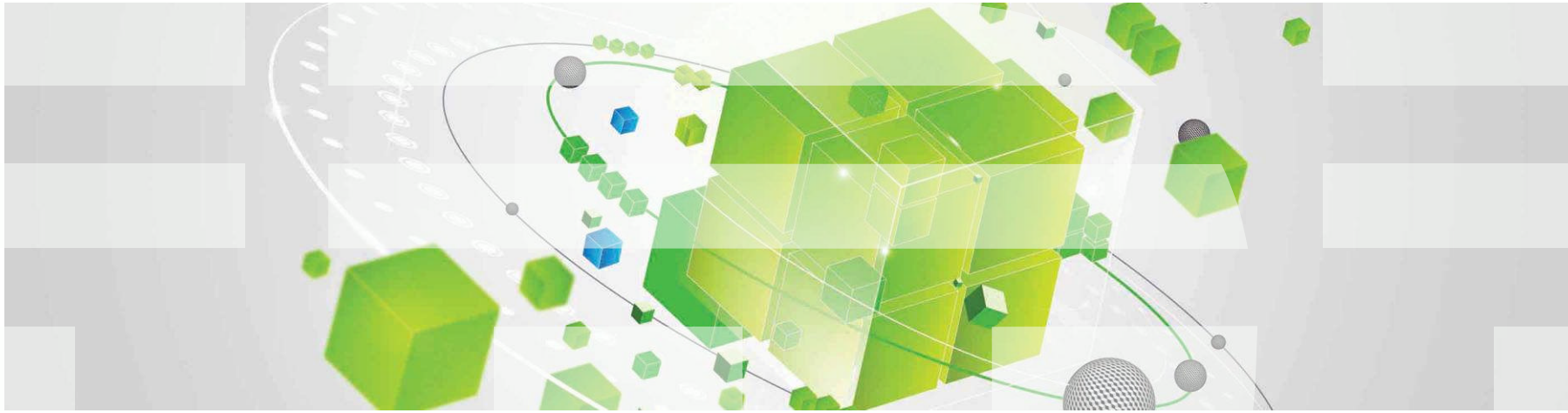
zEnterprise storage management for big data: Manage, audit, catalog and recover data cost-effectively

(January 23, 2014)



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IBM Tivoli System z Storage Management Reduce Costs, Increase Productivity & Fosters Collaboration

Key Takeaways

1. Tivoli z/OS Storage portfolio brings together a rich set of z/OS Storage management capabilities to address new evolving z/OS pressures that includes workload, hardware and software monitoring, HSM management, ICF Catalog management, Data Allocation to prevent costly outages and reduce CPU and storage hardware costs
2. Common interfaces, standard methods of operation, built-in subject matter expertise, consolidated information views, intelligent alerting, and automation of routine tasks all combine to make users more efficient
3. Tivoli Storage portfolio integrates to provide an array of powerful management components that break down organizational silos, share expertise and foster collaboration in solving problems and optimizing the environment .

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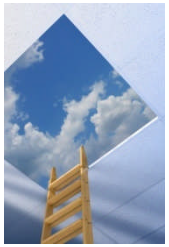
System z proven platform to seamlessly address challenges for Mobile, Cloud and Big Data workloads

Mobile

- Mobile Business workloads require high availability and performance
- Increased mobile business data access and complexity
- Drives Scale-up and Scale-out Enterprise challenges



Cloud

- Critical Business workloads running on Cloud
  - Require performance, security, high availability and disaster recovery
  - Require ability to quickly and easily provision and orchestrate

Big Data/Analytics

- Complex, non-traditional data require enterprise-wide data management
- Analytics requires fast, easy heterogeneous data access

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Optimize overall performance and availability of your z/OS Data and subsystem

- Supplying visibility to cloud, Big Data and mobile environments of your Systems of Record (System z) – solid storage mgmt is the foundation!
- Bringing forward an integrated System z storage view of your infrastructure
  - Managed based on key performance indicators (KPIs)
- Increasing control of total System z environment with single view of:
  - I/O Subsystem resources
  - Catalogs
  - Allocations
  - DFSMShsm
  - Workloads

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What are the Issues?

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What do you do for the following?

- z/OS storage – tracking workloads
- Dealing with space problems
- Maximizing resources in many areas
- DFSMShsm Problems
- Catalog Integrity
- Data Integrity
- Maximizing time and personnel
- Breaking down the Silos

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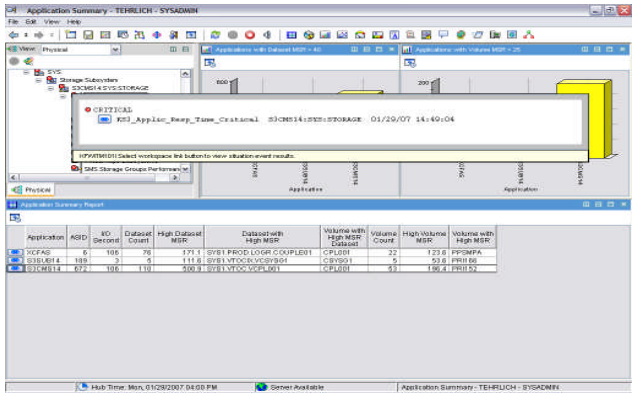
What do you do to track the z/OS Workloads?

- Do you even manage by workloads?
- New initiatives are driving more and different workloads to z

- If so …. What do you do?
  - Scan JCL?
  - Map DS to Volumes?
  - Look at volume response times?
  - What about shared DASD?



Easily define a z/OS address space and identify all data sets being accessed and associated information to determine the health of that ASID's I/Os

Workloads are what all the resources are there for to service

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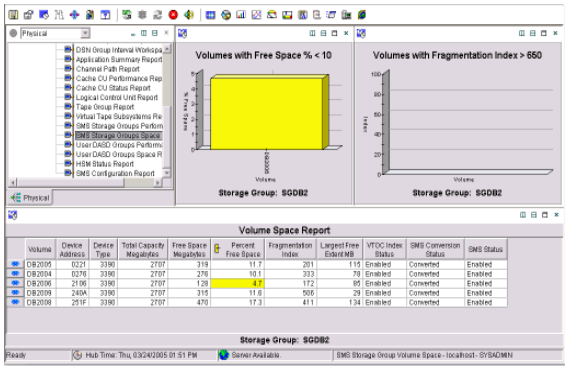
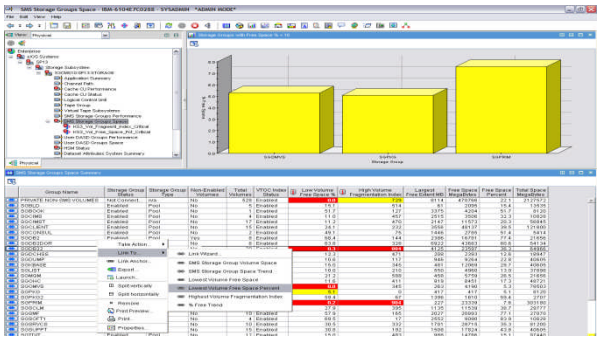
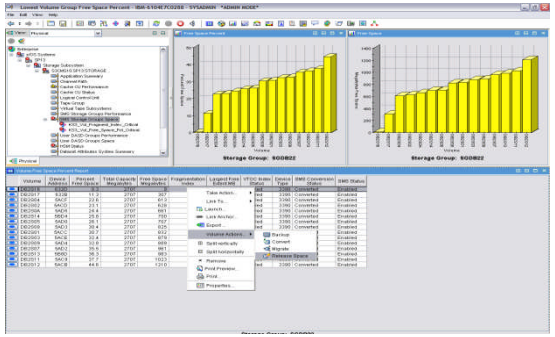
Avoid Costly Space Problems



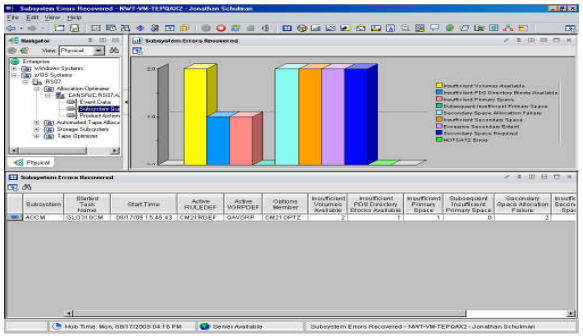
Set up alerts on various space conditions, make sure alerts provide enough warning before impacting applications or users



Quickly determine the constrained storage area



Identify root issues quickly and respond seamlessly, (automatically where possible) from single solution



Prevent X37 type of abends and NOTCAT2s

….Identify repeat offenders to correct underlying allocation issues

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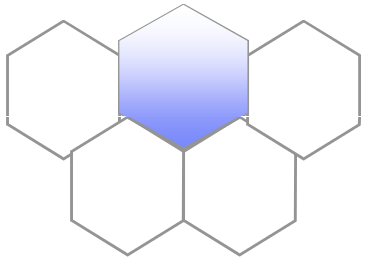
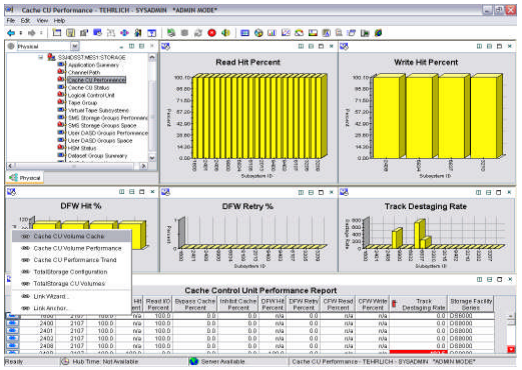
Get the most out of your resources

- Optimize your existing infrastructure…
  - Eliminate common problems
  - Maximize utilization
  - Minimize contention





- From from CU Cache, to volume and down to data set level, ensure correct resources are deployed to meet service level agreements (SLA)
- How can I tell what impact any one LPAR has on a shared device?
- How are your IBM / HDS / EMC devices performing?
- How can I make sure my Storage Groups can contain this weeks allocations?
- What are my Tape resource doing?
- Leverage storage tools

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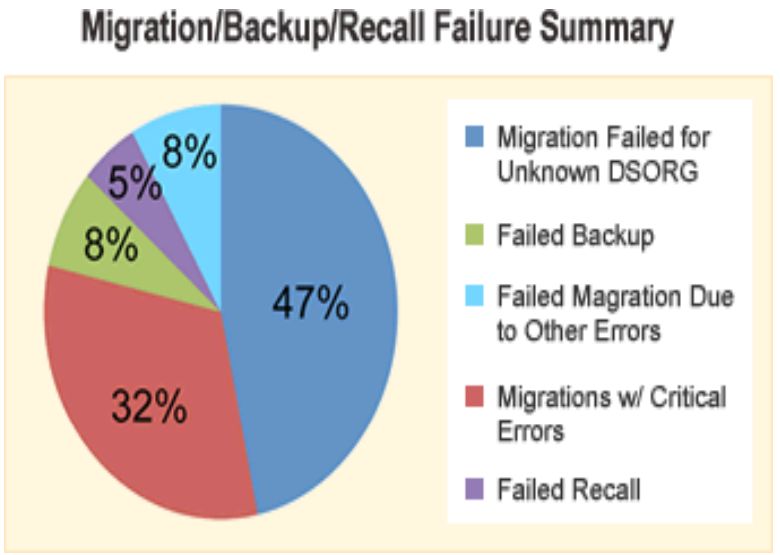
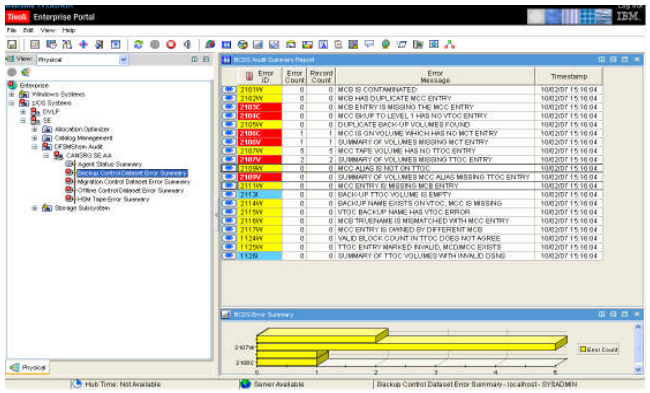
DFSMShsm Problems

- How did last nights HSM processing go?
- Are repetitive migration failures affecting performance daily?
- Are HSM migration policies in tune with the current business environment?
- How can I minimize HSM down time?
- I have discrepancies in my CDS's?
- I want to correct HSM tape errors?



Tivoli z/OS Storage solution can address these issues plus much more !



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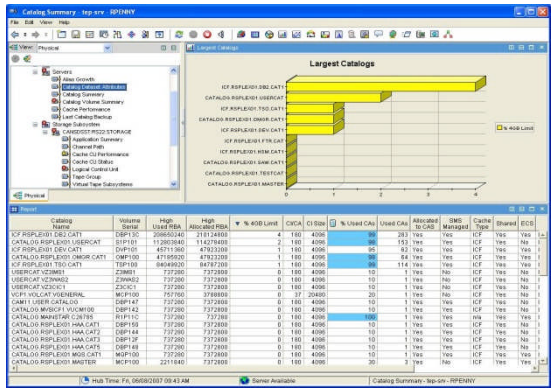
Catalog Integrity (Heart and Soul of I/O)

- Catalog Failures – rare but deadly
- Needed Catalog maintenance (merge, split, reorg, etc) can cause application downtime
- Recovery delays can be costly

- Common scenario – a few key catalogs affect the vast majority of applications
  - Improperly protected catalogs cause widespread outages
  - Backup & reliable, *fast* forward recovery are imperative
  - Health monitoring of catalog's complex structural integrity can prevent problems
  - Alerts identify problems *before* they cause outages
  - Catalog maintenance-while-open can reduce application downtime
  - What-if simulation previews the effects of actions



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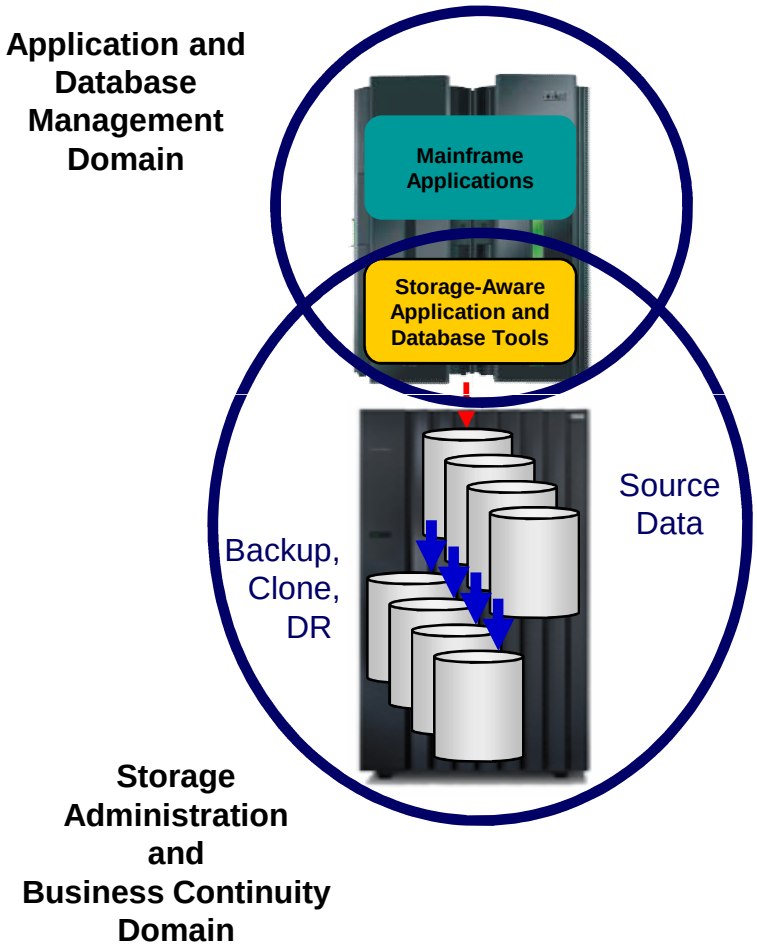
Backup and Recovery Management



- Data Integrity
  - Impact and cost of outages
  - Regulatory Compliance
  - Internal Audit Controls
  - Security
- Effective DR depends on several factors
  - Automatically and accurately identify what needs to be preserved
  - Backup/Copy only what needs to be preserved
  - Validate data capture and eliminate redundancy; Alert for data *NOT* backed up
  - Automate recovery processes to reduce required manual data manipulation
  - Faster recovery time reduces business impact
  - Storage-based fast-replication lowers cost
  - Mirrored environments still require point-in-time backups

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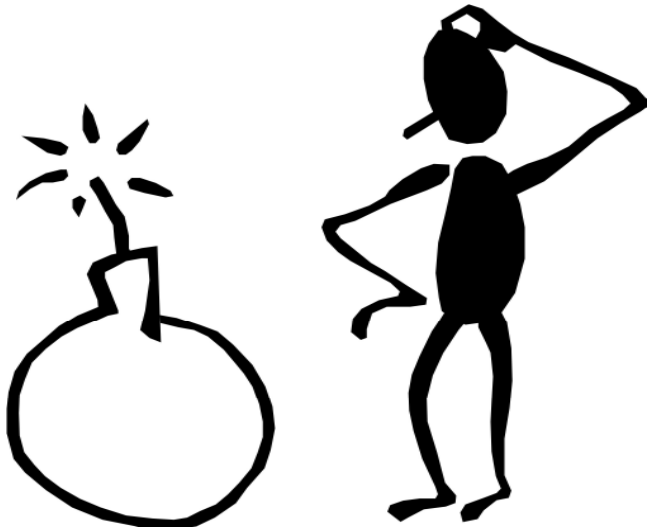
Maximizing time and personnel

So, what happens when there is a problem?

- Is there an end user complaint?
- Are you notified by operations?
- Shotgun approach to finding the problem?
- How many folks get involved?
- Is there a War room involved?
- How long does it take?



How do you identify complex problems?

- How do you pinpoint problems in your environment?
- Quickly determine the problem?
- Do you need more than just a simple threshold alert?
- How do you respond quickly to identified problems?

What can I do to maximize, efficiency and effectiveness?

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VISIBILITY **CONTROL** **AUTOMATION**

Maximizing time and personnel

- Manage by exception
- Common Tools and Processes
- Create collaboration through tool integration
- Efficiency in doing the day to day management of your z/OS Storage
  - Link actions to situations
  - Automate problem responses
  - Capture expert knowledge
  - Leverage toolkit function

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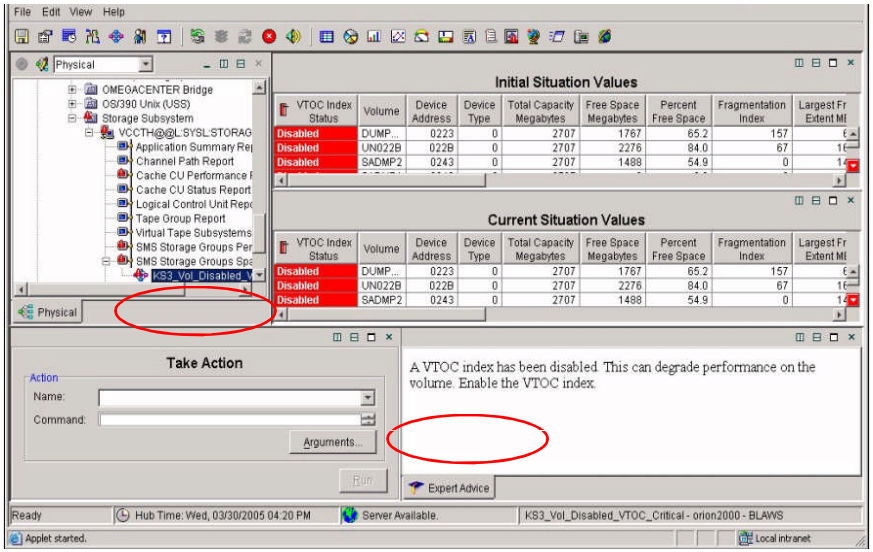
Focus Visibility and Control to Key Areas

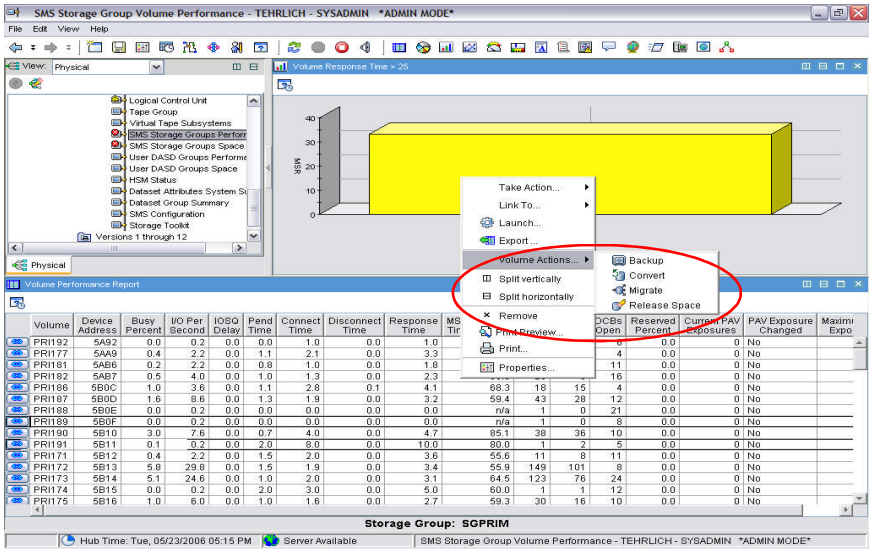


From monitoring HSM, DSS, IDCAMs, ICKDSF, RMM and JCL, use the Toolkit to generate **automated or manual batch job responses directly from your monitoring activity**

Manage by exception – monitor key applications and limit visible information to what is needed

When situations “fire” quickly see what caused the alert, and compare current status of the situation to the initial condition that caused this alert

Pre-programmed actions can respond automatically to situations – or - Take Action by issuing commands



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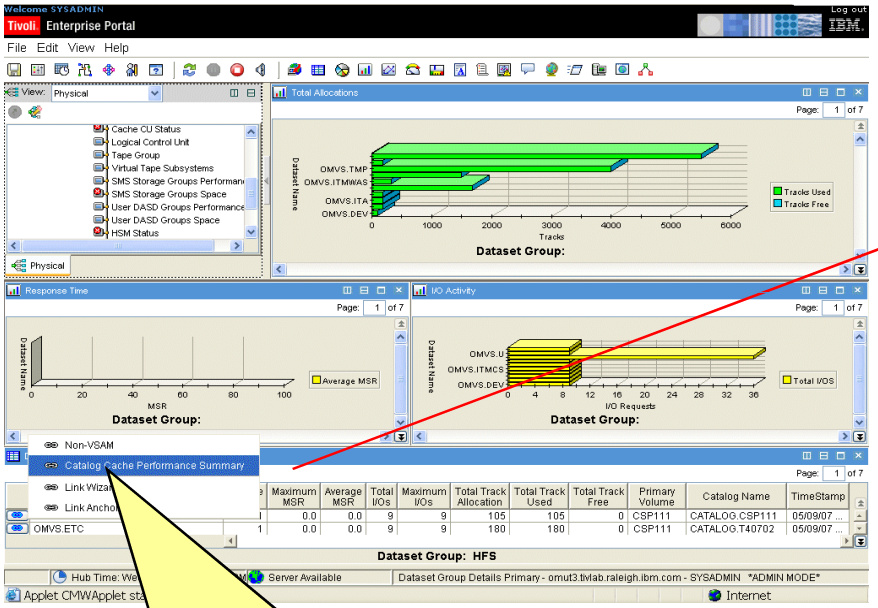
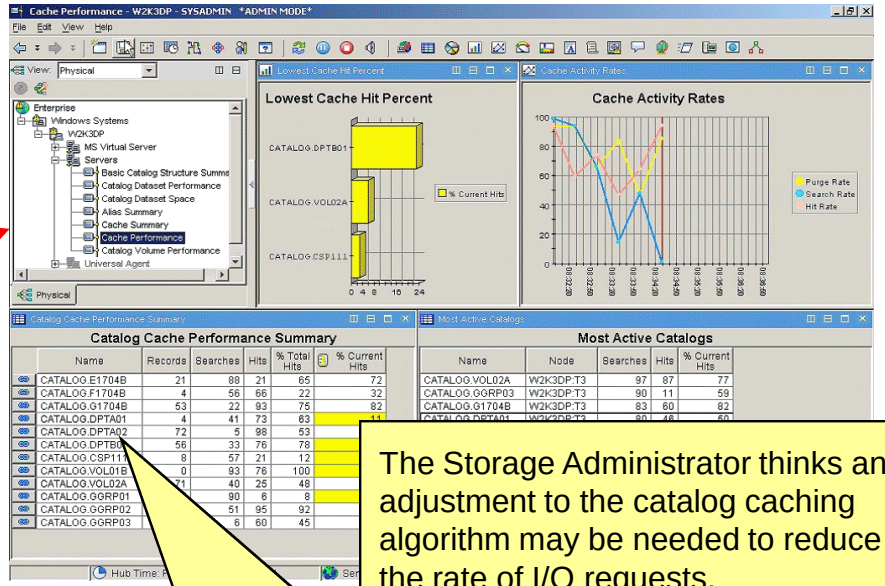
Improve Staff Efficiency with Tool and Process Integration

Seamless integration among tools provides synergy, makes collaboration easy in problem solving and other day-to-day administrative activities





The Storage Administrator links to the Advanced Catalog Management Catalog Cache Performance Summary workspace

The Storage Administrator thinks an adjustment to the catalog caching algorithm may be needed to reduce the rate of I/O requests.

The Advanced Catalog Management Catalog Cache Performance Summary workspace indicates that the cache hit ratio for the user catalog residing on the badly performing logical volume is very low.

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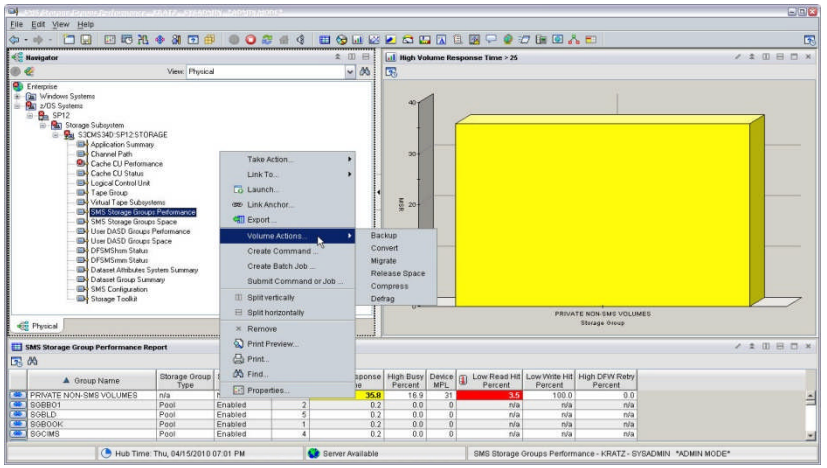
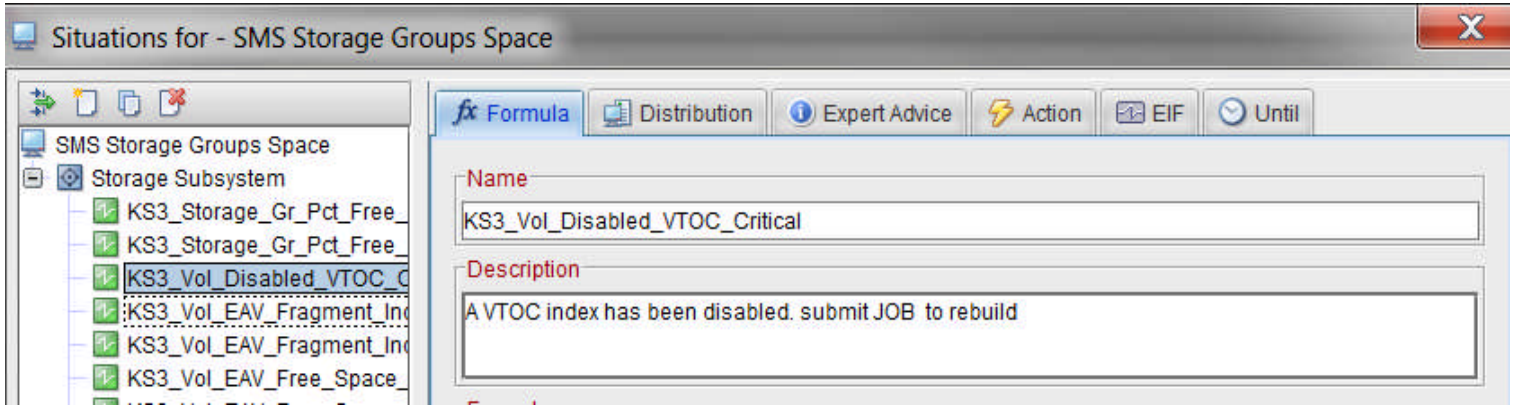
Leverage Tools to maximize efficiency (Toolkit function)

Toolkit commands

- SMS Storage Groups Performance
- SMS Storage Groups Space
- User DASD Groups Performance
- User DASD Groups Space
- Dataset Group Summary
- Dataset Attributes Group Summary



Situation-driven invocation of Storage Toolkit functions



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Breaking down the Silos

- Storage is a common denominator for workloads running on z/OS
- Is your environment managed by different teams that do not regularly work together?
- When there is a problem, do you have to meet or gather information from multiple people to identify the root cause (war room)?

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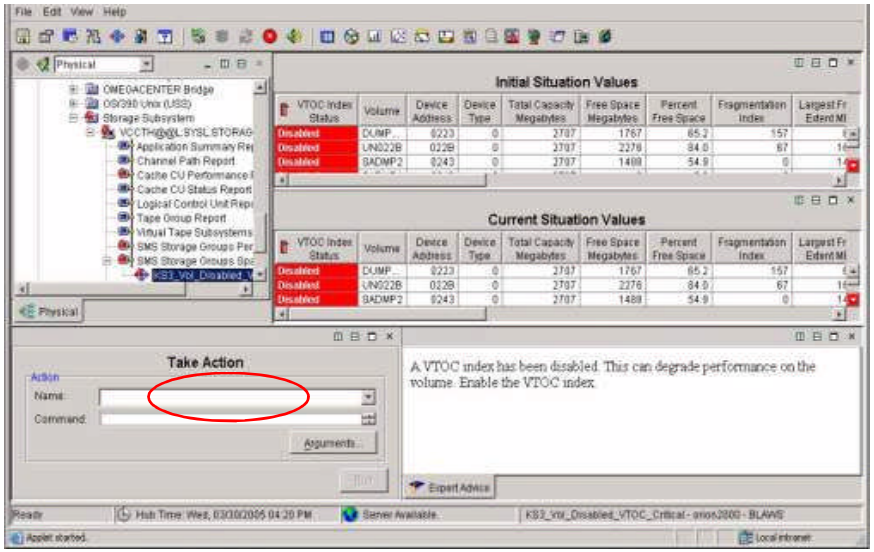
Fostering teamwork and efficiency – Break down the silos



Quickly identify the problem, exploit Expert Advice, and Take action to reduce meantime–to-resolution and knowledge transfer

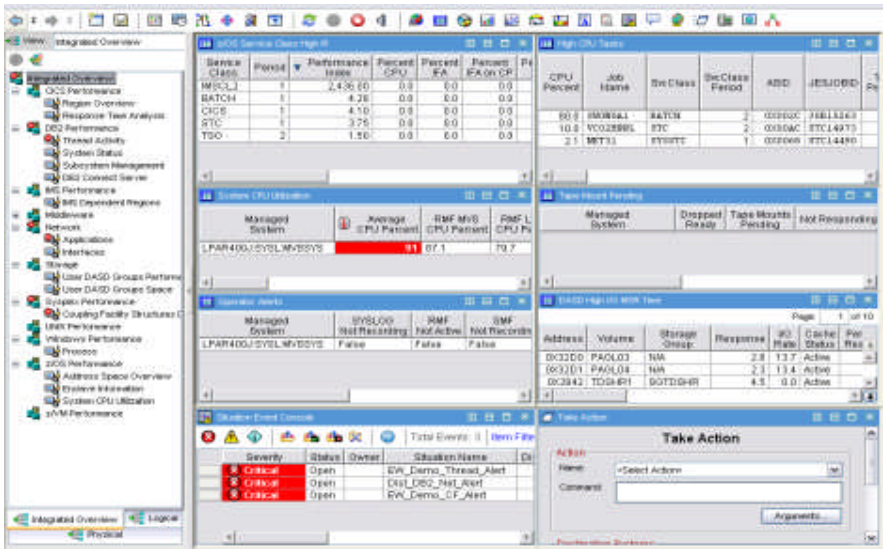
Separate teams using common tools and processes can collaborate easily on problem determination and resolution, breaking down the silos

Intelligent tooling and knowledge capture reduces 24x7 reliance on experienced “gurus”.

Storage is a common entity with any z/OS workload, regardless spanning CICS, DB2, IMS, middleware, networking and z/OS operating system information

Integration at this level:

- Increases ability to identify and address problems
- Fosters greater communication
- Prevents issues from impacting service levels
- Reduces down time and business impact from issues



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What is the Tivoli z/OS Storage Management solution?

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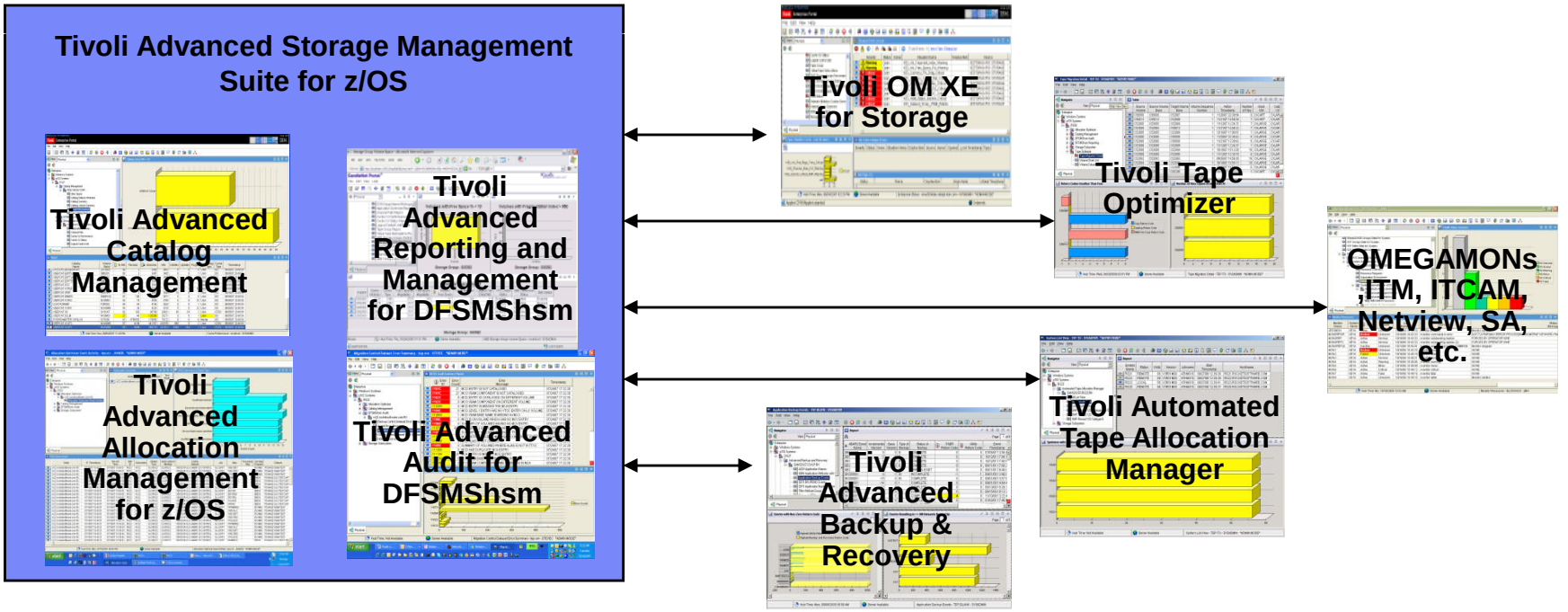
IBM Tivoli Integrated System z Storage Management

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
- Increased staff productivity and reduce learning curve

(OM Storage – Cornerstone)



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You can expect these key benefits:

- z/OS Storage resource and workload management – (Toolkit function)
- Detailed rpting, Audits, repairs, and ensures integrity of the HSM, including tape
- Executes HSM mgmt functions while allowing it to be available to applications
- Powerful, safe, reliable and easy ICF catalog and VSAM backup/fast forward recovery, reducing recovery time and protects complex structural integrity, alerts for potential errors
- Catalog merge-while-open capability reduces outages and helps consolidation
- Avoid costly availability and space conditions
- Avoid space abends and control allocation of data sets for availability and placement control
- Provides application backup and recovery for DR
- Proactive notification and alerts that can have automated responses
- Integration for better efficiency and effectiveness

Visibility

Control

Automation

Reduce Costs, Increase Productivity & Foster Collaboration

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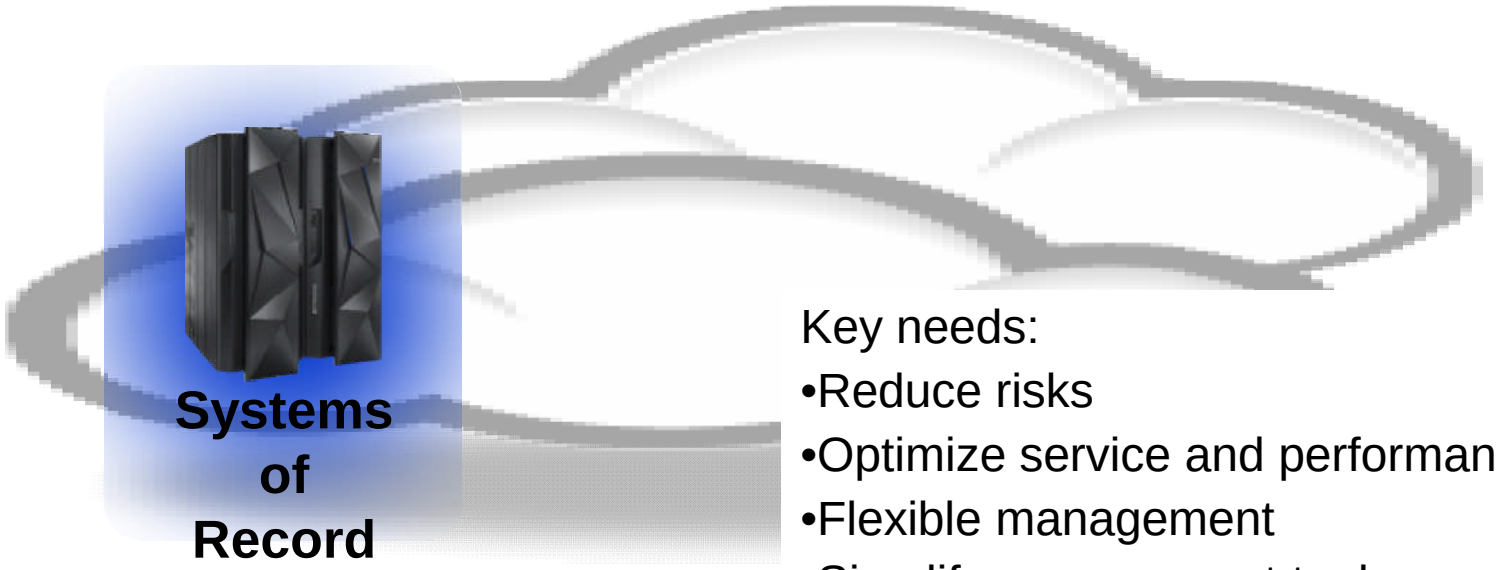
Effective, efficient management of z/OS critical to business success as new initiatives impact your environment



Key needs:

- Reduce risks
- Optimize service and performance
- Flexible management
- Simplify management tools portfolio
- Leverage integration across z/OS and Big Data and Cloud

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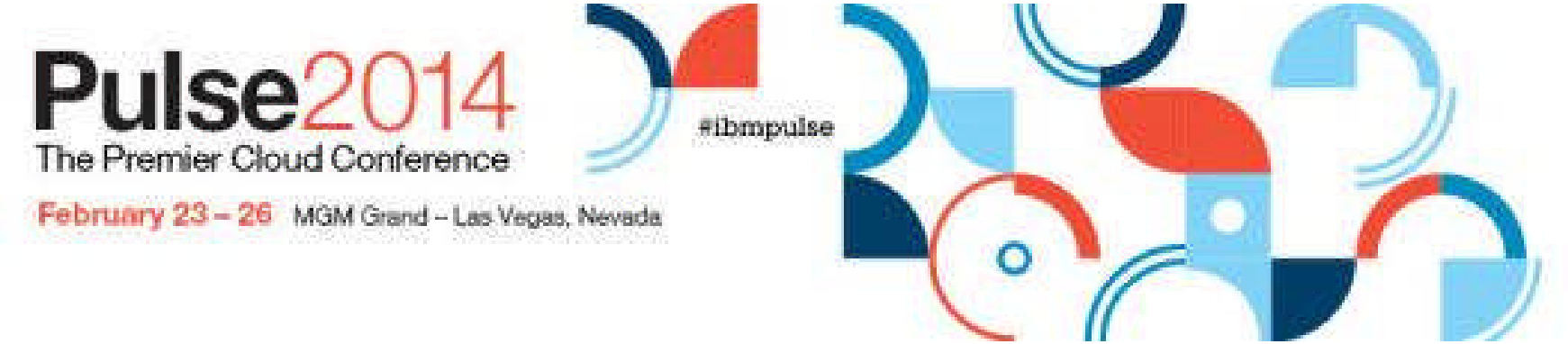
Learn more about cloud on System z at Pulse 2014



- System z track: Over 40 sessions
  - Customer, Analyst and Business Partner Sessions
- Meet the Experts
- Demos and Hands on Labs

http://www-01.ibm.com/software/os/systemz/pulse/index.html

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