



Disaster Recovery

For Small and Medium Enterprises

So Who is This Guy Anyway?

◆ Founder and Chief Scientist

Networks Are Our Lives, Inc!

- Network and Directory Services Design
- Backup and Disaster Recovery Planning
- Network Documentation
- Systems Management/Monitoring Deployment

◆ Author

- ◆ Over 100 articles and product reviews since 1987
- ◆ Currently writing:
The Disaster Recovery Cookbook for Windows

◆ Contact:

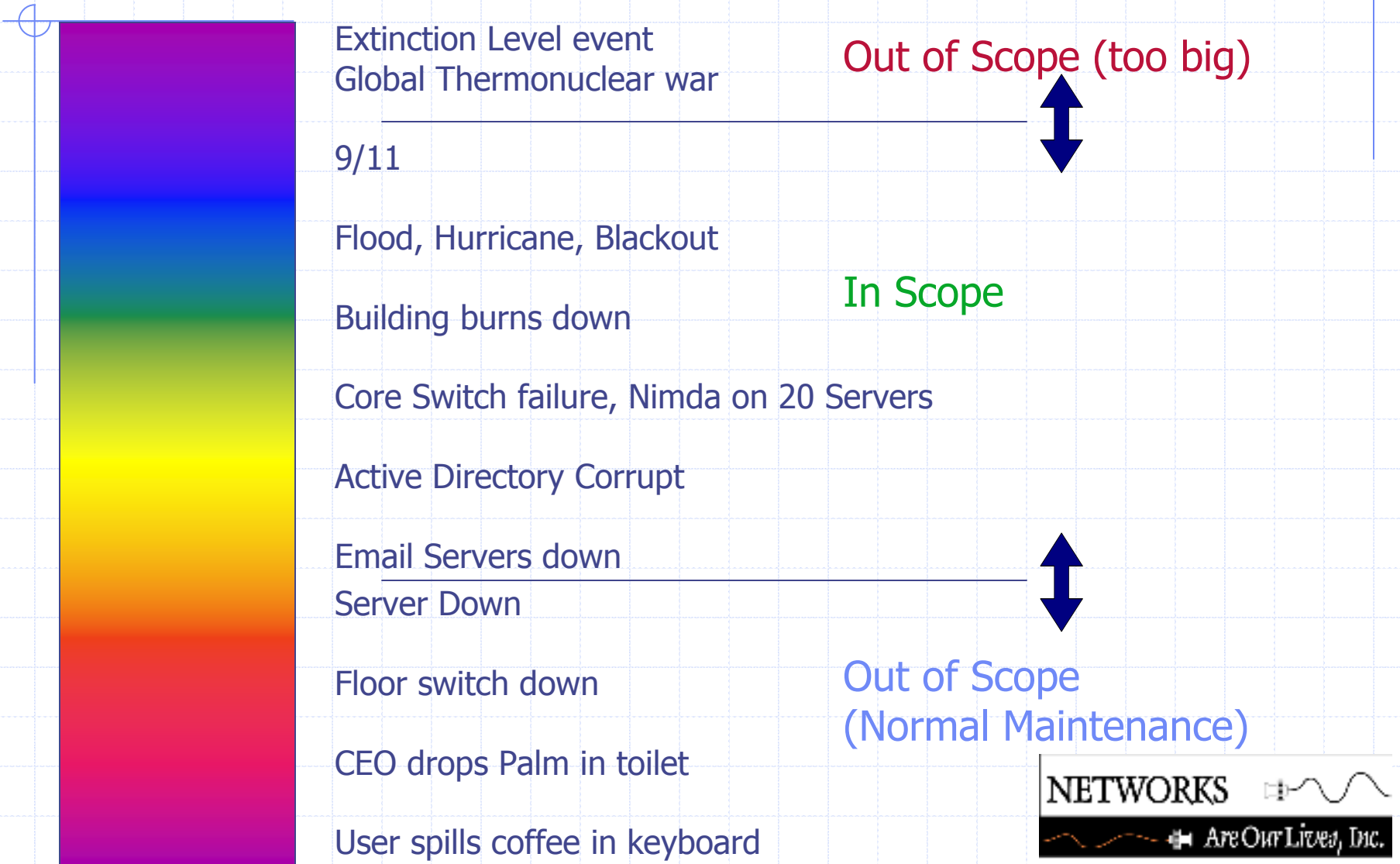
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So What Do We Really Mean By Disaster

- ◆ An event which causes your IT services to be unavailable to your users
- ◆ The event is small enough that restoring the IT services is important
- ◆ The event is large and uncommon enough to rally extraordinary efforts and or resources
- ◆ Typically we plan for a data center being unavailable

The Disaster Spectrum



Important Thoughts

- ◆ "A Failure to Plan is a Plan to Fail"
 - ◆ Legendary UCLA coach John Wooden
- ◆ "No Plan of Battle Ever Survives Contact With the Enemy"
 - ◆ Credited to Field Marshall Helmuth Carl Bernard von Moltke, General George C. Marshall and Napoleon Bonaparte
- ◆ Which boils down to:
 - You need a flexible plan

Recovery Elements

◆ Data

- On file servers
- In databases and message stores
- On local hard drives
 - ◆ Don't forget the laptops

◆ Application Availability

◆ User Work Environment

- Place to work
- Systems and applications
- Re-direct of phone numbers

The 9 Step Planning Process

1. Services Inventory
2. Risk Assessment
3. Assignment of Roles
4. Identify Possible Solutions
5. Choose Solutions
6. Implement Solutions
7. Create Recovery Manual
8. Test Recovery
9. Train, Maintain, Document

Step 0. Selling Management

- ◆ Explain legal requirements
 - Sarbanes-Oxley
 - HIPPA
 - SEC and other regulations
- ◆ Try FUD
 - "X (60-90)% of all companies that suffer a disaster are acquired or out of business in 2 years"
- ◆ Auditor requirements
- ◆ Less of an issue in the post 9/11 world

1. Services Inventory

- ◆ Include ALL your technology services
 - Applications
 - Telephony, FAX Etc. not just applications
 - ◆ Circuit numbers, contact phones Etc.
 - Even the ones you claim not to support
 - Especially that HR app created and managed by consultants
- ◆ Get EVERYTHING needed to restore:
 - Serial Numbers/Key Codes Etc.
 - Collect installation media/data
- ◆ Be sure to identify dependencies

Collect Data for Applications

DRP Application Data

Application Name: Quickbooks _____

Instance: Client ABC Co _____

Version: 2002 _____

Business Group: Client Services _____

Business Owner (super User): John Sirica _____

Backup super user: John Dean _____

Technical Owner: Gordon Liddy _____

Backup technical owner: Bob Haldeman _____

Publisher: Intuit _____

Vendor: CDW _____

Who Provides Support: Intuit _____

Support Telephone Number: 1-800-555-1212 _____

Support Type: Free Time and Materials
 Contract Paid Incident
 Other _____

Contract/Incident account #: None _____

Contract exp. Date: _____

Maintenance Contract: (Y/N) # _____ Exp _____

Date: _____

Architecture: File 2 Tier Client/Server
 Messaging n-Tier Client Server
 Web Tiers: _____ (1/2/3)

File Based Application Data

Application Install Point: \\DRFS\APPS\QB2002 _____

Number of Licenses: 5 _____

Type of license: Perpetual Concurrent
 Workstation Named User
 Limited Time Expires: _____
 Dongle Stored: _____

Install Codes/Serial Numbers:

| | |
|------------------|------------------|
| 1111-111-1112112 | 1111-111-1112113 |
| 1111-101-1112112 | 1181-111-1112112 |
| 1111-111-1192112 | 1811-111-1112112 |
| | |
| | |


Data Location (UNC): \\Clinetfs\ABC\ACCT _____


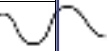
Drive Mapping: Q: _____

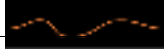

OS Dependencies: Windows NT 4 Service Pack: 6a _____
 Windows 2000 Service Pack: _____
 Windows XP Service Pack: _____

Installation Instructions:

Just run Setup



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Rank Services and Applications

- ◆ Each service or application
 - Critical
 - Vital
 - Sensitive
 - Nice to have
 - Should be dead already
- ◆ Assign RTO, DLO to each category
- ◆ Survey users
 - Then add your expertise
 - Get Sr. management buy in for downgrades

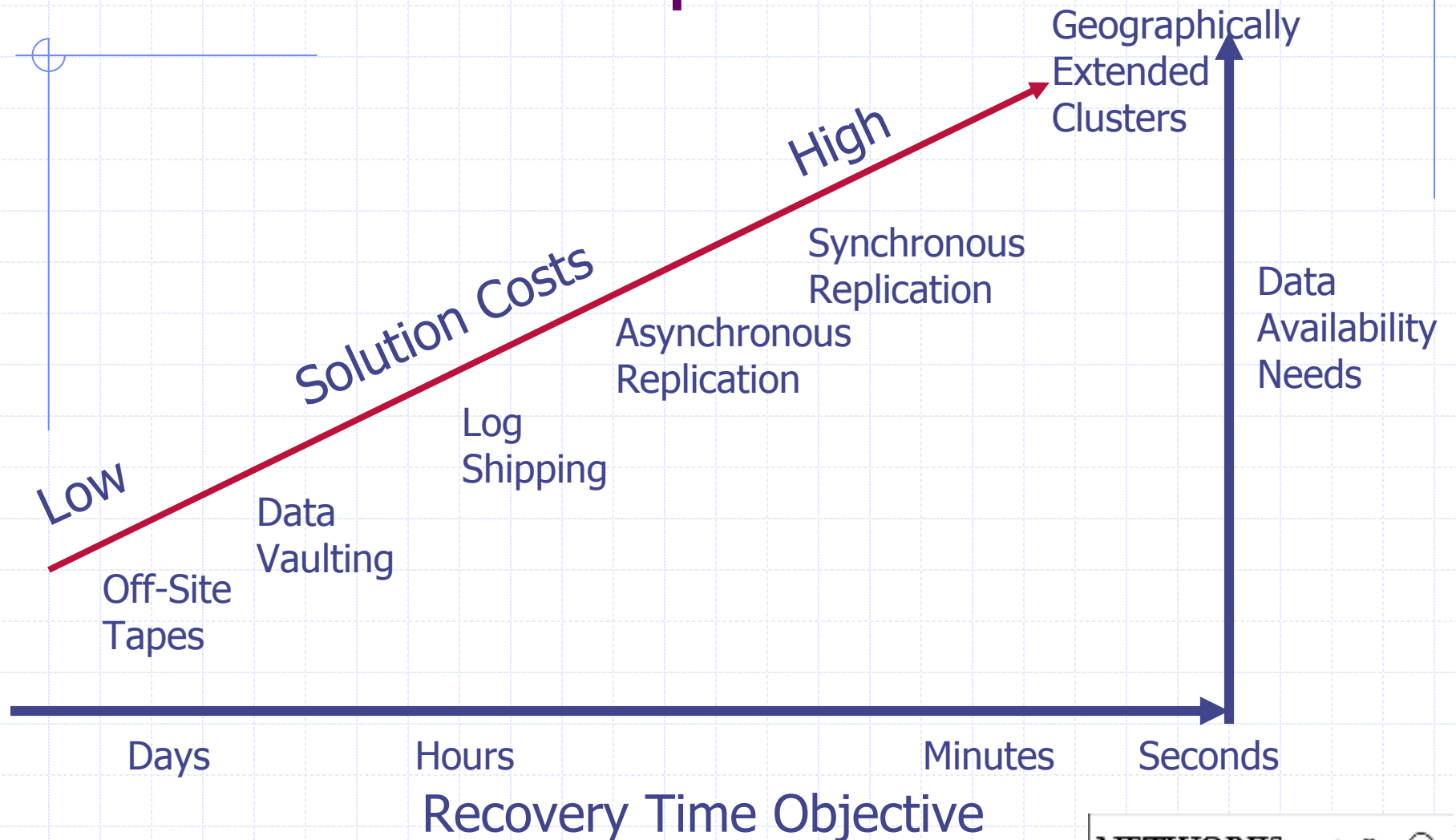
2. Risk Assessment

- ◆ Typically cost of downtime
 - Usually described as \$250,000-\$1,000,000/hr in lost revenue
 - Actually a step function times cost per user
 - ◆ 1st minute negligible cost
 - ◆ 3 months infinite cost
 - Include PR, customer relations impacts
- ◆ Add in cost to recreate data
 - Very application dependant
 - ◆ Amazon orders are lost and unrecoverable
 - ◆ I might need to re-write an article

Define Objectives

- ◆ Recovery Time Objective (RTO)
 - Time between declaration and service availability
 - Think restore time
- ◆ Recovery Point Objective (RPO)
 - Data in system at disaster time but not recovered
 - Think data entered since last backup

The Solution Spectrum



4. Identify Possible Solutions

- ◆ Identify available solutions for each application or service
- ◆ Build a matrix of solutions that could meet various RTO, DLO and cost requirements
- ◆ Identify vendors for DR services
 - Server locations
 - User work area providers
 - Restoration help
 - Etc.

Off-Site Tapes

◆ Send tapes off site

- You know you should but do you?
- How often?
- Where?
- If your data center is unavailable could you know what to recall?

◆ Records storage services

- Arcus (div. Of Iron Mt.)
- Recall
- Etc.

Data Vaulting

- ◆ Agent on server scans for changed blocks in files then sends them to vault
- ◆ Gets data offsite ASAP
- ◆ DLO reduced to hours
- ◆ If full restore needed vault vendor ships CD, DVD, Tape or NAS
- ◆ Costs from \$20/mo for 1GB to \$1000/mo for 50GB
- ◆ Providers:
 - Amerivault, Evault, LiveVault and many others

Replication Solutions

◆ Synchronous

- Major SAN array vendors, NetApp Etc.
- Veritas Volume Manager
- Legato Co-Standby Server
- NSI Geocluster

◆ Asynchronous

- Veritas Volume replicator, Storage replicator
- Legato RepliStor (Formerly Octopus)
- NSI Double-Take
- Software Pursuits SureSync

Where to replicate?

- ◆ In the array
 - High performance
 - Requires similar hardware
- ◆ Host based
 - Can be application aware
 - Could require multiple instances
- ◆ Replication/CDP appliance
 - Can insure transaction integrity
 - Usually requires Fibre Channel SAN

Server location options

- ◆ DR provider
- ◆ Quick Ship
 - You'll need somewhere to ship to
 - Doesn't work if all aircraft grounded
- ◆ Collocation site
 - Typical Cost \$1000-\$2000/rack/mo
 - Includes bandwidth

DR Services

- ◆ Recovery Work Space
 - Ranges from desk and phone with PC to Specialized trading turrets and systems
 - You pay per month plus per day after declaration
- ◆ Dedicated servers
 - Servers for your use on line at site
 - Yours or provided by vendor as part of contract
- ◆ "Shared" servers
 - Vendors servers available to you after declaration and for testing
 - You pay per month plus per day after declaration
- ◆ Quick Ship Servers
- ◆ Bandwidth

DR Services Providers

◆ Full Service, National

- Sungard (including former Comdisco)
 - LIC, Carlstadt NJ
- IBM
 - Tuxedo Park NY
- HP

◆ Regional/Local

- Savvy Networks "The Bunker" Tarrytown

5. Choose Solutions

- ◆ Match solutions to RTO RPO of applications
- ◆ Decision order
 - Do my RTO and RPO allow restore from backup?
 - Do I want to manage servers myself?
 - Do I need 1 stop shopping?

Virtualization can help

- ◆ Faster recovery of servers/apps
 - If not necessarily data
- ◆ Fewer servers to pay for at DR site
 - Can easily migrate VMs to additional servers after declaration

Then start testing solutions

- ◆ Do they really work?
- ◆ Can your staff handle them?
- ◆ How much bandwidth will your applications need?
 - We test applications 1 at a time and monitor bandwidth usage
 - Email load generator helps
- ◆ Keep adjusting to balance against budget

6. Implement Solutions

- ◆ Now you get to find out how agents really effect production systems
- ◆ Monitor source servers and bandwidth usage as agents added

7. Create Recovery Manual

◆ Contents:

- Data from inventory
- Restore instructions based on selected solutions
- Contact list and call tree
 - ◆ Staff
 - ◆ Consultants and other vendors
- Disaster roles and procedures

When writing remember

- ◆ Nothing you didn't write down to store off site is available
 - Installation CDs
 - Install Codes
 - IP addresses
- ◆ Write so ANY MCSE could follow
 - While Bill knows how to bring up WonderCalc he might have been in the building when it burned down
- ◆ Find someplace off site to keep the manual
 - Locker at DR site, data vault, Hosted website Etc.

Any Questions?

