

IBM Cloud & Smarter
Infrastructure
Visibility. Control. Automation.



IBM TSM User Forum

IBM Tivoli Storage Manager
Trends und Kundenreferenzen



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November 2013

TSM Produktneuheiten



New Announcements

- TSM Server V7.1
- TSM Client V7.1
- TSM Operations Center V7.1
- TSM for Virtual Environments V7.1
- TSM HSM for Windows
- TSM for Mail V7.1
- TSM for Databases V7.1
- FlashCopy Manager V4.1
- Fastback for Workstations V7.1

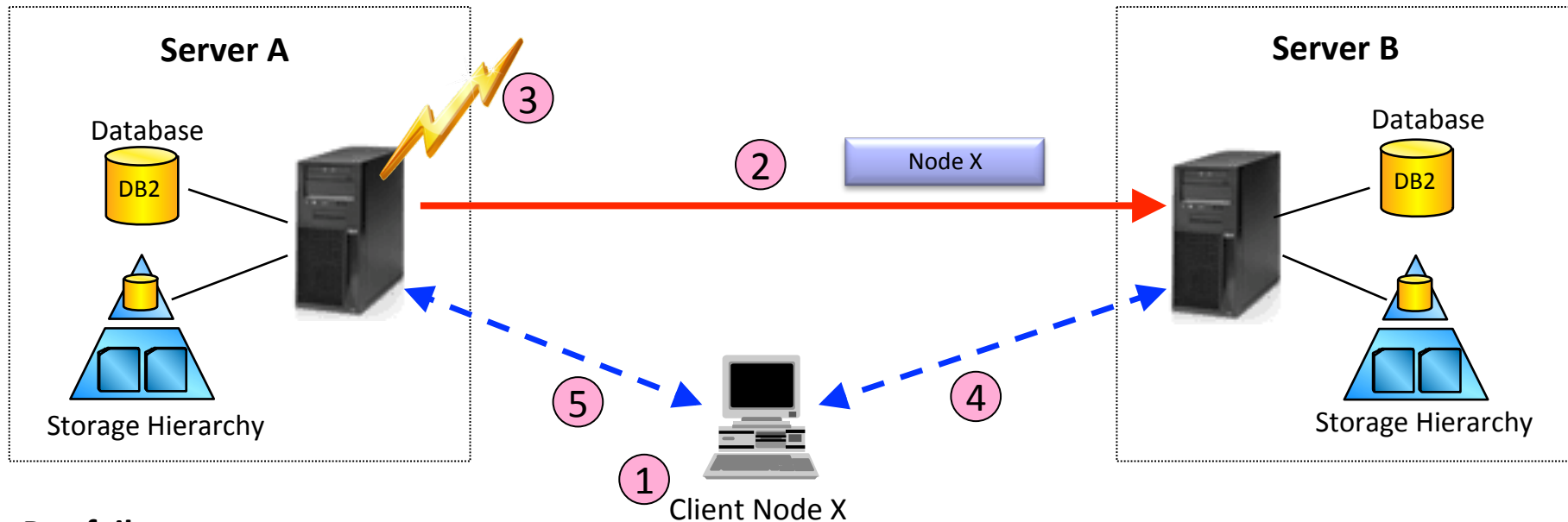
TSM Server / Client News



TSM Server V 7.1 News

- Increased scalability with up to 10x improvement for daily ingest
- Automated fail-over in node replication
- Upgrade to DB2 10.5
- IBM Install Manager packages for TSM server, and client
- Multi-threaded Storage Pool Migration
- Collocation by Filespace Group
- TSM server DB backup over Shared Memory instead of TCP/IP
- Support Windows Server 2012 in Core Server mode
- Improve Server Scalability for Large Objects
- Support Centera on Linux x86_64

Replication with Automated Failover



Pre-failure

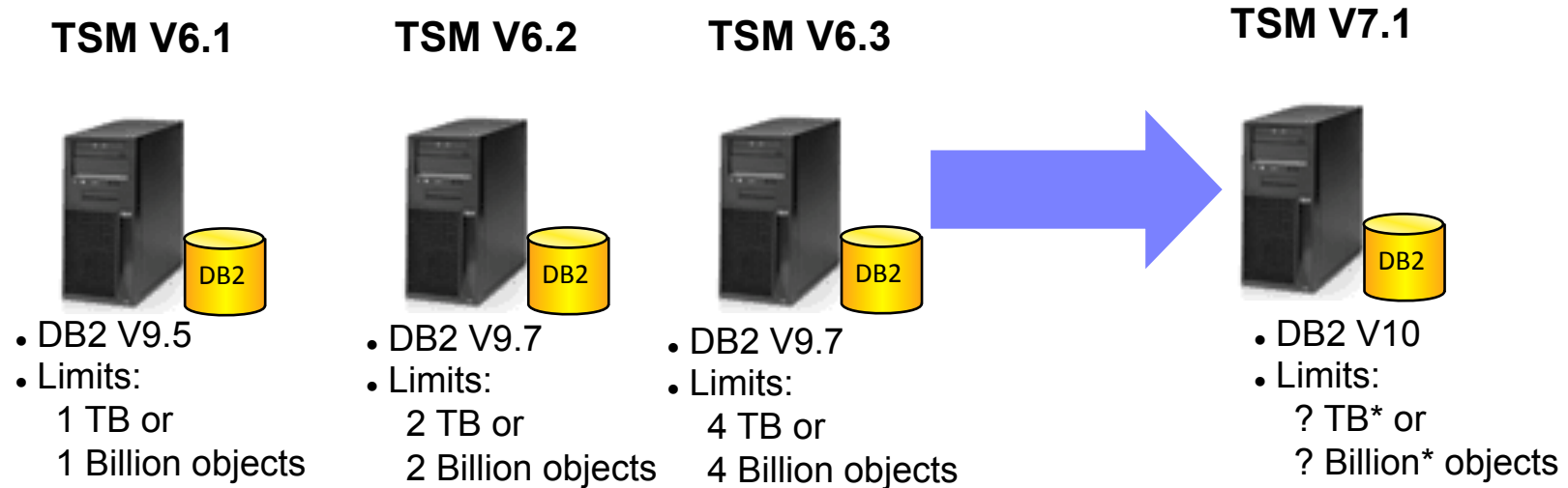
1. Server A sends failover server connection information to client, which stores information locally
2. Server A replicates node data and metadata to secondary server B

Failover

3. Server A becomes unavailable
4. Based on failover server connection information and policy, client is **automatically** redirected to

■ Customer requiring “hot” stand-by environments for their production servers (including DR) can use this capability to provide hot stand-by servers and satisfy these requirements

Uplift to DB2 V10.5 & Scale

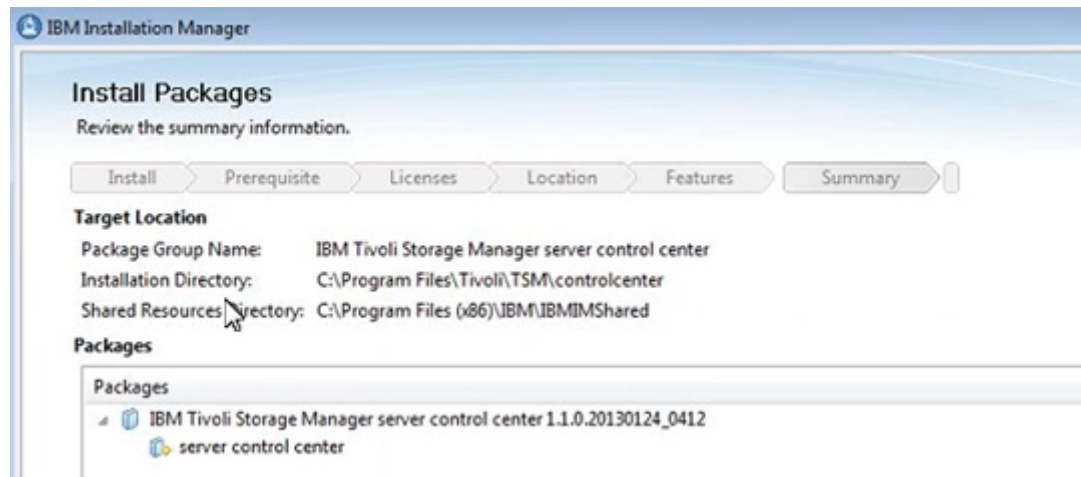


Notes:

- 10.5 can't restore Online backups taken by DB2 9.7 - so after an upgrade, bac up db asap
- DB2 10.5 does not support Solaris 11, so TSM server will not be able to support it either
- DB2 10.5 drops support for RHEL 5, so TSM server will also have to drop support.
- DB2 10.5 does not support upgrade from a 9.5 instance. TSM 6.1 users must upgrade to 6.2 or 6.3 before 7.1.

Install Changes

- TSM Server and Clients will utilize IBM Installation Manager
- All server components will fail installations that do not meet prerequisite checks
 - Will fail if incorrect version of Operating System
 - Will check for memory, disk space, etc.



Multi-Threaded Storage Pool Migration

- Improve the server's efficiency when running migration from stgpools with DISK devclass for nodes with a large number of filesystems.
 - Migration from sequential storage pools is volume based, not node based
 - Applies to migration to pools that do not have collocation specified, or that have collocation by filesystem
- Previously, multi-process migration from DISK was limited to a single node being processed on a given thread
 - No parallelism for nodes with lots of filesystems, because the work was not spread/shared to the other threads
- Now, migration workloads from DISK will be better shared & optimized across the threads assigned to the process
 - Allows a node with many filesystems to achieve parallelism by having the work for node1/fs1/archive data assigned to one thread, while node1/fs2/backup data is assigned to another and so on...
 - Nodes with just a few very large filesystems achieve somewhat better parallelism as work is spread across more than a single thread
 - Does NOT help when a client node has a single "monster" filesystem

Filespace Collocation

- Allow for collocation by **group of filesystems**
 - Reduce amount of time needed to restore from tape
- In order of increasing granularity, collocation options are
 - (1) No collocation
 - (2) Collocation by group of nodes
 - (3) Collocation of a single node
 - (4) Collocation by group of filesystems (multiple VMs per tape)
 - (5) Collocation by a single file space (one VM per tape)

```

tsm: TSMSRU>
tsm: TSMSRU>q files uc1_dc1
Node Name      Filespace Name      FSID      Platform      Filespace Type      Is Files-pace Unicode?      Capacity      Pct Util
-----
UC1_DC1        \UMFULL-TS-MUM1      6          WinNT          API:TSMUM            No                          0 KB          0.0
UC1_DC1        \UMFULL-TS-MOPC      7          WinNT          API:TSMUM            No                          0 KB          0.0
UC1_DC1        \UMFULL-TS-MDM2      8          WinNT          API:TSMUM            No                          0 KB          0.0
UC1_DC1        \UMFULL-TS-MUM2      9          WinNT          API:TSMUM            No                          0 KB          0.0
UC1_DC1        \UMFULL-TS-MDM1     10         WinNT          API:TSMUM            No                          0 KB          0.0
UC1_DC1        \UMFULL-vC-enter     11         WinNT          API:TSMUM            No                          0 KB          0.0
tsm: TSMSRU>
    
```

TSM 7.1 Client – Automated System Recovery for UEFI or EFI

Features

- Recovery from a catastrophic system or hardware failure
- Used when all other repair options have been exhausted
- Recovers the boot & system drives plus system state
- Restores system to a new disk drive using:
 - OS CD
 - TSMCLI CD
 - TSMCLI configuration diskette from TSM or backup sets
- ASR, System Volume & System State backed up to TSM server
- TSM 7.1 base feature on Windows 7 & 2008
- Backs up directly to TSM server via schedule or command line
- Works for both UEFI and BIOS boot architectures
 - The Unified EFI (UEFI) Specification (previously known as the EFI Specification) defines an interface between an operating system and platform firmware.



TSM Operations Center News



Operations Center Dashboard

Tivoli Storage Manager | Overviews | Clients | Services | Servers | Storage Pools | Storage Devices | hitler | IBM

TSM Clients 148

50% At risk 74

Applications 21

Virtual Machines 1

100% 1

Systems 126

58% 73

Alerts 8

Services

Backup & Restore

- Archive & Retrieve
- Migrate & Recall

Policies

Network Traffic

	Previous	Current	Change
	0 bytes	0 bytes	—
	2.9 KB	2.9 KB	0%
	45.5 MB	45.5 MB	0%
Total	46 MB	46 MB	0%

TSM Servers 2

All available

Inventory

Databases	✓	Normal
Active logs	✓	Normal
Archive logs	✓	Normal

Activity

- Processes: 0
- Sessions: 0

Storage Pools

Primary Storage

On Disk: 142 GB free out of 159 GB

Pools	✗	1 Critical
Devices	✓	Normal

On Tape: 0 bytes free out of 0 bytes

Pools	✓	Normal
Devices	✓	Normal

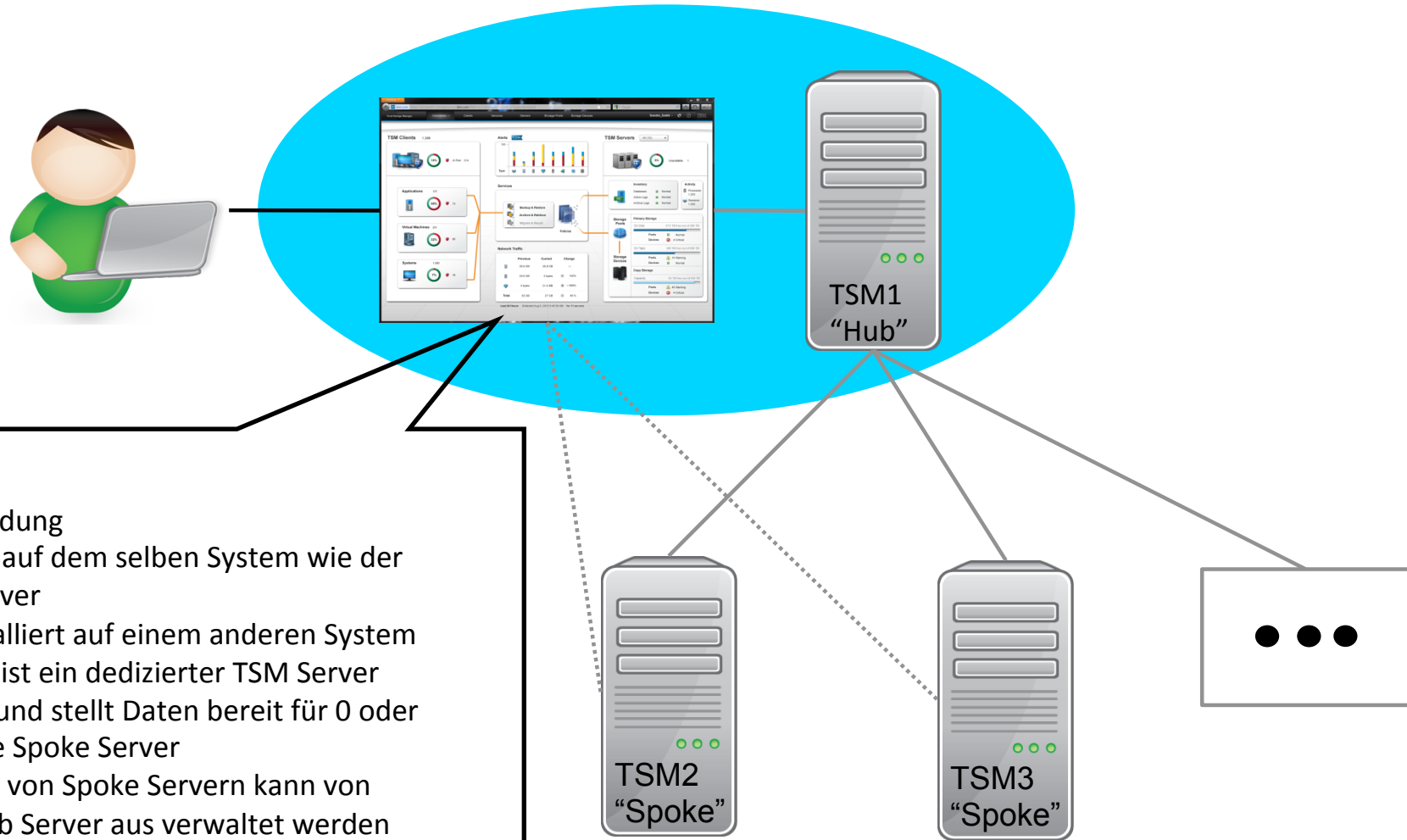
Copy Storage

Capacity: 0 bytes free out of 3 GB

Pools	✗	1 Critical
Devices	✓	Normal

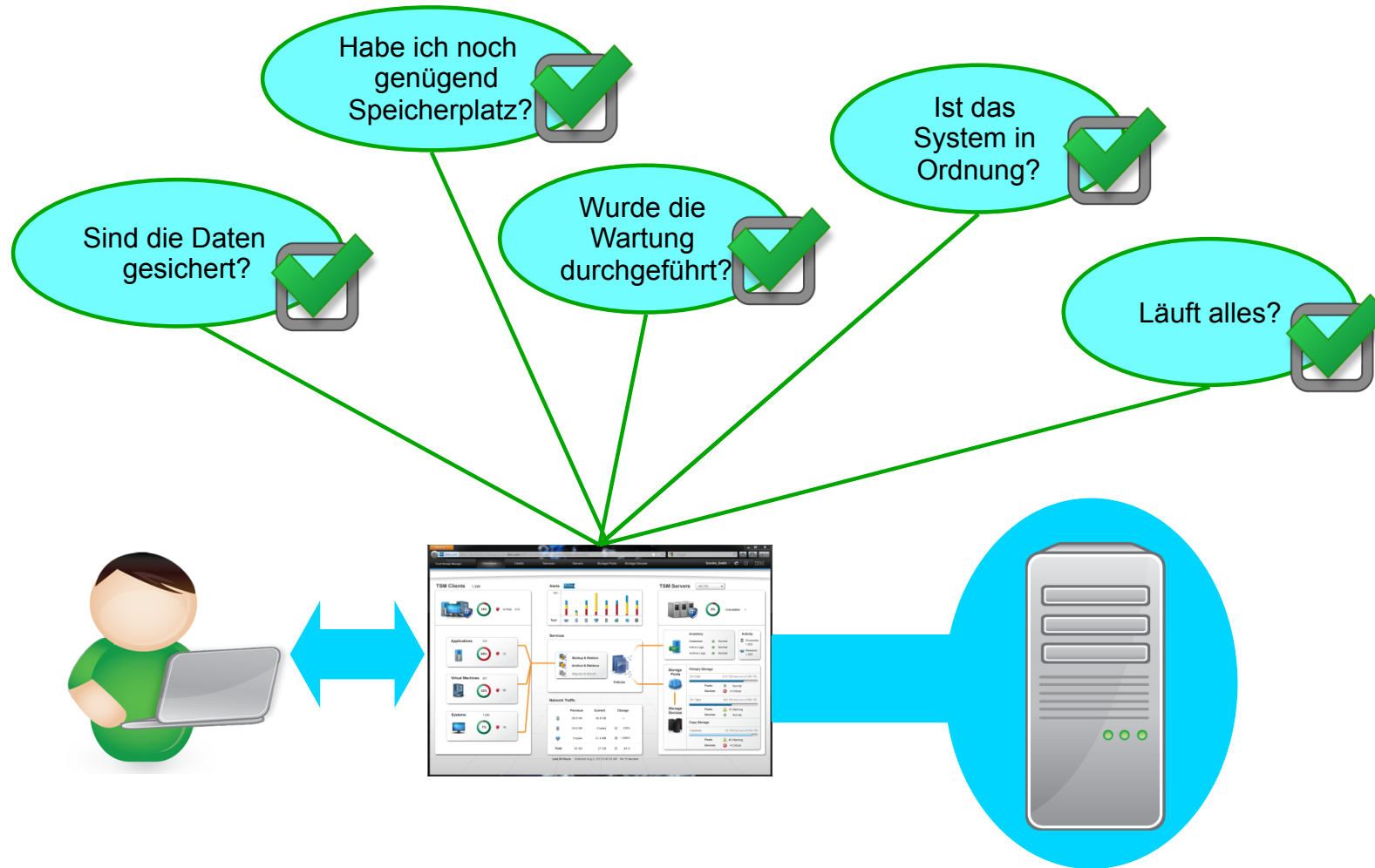
Collected Oct 29, 2013, 09:46:53

Was ist das TSM Operations Center? ...



Webanwendung
Installiert auf dem selben System wie der TSM Server
Oder installiert auf einem anderen System
Hub Server ist ein dedizierter TSM Server
Sammelt und stellt Daten bereit für 0 oder mehrere Spoke Server
Eine Anzahl von Spoke Servern kann von einem Hub Server aus verwaltet werden

Administrative Ziele für die Benutzung des Operations Center



A web-application that uses:

- A visual dialogue with administrators delivering decision point information necessary for successful use of the product
- An integrated command-line interface to bridge from visibility to control
- **Hub and Spoke model to monitor multiple TSM servers**
- IBM Installation Manager
- **TSM 6.3.4 Servers** with updates and support for:
 - Collecting and providing appropriate status and monitoring data for the UI
 - Monitoring and lifecycle management of alerts
 - Notifies the Operations Center as alerts occur
 - Optional capability to email alerts directly to designated administrators for immediate untethered notification
 - **A data collection engine to manage the consolidation and “singular” view of multiple TSM server for a given operations center**

TSM 7.1 Operations Center

- Functions and views based on Admin authority
- Immediate backup of “at risk” clients, TSM DB , Logs and Storage Pools
- Editable Client and Server properties
- Activity log viewer
- Create TSM client wizard
- Server processes and session viewer and cancel button

Server Übersicht



Abgeschlossene Server Tasks mit Activity Log Einträgen

The screenshot shows the Tivoli Storage Manager interface for a server named 'OPC'. A warning icon is visible. The main area displays a table of tasks with columns for Start Time, End Time, Duration, Name, ID, Type, and Success status. The task 'Database Backup' (ID 22) is selected. Below the table, an 'Activity Log' window is open, showing detailed messages for the selected task, including volume opening, stream processing, and successful completion.

Start Time	End Time	Duration	Name	ID	Type	Success...
Oct 1, 2013, 10:35:49 AM	Oct 1, 2013, 10:39:23 AM	3 minutes	Database Backup	19	Process	✓
Oct 1, 2013, 12:00:28 PM	Oct 1, 2013, 12:05:56 PM	5 minutes	Expiration	20	Process	✓
Oct 1, 2013, 2:23:28 PM	Oct 1, 2013, 2:23:34 PM	6 seconds	TYLER_CLEMENTS_FRAZIER	15207	Client	✓
Oct 1, 2013, 9:13:58 PM	Oct 1, 2013, 9:14:01 PM	3 seconds	Expiration	21	Process	✓
Oct 2, 2013, 2:03:38 AM	Oct 2, 2013, 2:06:48 AM	3 minutes	Database Backup	22	Process	✓

Activity Log

```

Oct 2, 2013, 2:03:39 AM ANR0513I Process 22 opened output volume C:\TSM_DATA\DBFILECLASS\80697419.DBV. (PROCESS: 22)
Oct 2, 2013, 2:03:39 AM ANR1360I Output volume C:\TSM_DATA\DBFILECLASS\80697419.DBV opened (sequence number 1) (PROCESS: 22)
Oct 2, 2013, 2:03:39 AM ANR4626I Database backup will use 1 streams for processing with the number originally requested (PROCESS: 22)
Oct 2, 2013, 2:05:48 AM ANR4550I Full database backup (process 22) completed. Total bytes backed up: 277,728,000 (PROCESS: 22)
Oct 2, 2013, 2:06:48 AM ANR0985I Process 22 for Database Backup running in the BACKGROUND. SUCCESS at 02:06:48. (PROCESS: 22)
    
```

Activity Log Einträge bezogen auf die ausgewählte Task

Clients

The screenshot shows the TSM Clients management interface. At the top, there are navigation tabs for Overview, Clients, Services, Servers, Storage Pools, and Storage Devices. The main header displays 'TSM Clients 134' and several summary cards for Alerts (0), Applications (17), Virtual Machines (0), and Systems (117). A toolbar below the header includes buttons for '+ Client', 'Quick Look', 'Details', 'Back Up', and 'Set At Risk'. A table lists individual clients with columns for Name, Risk, Replication, Peer Server, VM Type, Locked, and Last Access. Three callout boxes are present: one pointing to the '+ Client' button, one pointing to the 'Back Up' button, and one pointing to the 'Set At Risk' button.

Type	Name	Risk	Replication	Peer Server	VM Type	Locked	Last Access
	AILEEN_JACOBSON		Send	TSM_DEMO_SPOKE			12 hours
	ALEJANDRA_BERG		Receive	EP1CLOUD151			1 week
	ALEX_FLORES						5 days
	ALVIN_BLACKWELL						3 hours
	AM...						3 hours
	AN...						3 hours
	AN...						3 hours
	AP...						3 hours
	AR...						3 hours
	BARBARA_RAMIREZ_VANG	—					3 hours
	BETTY_TAYLOR	—					3 hours
	BEULAH_BAIRD	—					2 hours
	BRIAN ESTRADA	—					2 hours
	CARLA_PRICE	—					2 hours
	CARMELA_LYNN	—					2 hours
	CARRIE_MONROE	—					2 hours

Operations Center Roadmap

Visibility: Status, Monitoring, Alarmierung

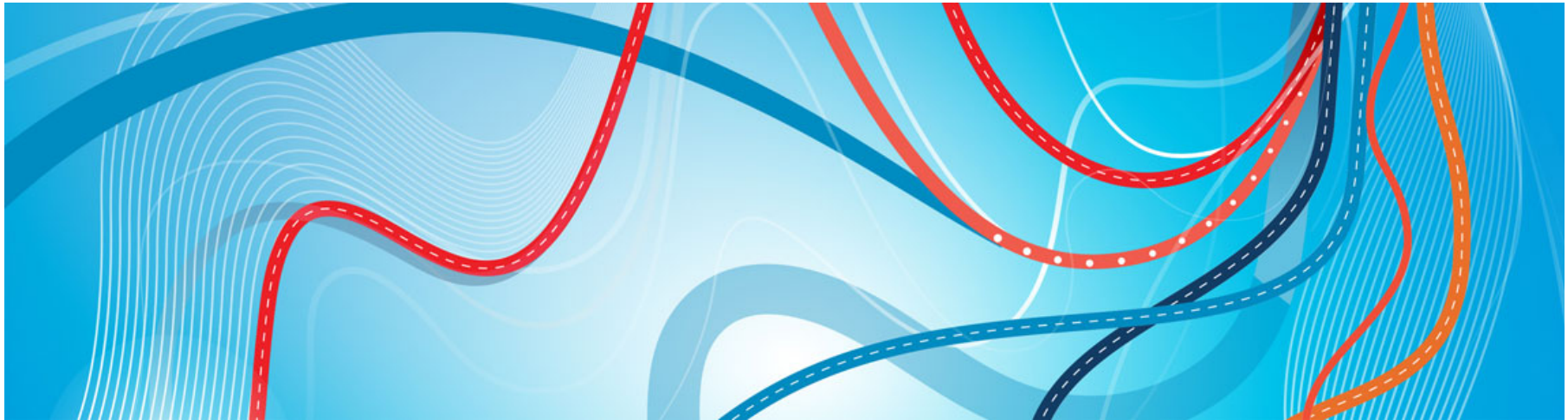
Control: Aktionen Workflows, Konfiguration, Einstellungen

Automation: Komplexe Aufgaben, Assistenten, Ratgeber



Möglicher Rollout				
	2H 2013	1H 2014	2H 2014	1H 2015
Visibility	▪ Server Aktivität	▪ Policy Details ▪ Schedules	▪ Storage Pools ▪ Devices	▪ API Perf. Monitor ▪ Node Replication
Control	▪ Anlegen Nodes ▪ Client Backup ▪ Server Einstell.	▪ Policy ▪ Schedules	▪ Storage Pools ▪ Devices ▪ Admins / Berecht.	▪ Client Verteilung ▪ Node Replication
Automation				TBD

TSM for ... News



TSM for Virtual Environments Overview

Centrally managed data protection for VMware avoids deployment of agent within each VM guest

Fast and efficient incremental block-level backups utilizing VMware's vStorage APIs for Data Protection and Changed Block Tracking (incremental forever and content aware backups)

Automatic discovery and backup of newly created virtual machines

Capability to **offload backup workload** to one or more vStorage backup servers

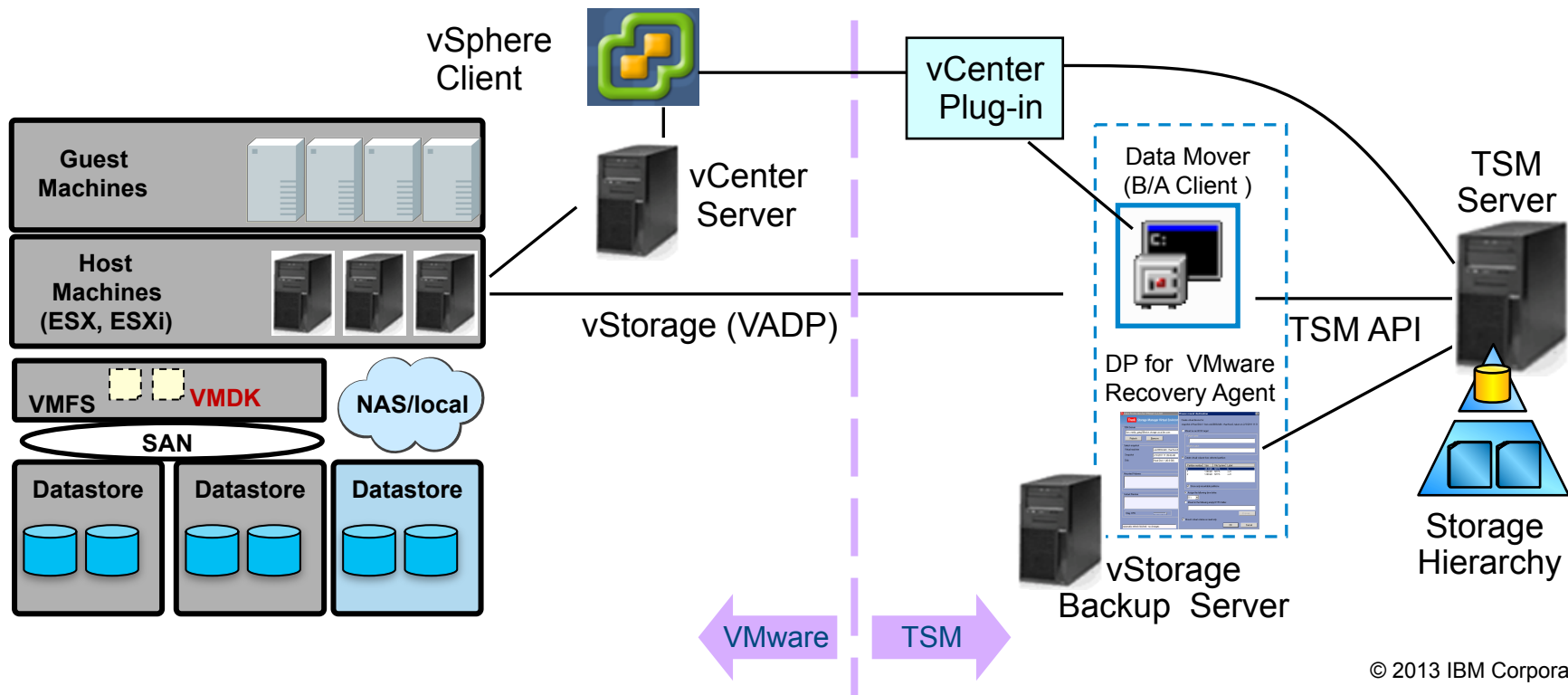
Non-disruptive snapshot at the virtual machine image level to help minimize disruptions to virtual guests

Multiple recovery options from single-source image-level backup

- Granular file-level recoveries
- Near-instant volume recoveries (non-OS volumes)
- Full virtual machine recoveries

Integrated with TSM capabilities

- Data reduction (compression and deduplication) to reduce network and storage capacity requirements
- TSM server scalability and storage pool management
- LAN or SAN data paths to TSM server
- Common approach for physical and virtual environment



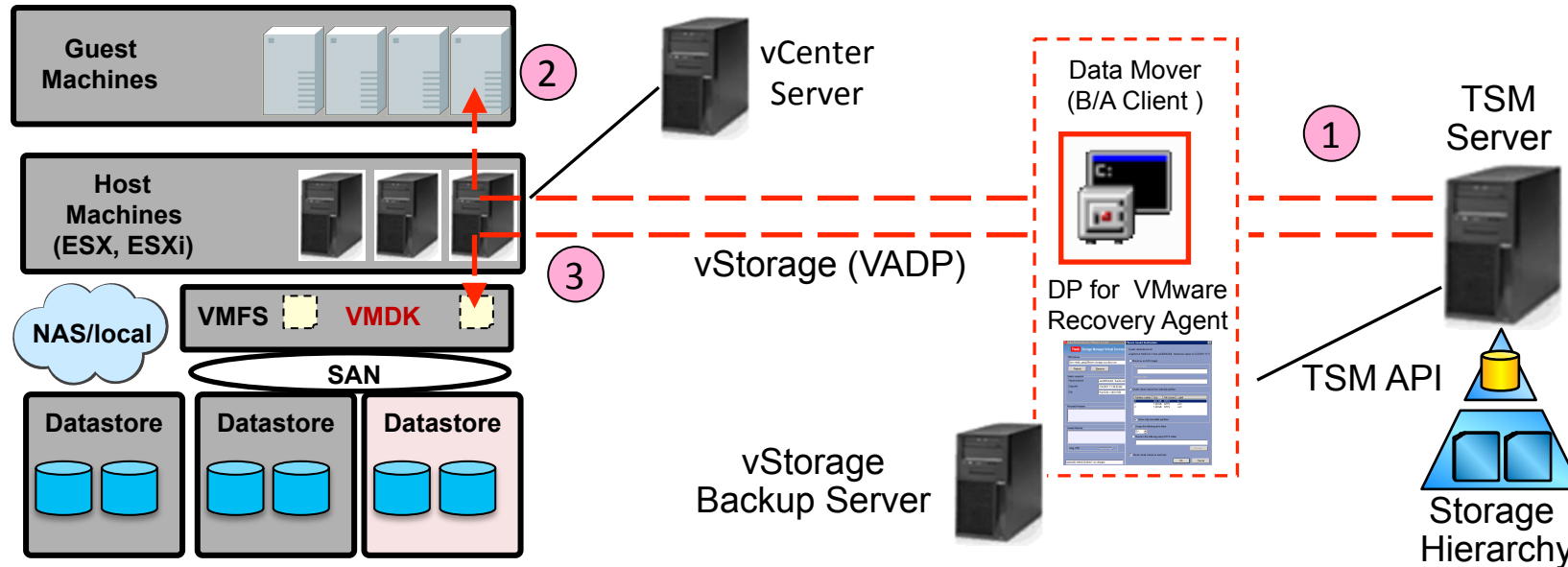
IBM Products providing Data Protection for Virtual Environments

- TSM B/A Client - without TSM for VE
 - Provides basic support to backup/restore vSphere VMs
 - **Does not include the Recovery Agent**
 - **Does not allow for CBT/Incremental Backups/Incremental Forever**
 - Also supports basic protection of Hyper-V
 - Licensed as TSM or TSM Extended Edition
 - No additional charge
- TSM for VE
 - On top of TSM B/A Client
 - Adds Recovery Agent
 - Adds a license file for enabling CBT
 - Adds support for CBT/Incremental/Incremental Forever for vSphere
 - Requires additional TSM for VE license
- FCM for VE
 - Can be on top of TSM for VE or Stand Alone (without TSM support)
 - Adds hardware snapshot support for vSphere
 - Requires FCM license

TSM for Virtual Environments V 7.1

- Full VM instant restore
- Stand-alone DP for VMware user interface
- Filespace level collocation groups to support VE
- vCloud Director Tenant vApp support
- DP for Exchange/FCM for Windows IMR support for DP for VMware mounted snapshots
- Backup/Recovery of VMs w/ Microsoft AD
- DB-level recovery from VMs hosting Microsoft SQL
- Report on “What Failed Last Night”

DP for VMware: Full VM Instant Access & Recovery

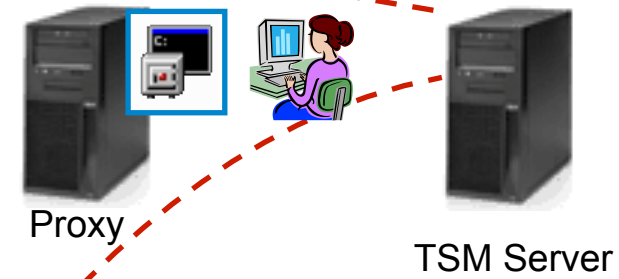
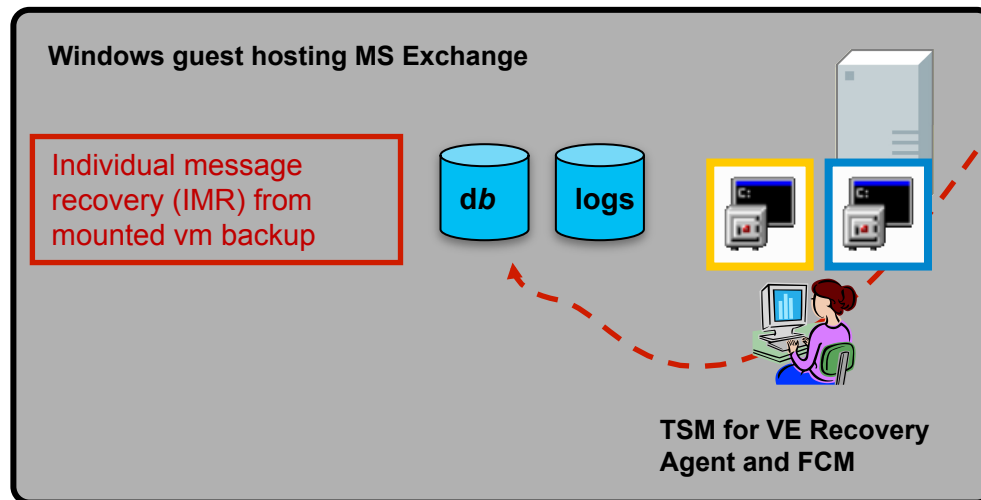
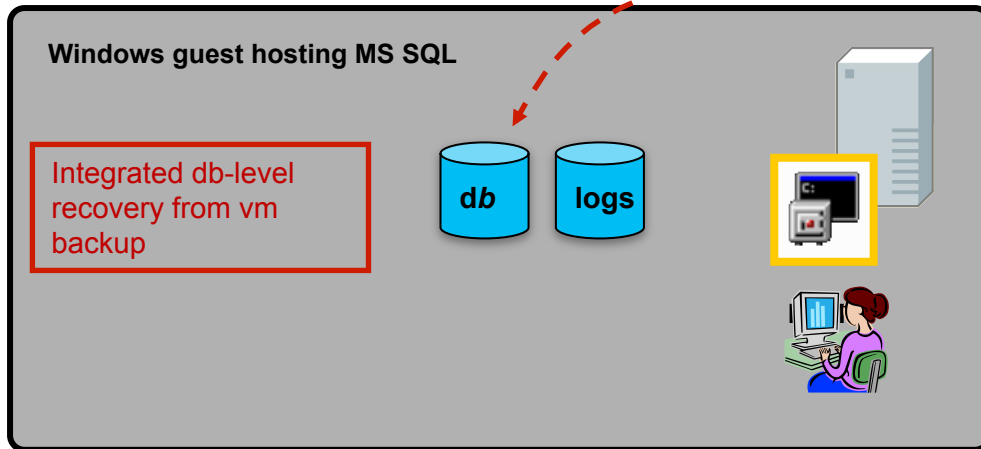


Previous versions: Instant Restore for non-OS volumes, when running inside a VM guest

TSM for 7.1 adds Instant Restore and verification for the entire VM

- **Full VM Instant recovery** - Recover of an entire VM – Includes the ability to use / work with the virtual machine while it's recovering
- **Verification** - Mount and verify a VM from previously taken backup
- TSM server acts as virtual datastore to allow access to a VM stored in TSM hierarchy
- Functions are dependent on vMotion and TSM for VE mount iSCSI performance

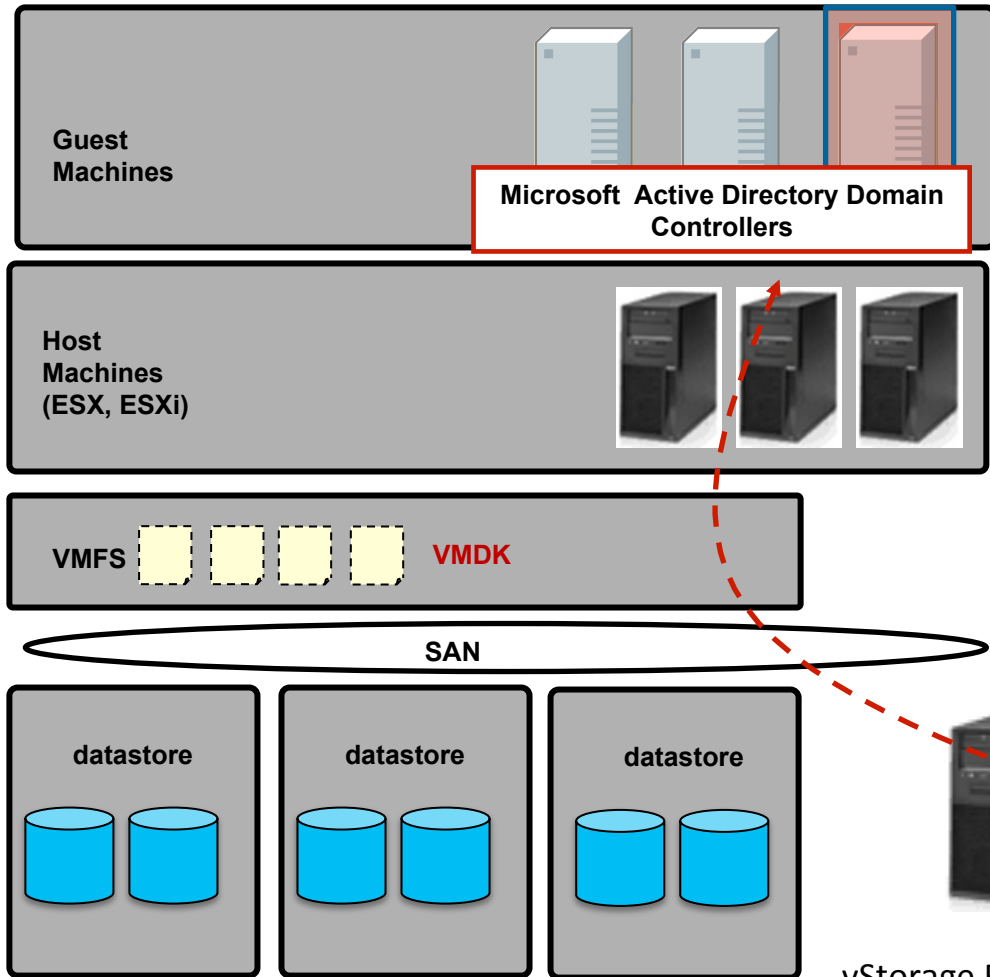
DP for Exchange/DP for MS SQL Server: Enhancements for MS SQL Server and MS Exchange



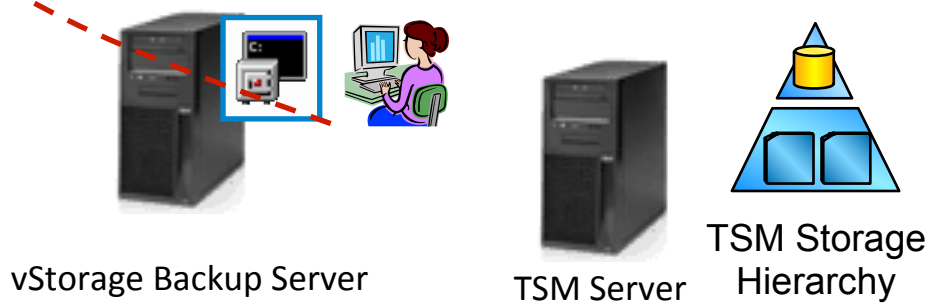
MS SQL Server:
One step process, all integrated

MS Exchange:
Two step process
1. Recovery Agent mounts volumes
2. DP for Exchange reads data

DP for VMware: Recovery of VM Hosting Active Directory



- Co-ordinate vm recovery with Active Directory synchronization to recover a vm hosting active directory:**
1. Recover full vm from TSM server
 2. Before making vm available to user, modify Windows Registry to indicate machine was restored from backup
 3. When vm is booted, active directory synchronization will realize that the machine has been restored and proceed with synchronization "catch-up" to other domain controllers



TSM for Mail V 7.1

- **DP for Domino**
 - Domino 9
 - Windows 2012
 - 64-bit Linux x86_64 support

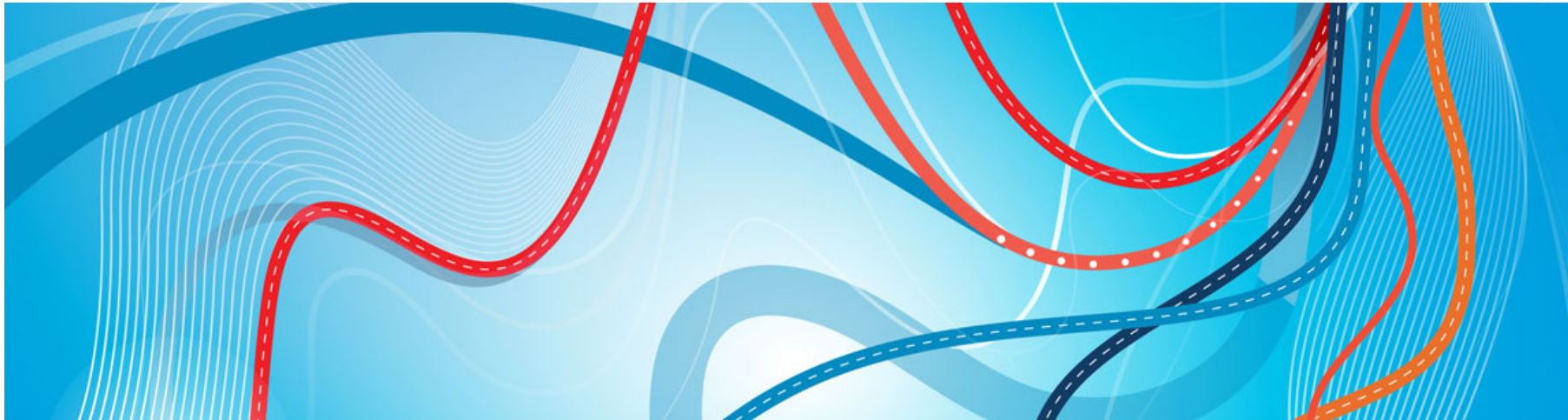
TSM for Mail V 7.1

- **DP for Exchange**
 - Support for Exchange 2013
 - Exchange on Windows 2012 servers
 - Remote GUI
 - Multi-language support in mailbox restore browser GUI
 - Mailbox restore to PST files greater than 2GB
 - Mailbox restore to Unicode PST files
 - Exchange mailbox and item level restores from Disk Files
 - Collecting mailbox history for improved backup performance
 - Calendar widget for entering dates in MMC GUI
 - instant restore - automatically stop Exchange services that must be stopped
 - IIMR browser GUI - more efficient queries of data in Recovery Database
 - New Powershell cmdlet interface

TSM for Databases V 7.1

- DP for Oracle
 - Oracle on Windows 2012
 - Oracle 12c support
- DP for SQL
 - Remote GUI
 - Extend SQL backup commands to improve usability of SQL AlwaysOn Availability Group (AAG) backups through more wildcard filtering options

FlashCopy Manager V 4.1 News



FlasCopy Manager V 4.1

FCM for Windows

- Distributed GUI – single pane of glass access all FCM Windows instances
- Support for Exchange Server 2013
- Exchange mailbox and item level restores from TSM for VE backups
- Enhanced support for SQL Server 2012 Availability Groups
- Availability of PowerShell cmdlets to drive FCM operations
- Multi-language support for Exchange IMR browser
- Exchange mailbox restore to PST files greater than 2GB
- Automatically stop Exchange services for Instant restore

FlasCopy Manager V 4.1 cont....

FCM for UNIX

- Support for application data stored on NetApp/N series NAS file systems
- Support for GPFS snapshots to support DB2 pureScale for AIX and Linux
- Support operation in a Vmware Virtual Machine

FCM for Vmware

- Support for VMware vSphere 5.5
- Instant restore for Virtual Machine File System (VMFS) datastores
- Enable operations in VMware environments where Site Recovery Manager (SRM) is deployed

FCM NV Integrated MMC Console

The screenshot displays the TSM MMC console interface. On the left is a tree view of the console structure. The main area is divided into four charts and a table:

- Status Summary for 1 Week:**
 - Tasks:** A 3D pyramid chart showing task completion status: Active (blue), Completed With Errors (orange), Completed With Warnings (yellow), and Completed Successfully (green).
 - Amount of Data Protected (GB):** A 3D bar chart showing backup and restore volumes per day from Monday to Sunday.
 - Total Amount of Data Stored (TB):** A 3D area chart showing data stored on Disk (blue) and TSM (orange) over the week.
 - Types of Data Stored:** A donut chart showing the distribution of data types, with labels for Exchange and SQL Server.
- Activity for 1 Week:** A table listing recent backup and restore activities.

Item	Action	Started	Duration	Status
SQL Server	Snapshot Full to Disk	11/07/08 4:00:01	2 min	Successful
SQL Server	Snapshot Full to TSM	11/07/08 4:00:01	7 min	Warnings
SQL Server	Backup Differential to...	11/06/08 4:00:01	4 min	Successful
SQL Server	Backup Differential to...	11/05/08 4:00:01	4 min	Successful
SQL Server	Snapshot Full to Disk	11/07/08 4:00:01	2 min	Successful
SQL Server	Snapshot Full to TSM	11/07/08 4:00:01	8 min	Warnings
SQL Server	Backup Differential to...	11/07/08 4:00:01	3 min	Successful
SQL Server	Backup Differential to...	11/07/08 4:00:01	5 min	Successful

FCM for Unix, Linux & VMware Future - Support for non-IBM Storage Devices

- First priority is EMC Symmetrix
- Support for others (EMC VNX, HDS, ...) will follow



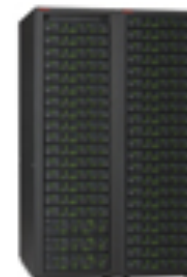
EMC Symmetrix



EMC VNX



HDS Storage Systems



FastBack for Workstations V 7.1



FastBack for Workstations

- Add reporting to Central Admin Console
- Central admin console scalability
- Rebrand CDP starter edition & OEM to FB4wk Starter Edition & OEM

Vielen Dank für Ihre
Aufmerksamkeit



Haben Sie noch
Fragen ?

