

# Geographically Dispersed Parallel Sysplex

*The IBM Multiple Site  
Application Availability Solution*

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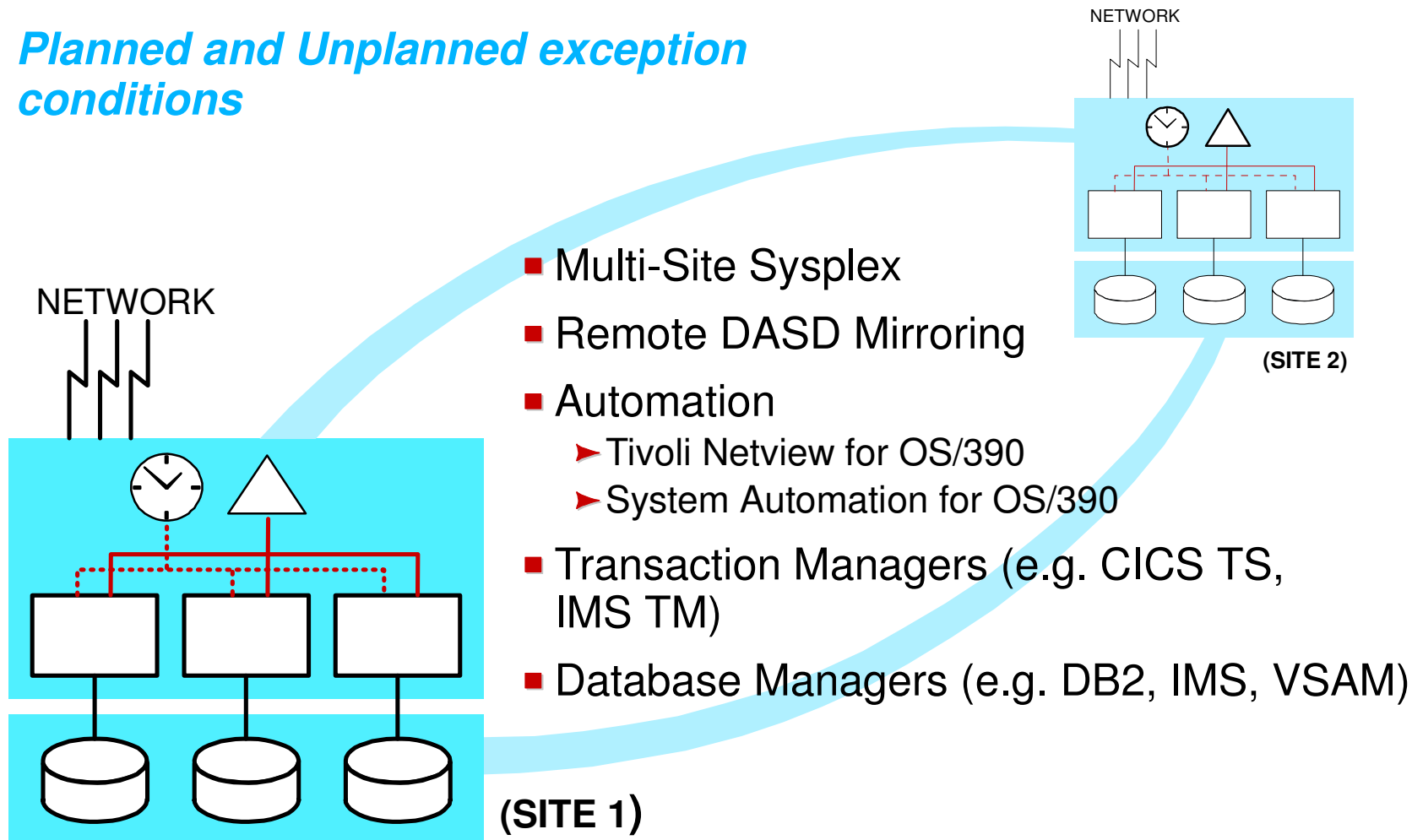
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# Manages and Helps Protect IT Services

*Planned and Unplanned exception conditions*



***Application Independent Solution  
Near-continuous Application Availability***

# Automates Planned Reconfigurations

IBM

- Parallel Sysplex configuration management tasks
  - ▶ Hardware and software maintenance
  - ▶ Temporary site relocation
- Remote Copy configuration management tasks
  - ▶ Storage group changes
  - ▶ Status check
  - ▶ Device maintenance
- Full screen, ISPF style interface

***Greatly Simplifies Parallel Sysplex Environment and Remote  
Copy Configuration Management  
Helps Minimize Application Availability Disruption  
Single Point of Control***

# Automates Unplanned Reconfigurations

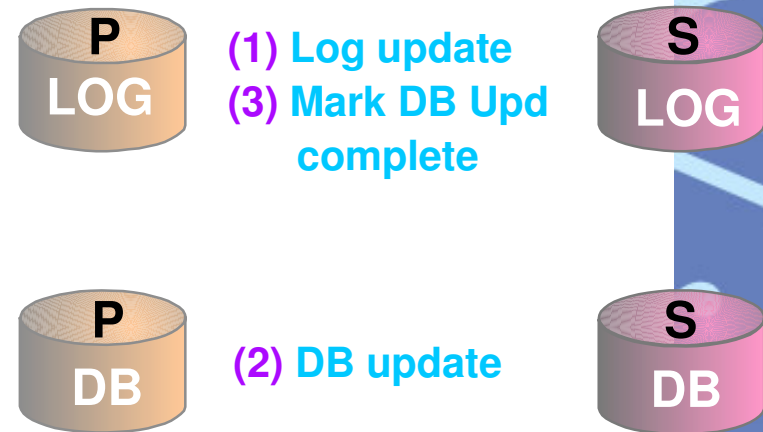


- Handles OS/390, processor complex and site failures
  - ▶ Avoids or helps minimize application outage
- Manages Remote Copy SUSPEND conditions
  - ▶ Can maintain data consistency and integrity across all volumes
- Supports fast, automated failover
  - ▶ No or limited data loss; based on customer business policies
  - ▶ Optionally requires operator authorization — no analysis

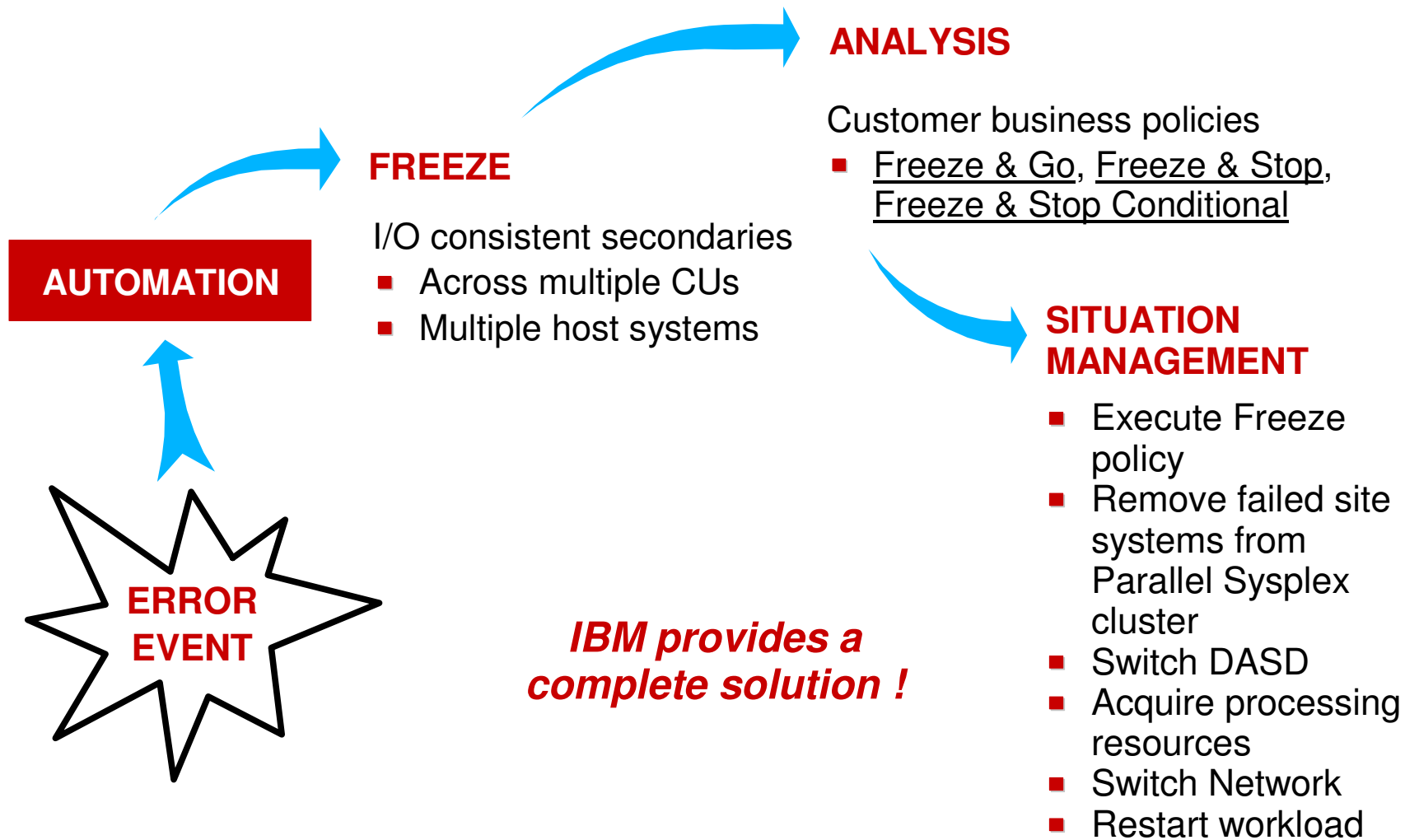
***Can Provide Reduced Loss of Service  
Practiced, Proven Disaster/Recovery Readiness  
Single Point of Control***

# The need for Time Consistency

- ★ Many examples where start of one write is time dependent on the completion of a previous write
  - ▶ Data base & log
  - ▶ Catalogs, VTOCs
  - ▶ Index & data components
- ★ Time sequence could be exposed in remote copy
- ★ To be managed through
  - ▶ PPRC Critical attribute
  - ▶ Automation / Freeze function



# Unplanned Cross-Site Reconfiguration



# FREEZE Policy Options



## FREEZE & GO

- Freeze secondary DASD configuration
- Allow applications to continue
  - ▶ *Optimize for remote restartability*
  - ▶ *Least impact on application availability*
  - ▶ *May lose data in case of real disaster*

## FREEZE & STOP

- Freeze secondary DASD configuration
- Stop all OS/390 images
  - ▶ *Optimize for remote restartability*
  - ▶ *May impact application availability*
  - ▶ *No data loss on primary site disaster*

## FREEZE & STOP Conditional

- Freeze secondary DASD configuration
- Determine reason for Suspend
  - ▶ *If secondary HW problem then FREEZE & GO*
  - ▶ *Other reason: FREEZE & STOP*



# Three Implementation Levels

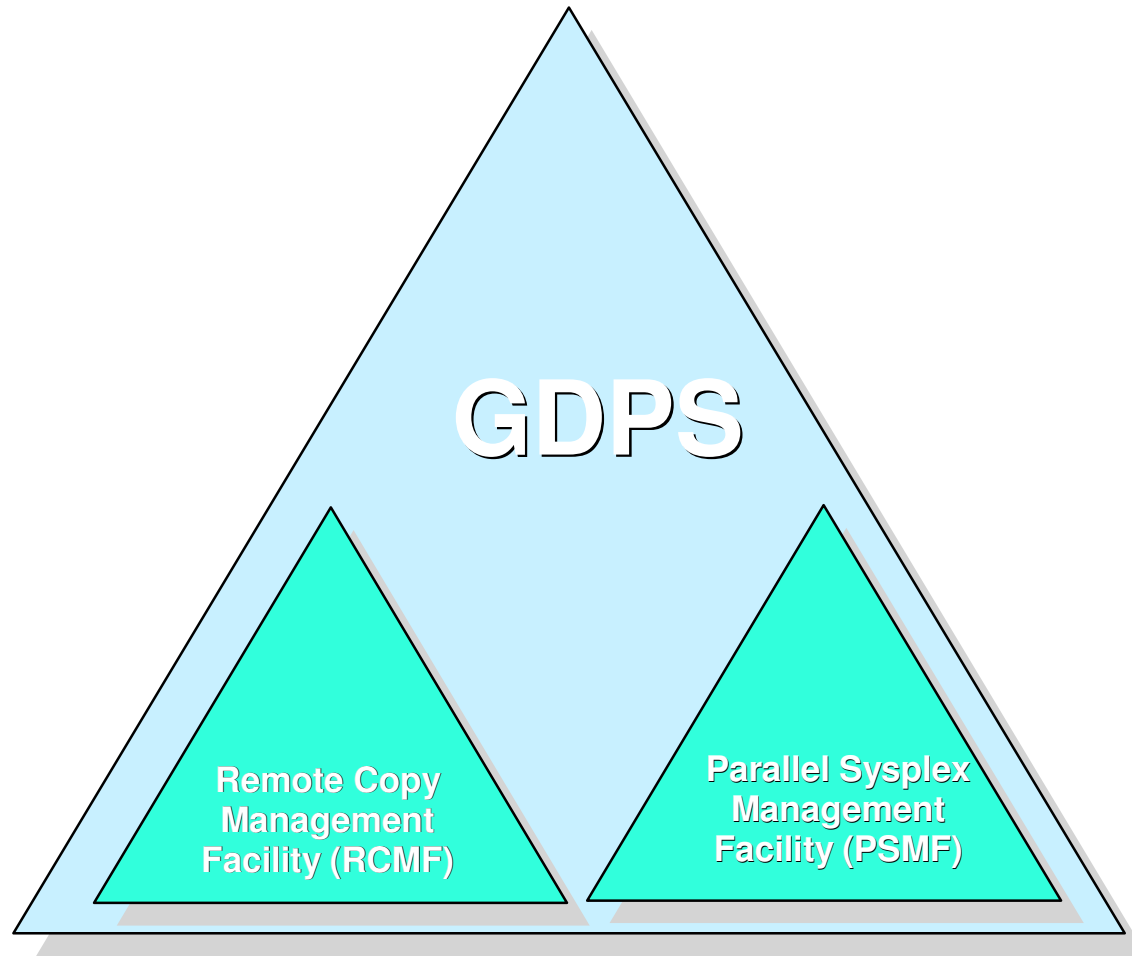


1. Full Geographically Dispersed Parallel Sysplex
  - Includes all functions to handle planned and unplanned exception conditions
2. Parallel Sysplex Management Facility (PSMF)
  - Stop, remove, IPL a system or a site
  - Couple data set management
3. Remote Copy Management Facility (RCMF)
  - Remote Copy Configuration Management
  - DASD, cache and P/DAS management
  - ISPF style interface

***Delivered through IBM Global Services***

# Multiple Implementation Starting Points

IBM

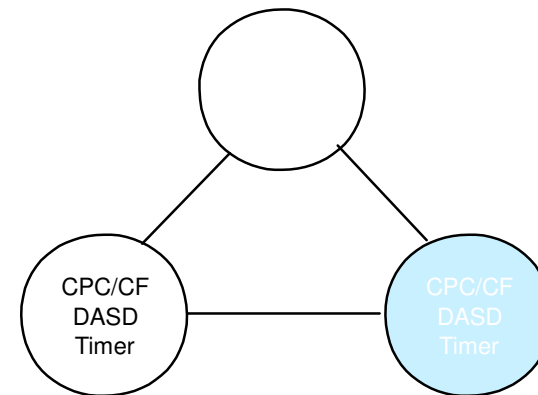
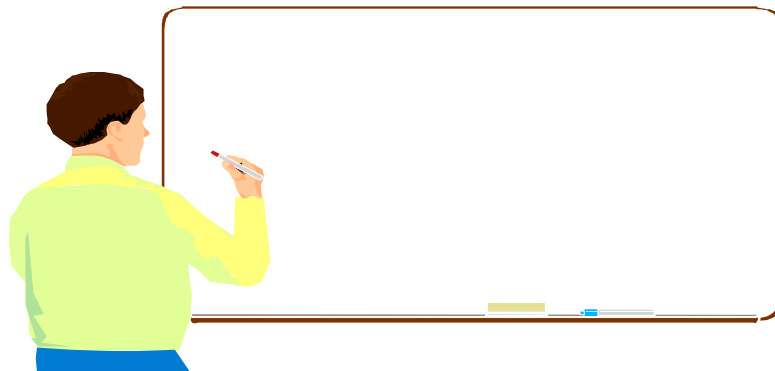


S/390

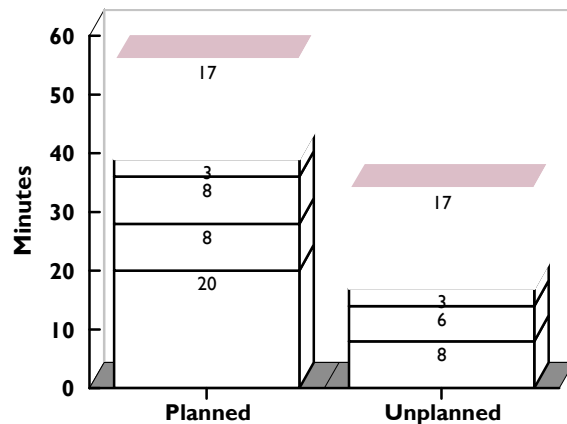
# Värdepapperscentralen AB - Stockholm GDPS Experience



- Unplanned site reconfiguration (including disasters)
  - ▶ Previously used traditional Disaster / Recovery techniques
    - Weekly image copies & logs sent offsite every 24 hours
    - Manual recovery at Disaster / Recovery facility — practiced annually
  - ▶ GDPS experience
    - *Eliminated data loss*
    - *Recovery window reduced from 12 hours to 22 minutes*
    - *Eliminated Disaster / Recovery facility subscription*
- Planned reconfigurations
  - ▶ Previously operator intensive
  - ▶ GDPS experience
    - *Automated system, storage subsystem and site planned reconfiguration*
    - *Procedure completed in 42 minutes*



**Site Switch Times**



- Sys/Appl startup**
- Activate/load LPARs
  - DASD switch/recover
  - Reset LPARs
  - Sys/Appl shutdown

- met business objectives
- test more frequently
- less skill level required

*7 lines of GDPS policy for planned switch  
11 lines of GDPS policy for unplanned switch*

# iT-AUSTRIA - Vienna

## GDPS Experience



- Business requirements
  - ▶ No loss of committed data
  - ▶ Recovery within 1 hour for any outage
  - ▶ Infrastructure maintenance twice a year
- 3 Sites, 2 Sysplexes, 2 x GDPS, 12TB disk storage
  - ▶ Single site workload / 5-way Parallel Sysplex
  - ▶ Multiple site workload / 5-way Parallel Sysplex
- Implemented full GDPS
  - ▶ In production since August 1998
  - ▶ Replaced home-grown PPRC configuration management tool

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## GDPS Experience



- Achievements (GDPS with 700 volumes)
  - ▶ *Recovery window reduced from 24 hours to 34 minutes*
  - ▶ *Data loss reduced from up to 48 hours to 0*
  - ▶ *Planned site switch completed in 56 minutes*
- GDPS meets / exceeds requirements
  - ▶ Data current and consistent at recovery site
  - ▶ Recovery time less than expected
  - ▶ Can test more often
  - ▶ Very significant reduction of on-site manpower and skill required for planned and unplanned actions

# Svenska Handelsbanken - Stockholm GDPS Experience



- Previously relied on traditional disaster protection
  - ▶ Volume dumps (weekly) and log tapes (daily) shipped to 3rd party Disaster / Recovery facility
  - ▶ Disaster / Recovery drill 2 x per year - 75% success rate
  - ▶ Recovery time approaching 100 hours
  - ▶ Data loss up to 48 hours
- GDPS experience
  - ▶ In production since December 1998
  - ▶ *Restart applications in less than 1 hour - no data loss*
  - ▶ Reduced frequency of application shutdown for backup
  - ▶ Total GDSP cost about the same as that of the previous D/R solution

***"Could not manage D/R protection without GDPS"***

# GDPS Highlights



- Provides near-continuous application and data availability
  - ▶ Planned reconfigurations (hardware, software, site maintenance)
  - ▶ Unplanned reconfigurations (OS/390, processor, disk, site failure)
- In case of disaster
  - ▶ Insures data consistency and integrity with little or no data loss
  - ▶ Offers prompt, responsive disaster recovery
- Simplifies operations from a single point of control
  - ▶ Remote Copy configuration
  - ▶ Parallel Sysplex technology
- Solution is application independent
- GDPS white paper and solution information available at:
  - ▶ <http://www.as.ibm.com/asww/offerings/mww62b1.htm>



# Financial Impact of Disasters

<i>Type of Business</i>	<i>Average Hourly Impact</i>
Retail Brokerage	6,450,000
Credit Card Sales Authorization	2,600,000
Home Shopping Channel	113,750
Catalog Sales Centers	90,000
Airline Reservations Centers	89,500
Cellular Service Activation	41,000
Package Shipping Service	28,250
On-line Network Connect Fees	25,250
ATM Service Fees	14,500