage Based Replication

Campus location A

Production Servers



Production Storage



Campus location B

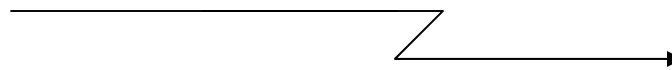
Development Servers



Development Storage



Live data replication



Backup production site

****Available in the mid-range**

Disaster Recovery – Are You Ready?

#	Quick Assessment	Yes	No
1.	Have you conducted a business impact analysis to quantify and rank the business and financial risk of disruptions to all vital functions?		
2.	Have you evaluated the impact of service provider failure on your disaster recovery and business continuity plans?		
3.	Do you have a written disaster recovery plan that includes back-up and archive procedures?		
4.	Have you tested your plan using a worse case scenario (e.g. loss of facility)? Did testing prove you could meet all recovery time requirements?		
5.	Have you taken action to mitigate known risks and single points of failure (e.g. power loss, physical access, etc.)?		
6.	Have you established service level agreements or other binding commitments with business stakeholders defining recovery objectives and requirements?		
7.	Are you prepared to address regulatory compliance and fiduciary responsibilities in case of disaster?		
8.	Is your disaster recovery plan updated regularly to keep it current with business and staffing changes?		
9.	Do you have an adequate budget to support your disaster recovery program?		
10.	Do you understand your disaster recovery costs, options, and disaster declaration procedures?		

If not, contact us or . . .

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