



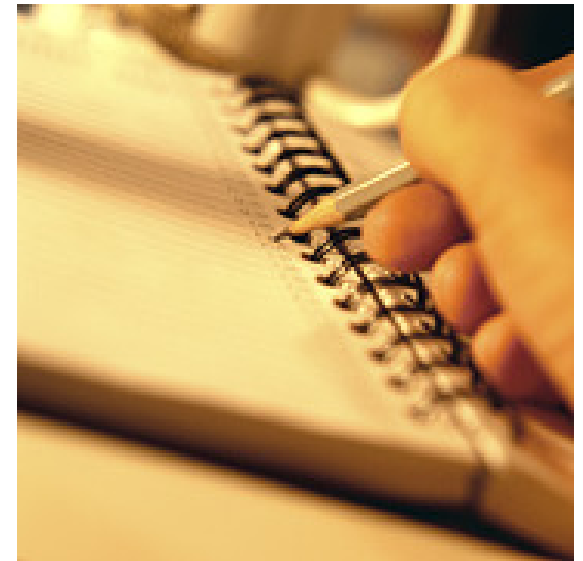
SMPO – IBM Software Group - Americas

Best practices for business resiliency with System z

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Agenda

- **Key Drivers in Compliance**
- **Implications for zStorage Requirements**
- **How the zStorage Solution from IBM Meets Compliance Requirements**
- **Components of zStorage Solution:**
 - **Tivoli Advanced Backup & Recovery for z/OS**
 - **Tivoli Advanced Audit for DFSMSHsm**
 - **Tivoli Advanced Reporting for DFSMSHsm**
 - **Tivoli Advanced Catalog Management for z/OS**
 - **OMEGAMON XE for Storage on z/OS**
- **Case Study**
- **Summary**
- **Q & A**



Key Drivers in Compliance

Sarbanes-Oxley Act of 2002: (US):

- **The Sarbanes-Oxley Act of 2002 (SOX) mandates financial accountability of publicly held companies.**
 - Penalties for violations up to \$5M & 20 years in prison for corporate officers – ***Serious Business!***
 - Requires public companies to:
 - Be able to readily produce certain records including financially-related documents & emails
 - Prove they were not destroyed or altered
 - Does not specify which records must be kept, or for how long, or how long it should take to produce
 - Most companies keep anything even remotely financially-related; some store all records & emails
 - Results in growing storage volumes and complexity
 - While security access controls prevent unauthorized access to information, other measures are required to prevent and recover from accidental loss, damage, or alteration of data due to:
 - System outages
 - Disaster
 - Human error such as accidental alteration, deletion, or overwriting
 - Damage to or degradation of physical storage media
 - System problems that impair the execution of documented storage policy

- **Companies have a stronger need than ever to implement policy-based data retention systems that can be managed efficiently to meet the growing need to keep data, yet be able to demonstrate the integrity of both their data and the implementation of their policies, as well as ensure that their data is backed up and recovery can be made for anything from a local outage to a major disaster.**

Key Drivers (continued)

Financial Services Authority (FSA), 2006 - UK

■ **FSA Business Continuity Management Practice Guide:**

- Section C.1.7.1: All critical data are copied or replicated at another site.
- Section C.1.7.2: It takes less than one hour to retrieve off-site copies of critical recovery data (where applicable).

■ **Very Strong Data Protection and Recovery time requirements**

- Requires a cohesive, integrated set of tools to implement



Implications for zStorage Requirements

Data Protection on System z has always been critically important

- **Regulatory controls make it IMPERATIVE**
- **Customers need a solution that can ensure and *prove*:**
 - Critical data for operations is identified and backed up
 - Critical data must have assigned retention requirement
 - Fast Recovery from Human error, HW/SW or physical media failures, or disasters
 - System problems do not prevent retention policy from being executed
- **IBM Tivoli zStorage Solution provides:**
 - Automated Backup & Recovery for data, with automatic identification of critical data
 - Auditing, Monitoring, and validation of DFSMSHsm environment, including tape
 - Automated Backup and Forward Recovery of critical ICF and Tape Catalogs and VSAM file data

How IBM zStorage Meets Compliance Requirements

	Identify Critical Data Assets	Back Up & Recover Data	Track Backups & Ensure Currency	Recover from Outages	Demonstrate Recoverability	Monitor Health	Monitor HSM Execution	Diagnose & Correct Problems
Tivoli Advanced Backup & Recovery for z/OS	X	X	X	X	X		X	
Tivoli Advanced Catalog Management for z/OS	X	X	X	X	X	X		X
Tivoli Advanced Audit for DFSMSHsm				X	X	X		X
Tivoli Advanced Reporting for DFSMSHsm	X			X		X	X	X
Tivoli OMEGAMON XE for Storage on z/OS						X	X	X

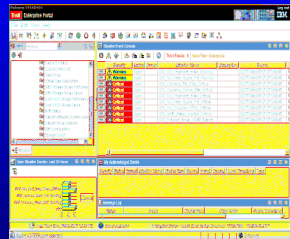
IBM Tivoli Integrated System z Storage Management

IBM's System z Storage Management Provides:

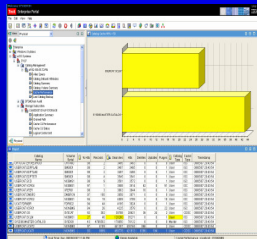
- Powerful Integration of related System z Storage information via the Tivoli Enterprise Portal (TEP)
- Robust Tools for monitoring and managing System z Storage
- Dynamic linking and capability to take action directly from the TEP
- Standardize System z Storage Toolset - Reduce dependency on zStorage Management 'gurus'
- Simpler maintenance & upgrade – all use standard IBM SMP/E packaging
- Reduce usage of System z Resources – reduce cost and energy usage

Tivoli Enterprise Portal

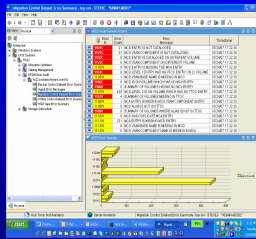
Tivoli OMEGAMON XE for Storage



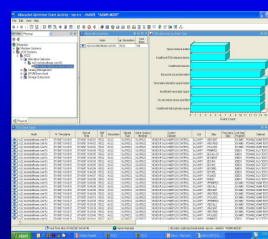
Tivoli Advanced Catalog Management



Tivoli Advanced Audit for DFSMSHsm

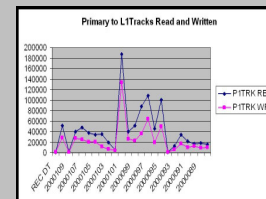


Tivoli Allocation Optimizer



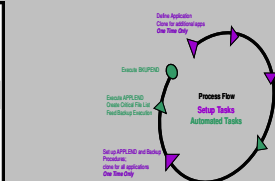
V2.1 Available 10/26/2007

Tivoli Advanced Reporting for DFSMSHsm



V1.1 Available June 2007

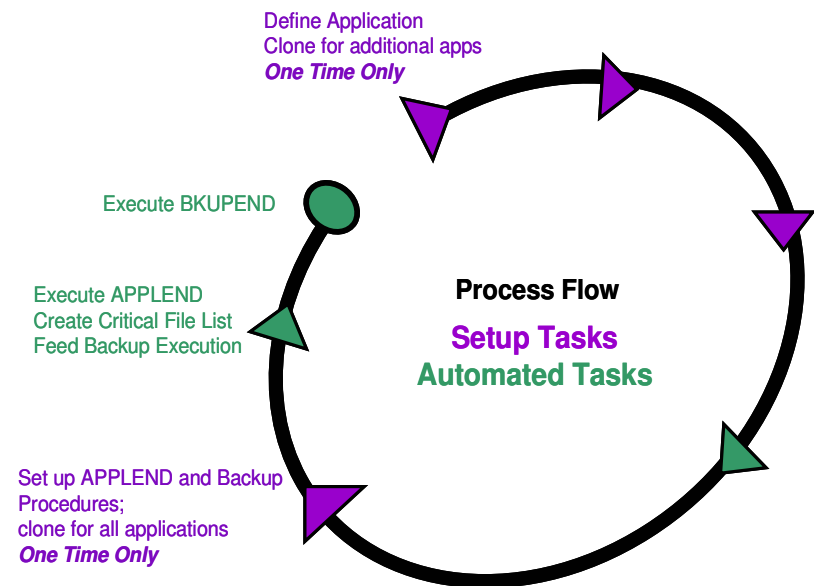
Tivoli Advanced Backup & Recovery



V1.1 Available Dec. 2006

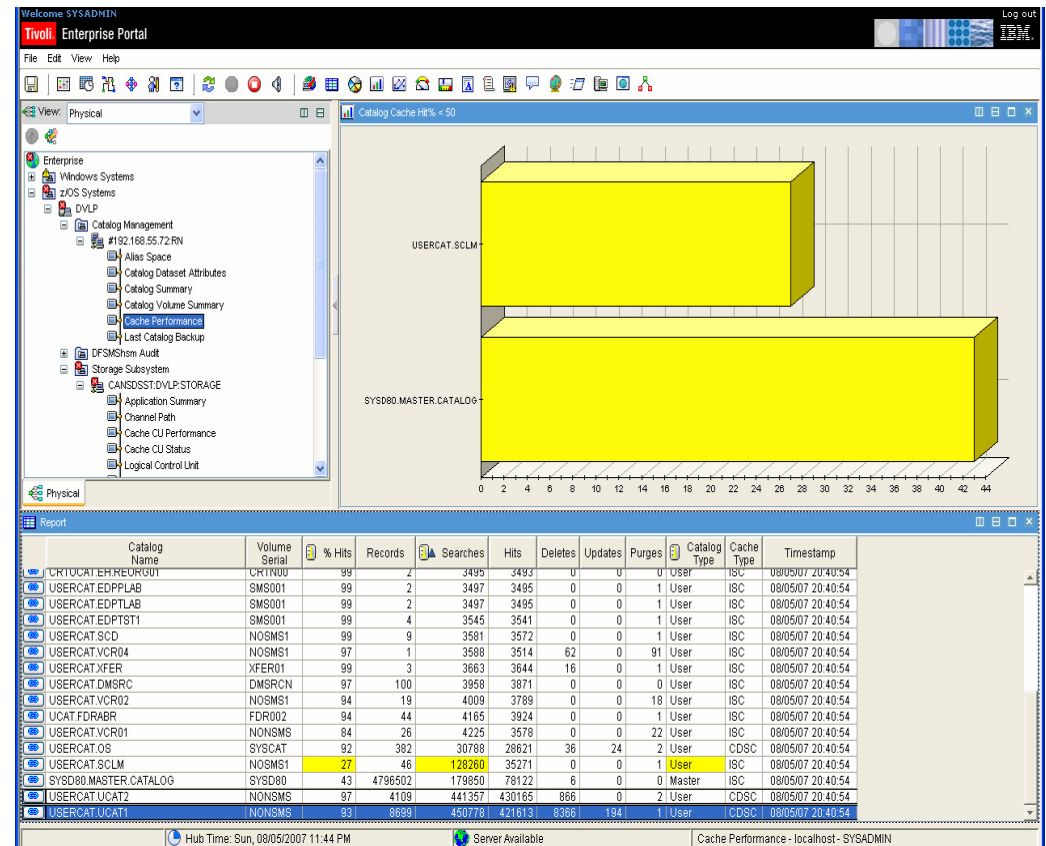
IBM Tivoli Advanced Backup & Recovery for z/OS

- A Toolset to automatically:
 - Identify critical application data
 - Track & Validate Backups
 - Where they are
 - Currency
 - Supporting removable or non-removable media types
 - Recover **Fast** from Disasters or Local Outages
 - Either at Local or DR site
 - From one central location
 - With one simple process
 - Eliminates guesswork and manual processes
 - Provides assurance that the data needed for the business to be resilient and compliant is protected and can be recovered from any type of outage, with documented evidence of the recoverability



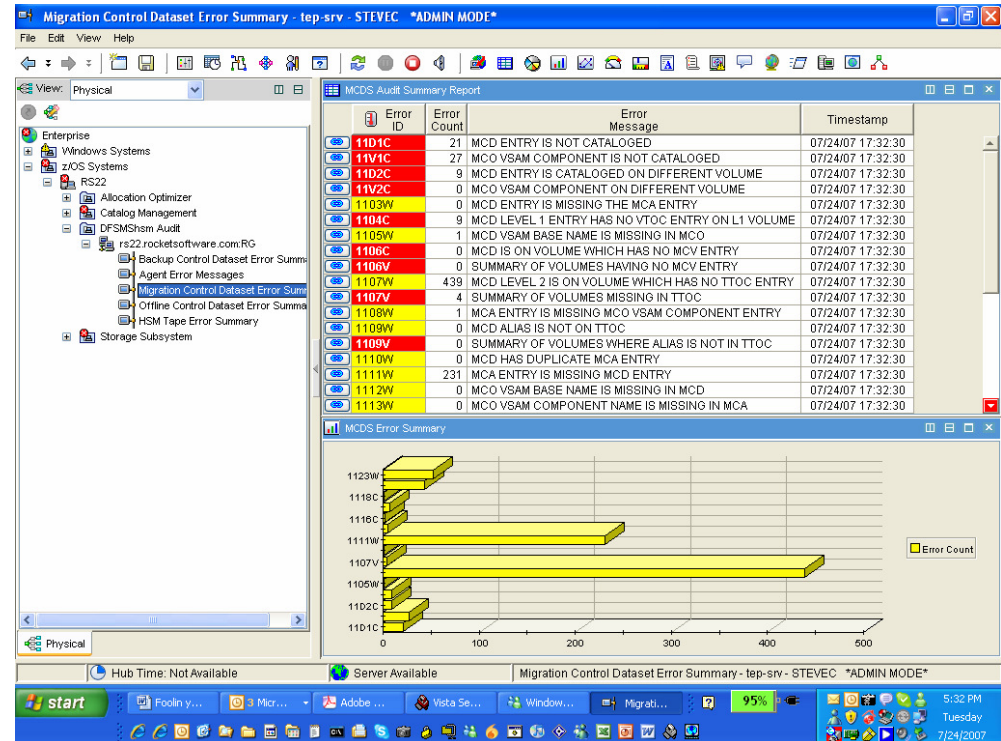
IBM Tivoli Advanced Catalog Management for z/OS

- Provides powerful, safe, reliable, and easy ICF catalog and VSAM backup and ***fast*** forward recovery
- Protects a catalog's complex structural integrity, alerts for potential errors, and reduces recovery time
- Reduces application down-time by permitting catalog maintenance while open
- Allows "what-if" simulation to preview effects of actions
- Easy-to-use interface improves staff productivity
- TEP Integration makes it easier to detect, diagnose, and correct problems involving catalogs



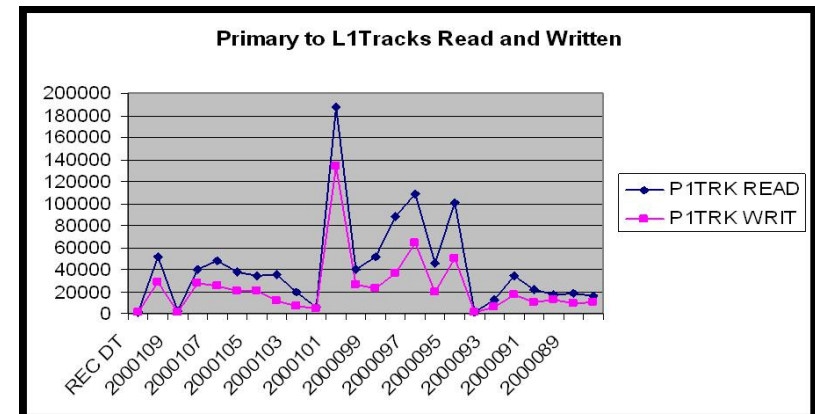
IBM Tivoli Advanced Audit for DFSMSHsm

- **Audits, repairs, and ensures integrity of the DFSMSHsm environment, including tape**
 - Be able to detect and repair issues from media degradation
- **Automates data collection and corrective actions**
- **Proactive notification and alerts to critical problems which can be expertly resolved before a system outage occurs**
- **Prove integrity of DFSMSHsm environment**
- **Operates many times faster than native DFSMSHsm commands, without performance impact on DFSMSHsm**
- **Ease-of-Use and performance permits regular rather than periodic audits**
- **TEP Interface makes it much easier to detect and diagnose problems – even linking to other products.**



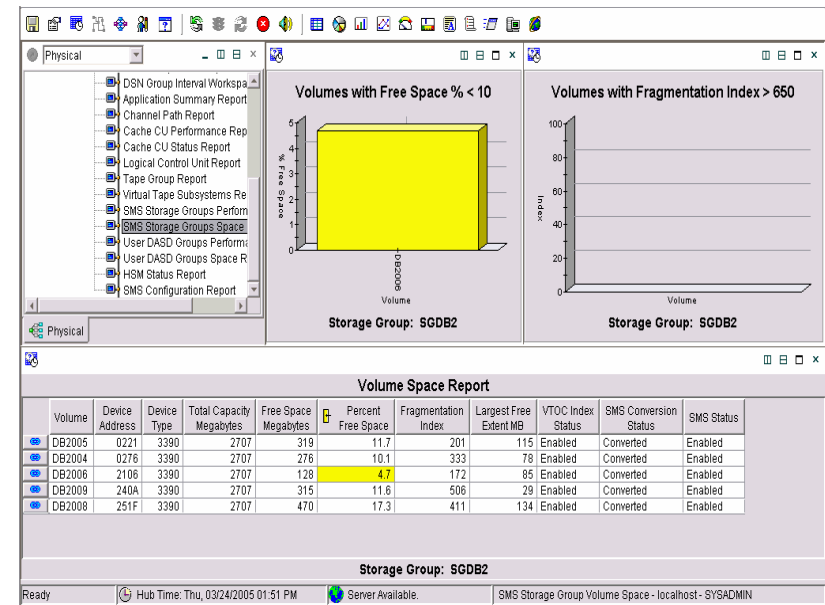
IBM Tivoli Advanced Reporting for DFSMSHsm

- **Provides Detailed HSM Reporting Capability**
 - Daily Health Reports
 - **Provides reports for:**
 - DFSMS Mounted Volumes
 - DFSMSHsm Managed Volumes, Space Management, Automatic Backup and Autodump Activities
 - **Automatic Spreadsheet Charting**
 - Ad-hoc reporting
 - **Fast and highly interactive**
 - **Easily find areas of concern, drill down & Act!**
 - Perform “what-if” analysis
 - **Migration thresholds**
 - **Recycle percent valid**
 - “Plans” Feature makes new reports simple to create and save
 - **Provides filtering logic so you can drill down**
 - Automated command generation
 - **Allows wrapping action commands around listed data sets**
 - **Go from “Now I know what to do” to “I’ve already done it”**
 - **Add your own customized commands to the command library**
- **Easy-to-Use ISPF User Interface**
- **Planned for TEP enablement**



IBM Tivoli OMEGAMON XE for Storage on z/OS

- **Monitors mainframe Storage**
 - Both real-time and historical
- **XE user interface, comes with the CUA UI component**
- **Wide breadth of mainframe storage information:**
 - **Space & Performance:**
 - storage or user groups - define your own
 - Tape / VTS
 - **CACHE**
 - **Channels (FICON)**
 - **Control Units**
 - **DFSMShsm (View HSM queues, control Datasets, etc.)**
 - **DFSMShsm/DFSMSdss online toolkit**
 - **SMS constructs**
 - **DS8000 support**
 - **See all logical volumes on a physical disk**
 - **Powerful applications view**
 - **Powerful dataset view and action capability**
- **Integration capabilities from TEP interface**
 - **Integration with other zStorage products**
 - **Integration with other OMEGAMON products**



IBM Tivoli Advanced Backup & Recovery for z/OS

- Three functional areas:
 - ABARs Manager
 - Provides enhanced management of ABARs under DFSMSHsm
 - Application level backup and recovery
 - Support for individual or environment data recovery
 - Logical backup methodology
 - Support for short- and long-term retention
 - Provide recovery requirements based on available hardware
 - Load balancing to insure optimal processing efficiency
 - Break large aggregates into smaller
 - Merge small aggregates into larger
 - Backlevel protection to insure older version does not replace more current version during recovery
 - Incremental processing capability

IBM Tivoli Advanced Backup & Recovery for z/OS

- Three functional areas (cont):
 - Critical Data Identification
 - Automatic identification of active environment data
 - Determination based on:
 - Actual usage
 - JCL reference (individual)
 - JCL reference (production schedule)
 - Provides critical data reports
 - Provides input to backup utility
 - Provides input to DFSMSHsm ABARs

IBM Tivoli Advanced Backup & Recovery for z/OS

- Three functional areas (cont):
 - Critical Backup Tracking/Identification
 - Automated identification of backup activity
 - Produce appropriate recovery routine
 - Produce various exception lists:
 - Multiple backups of same data
 - Missing/failed backup of critical data
 - > Based on manual list
 - > Based on designated system catalogs
 - > Based on Critical Data Identification

A Case Study

Case Study:

Financial Services Authority Challenge!

- **The FSA challenged a large UK insurance company:**
 - They had to demonstrate that all critical data, for all business applications, can be recovered in the event of a disaster at their production site, **within 9 months**.
 - Severe financial penalties if they failed to comply
- **What the company did:**
 - Set 1 person to identify all critical data for a single application suite, then list all the backups for this critical data
 - The application selected had been in existence for over 10 years
 - It was neither the smallest nor largest – just representative
 - The original development team had either dispersed or retired.
- **Took 6 weeks to produce a list of all the critical data sets (several hundred) and the names of their respective backup data sets**
 - How to know if the list is complete?
 - Where are the backups?
 - There are over 100 applications
 - ⇒ **600 man weeks – Not a Feasible Solution!**

How to meet the Deadline?

Insurance Company came to IBM Business Partner Mainstar for help:

- **Installed the BRM suite (now marketed by IBM as Tivoli Advanced Backup and Recovery)**
- **Evaluated with the representative application**
- **Produced the following results:**
 - Many critical data sets not identified:
 - Some data sets had never been backed up
 - Monthly and Yearly data sets a particular issue
 - “Toolset” datasets used in development not identified
 - Some critical data sets backed up but not moved off-site
- **Mainstar BRM Suite purchased**
- **Rolled out to all applications and met agreed timescale**
 - Under a service contract with Mainstar
- **FSA happy**
 - Met SOX and BASEL 2 compliance
 - No financial penalty imposed

Summary

- **IBM's System z Storage solution can help you meet compliance challenges**
 - Automate Data Identification, Backup and Recovery
 - Validate Recoverability
 - Ensure the health and operation of your Hierarchical Storage Management environment
 - Make sure that system-critical catalogs and VSAM files are backed up and can be forward-recovered in event of outages
 - Recover at either local or DR sites
 - Protect data integrity against human error, hardware/software problems, physical media (tape) deterioration as well as major disasters
 - PROVE you can do all of the above with a set of integrated tools from IBM
- **IBM Tivoli System z Storage Solution:**
 - Tivoli Advanced Backup & Recovery for z/OS 5698-A94 / S&S: 5698-S93
 - Tivoli Advanced Catalog Management for z/OS 5698-A50 / S&S: 5698-R02
 - Tivoli Advanced Audit for DFSMSHsm: 5698-B12 / S&S: 5698-R12
 - Tivoli Advanced Reporting for DFSMSHsm: 5698-A98 / S&S: 5698-S98
 - Tivoli OMEGAMON XE for Storage on z/OS 5698-A37 / S&S: 5608-S77

Q & A



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