




  
**Disaster Recovery**  
 Yesterday – Today - Tomorrow


By  
 Robert Swann and Robert Schwyn

Presentation Goal
 

- Role of Traditional Disaster Recovery
- An awareness for IT Service Resilience
- Awareness of the Healthcare IT Tsunami



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Agenda
 



- Disaster Recovery
  - Traditional Approach (Dead or Alive)
  - The Healthcare Challenge
- The "Paradigm Shift"
  - IT Service Delivery
  - IT Service Resilience
- Healthcare IT Service Resilience
  - So what do I do Monday Morning
  - Then what do I do the rest of the week

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Disaster Recovery Definition
 


From [Disaster Recovery Journal's](#) Glossary

- **DISASTER:** A sudden, unplanned calamitous event causing great damage or loss.
- **DISASTER RECOVERY:** Activities and programs designed to return the entity to an acceptable condition.

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Disastrous Effects ?
 




- 75% of all U.S. businesses have experienced a severe business interruption (DRJ)
- 43% of U.S. companies never reopen after a disaster & 29% more close within 3 years (DRJ & US National Fire Protection Agency)
- 93% of U.S. companies that suffer a significant data loss are out of business in 5 years (DRJ & US Bureau of Labor)
- 20% of small to medium size businesses suffer a major disaster every five years (DRJ & US Bureau of Labor)
- Disgruntled employees are the largest & single most damaging source of risk to U.S. businesses (National Computer Security Association)

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Disasters are becoming Everyday Events
 


**Recent Disaster Declarations**




- Computer hardware failure
- Data center flooded after a pipe bursts
- Phone lines severed due to construction
- Bomb threat causes corporate evacuation
- Hazardous materials spill
- Transformer fire causes power outage
- Anthrax scares
- Sabotage by disgruntled employee

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### Traditional Disaster Recovery The Challenge



- Conduct a Risk Assessment
- Identify Recovery Strategies
- Develop Recovery Procedures
- Complete the Plan
- Purchase Products and Services
- Train Users
- Test the Plan
- Continuously update the Plan



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### Traditional Disaster Recovery The Cost





- One full time Project Manger\*\* 250 Days
- 4 IT Staff x 10 days x 4 times a year\*\* 160 Days
- 6 Test Users x 4 days x 4 per year 100 Days
- Manpower \$125K
- Hardware \$50K plus and up

\*\* Equivalent of ~2.5 full time employees @ cost to the company of ~ \$50K/pa  
\* This does not take into account the availability of staff during a disaster

David Caddick "DR Is Dead" at <http://www.geekswithblogs.net/wallabyfan/articles/43967.aspx>

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### Traditional Disaster Recovery Recovery Time

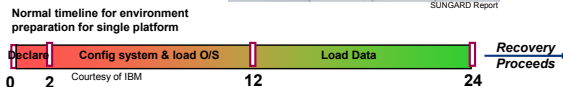


The recovery time non-healthcare = 2 to 7 days under ideal conditions

	STRATEGY 1 Single Site Availability (Normal Reliability)	STRATEGY 2 Single Site Availability (Higher Reliability)	STRATEGY 3 Traditional Recovery
SITE 1: CONFIGURATION RELIABILITY	Basic Operations (99%)	High (99.99%)	High (99.99%)
SITE 2: CONFIGURATION RELIABILITY	N/A	N/A	N/A
RECOVERY TIMING	1 To 4 weeks	1 To 4 weeks	1 to 7 days
DATA LOSS	1 to 2 days	1 to 2 days	1 to 3 days


SUNGARD Report

Normal timeline for environment preparation for single platform



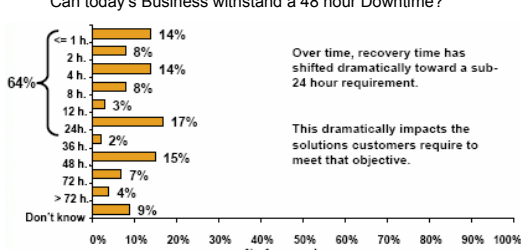
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### Traditional Disaster Recovery Recovery Time



**Gartner Says NO!**

Can today's Business withstand a 48 hour Downtime?



Downtime Duration	% of Companies
<= 1 h.	14%
2 h.	8%
4 h.	14%
8 h.	8%
12 h.	3%
24 h.	47%
36 h.	2%
48 h.	15%
72 h.	7%
> 72 h.	4%
Don't know	9%


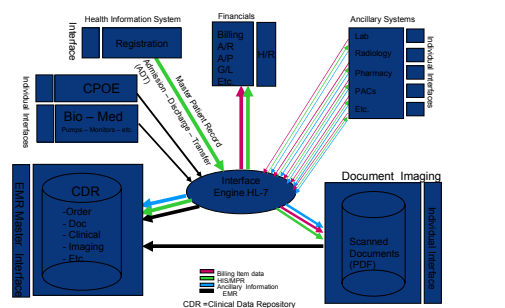
Over time, recovery time has shifted dramatically toward a sub-24 hour requirement.

This dramatically impacts the solutions customers require to meet that objective.

© Gartner Group

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### Traditional Disaster Recovery for Healthcare The Complexity continues to grow

Health Information System: Registration, Billing, AVR, AP, CCL, ETC.

Financials: HR, Billing, AVR, AP, CCL, ETC.

Ancillary Systems: Lab, Radiology, Pharmacy, PACS, Etc.

Individual interfaces: CPOE, Bio - Med, CDR, Document Imaging.

Interface Engine HL-7

CDR = Clinical Data Repository

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### Traditional Disaster Recovery for Healthcare



**DR is only part of the solution!**

The Complexity continues to grow



• Laboratory  
• Radiology  
• PACS  
• Transcription  
• Departmental Systems  
• Doc. Imaging

EMPI  
CPOE  
CDR  
CMV  
CDSS

Pat. Access  
Billing/Coding  
WB  
Scheduling  
ERP  
Resource Management

Web Portal

© 2005 HIMSS Analytics

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## The new "Paradigm"

### From traditional DR to IT Service Resilience

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**HIMSS**  
Healthcare Information & Management Systems Society

*"In the next 24 months, the recovery industry will change more radically than it has in the previous 30 years combined!" – Mark Rossiter – IBM April 2005 presentation to The Regence Group*

**As you face this New Paradigm – you must have the right perspective**

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## From traditional DR to IT Service Resilience

### The New Reality

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The New Reality is to:

- Deliver consistent reliable service 24 hours a day 365 days a year, across the entire enterprise.
- Prepare for unforeseen shock to the organization.
- Safeguard the patient and employee privacy
- Reduce all types of operational risks

1970      1980      1990      2000      2005      Future

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## Healthcare Resilience Challenge

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*"The IT industry has a history of over-promising and under delivering. This history repeats itself in the ASP model, with promises of absolute (99.99999%) reliability, global availability and rock bottom costs."*

**Value**

**Time**

*The Healthcare industry is positioned to significantly leverage emerging technologies to transform the care delivery process – The availability of these systems will be one of the biggest challenges we face.*

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## From traditional DR to IT Service Resilience

### The New Reality

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The Healthcare Organization future depends on the successful Information Transformation to IT Service Resilience

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## Healthcare Resilience Challenge

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Healthcare organizations are rapidly moving toward Electronic Medical Records?

### Percent of Hospitals by Stages of Clinical Transformation

Stage	Hospitals In a Stage	Total Hospital
Stage 1	804	20.47%
Stage 2	1867	47.54%
Stage 3	68	1.73%
Stage 4	33	0.84%
Stage 5	1	0.03%
Stage 6	0	0.00%
Stage 7	0	0.00%

Source: HIMSS Analytics 2005

**Stage 1:** Major ancillary clinical systems are installed (i.e., pharmacy, laboratory, radiology).  
**Stage 2:** Major ancillary clinical systems feed data to a CDR that provides physician access for retrieving and reviewing results

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## Healthcare Resilience Challenge

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Stage 7	0	0.00%

Source: HIMSS Analytics 2005

**Stage 3:** Nursing documentation, charting, care plan, and the electronic medication administration record (eMAR) system is implemented and integrated with the CDR. Some level of medical image access from PACS is available.  
**Stage 4:** CPOE for use by clinicians is added to the nursing and CDR environment along with the second level of clinical decision support capabilities related to evidence based medicine protocols.

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### Healthcare Resilience Challenge

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Source: HIMSS Analytics 2005

**Stage 5:** The closed loop medication administration environment is fully implemented. The eMAR and bar coding or other auto identification technology, such as radio frequency identification (RFID), are implemented and integrated with CPOE and pharmacy to maximize point of care patient safety processes for medication administration.

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### Healthcare Resilience Challenge Expectations

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Expectations of clinicians/customer's dramatically increase as the healthcare delivery process becomes more dependent on technology.

Value

Time

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### Healthcare Resilience Challenge Expectations vs. Reality

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Clinician's/customer's intolerance for downtime inhibits the clinical adoption process.

Value

Time

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### Healthcare Resilience Challenge Expectations vs. Reality

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#### Observations from an August 2005 CHIME survey

- 77% of the respondents strongly believe that expectations for IT service availability will significantly increase with implementation of the EMR
- 49% of CIO's believe healthcare IT is NOT positioned to deliver the near 100% EMR availability that will be expected by clinicians
- 93% of the respondents will have an EMR implemented within 6 years (55% - within 3 years)
- 61% of the respondents have or plan to adopt best practices in IT service management

The Healthcare EMR Challenge.....

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### Healthcare Resilience Challenge Expectations vs. Reality

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"Many IT organizations are so busy digging out of yesterday's ruts they have too little time to anticipate what tomorrow might bring. Caught in operational mode, they are not well positioned to help create or implement the types of strategies that set a business apart. But by closing the gap between the needs of business and the ability to deliver, IT can move beyond fixing the past and more actively plan for the future". **A.T Kearney Study 2005**

The Optimistic Healthcare CIO

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### Healthcare Resilience Challenge Expectations vs. Reality

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2004 HIMSS survey of 2101 hospitals revealed


80% of the Healthcare Information Technology organizations are expected to do more with the same or less

Increase 19% Decrease 19% No Change 61%

Source: HIMSS Analytics™ Database. Based on data from 2,101 hospitals collected through December 2004. © 2005 HIMSS Analytics

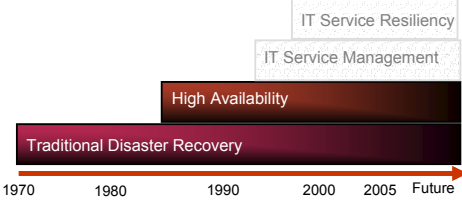
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## High Availability Definition



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High availability refers to a system or component that is continuously operational for a desirably long length of time. Availability can be measured relative to "100% operational" or "never failing." A widely-held but difficult-to-achieve standard of availability for a system or product is known as "five 9s" (99.999 percent) availability.




1970    1980    1990    2000    2005    Future

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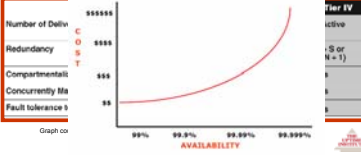
## High Availability Components



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How much availability can you afford?



C O S T	
Number of Downtime	\$66666
Redundancy	\$5555
Compartmentalized	\$555
Concurrently Maintained	\$55
Fault tolerance	\$5


TIER IV	
99.999%	100%
99.99%	99.99%
99.9%	99.9%
99%	99%

- Tier I 99.671%
- Tier II 99.741%
- Tier III 99.982%
- Tier IV 99.995%


Graph courtesy of 

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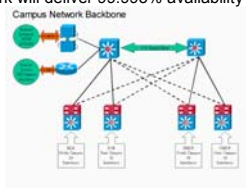

## High Availability Components



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A redundant fiber network will deliver 99.995% availability


Tier IV Data Center - 99.995%

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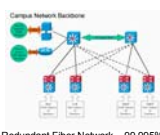

## High Availability Components



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A high availability server will 99.995% availability

Tier IV Data Center - 99.995%


Redundant Fiber Network - 99.995%



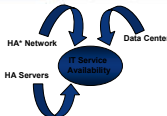
High Availability Servers

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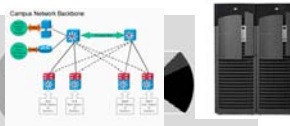

## High Availability Components



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IT Service Availability should = 99.94% - but why isn't it achieved?

Tier IV Data Center - 99.995%

Redundant Fiber Network - 99.995%




High Availability Servers - 99.95%

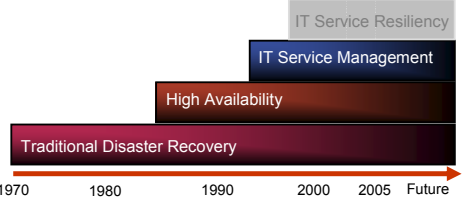
Figure 3: 2004 IDC Study on Cause of Network Downtime

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## IT Service Management Definition



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1970    1980    1990    2000    2005    Future

ITSM is an approach that combines proven methods such as process management and known industry best practices, in the area of IT Service Management, to enable any organization to deliver quality IT services that satisfy customer business needs and achieve performance targets specified within service level agreements.

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**IT Service Management**

**ITIL**  
The **IT Infrastructure Library** is a customizable framework of best practices that promote quality computing services in the IT sector. Built on a process-model view of controlling and managing operations, ITIL addresses the structure and skill requirements for an IT organization by presenting a comprehensive set of management procedures.

**COBIT**  
**Control Objectives for Information and related Technology** is a framework for information security that provides managers, auditors and IT users with a set of generally accepted IT control objectives to assist them in developing appropriate IT governance and control in a company.

**CMM**  
The **Capability Maturity Model** is a method for evaluating and measuring the maturity of the software development process of organizations on a scale of 1 to 5. A revised version, the **Capability Maturity Model Integration (CMMI)**, provides guidance for improving an organization's processes and a way to manage the development, acquisition and maintenance of products or services.

**Six Sigma**  
**Six Sigma** is a data-driven quality-management program to control variation and thereby achieve extremely high levels of quality. "Six sigma" refers to six standard deviations in statistical measurement, which in the methodology corresponds to a maximum of 3.4 failures per million units.  
SOURCE: WIKIPEDIA

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**IT Service Management**

**ITIL (Information Technology Information Library)** is becoming the process of choice

<http://www.itil.co.uk/>

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**IT Service Availability**  
ITIL

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**IT Service Management**

IT Service Availability = 99.94% +

**But one data center and a single point of failure**

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**IT Service Resilience**

*"The recovery industry will see a more dramatic change in next 24 months than in the previous 30 years combined"*

**Information Technology Service Resilience**

- Delivers consistent reliable service 24 hours a day 365 days a year, across the entire organization
- Prepares for unforeseen shock to the organization.
- Safeguards the patient and employee privacy
- Reduces all types of operational risks

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**IT Service Resilience**

*"A resilient organization effectively aligns its strategy, operations, management systems, governance structure, and decision-support capabilities so that it can uncover and adjust to continually changing risks, endure disruptions to its primary earnings drivers, and create advantages over less adaptive competitors."* Booz-Alien "Enterprise Resilience - Managing Risk in the Networked Economy" by Randy Starr, Jim Newfrock, and Michael Delurey Reprint No. 03107

... rapidly adapt and respond to risks, as well as opportunities, in order to maintain continuous business operations, be a more trusted partner, and enable growth.

Strategy, Organization, Processes, Applications and Data, Technology, Facilities

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**IT Service Resilience**

Co-location: a phased approach – Single Data Center – server separation

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**IT Service Resilience**

Co-location: a phased approach – Two data centers – active and passive

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**IT Service Resilience**

IT Service Resilience = 99.99% +

Two data centers for business continuity

**OHIO SAVINGS BANK**

**Key Problem:** Recovery solution for a mission critical Oracle applications. 5 times availability with zero data loss.

**Solution:** Fully redundant FCIP based controller to controller data mirroring.

**Business Impact:** Reduced business risk due to an outage.

**Operational Impact:** Achieved replication with no impact on performance measurements.

**Financial Impact:** Reduced telecom costs by 30-50% by leveraging IP.

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**Edward Hospital**

Healthcare organizations are moving to IT Service Resilience

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**Summary**

IT Service Resilience = 99.99% +

**Must always have off-site data storage**

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**Summary**

**In order to achieve true IT Resilience**

The IT group must

- Have the basics of IT in place
- Implement operational best practices
- Be on a path to IT Service Resilience
- Have a vision or a "Spot on the Wall"
- Consider People – Process – Technology

**Failure to make this transition puts the organization's existence at risk!**

*The tsunami is coming*

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And you know what?

