



FOUNDED BY BRIGHAM AND WOMEN'S HOSPITAL  
AND MASSACHUSETTS GENERAL HOSPITAL

# Data Center Disaster Recovery

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[www.partners.org](http://www.partners.org)

# Agenda

- Partners Background
- The challenge
- The process of deciding on DR plan approach
- Tools and technologies used
- Results/benefits
- Advice to others

# Background

Partners HealthCare is an integrated health care system, founded by Brigham and Women's Hospital and Massachusetts General Hospital, that offers patients a continuum of coordinated high-quality care. In addition to its two academic medical centers, Partners includes community and specialty hospitals, community health centers, a network of primary care and specialty physicians, home health and long-term care services, and other health-related entities.

Partners HealthCare is committed to improving the health of the community and advancing the field of medicine through teaching and research. Partners is one of the nation's premier biomedical research organizations and several of its hospitals are teaching affiliates of Harvard Medical School. Partners is a not-for-profit organization.



# Partners Healthcare

- Industry: Healthcare
- Size: 50,000 employees
- Geographic region: Massachusetts
- Company culture: Diverse

# Disaster Causes



# Important Terminology

- **RTO – Recovery Time Objective**
- **RPO – Recovery Point Objective**
  
- **DR Application Tiers**
  - **Tier 1 – Critical Recovery within the first 24 hours**
  - **Tier 2 – Recovery during Day 2 thru Day 5**
  - **Tier 3 – Recovery after Day 5**
  
- **BCP - Business Continuity Plans**
  - **Emergency Operations Procedures**
  - **Emergency Response Procedures**
  - **Departmental Downtime Procedures**
  
- **ENS – Emergency Notification System**
  - **Communications**

# The Challenge

- Ensure that Partners critical applications are highly available to meet stated RTOs and RPOs
- The business drivers are simple: “patient lives are at stake.”
- Ensure that IT DR becomes instilled in our culture.
- Every system must have a BCP and a DRP.

# The Challenge

- Establish a comprehensive IT Disaster Recovery program
- Focus on critical applications that support our hospitals

# How did we do it?



## Methodology

Developed The IT DR Strategy

*Addressed the NEED*

*Identified, positioned, and deployed strategic technology.*

*Got the message out via upper management.*

# The Process

## Phase 1 The DR Design Document

*Captured vital information and produced a current state diagram for each critical application.*

*Lead collaboration efforts to produce a DR end state solution for each critical application.*

*Achieved signoff before moving to next phase.*

## Phase 2 DR Design Build-out and formal DR plan creation

*Assisted application owners with DR equipment ordering.*

*Monitored the build-out process and requested status updates monthly.*

*Conducted training and assisted with completing the formal DR plan in LDRPS.*

*Conducted DR Tabletop tests once the DR plan was completed.*

*Scored the DR Tabletop test and reported results management.*

## Phase 3 DR Component Level Testing

*Conduct a DR Component level failover test at least once each year.*

*Score the DR Component test and report results to management.*

*Ongoing improvement, monitoring, and testing.*

# Technologies

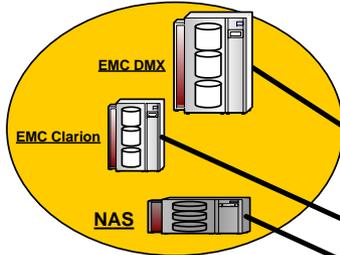
- Network Connectivity and Information Transport
- Data Storage and Replication Facilities
- Server Imaging Solutions

# Network Connectivity and Information Transport

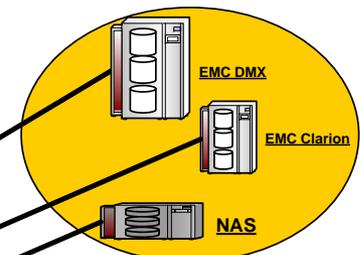
## Partners Healthcare High Availability Data Centers

Site-to-Site replication, copy, failover, and backup Services

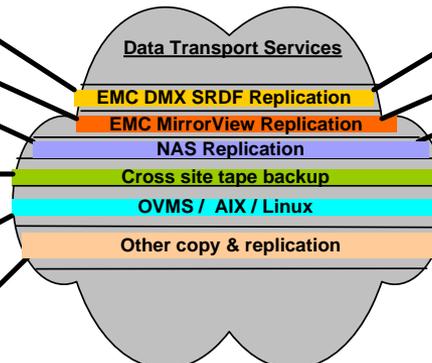
### West Data Center



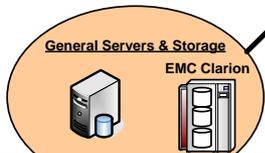
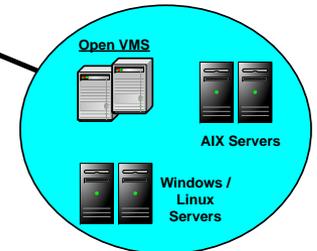
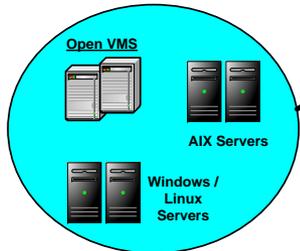
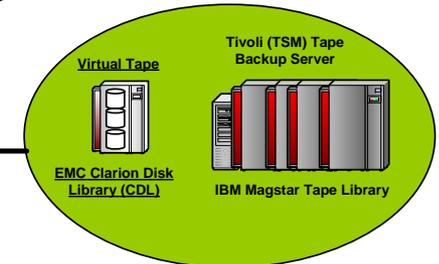
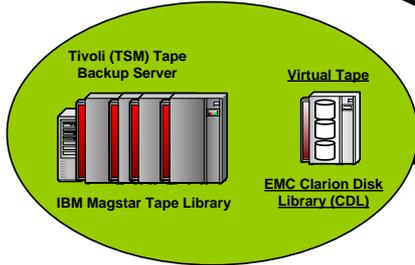
### East Data Center



### Partners Data Network



7 X 24 Operation



#### Replication considerations:

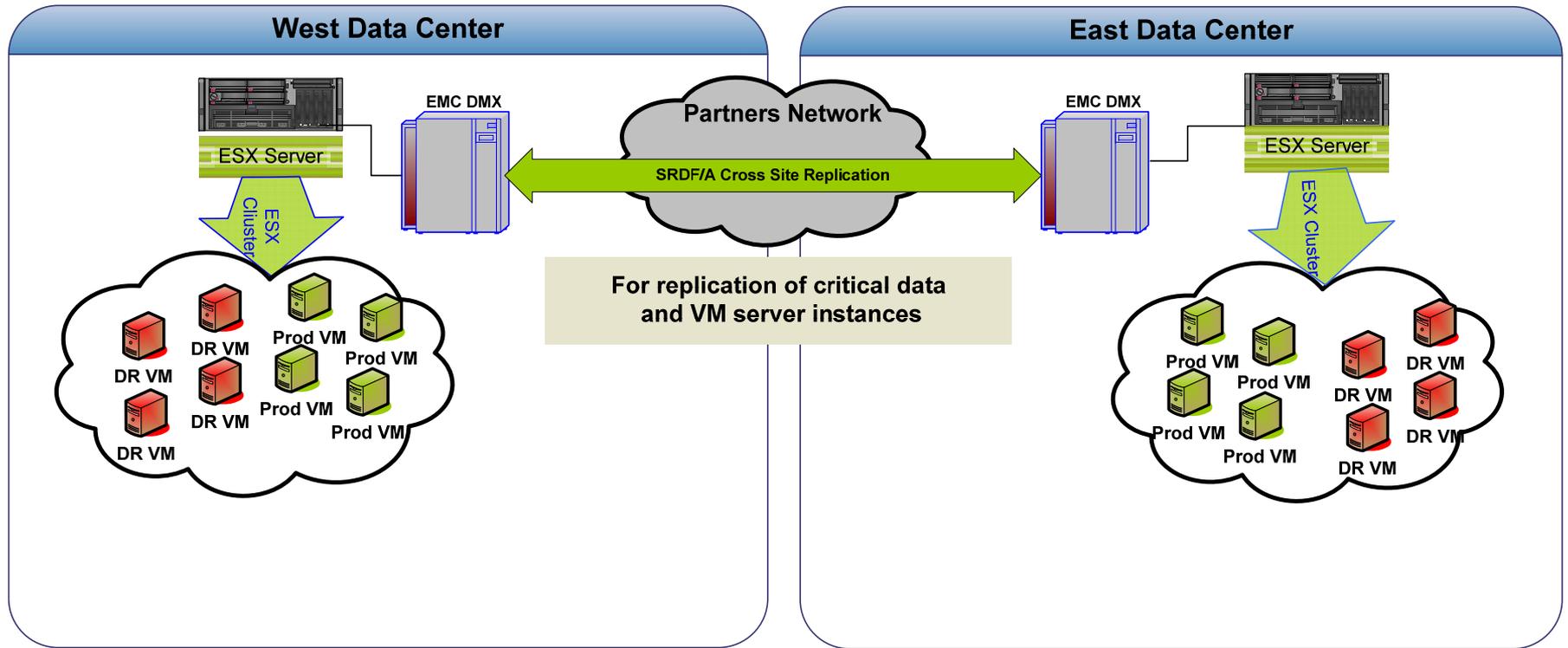
- Veritas
- DoubleTake
- SQL DB Mirroring
- Oracle DataGard
- DFS

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Strategy & Design Team

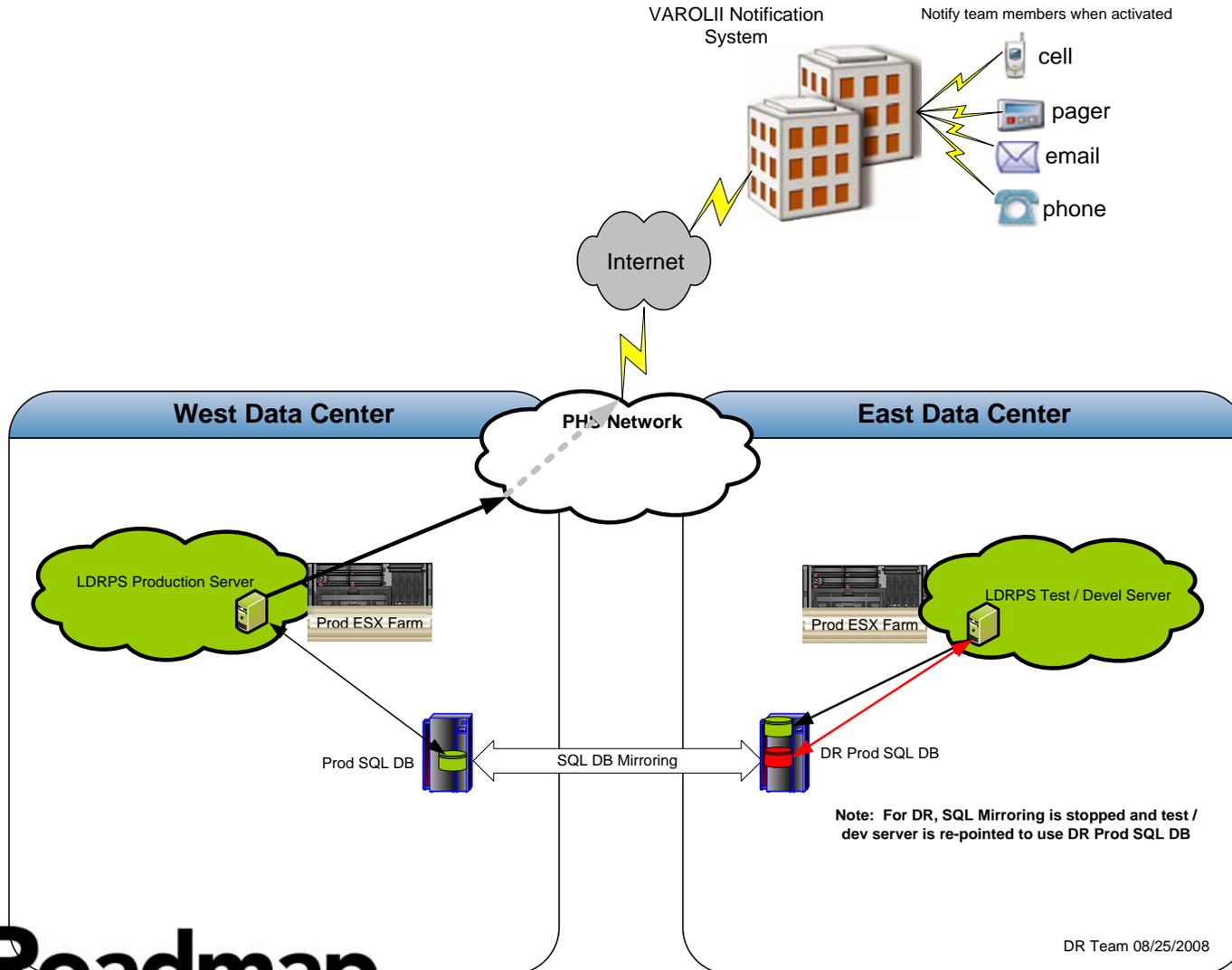
# VMware for DR



# Tools

- Living Disaster Recovery Planning System (LDRPS)
- DR Design Document
- DR Test Scorecard

# Living Disaster Recovery Planning System (LDRPS)



# DR Design Document



## 2. BUSINESS RECOVERY REQUIREMENTS (APPLICATION OWNER)

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### 2.1. Recovery Time Objective

### 2.2. Recovery Point Objective

### 2.3. Application Interfaces and Dependencies

### 2.4. Fixed Dependencies for all Systems

Domain Controllers

WINS

DNS

# DR Test Scorecard

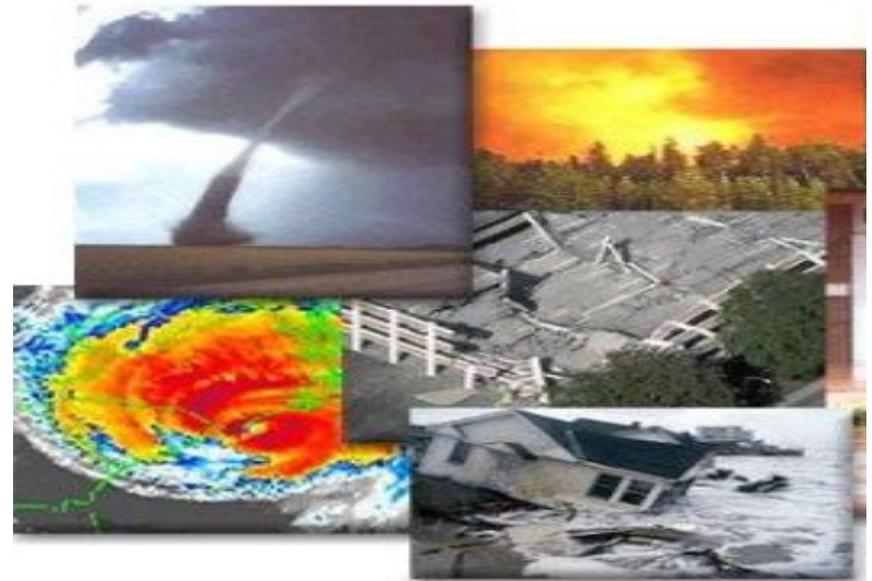
## Disaster Recovery Tabletop Test Scorecard

	Y/N	Total Pts	Pts Deducted	Deduction Reason
Were the correct employees assigned to the plan?	Y	15		
Were employees assigned to the correct Teams?	Y	10		
Were the correct applications assigned to the plan?	Y	15		
Were the correct servers assigned to the plan?	Y	15		
Were the correct restore priorities assigned to the servers?	Y	5		
Were the correct employees assigned to the Call List(s)?	Y	5		
Were the correct Vital Records assigned to the plan?	Y	5		
Were the correct tasks listed in the Task List?	Y	5		
Were the tasks in the correct sequence?	Y	10		
Was the correct software assigned to the plan?	Y	5		
Was the correct documentation assigned to the plan?	Y	5		
Were there any issues? How Many?	N	5		
		100	0	
<b>Total:</b>			<b>0</b>	

# Challenges

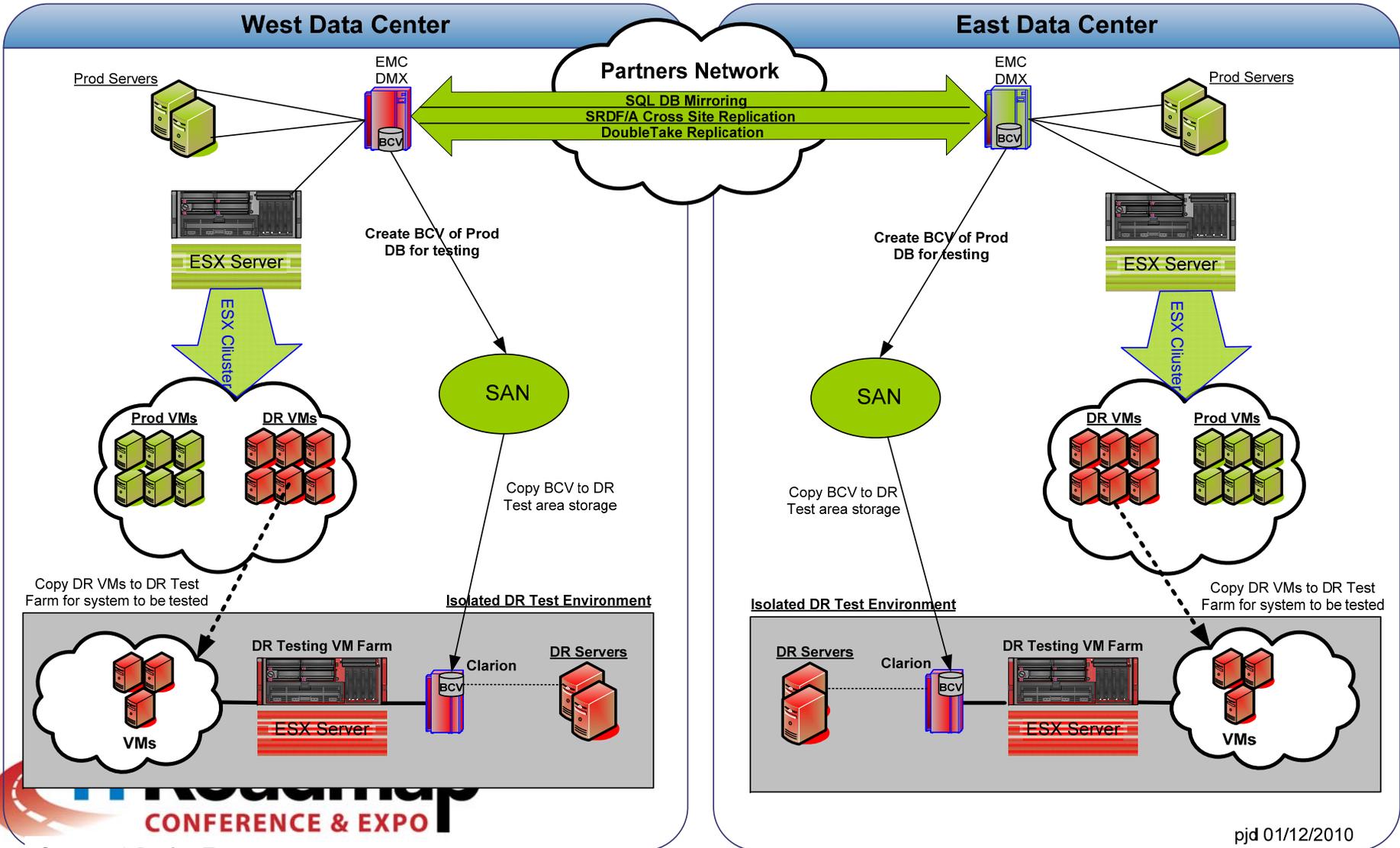
- DR component level testing.
- Servicing DR needs of other locations.
- Data center limitations.
- Limited resources.

**The disaster of not being ready**



# Working on DR Testing Strategy

## Physical Servers and VMware DR Testing Infrastructure Concept



# Implementation Considerations

- The project timeline is ongoing.
- A dedicated group was formed to assist application owners.
- High level funding (budget) can present a problem. We require each application owner to budget for DR each year.
- The corporate DR team monitors and scores DR tests. Test scores are sent to upper management.
- Each critical application must conduct at least one DR test per year.

# Results

- DR ROI is difficult to measure unless you experience a disaster.

Note: It has been estimated that for every dollar you spend on DR a return of 14 dollars will be realized if a disaster strikes your business.

- The intangibles are numerous and the effort can be very strategic.
- User and executive reaction to this initiative is positive and the IT DR team is perceived as a technology leader throughout the organization.
- Many new systems efforts now include the DR team up front in their architecture and design sessions.
- IT DR preparedness is an ongoing effort. As long as there are disasters, there will be a need.

# Advice

- Must have support from the highest levels of the organization.
- Establish a team of experts committed to success.
- Team members should have business and technology expertise.
- Develop the IT DR strategy.
- Provide awareness of this effort up front throughout the organization so people aren't surprised to see you.
- You must provide education on the fly.



# Connected Work / Remote Access As An Enabler



## Concerns:

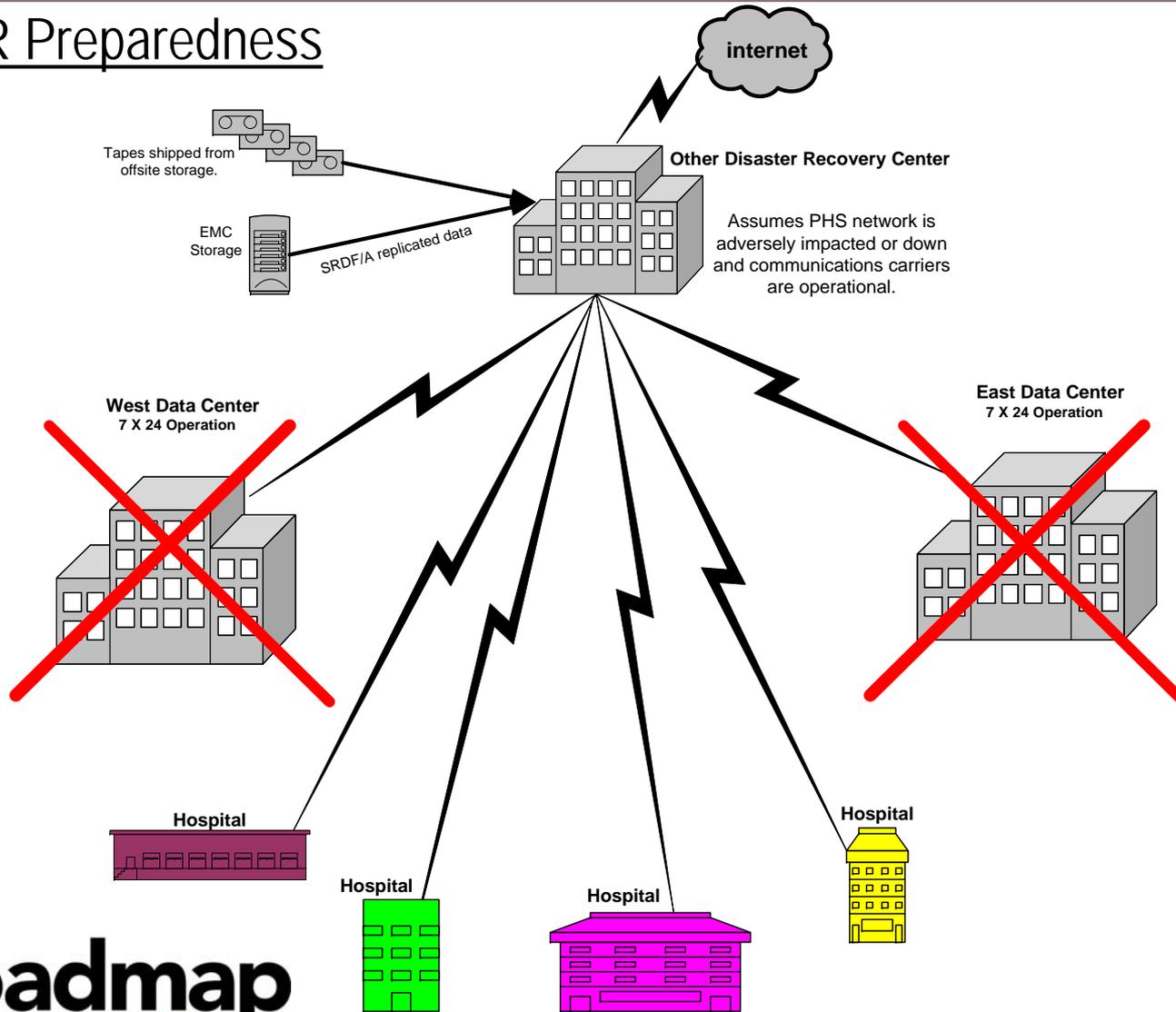
- We could not accommodate all recovery teams at the recovery data center.
- We may not be allowed to travel on the roads to get to the recovery site.

## Solution:

- Recovery team members can be anywhere as long as they have connectivity.
- Testing is performed remotely via email and conference lines.

# Future Considerations

## Regional DR Preparedness



# Summary

- ◆ A comprehensive Business Resumption Program is well underway throughout the Partners enterprise.
- ◆ New systems are embracing DR upfront in their design.
- ◆ We now have a centralized DR planning system in place and standard DR plans.
- ◆ DR planning is a collaborative effort between business and technology teams (culture).
- ◆ Evaluating and positioning new technology plays an important part.



DISASTER RECOVERY PLANNING is a *Journey* not a Destination!!!



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