

COMPAQ

Inspiration Technology

Disaster Protection and Recovery Update

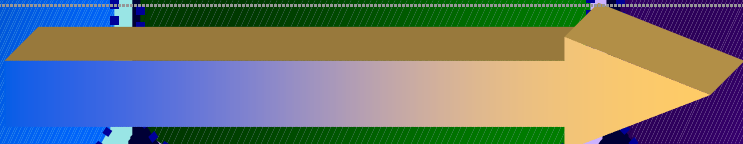
Canadian Tandem Users Group

November 15, 2001

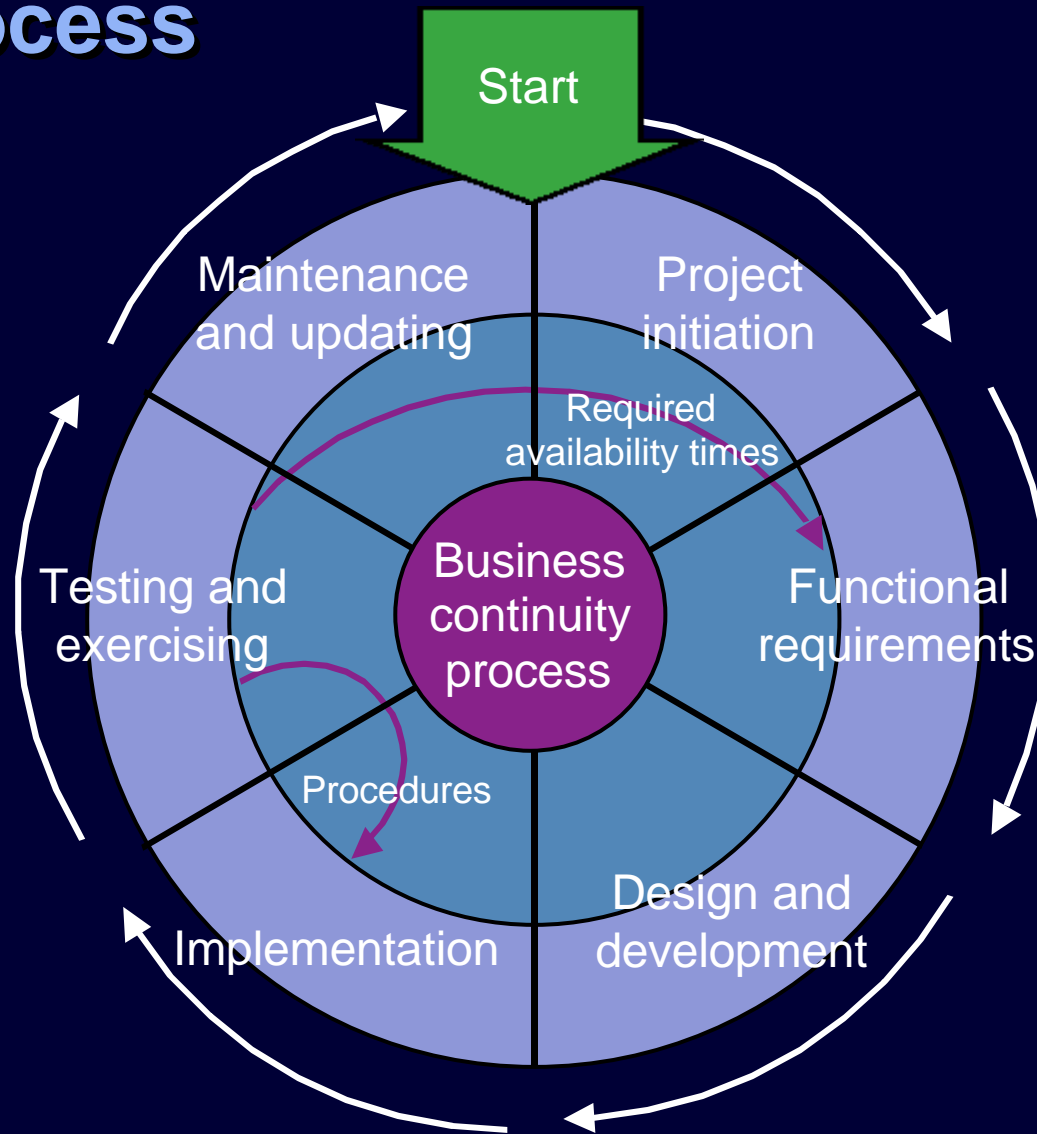
John Cosgrave
Senior Solutions Consultant
Compaq Canada

The Evolving Need for Availability

| | 80s | 90s | 00s |
|-----------------------------|------------------------|------------------------------------|--|
| Business Focus | Traditional | Dot.com | e-Business |
| Requirements | Restore, Recover | High Availability | Non-stop, Scalable |
| Driven By | Regulation | e-Commerce | Competition |
| Magnified By | Disaster | Absence of 'Bricks & Mortar' | e-Commerce |
| Recovery Expectation | Hardware Days/Hours | Hardware, Data, Minutes/Seconds | Hardware, Data, Application, Minutes/Seconds |
| Decision | Optional | | Mandatory |



Disaster Protection It's a process



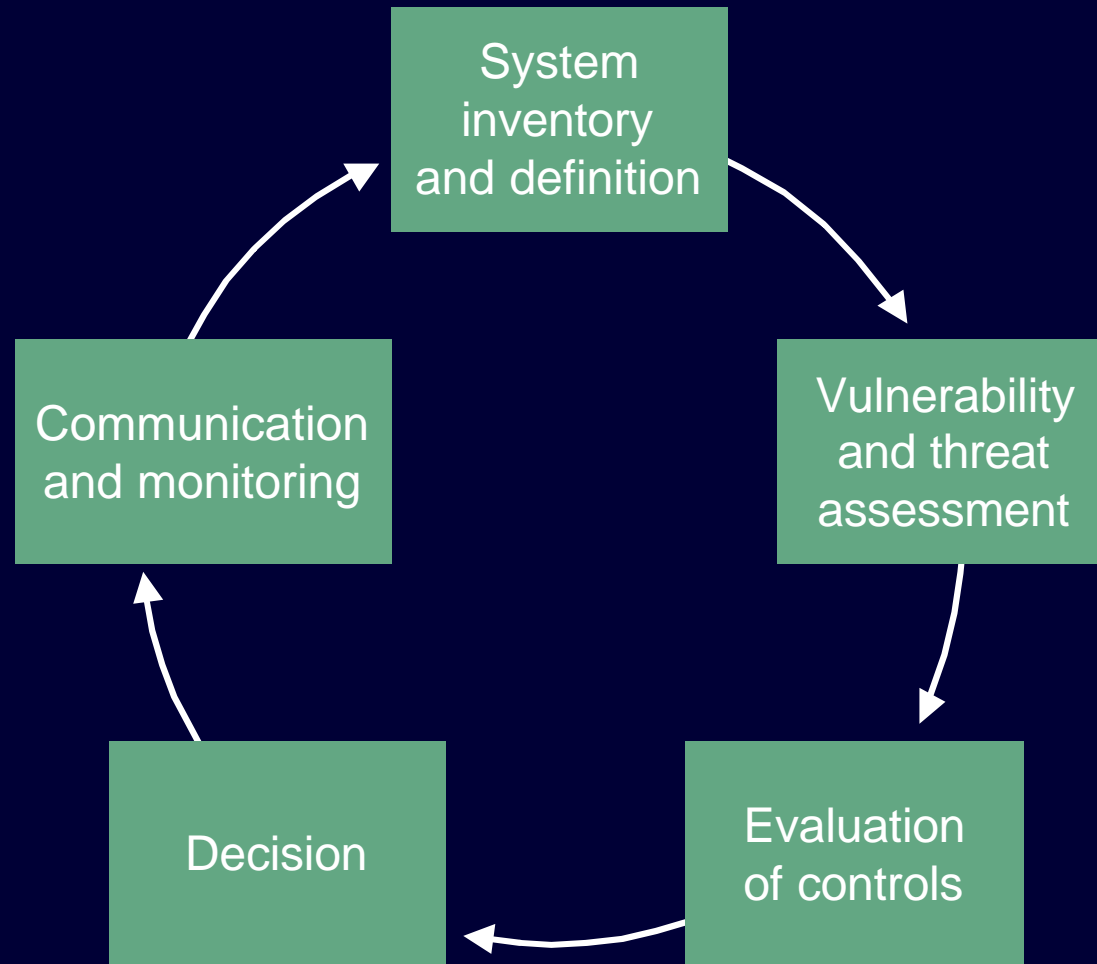
Functional requirements phase

Risk analysis

- What am I trying to protect?
- What do I need to protect it from?
- How much time, effort and money am I willing to expend to achieve adequate protection?
- Is what I am doing not enough, adequate or overkill?

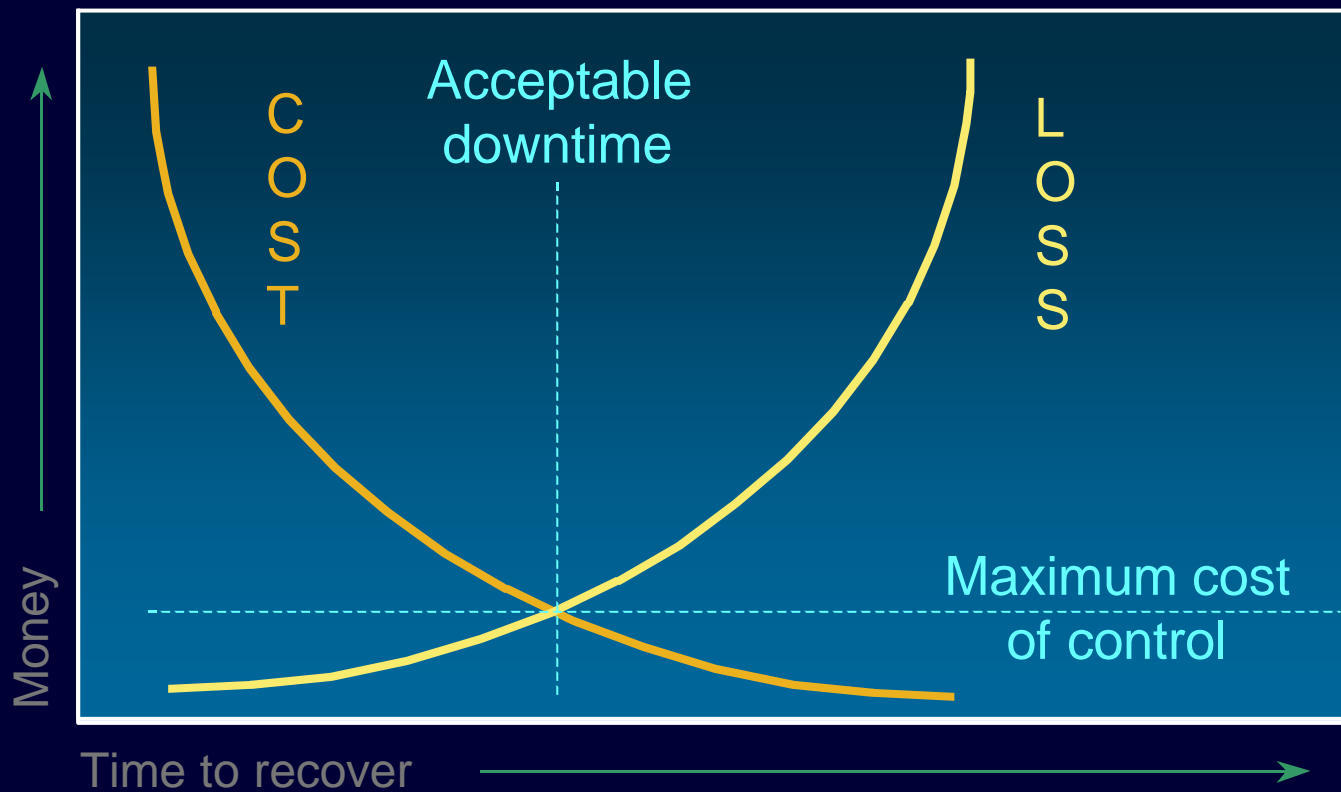
Functional requirements phase

Risk analysis



Functional requirements phase

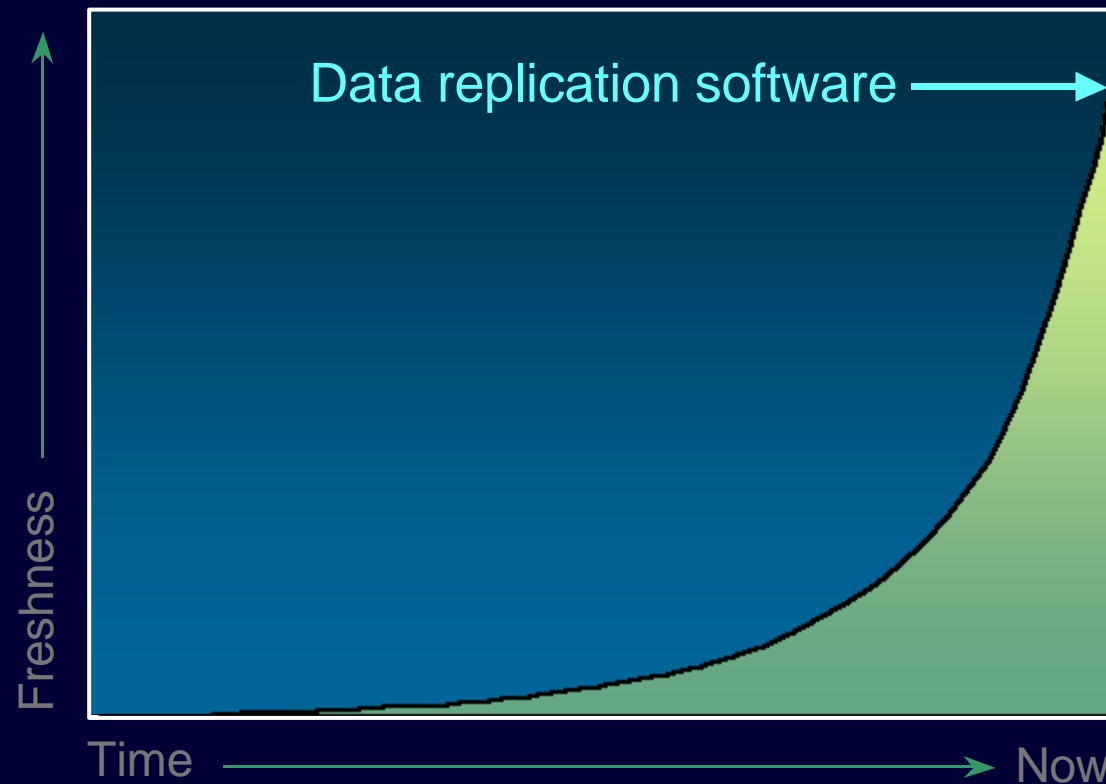
Business impact analysis



Functional requirements phase

Don't recover stale data

It's not just how fast you can recover, but to what point in time



Design and development phase *Cookbook*

- Common format for all plans
- Step-by-step how to write the plan
- Corporate team description
- Notification process
- Plan considerations
- Responsibility lists
- Corporate team support forms

Design and development phase *Escalation, notification, and activation*

- Who activates the EMT?
- How does the EMT get activated?
- Who decides to activate the CMT?
- How does the CMT get activated?
- How does the CMT decide to activate the plan?
- What happens if certain members of the CMT are unavailable?

Testing and exercise phase

Exercise plans, scenarios and exercises

- How often, how much, how realistic?
- Notify your people?
- Notify the hot site vendor?
- Notify offsite storage?
- Normal workday, middle of the night, or holiday weekend?

Testing and exercise phase

Evaluation and modification

- What went wrong and how do we fix it for next time?
- Do **not** find someone to blame. A fault found now could save your company later
- Were any of our assumptions wrong?
- Do we need to revisit a previous phase?

Not just an IT problem

- IT can recover computers and applications, not Business Processes
- The computers are humming, the applications are loaded...

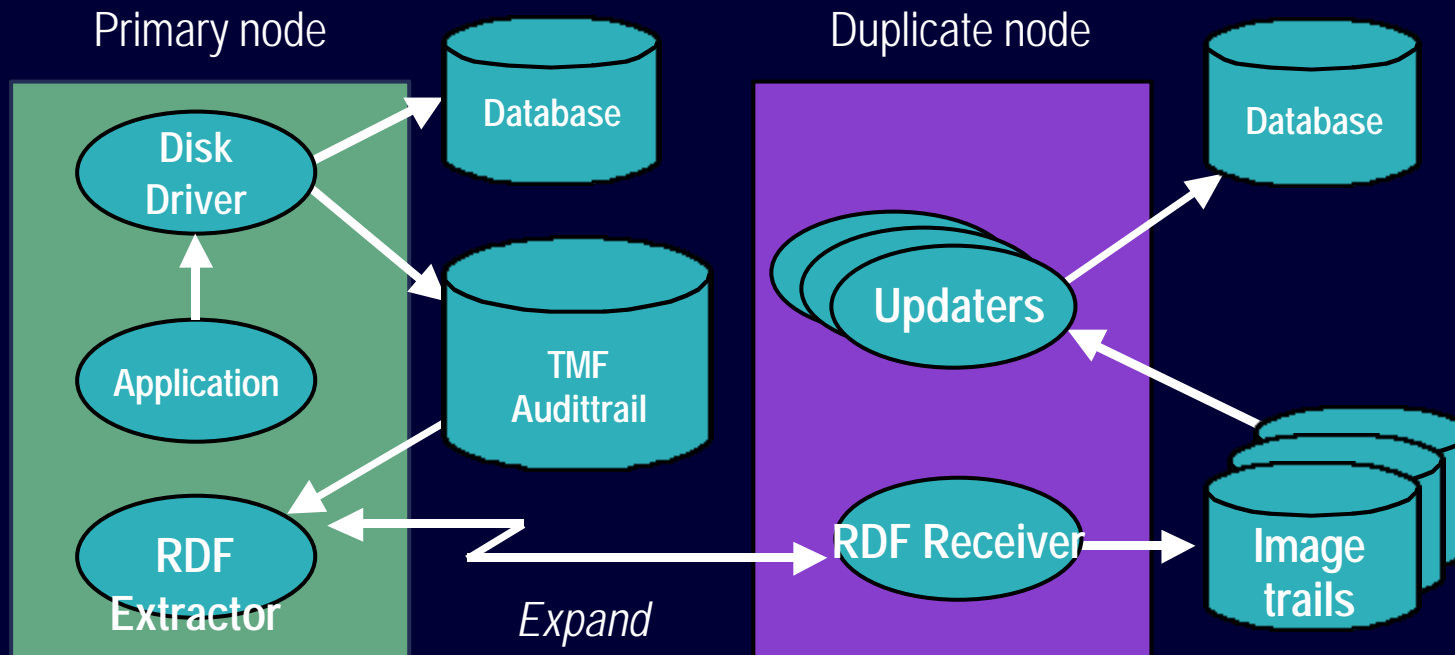
... and no one is around to use them

*IT recovery is part of a complete
contingency plan*

What is RDF Software?

- High-speed, high-performance data replication software
- Peer-to-peer for *Compaq NonStop™ Himalaya* servers only
- Focused on disaster protection capability
- Widening application support
- An integral element of the *Himalaya™* Indestructible Scalable Computing initiative

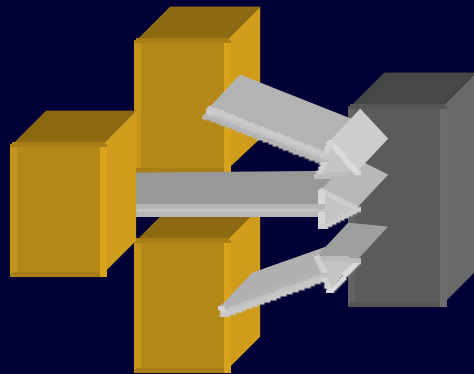
RDF architecture overview



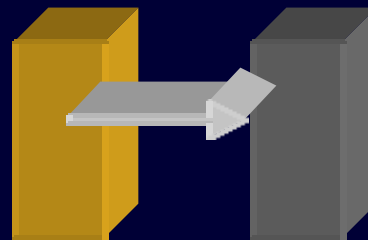
- High-performance, real-time update to duplicate sites
- Single management domain
- Flexible configuration options

Some RDF Topologies

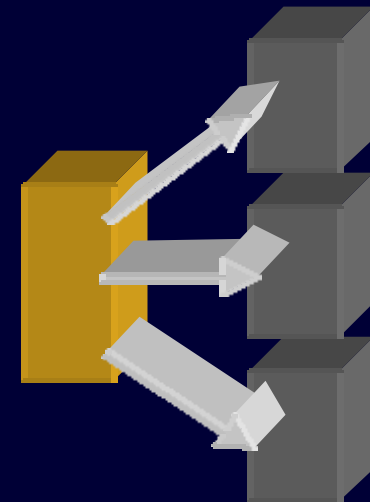
Centralized



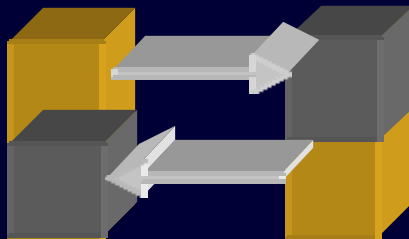
Simplex



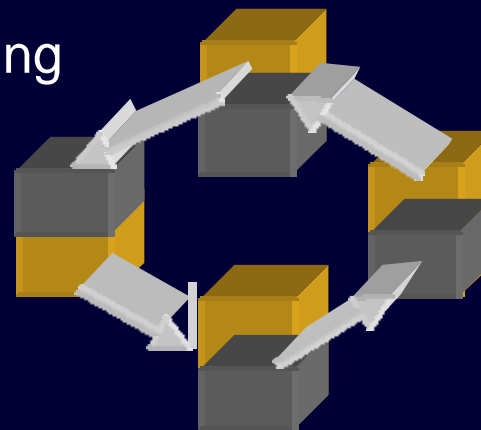
Multiple duplicate sites



Reciprocal



Ring



RDF IP Version 1.0 – Feb 1999

- Audit now generated on back-up system
- Dramatically increased throughput
- Faster take over
- Enhanced manageability

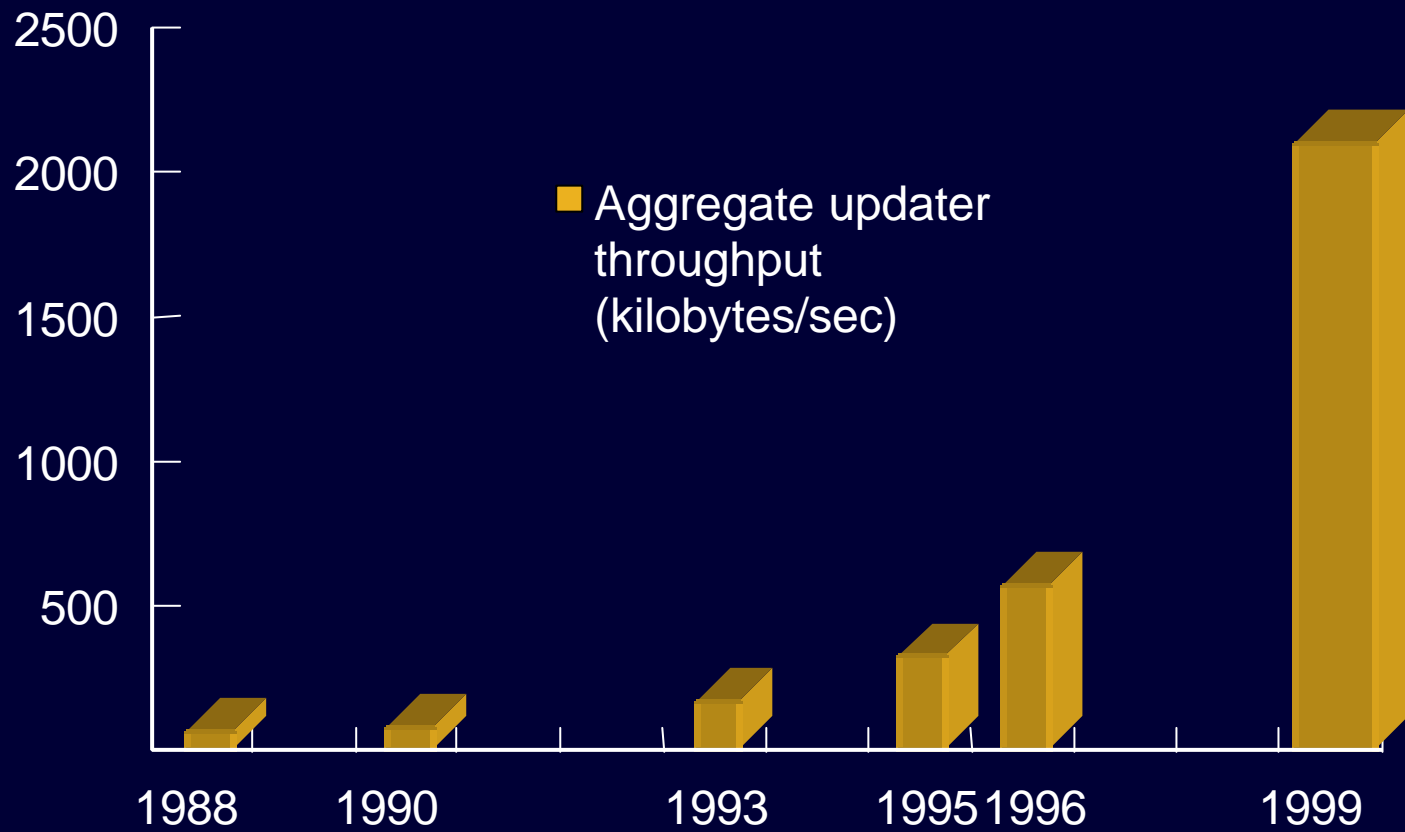
Faster RDF Takeover

- Four steps for SUT products
 - RDF takeover
 - Turn on audit flags
 - Take new online dumps of backup database
 - Start applications
- For Independent Products
 - RDF takeover
 - Start applications

Improved Manageability

- Event Management Service (EMS) event generation
- Warning thresholds
 - Configurable parameters for extractor and updaters
 - EMS event generated for each exceeded process
- Online dumps can be taken at any time
 - Valid before and after RDF takeover
- Configurable RDF software location
- Install RDF on a single system

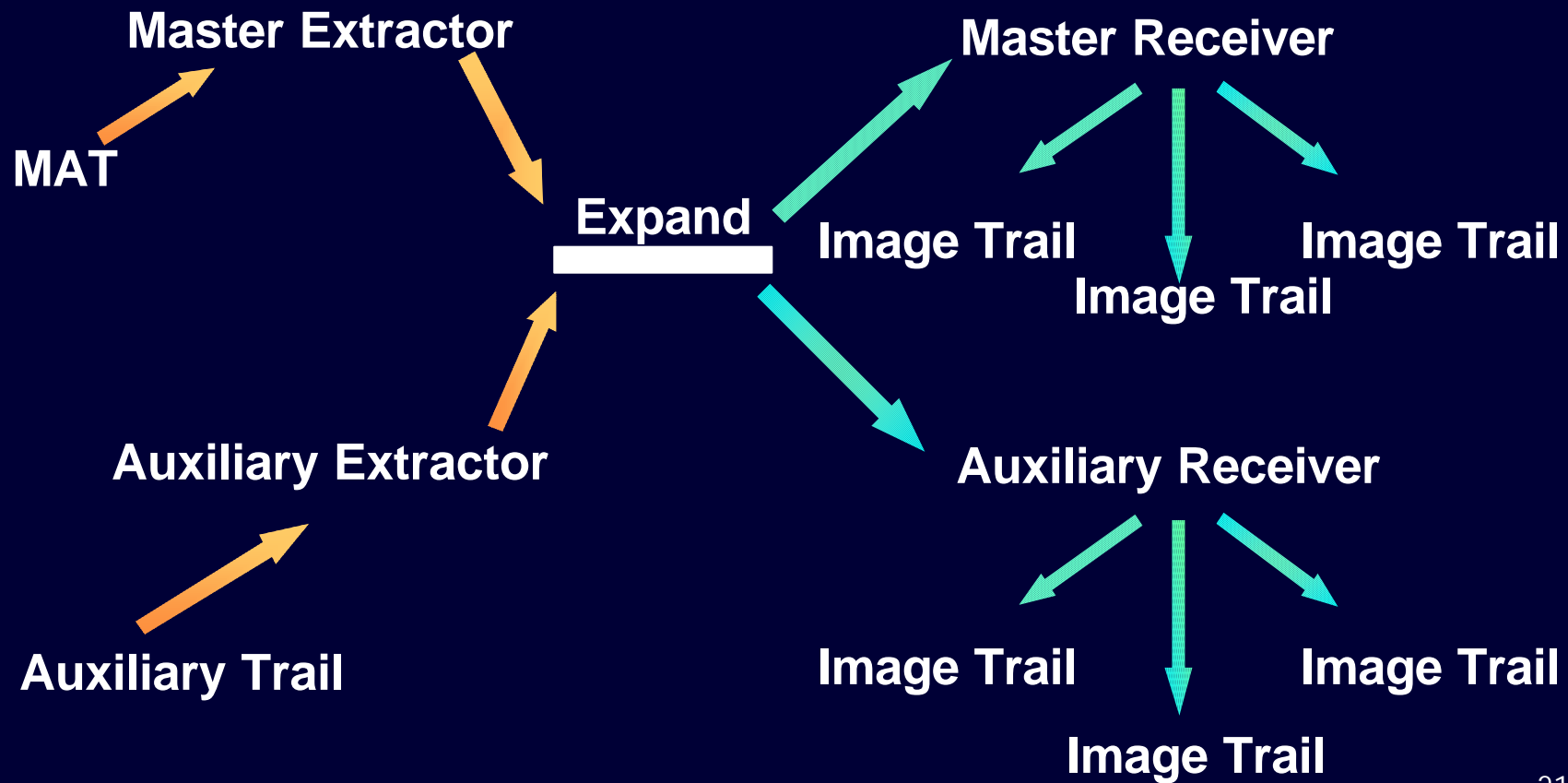
RDF Performance History



RDF IP Version 1.1 – June 2000

- Auxiliary audit trails - SA44V1 only
- File/sub-volume replication
- Compaq *NonStop*[™] SMF support

Auxiliary Audit



Sub-volume/File Level Replication

- Include List
 - INCLUDE mydata.myfile
 - Can specify multiple include items
 - Include list causes implicit exclude of all other files and tables
- Exclude List
 - EXCLUDE mydata.myfile
 - Can specify multiple exclude items
 - Exclude list causes implicit include of all other files and tables
- Wildcard
 - Asterisk used as suffix
 - INCLUDE mydata*.log*
 - INCLUDE mydata*.*
- Can have Include and Exclude items per volume
 - Includes evaluated first, excludes second

Compaq NonStop™ SMF Support

- Previously supported Compaq *NonStop*™ SMF software on primary only
- Support now covers backup database too
 - Logical volume on backup system must consist of a single physical volume
 - Supports ability to partition a large physical volume into several logical volumes
- RDF image trails must not be on logical volumes

RDF IP Version 1.2 – June 2001

- Support for network transactions
- Accelerated objects
- Support for SQL Big Files

Network Transactions

- Each primary node has its own RDF subsystem
- Network configuration record
 - Contains information for all primary and backup nodes in RDF network
- One subsystem is configured as the Network Master
 - Network configuration record maintained here
- Other RDF subsystems have pointer to Network Master
- Lose of a primary node requires RDF takeover on its backup nodes
- Nodes unaffected by failure,
 - Must stop transaction activity
 - Execute RDF takeover operations here too

RDF IP Version 1.3 – Sep 2001

- Support for lockstep transactions
- ASAP Support

- IPM T0346AAP support for replicated PURGE

Lockstep Transactions

- Data committed on your RDF primary node can be lost during an unplanned outage
- Lockstep Transactions - a joint RDF/TMF project
 - Requires application change
 - Application commits a transaction
 - Application calls DOLOCKSTEP
 - Control does not return until RDF has confirmed all data prior to this is safe on the backup system
 - Application now unable to make decision on transaction until it regains control

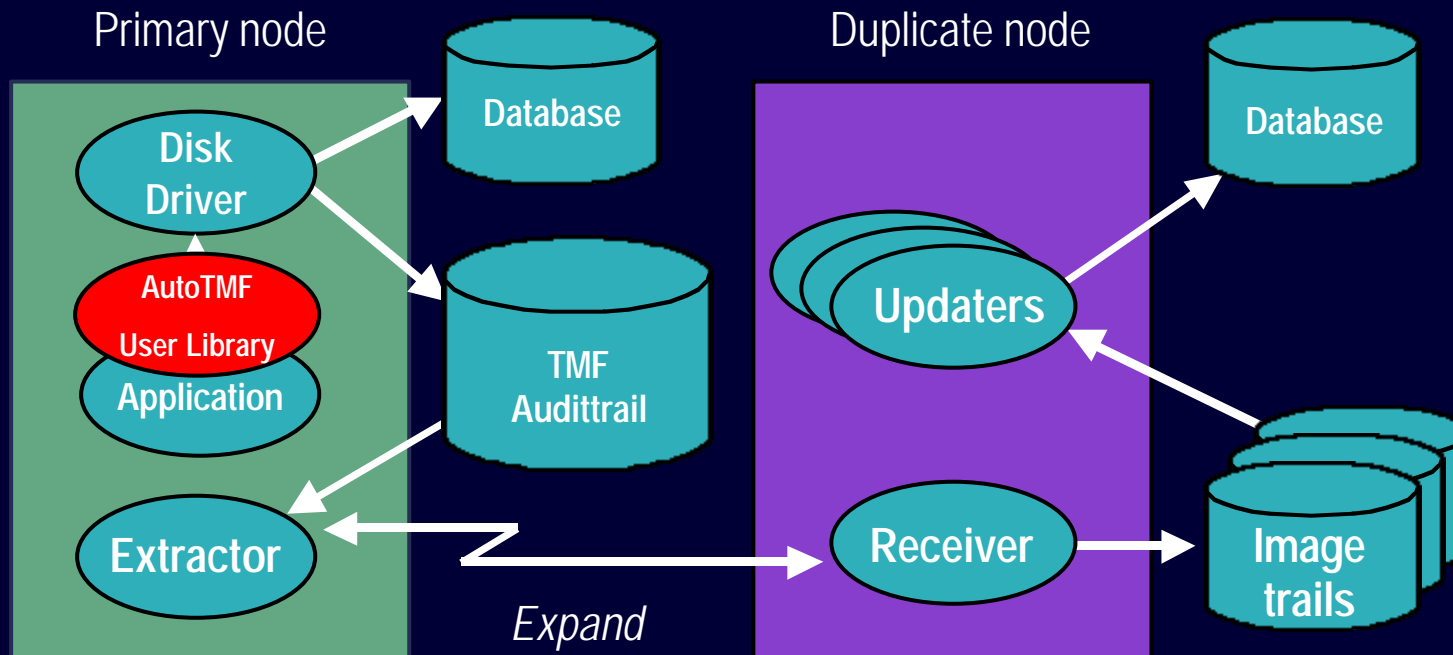
ASAP Interface

- Monitors availability of system objects and application domains, including RDF
- Alerts down objects, application metrics, and performance thresholds
- Real time and historical reporting of system and application objects
- Simplified monitoring with GUI
- Also interfaces to Compaq Open Enterprise Management Gateway

RDF IP Version 1.4 – 1H02

- Full SMF support.
- Removing the 255 updater limit.
- Aux audit support for SQL DDL operations.
- Superfast takeover.

NonStop™ AutoTMF™



- Add optional NonStop™ AutoTMF™ user library to application
- Converts unaudited operations to audited operations

NonStop AutoSYNC Overview

- Synchronizes file sets between Himalaya servers
- Replication of entire files, not record changes
- Compliments RDF and other replication products
- Easy to install and manage
 - Completely automatic; set it and forget it
 - Fault tolerant; highly reliable
- Primary uses
 - Completes disaster protection environment
 - Automated operations support

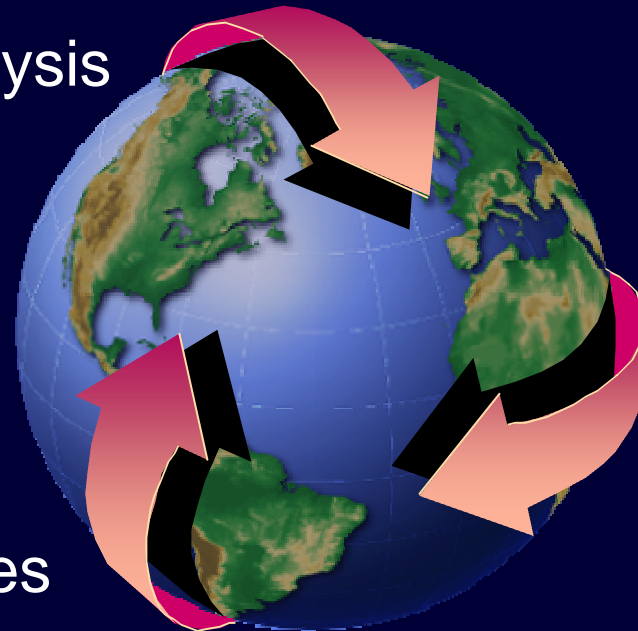
Other Replication Products

- Golden Gate – E/R
- ITI – Shadowbase3
- Network Technologies - DRNet

Professional Services

Focused services for disaster protection support

- Business availability, risk assessment, and impact analysis
- Implementation planning
- Installation
- Training
- Configuration and tuning
- Capacity and performance
- Outsourcing, hot and cold sites



Summary

- Contingency planning/disaster protection increasingly important
- It has become central to Himalaya server focus
- Compaq products and services provide powerful business recovery tools
- Continuing investment and enhancements

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