

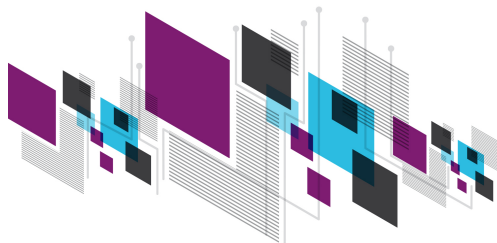
IBM TSM User Forum

IBM Tivoli Storage Manager Trends und Kundenreferenzen



Agenda

- 16:00 – 16:30 Uhr** Eintreffen der Teilnehmer und Registrierung
- 16:30 – 16:40 Uhr** Begrüßung
- 16:40 – 17:40 Uhr** **IBM Tivoli Storage Manager – TSM Produktneuheiten**
Wolfgang Hitzler, IBM Tivoli Technical Sales Specialist
- 17:40 – 18:00 Uhr** **Smartphones und Tablets im Unternehmen – ein großes Potenzial mit Risiken**
Bernhard Kammerstetter, IBM IT Specialist (Gastbeitrag)
- 18:00 – 18:20 Uhr** Pause
- 18:20 – 19:00 Uhr** **IBM System Storage – Neues zu Tape, Disk und SVC**
Manuel Schweiger, IBM System Storage Specialist
- 19:00 – 19:30 Uhr** **IBM TSM in der Praxis – Kundenreferenzen**
Tirol: Russ Media IT GmbH, Rainer Rudigier
Salzburg: SYSTEMA Human Information Systems GmbH, Gerhard Schweinschwaller
Linz: SYSTEMA Human Information Systems GmbH, Dietmar Arthofer
Wien: Safematix Security & IT-Services e.U., Robert Ressler
- ab 19:30 Uhr** Get-Together



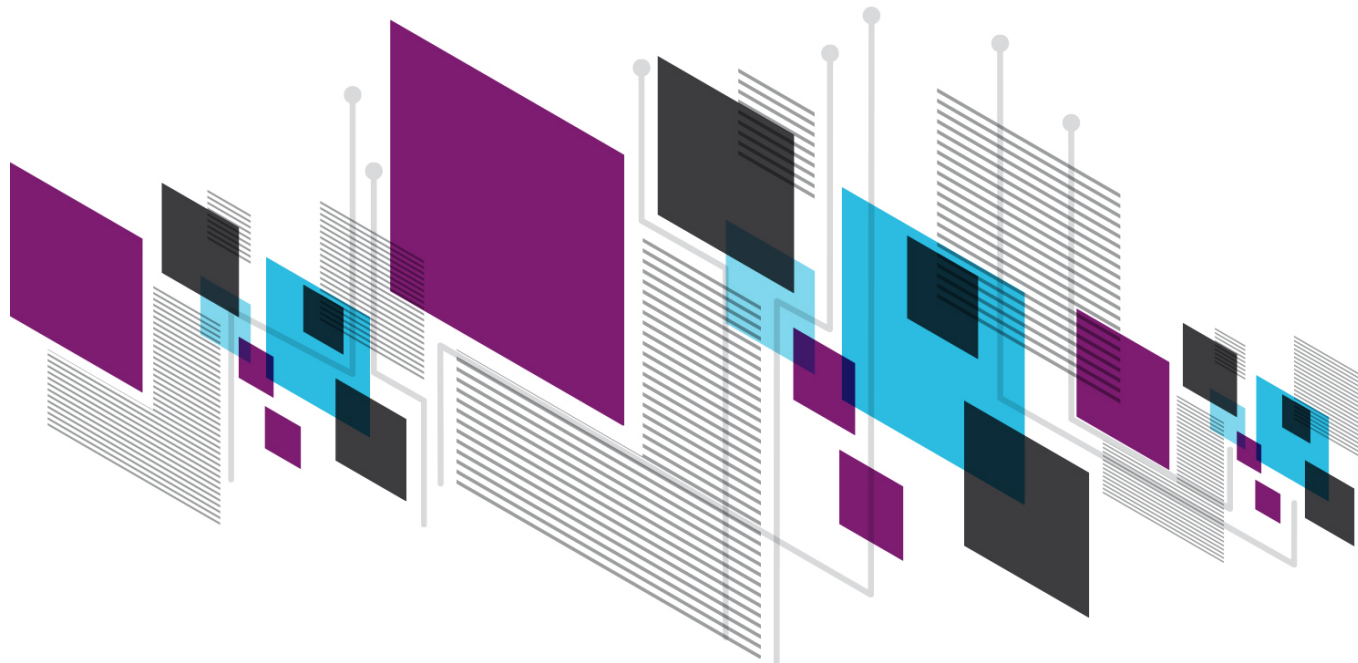
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IBM Tivoli Storage Manager
Trends und Kundenreferenzen



TSM Produktneuigkeiten



Wolfgang Hitzler

Hitzler@de.ibm.com

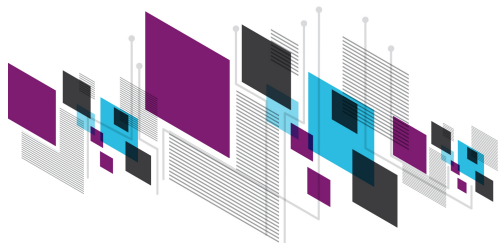
Dipl. Inform. (FH)

Certified IT Architect



Agenda

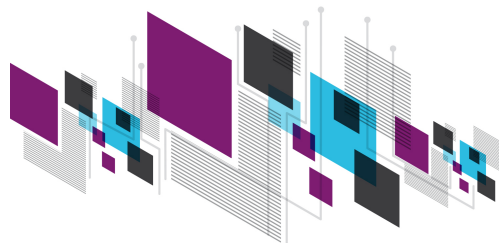
- TSM Server V6.3.3 News**
- TSM Client V6.4 News
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TSM Server News

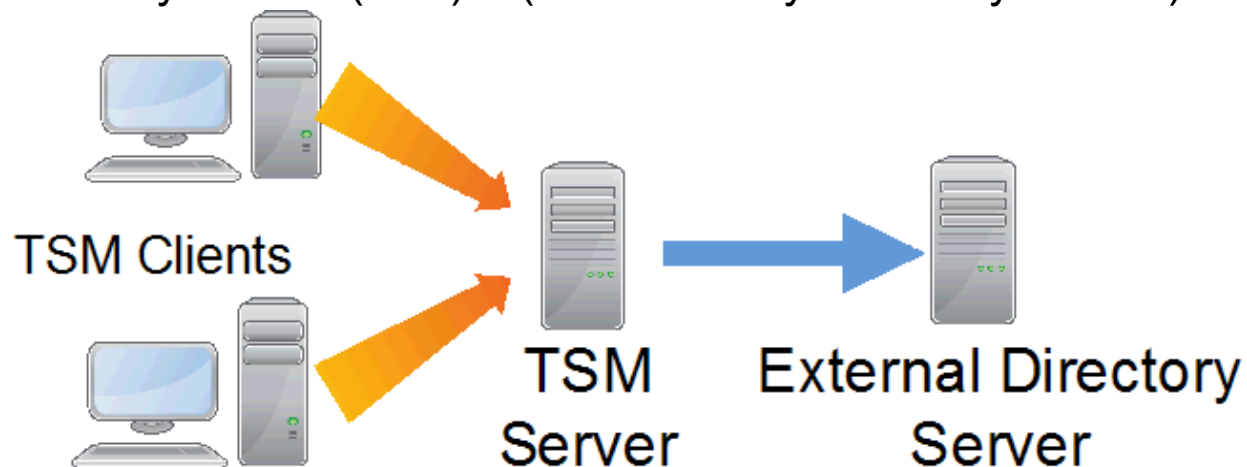


- Complex Administrator Passwords
- Complex Client Node Passwords
- Cluster wizard



Complex Password Overview

- **Stronger password enforcement**
 - Mixed-case characters (“Dog” is different than “dog”)
 - Password history (e.g. don’t allow previous 8 passwords)
- **TSM node & admin passwords can utilize LDAP for passwords**
 - Specific to each node and admin
 - Password rules enforced by the external directory server
- **External directory servers will be supported via the LDAP V3**
 - Active Directory (Microsoft) 2003 & 2008
 - Tivoli Directory Server (IBM) – (IBM Security Directory Server) 6.2->6.3



Potential Password Rules



Password Rule	TSM 6.3	External Directory
Minimum password length	✓	✓
Case-sensitive passwords		✓
Minimum number of upper/lower/numeric/special characters		✓
Maximum number of times character can be used in password		✓
Minimum characters different from previous password		✓
Maximum number of consecutive repeated characters		✓
Time after which modified password expires	✓	✓
Time that must elapse between password modifications		✓
Number of failed logon attempts before password is locked	✓	✓
Time before number of consecutive failed logons is reset		✓
Duration of lock for failed logon attempts		✓
Minimum number of passwords before reuse		✓

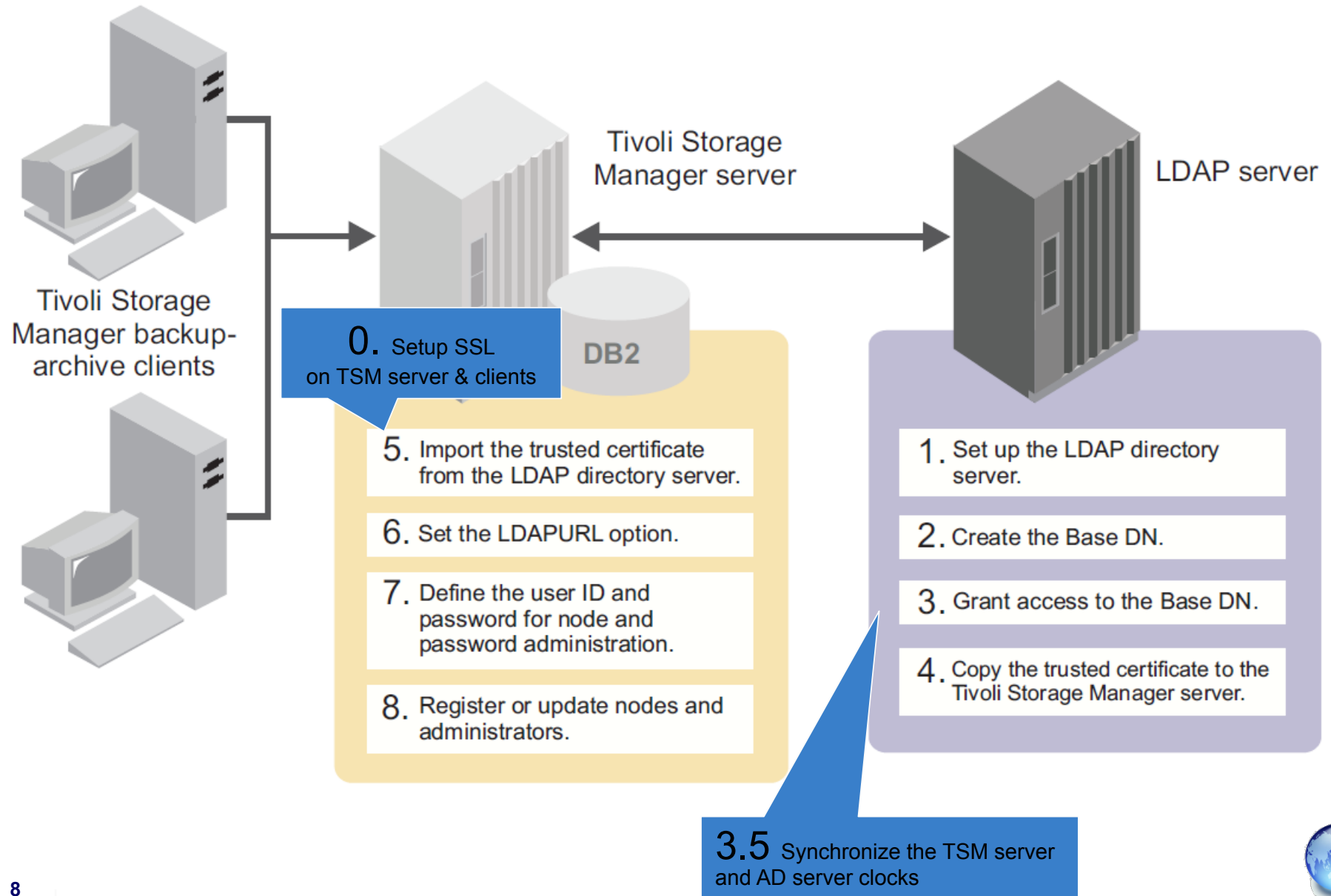
The above table is intended for illustration only. Actual external directory implementation may allow additional password rules and some of the above rules may not be supported.

Complex Password Support Overview

- Supports LDAP authentication from the TSM Server 6.3.3 to the following:
 - Command line admin client (dsmadmc)
 - Command line b/a client (dsmc), local GUI b/a client and API client
 - Client scheduler
 - Client-to-client (proxy) communication
 - LAN-Free communication
 - HSM Clients v6.4+
 - TDP's (implicit by virtue of API clients) v6.4+
- **Does NOT support the following authentication configuration (initially):**
 - Web client GUI
 - Server initiated client sessions (server prompted scheduled sessions ARE supported)
 - SNMP admin and monitor
 - UNIX TCA non authorized backup/archive users
 - Server-to-server or storage agent-to-server pw “**define server serverpassword**”
 - (e.g. library sharing, replication, etc.)



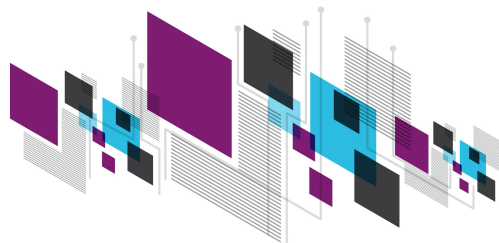
Complex Password Setup Steps





Agenda

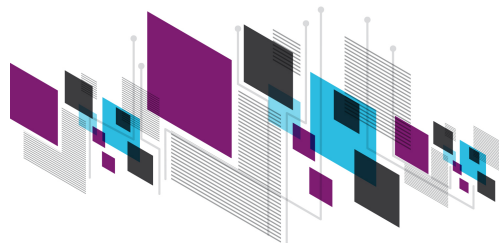
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TSM Client V6.4 News



- Platform support changes
- NetApp vFiler support for NetApp snapshot
- NetApp SnapMirror support for NetApp snapshot
- TSM for Space Mgmt – implement consistent RC for BA-Client & HSM
- HSM for Windows – Recall Quota Enhancements
- HSM for Windows – Snapshot Based Reconcile





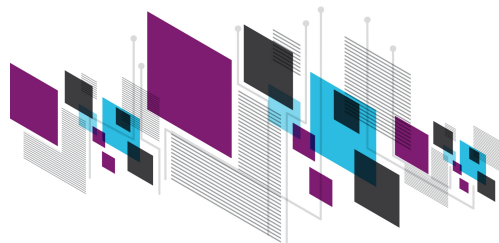
New and Dropped Client Support

New OS Support

- **TSM Client 6.4 for Windows supports Windows 2012 and Windows 8.**
 - All features supported, including System State backup, cluster support, Hyper-V
 - New file system ReFS (Resilient FS) is fully supported
 - No utilization of new functionality available in these OS. I.e. no support for Hyper-V incremental backup, no support for Hyper-V replication
- **TSM Client 6.4 for Mac supports Mac OS X 10.8**
 - All features supported
 - Oracle's Java 7 is not supported at this time

Dropped Support

- **Windows 2003 Client**
- Mac OS X 10.6
- LVSA (Logival Volume Snapshot Agent) on Windows Client
- Solaris 11 on Intel

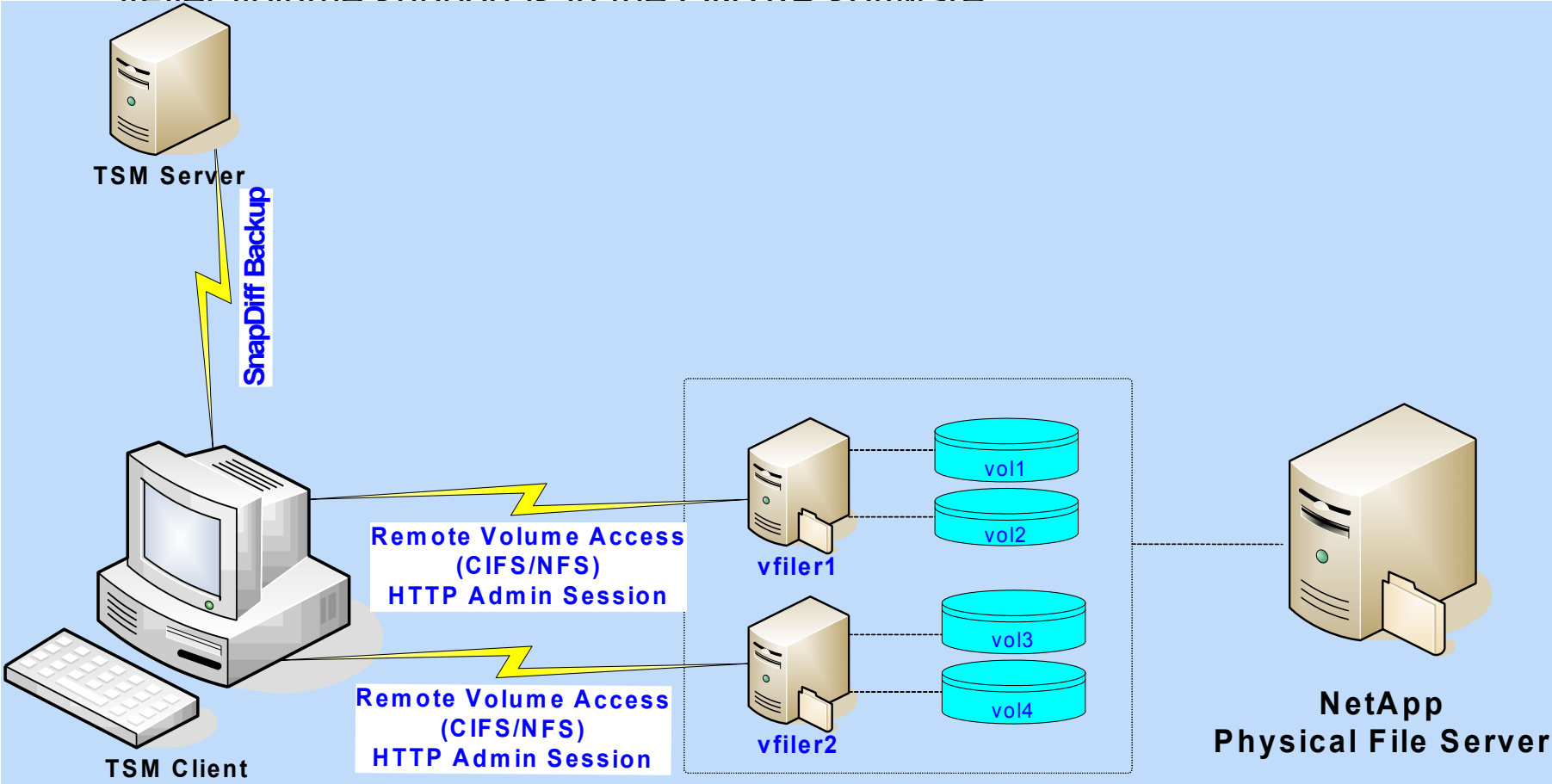


MultiStore (vfiler) Support



- **NetApp SNAPDIFF vfiler support in ONTAP 8.1.1**

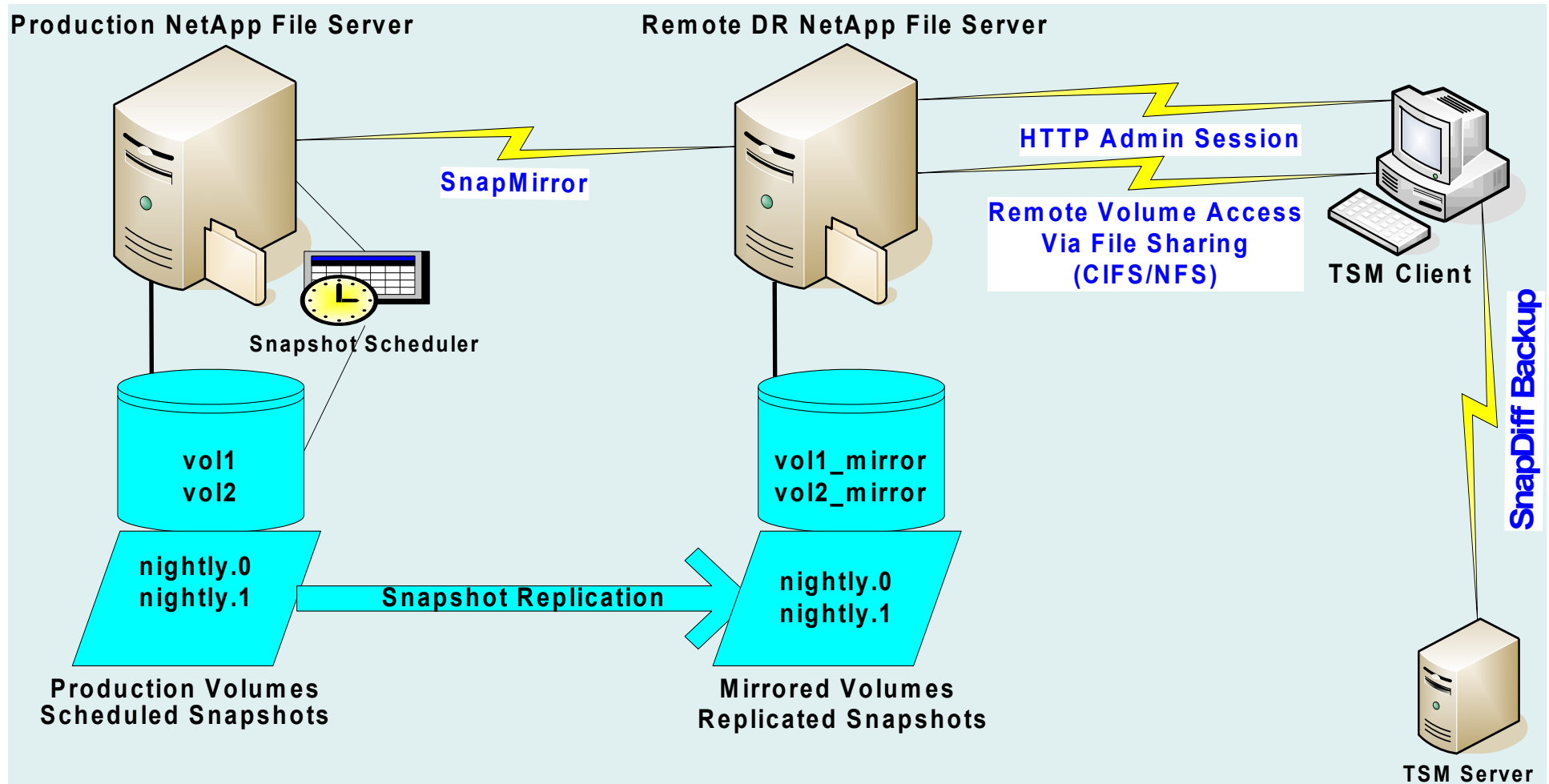
vFiler volume support is in the ONTAP software



Snapmirror Support added in TSM 6.3.3 / 6.4



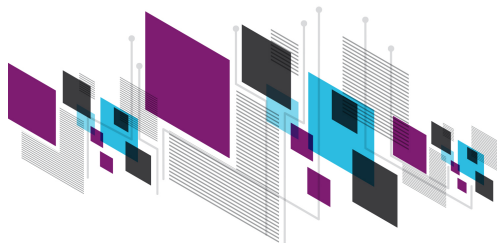
Customers want to offload TSM's Snapdiff backup to the mirrored DR NetApp filer





TSM for Space Management / HSM for Windows

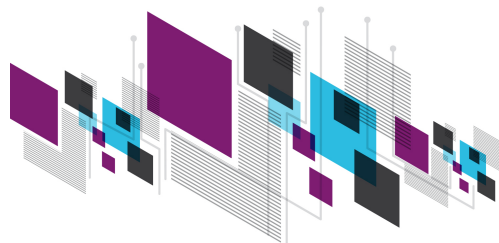
- HSM news bei Bedarf (Weglassen) Verweis auf extra Präsentation
- TSM for Space Mgmt - Supported platforms: AIX JFS2, AIX GPFS, Linux GPFS
- 4 reliable, consistent and meaningful RCs equivalent to BA client's RC
- Customers want to automate GPFS & HSM with customized scripts
 - Scripts need to be able to determine successes and failures
- HSM's QUOTA MANAGEMENT – the number of allowed recalls by a user/group in a certain timeslot
- HSM for Windows 6.4
- dsmgui.exe shows a lists of Windows users and a lists of Windows groups
- HSM admin selects a Windows user or group from list & assigns it a HSM recall quota
- Dsmgui.exe stores recall quotas defined by HSM admin in an XML-file config file





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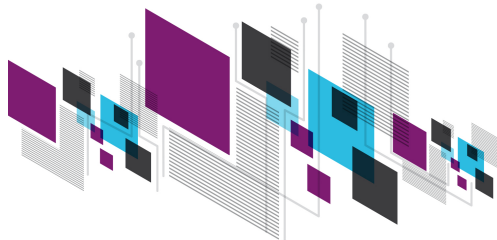
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TSM for Virtual Environments News

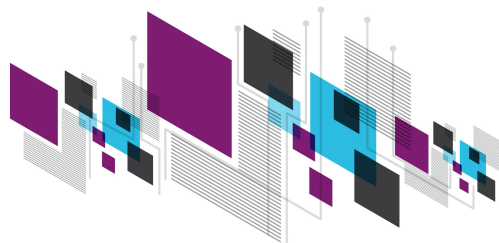
- **Incremental Backup forever (progressive incremental)**
- **Application aware Backup for MS-SQL and MS-Exchange**
- **Backup multiple virtual machines in parallel from single TSM instance**
- **More granular domain control (allow VM selection based on ESX Cluster, Datastore, wildcards)**
- **Preserve additional virtual machine configuration info**
- **More granular control of backup/restore of individual disks**
- **VMware Template Backup support**
- **vApp Support**





Progressive Incremental Backup: How does it work ?

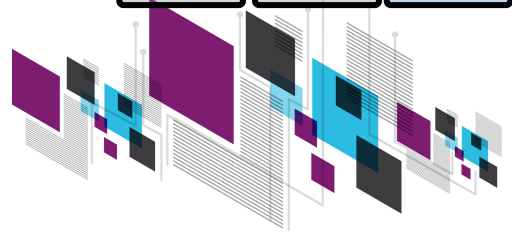
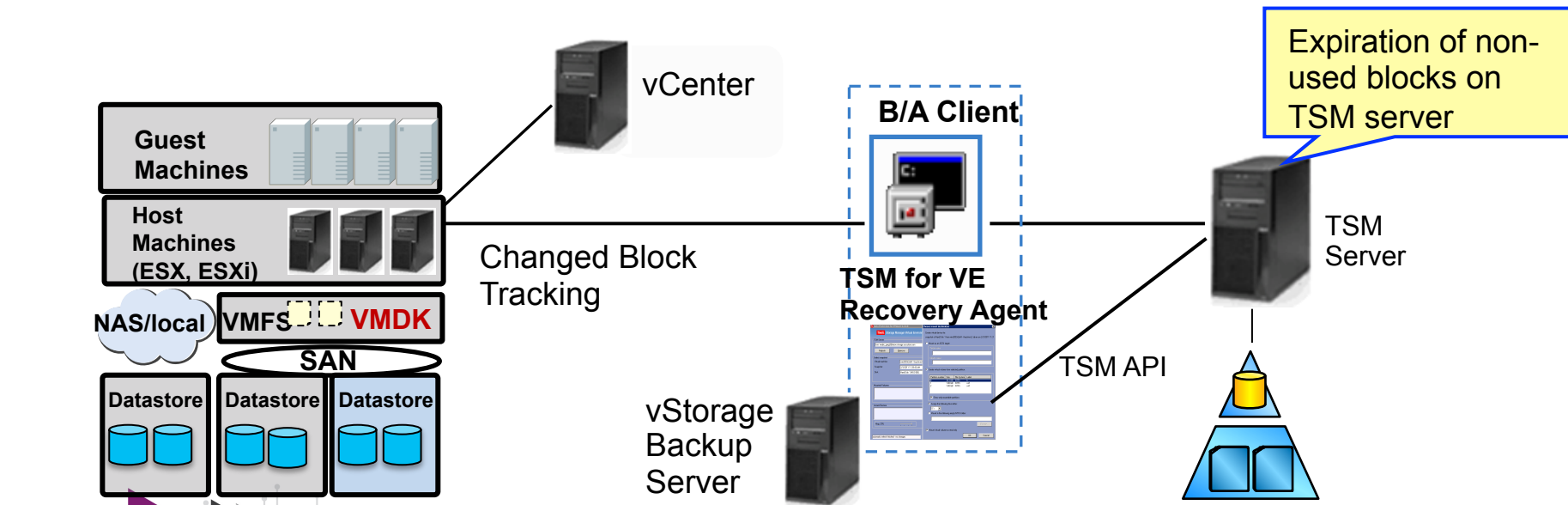
- Minimum TSM Server level V6.1.5 required
- Transparent process, which works on block-level basis
- Keeping track of changed blocks works 'on the fly' (during backup)
- No longer required blocks are marked as expired
- During Backup, only meta data (pointers to blocks) are being processed
- Regular TSM Expiration expires all blocks marked for deletion



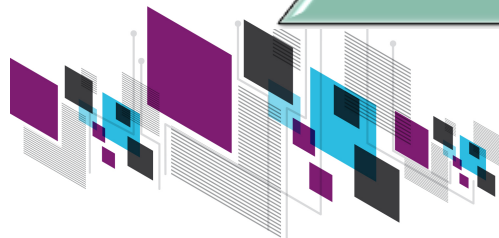
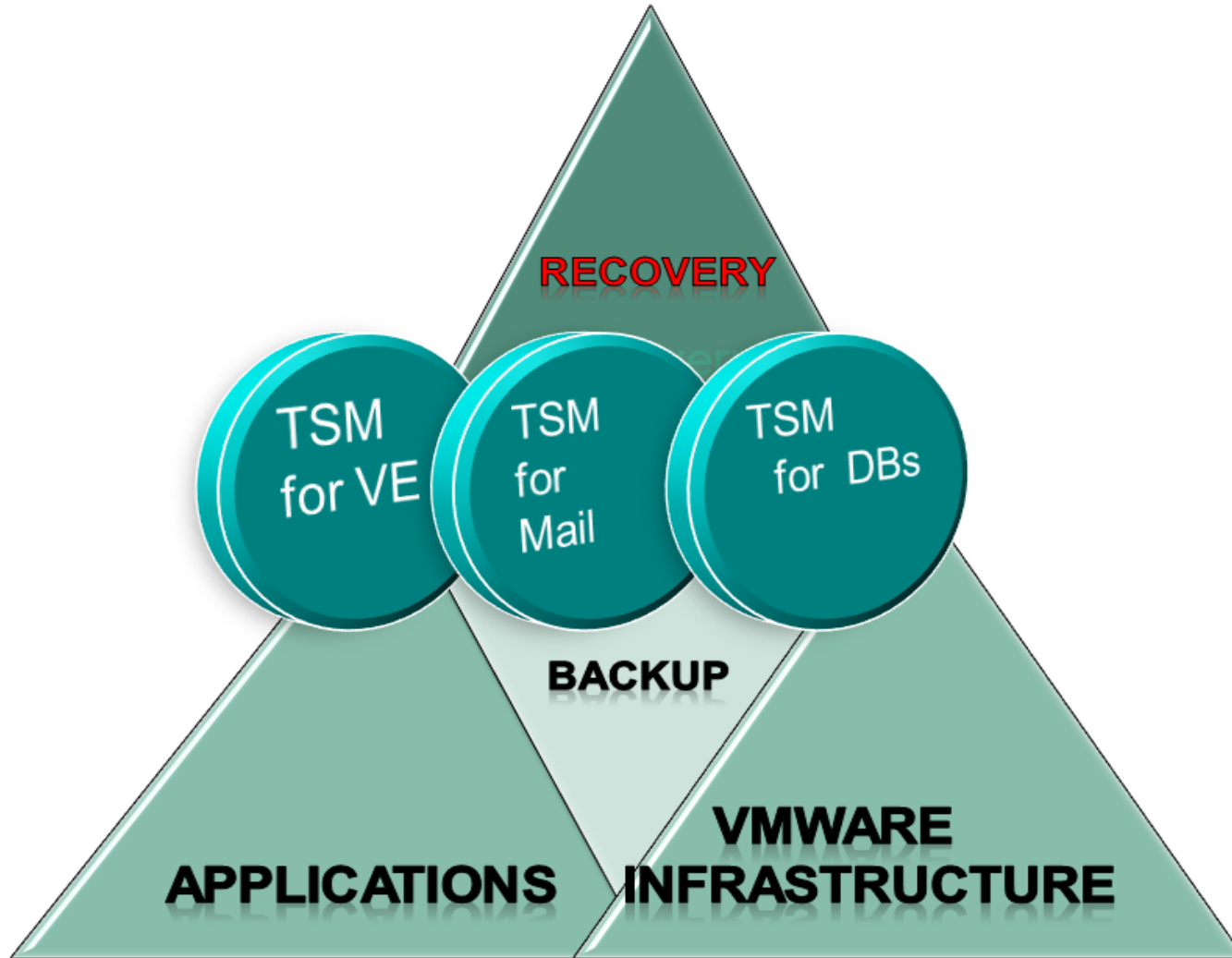
VMware progressive incremental backup



TSM for VE 6.3		6.4: Progressive Incremental
Periodic full + incrementals 	Full-VM Backup	Initial full + incrementals
Restore full and apply required incrementals	Full-VM Restore	Only restore required blocks once



Application aware Backup for MS-SQL and MS-Exchange



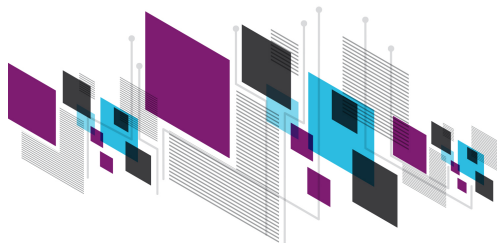


Unified application protection for VMware environments

- ❑ **Protection of applications/databases introduces additional requirements as compared to file/web servers traditionally hosted in VMware**
 - ❑ Log management (truncation) for a sustainable backup methodology
 - ❑ Achievement of multiple recovery points through roll-forward/roll-backward
 - ❑ Individual email message recovery

- ❑ **To achieve protection of applications and databases (Microsoft SQL, Exchange, Active Directory, Custom Applications) hosted in a VMware environment**
 - ❑ TSM customers today use TSM for Mail/Databases etc. running inside VMs
 - ❑ Future goal is to provide application protection that is integrated/unified with TSM for VE

- ❑ **Looking at various options that could involve integration of product features from**
 - ❑ TSM for VE for common **disaster recovery** across all VMs
 - ❑ TSM for Mail/Databases/Custom Applications for application awareness and **operational recovery**

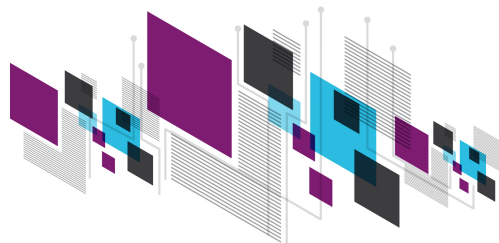




Unified application protection for VMware environments

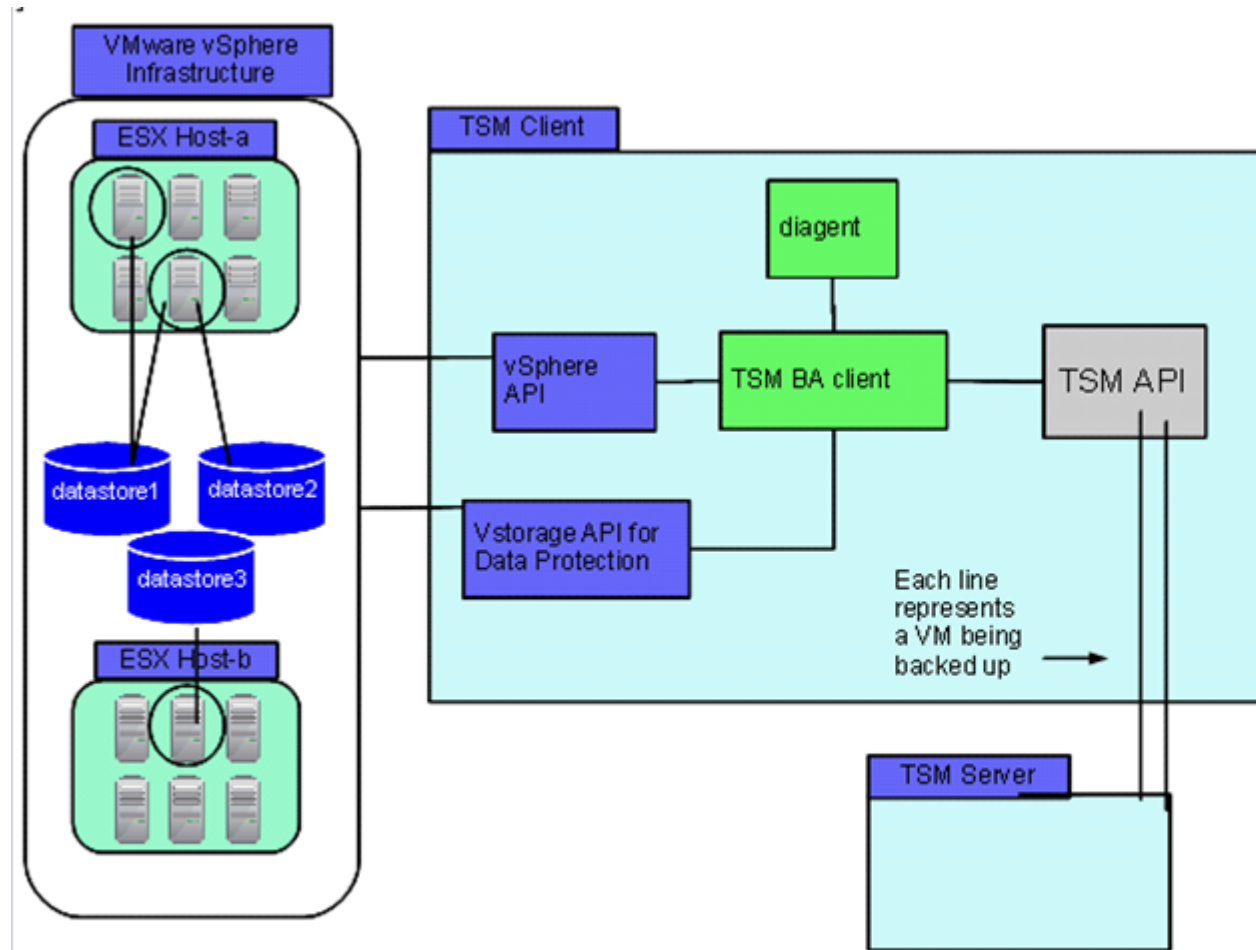
- Supported for Windows VM (VSS Writer is being called) for MS SQL Server and MS Exchange
- TSM B/A Client (datamover) triggers log truncation at VMware snapshot time
- Injection via Web Services API at runtime
- Allows for consistent Application/Database support in Windows VMs
- No TSM for product required inside the VM
- Limited functions for Point in Time restores, restores only possible to the time when the snapshot occurred, no log 'roll forward'
- No log handling in this scenario

- **Running TSM for ... inside the VMs is still functionally superior, therefore still recommended**





Backup multiple VM's in parallel from single TSM instance



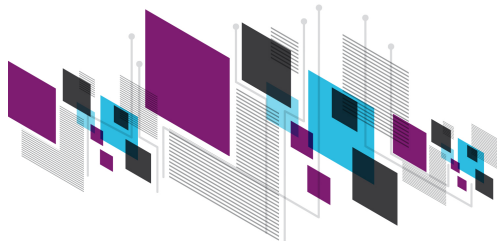
- Vmmaxparallel = 3
- Vmlimitperhost = 2
- Vmlimitperdatastore = 1
- A maximum of 2 VMs will be backed up at the same time. The limiting factor will be the # of VMs that can be backed up at a single time per datastore (vmlimitperdatastore). For 'Host A', the backup of the second guest cannot be started until the first is finished, due to the sharing of datastore1.





TSM for VE selection criteria

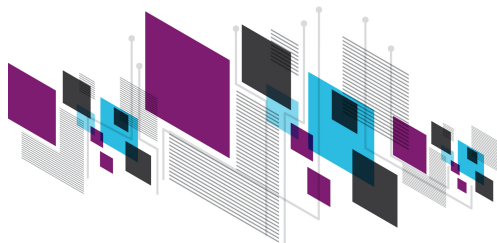
- TSM for VE 6.4 Datamover backup VMs that are grouped using any of the following ESX/ESXi methods:
 - ESX/ESXi host
 - vCenter (i.e. all VMs under a vCenter)
 - Folders (VMs placed into folder containers)
 - Manually defined list of VMs
 - Host clusters
 - Datastore usage
- New wildcard support added:
 - The use of “*” for multiple character matching or “?” for individual character matching can be used with the virtual machine keyword (vm) and (-vm) selection criteria



Support of individual disk volume backup/restore for VMware virtual disks



- **Users can specify which virtual disks are backed up or restored**
 - Disks not needed to be protected can be skipped saving storage space and backup time
 - Skipped disk configuration information saved to the backup (also pRDM)
 - Skipped disk configuration restored to the VM as an unformatted disk definition
- **Allows to specify a “division of labor” between TSM for VE and TSMs for**
 - Backs up non TSM for ... disks while TSM for ... agents back up disks specific to them
- **Allows individual disks to be restored to an existing VM**
 - Existing VM must be powered off
 - Disks not specified remain unchanged on existing VM
 - Can specify that just the VM configuration information be restored



New domain.vmfull *parameters* to allow selective backup

- ❑ New parameter, VMDK, can be used to include disks. New parameter, -VMDK, can be used to exclude disks.

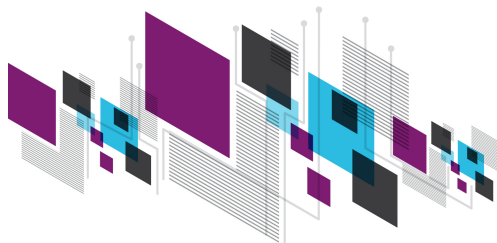
Syntax

dsmc BACKUP VM -vmbackuptype=fullvm

```

| <-----|
| |-- vmname, vmname -----| |
>>---DOMAIN.VMFULL-----><
| |-- VM=vmname,vmname -----| |
| |-- ALL-VM -----| |
| |-- ALL-WINDOWS -----| |
| |-- VMHOST=srv1,svr2 -----| |
| |-- VMHOSTCLUSTER=cluster01,cluster02-----| |
| |-- VMFOLDER=foldername1,foldername2 -----| |
| |-- VMDATASTORE=datastore1,ds2-----| |
| <-----:-----|
```

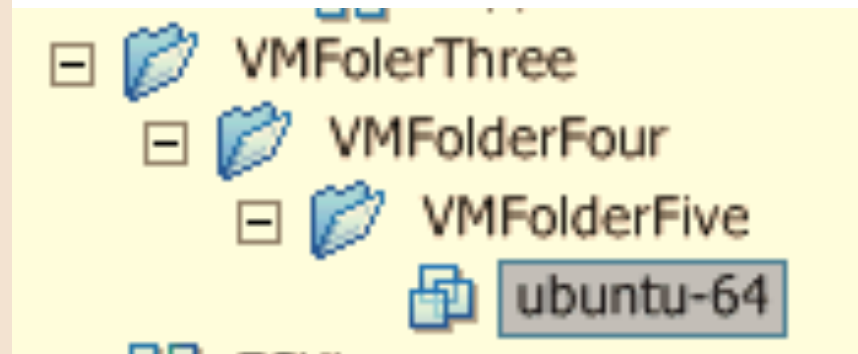
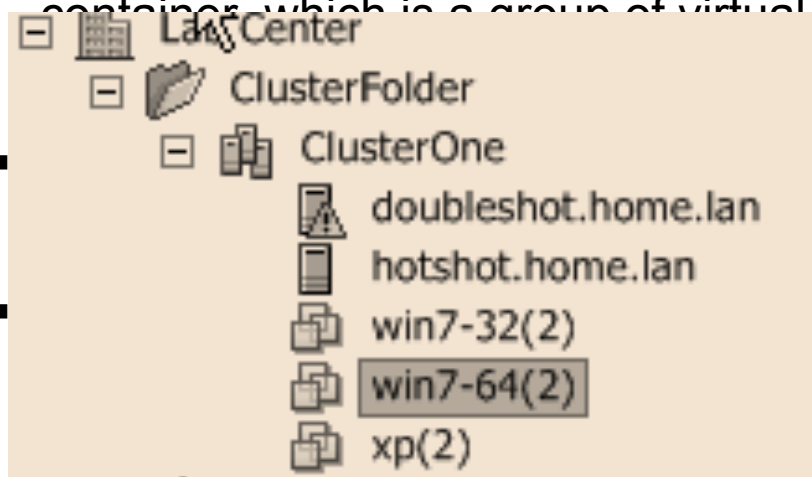
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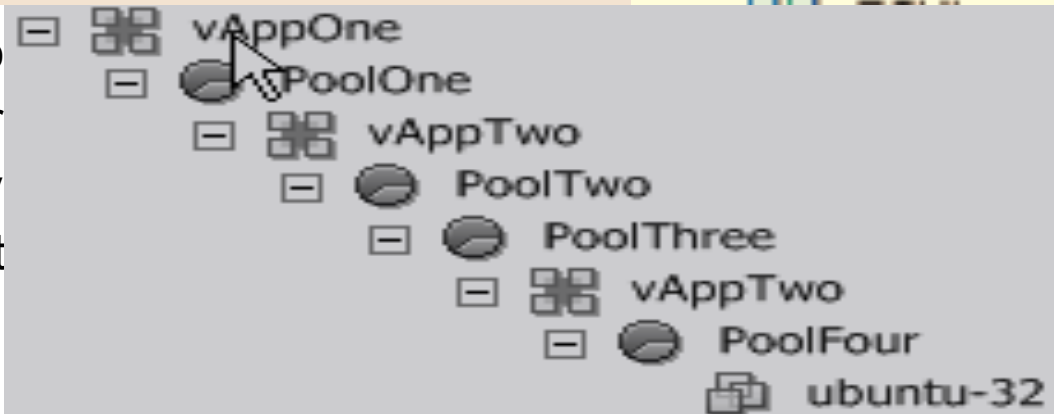


TSM for VE 6.4 : vAPP Support

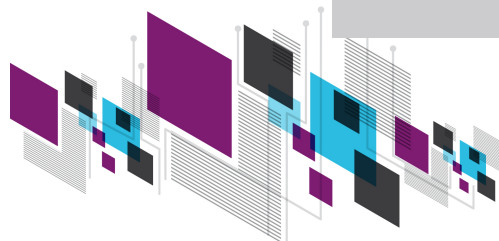
- Starting with VMware 4.0, VMware introduced the concept of a vApp container, which is a group of virtual machines that are managed as a



- TSM for VMware Resource Pools fails to backup these vApps due to a failure to



vApps, we fail to return s due to our





Attributes that will now be backed up

- ❑ Backup/Restore as much of the VMware guest VM's configuration information (.vmx file) as possible. Items that will be restored include:

Hardware | Options | Resources | Profiles | vServices

Settings	Summary
CPU	0 MHz
Memory	0 MB
Disk	Normal
Advanced CPU	HT Sharing: Any

Resource Allocation

Shares: Normal

Reservation: [Slider]

Limit: [Slider]

CPU Identification Mask

Hiding the NX/XD flag will increase vMotion compatibility between hosts, at the cost of disabling certain CPU performance features for some guest operating systems and applications.

Hide the NX/XD flag from guest.

Expose the NX/XD flag to guest.

Keep current flag.

CPU Identification Mask

Virtual Machine Default | AMD Override

The CPU Identification mask specifies the CPU capabilities that this virtual machine determine if a destination host is viable for vMotion or cold migration. In AMD processors. These can be set in the AMD Override tab.

Valid values for registers are an empty string, or 32 flag characters plus a space.

Register	Value (msb...lsb)
Level 80000001	
eax	-----
ebx	-----

- ❑ Restore Simple Types configuration information

Guest Power Management

How should the virtual machine respond when the guest OS is placed on standby?

Suspend the virtual machine

Put the guest OS into standby mode and leave the virtual machine powered on

Wake on LAN for virtual machine traffic on:

Network adapter 1 (VLAN100 - Internal)

CPU Affinity

info

forcing

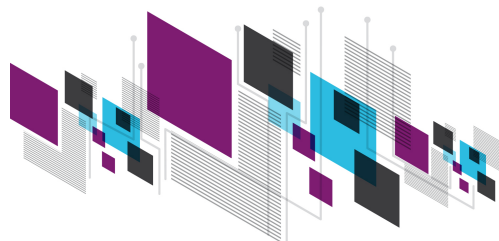
VM's .nv

- ❑ Restore VM Annotations. Custom Attributes

Annotations

This is a test vm: **test123**

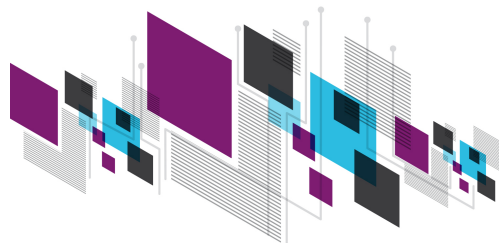
Notes:





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Improved DAG Support for Exchange 2010



□ Back

□

□

□

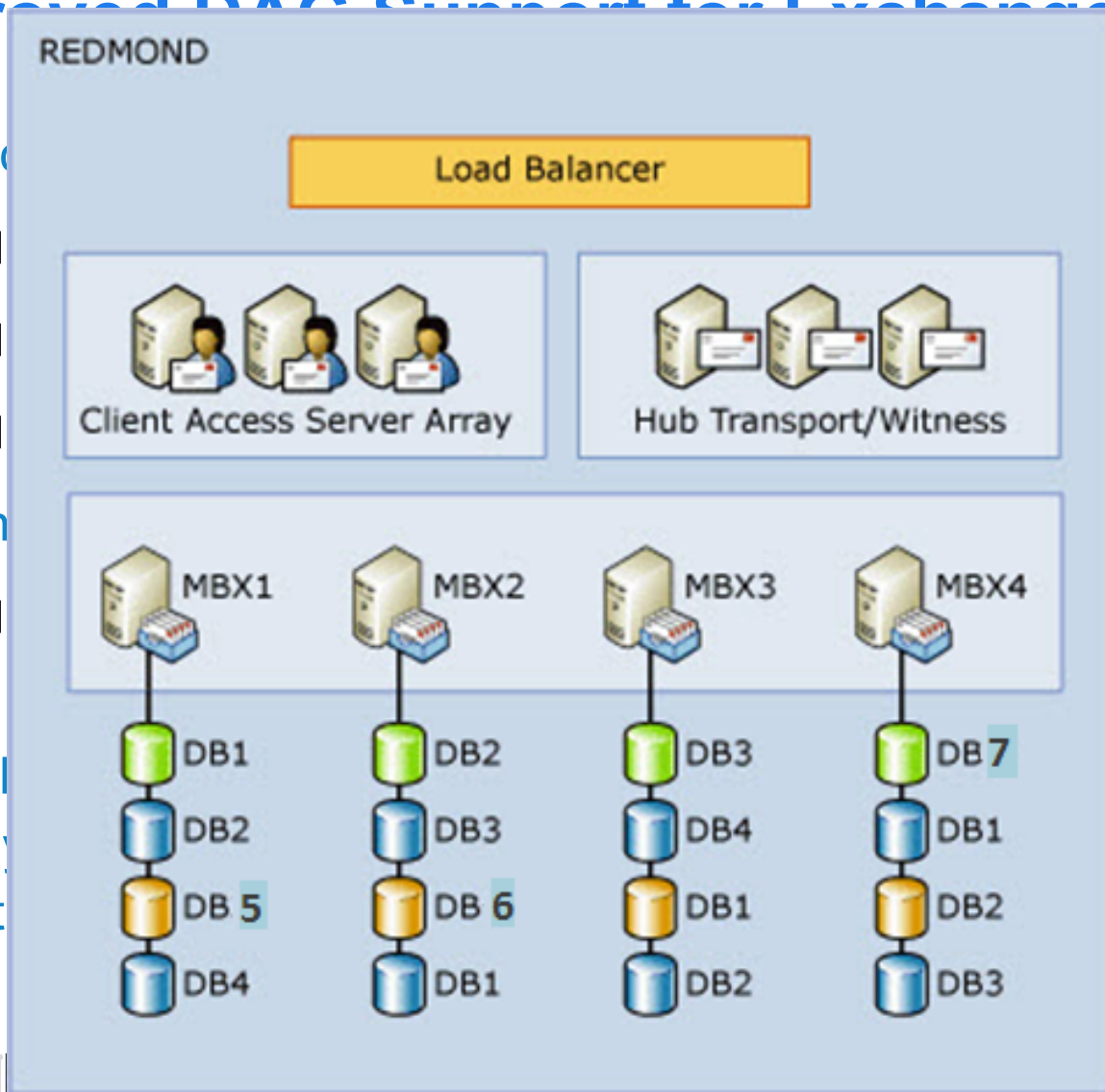
□ Single

□

□ Enable

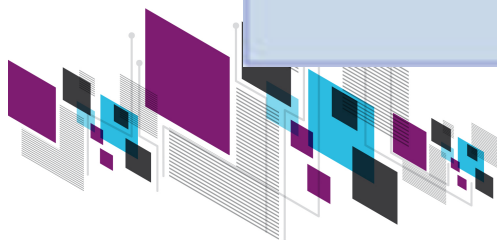
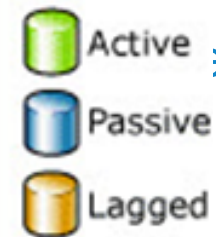
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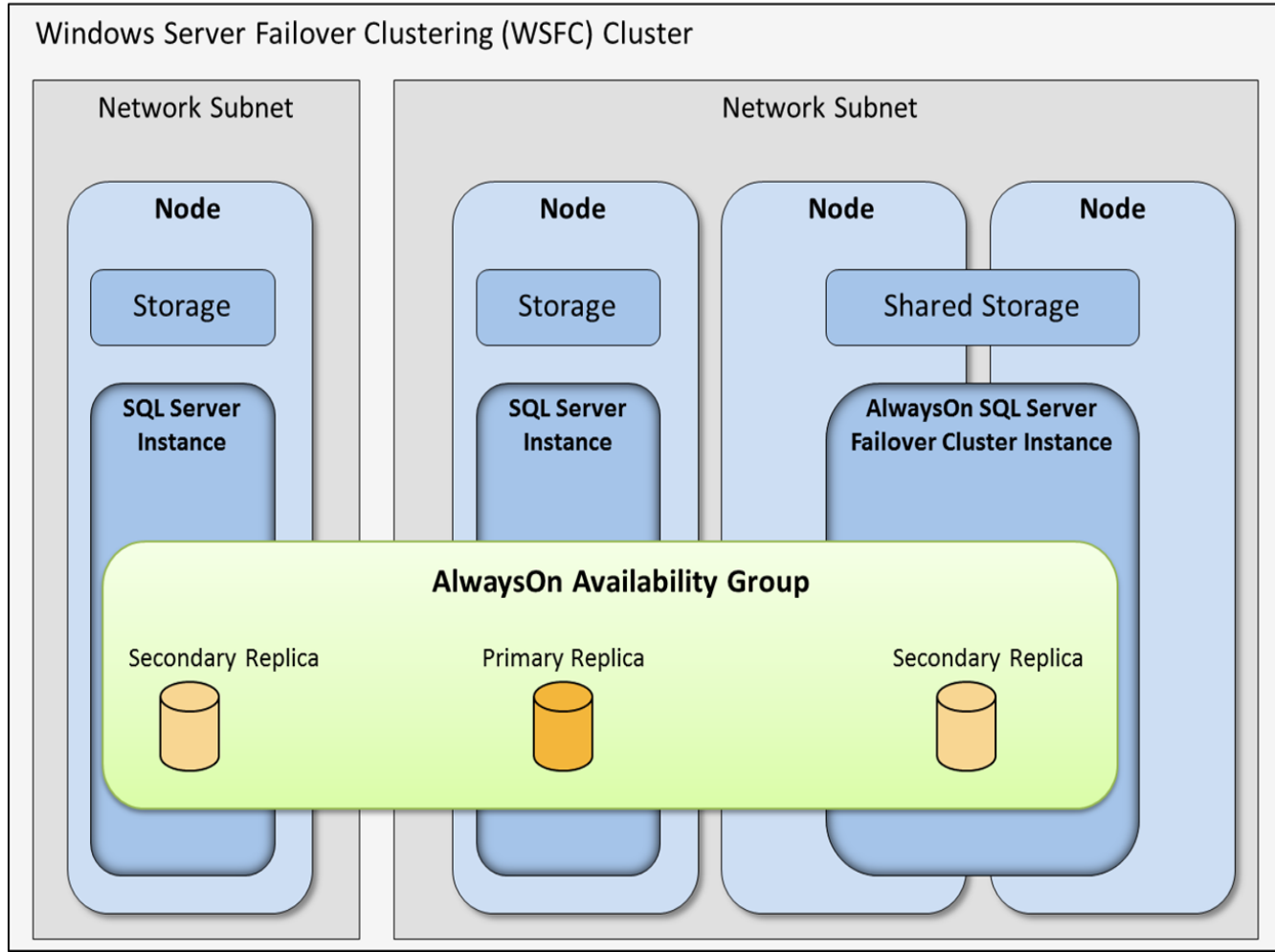
nts by
DAG



SQL Server 2012 Support



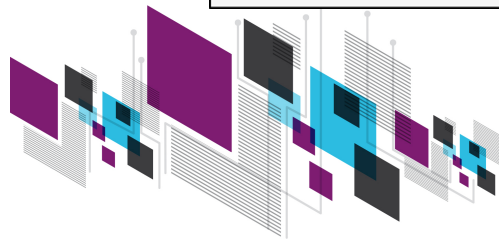
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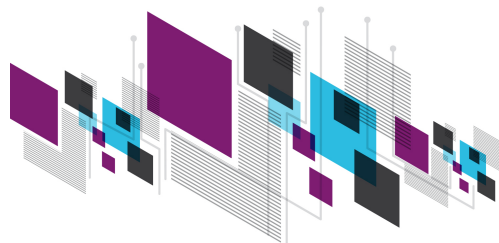
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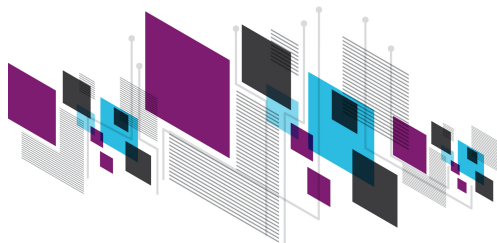
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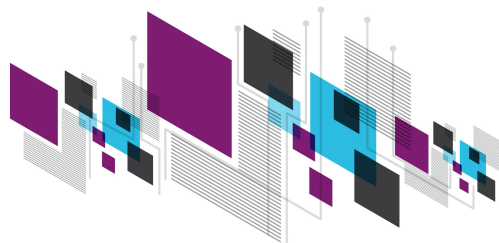
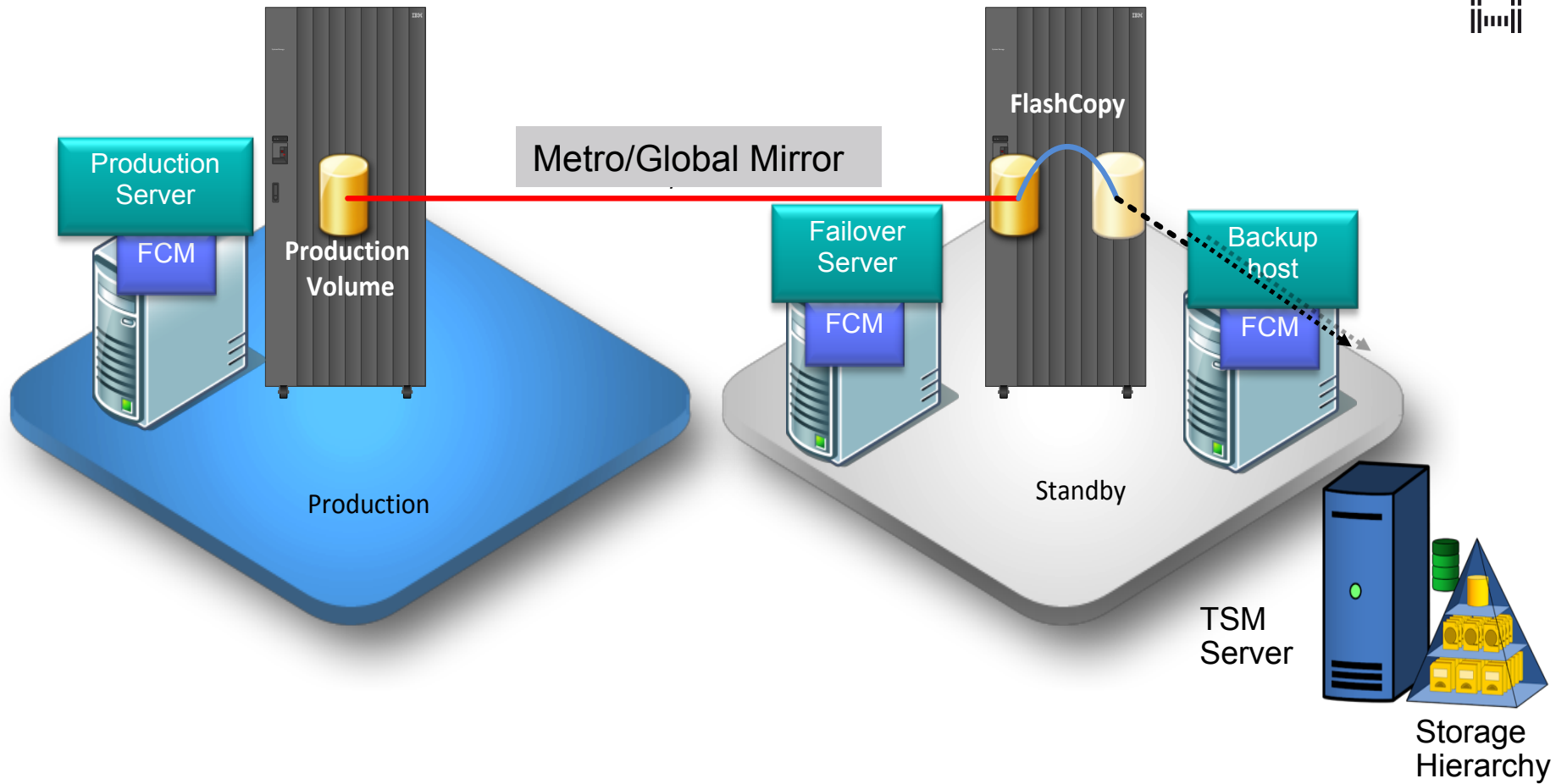
Global/Metro/Remote Mirror snapshot integration



- FCM 3.2 provides at the DR site similar capabilities to what it has already at the primary site
- Extends FCM to allow FlashCopy / Snapshot management in the remote site leveraging remote mirror copy
- Offload workload from production storage control unit
- Consolidate multiple backups (single or multiple source sites) to the DR site
- Backup can be used for restores in DR scenarios and to offload backup to TSM to DR site



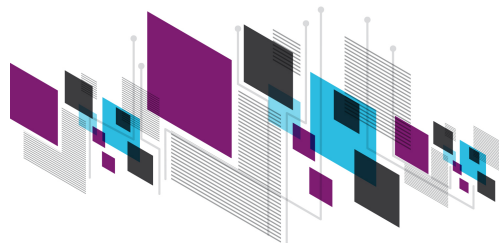
Global/Metro/Remote Mirror snapshot integration





Netapp and N-Series Snapshot Support

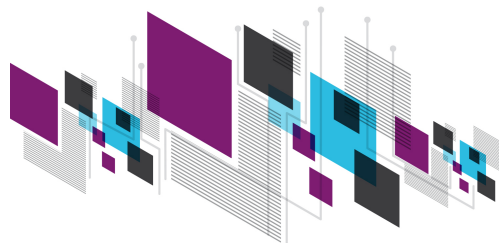
- ❑ Provides FCM support for IBM N series / NetApp devices on Unix/Linux and VMware
- ❑ Supports VMware, Oracle, DB2, SAP, Custom Applications, Unix/Linux file systems
- ❑ IBM N series / NetApp devices used as primary storage for supported applications – especially VMWare - can use FCM to manage snapshots for backup and recovery purposes
- ❑ By using FCM it makes it easier to backup IBM N Series / NetApp snapshots to TSM



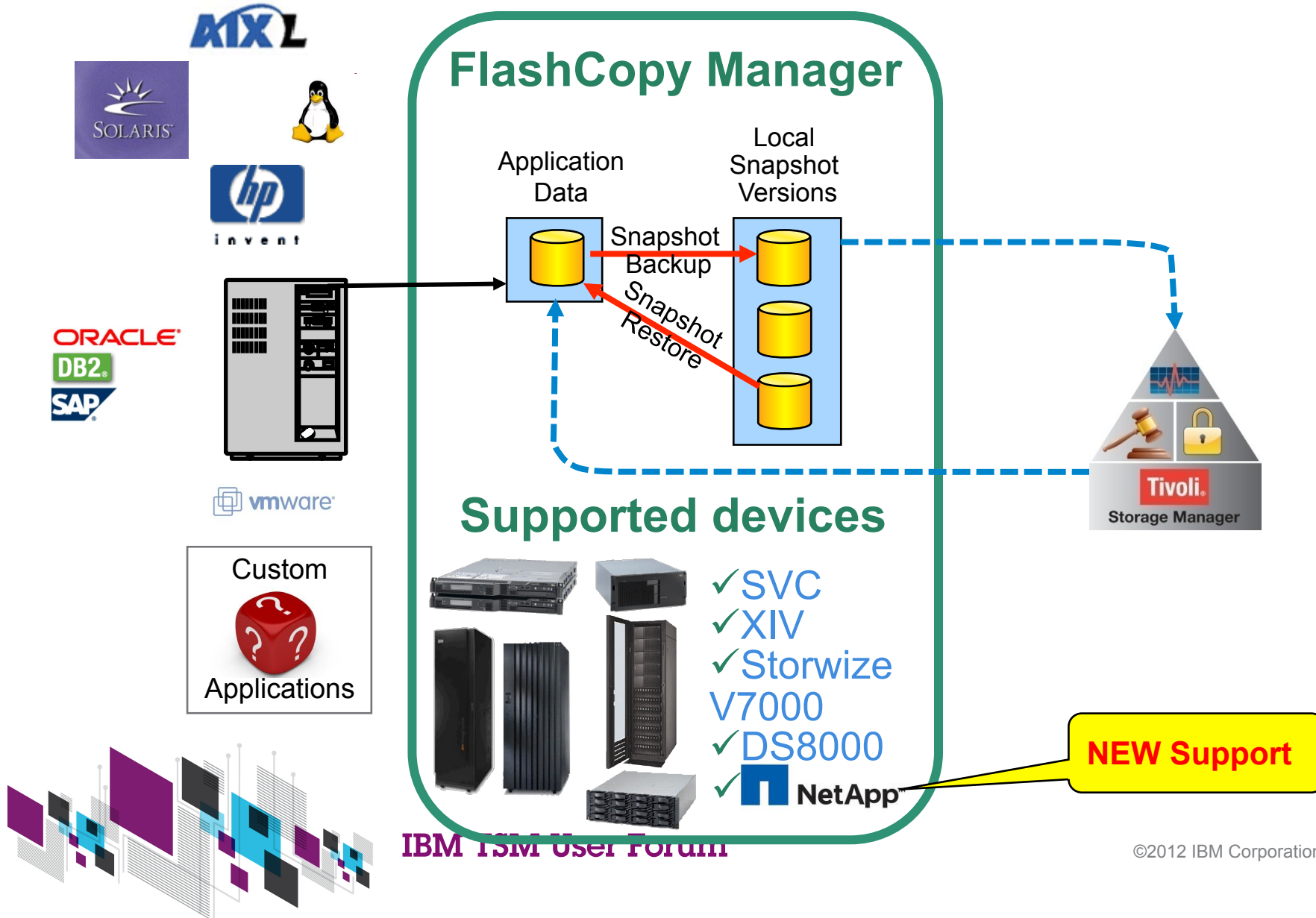


Netapp and N-Series Snapshot Support

- Does not alter or enhance the functionality of FlashCopy Manager on Unix—it simply extends the range of supported devices to include N-Series/Netapp
- The N-Series/NetApp storage can be attached via SAN for all applications and NFS for VMWare only
- Capabilities:
 - perform Flashcopies/snapshots
 - offload the TSM backup of the flashcopied data to an auxilliary host
 - restore the flashcopies in case of DB2, Oracle, SAP on DB2 or Oracle and the Custom Application Agent
 - perform flashcopies/snapshots of VMWare datastores
 - create clones of the databases (except for the Custom Application Agent)
 - support of iSCSI attached storage



Netapp and N-Series Snapshot Support

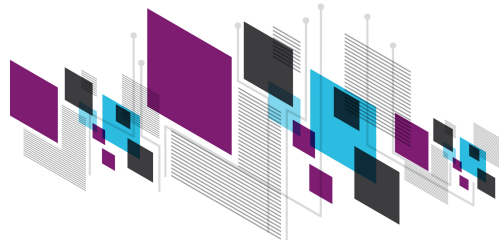
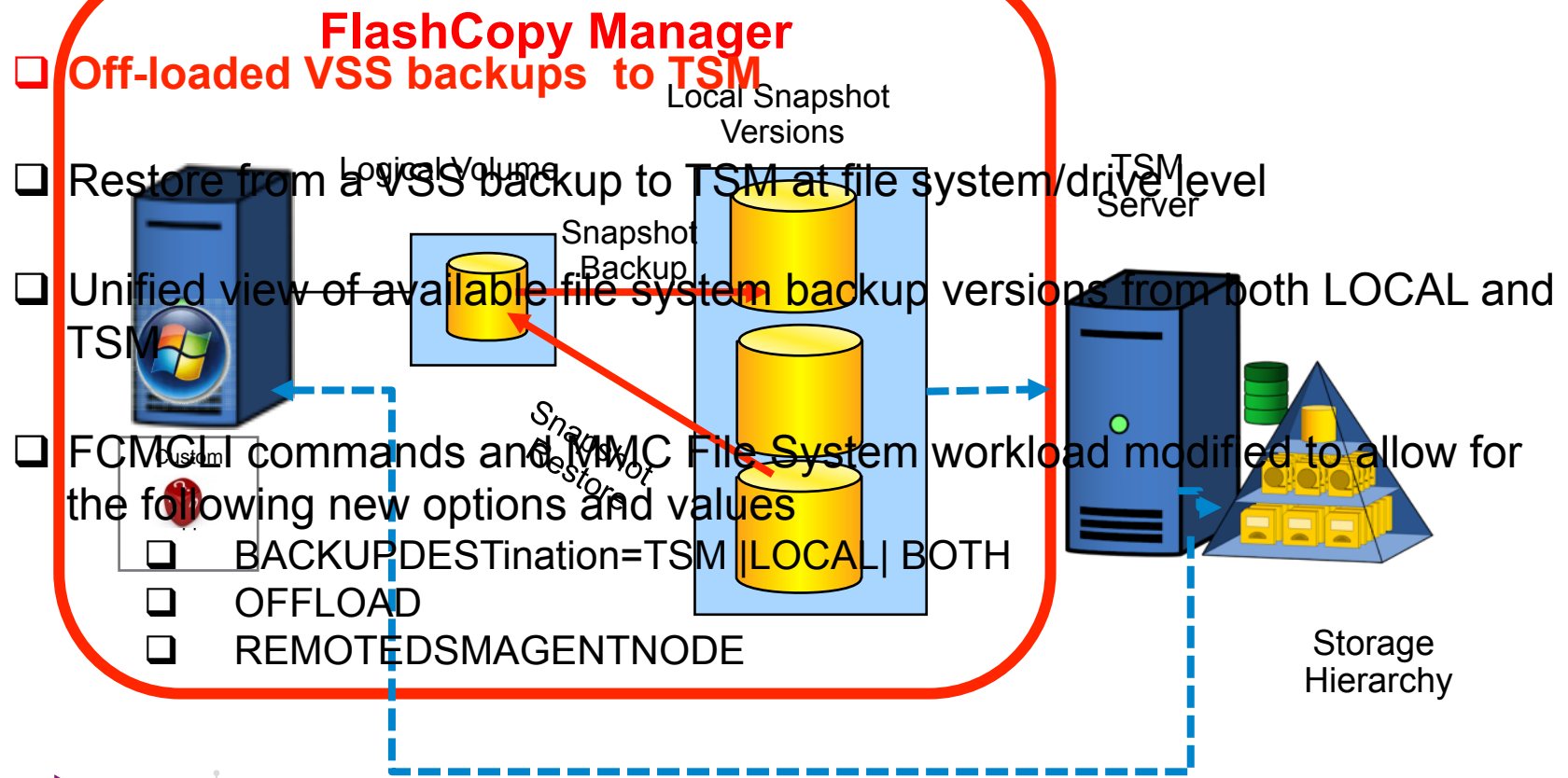


File System and Custom Application support

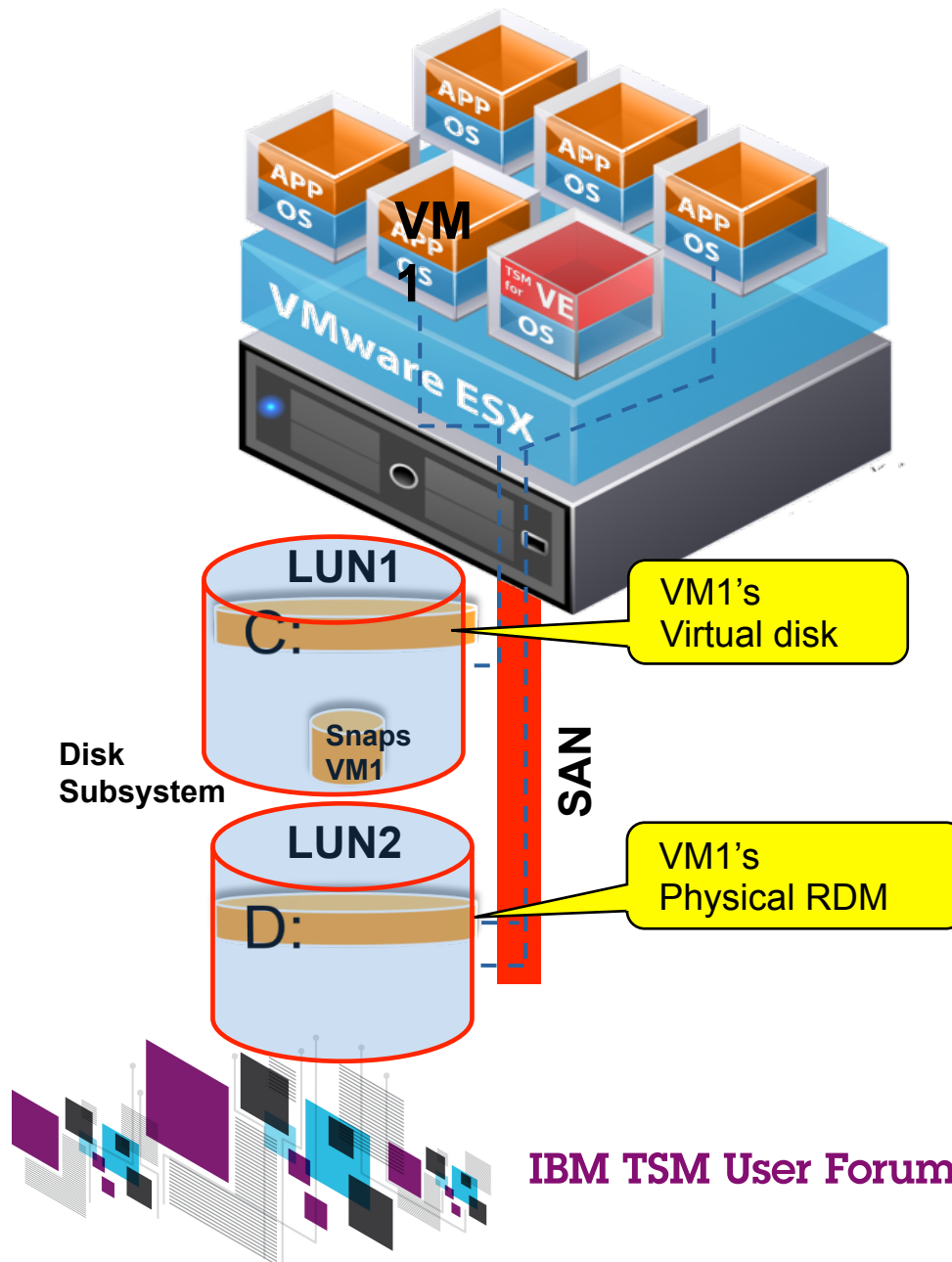
TSM Integration



- ❑ Integrated file system/drive level backup to TSM from VSS snapshot
 - ❑ Exploits Backup Archive Client image backup functionality



Add VMware support for backup/restore of VMs with Raw Device Mappings

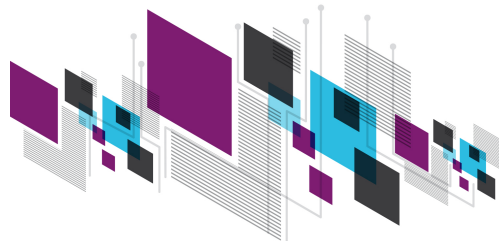


- Many databases and applications use Raw Disks/Partitions for performance reasons.
- When using FCM for VMware, this new enhancement avoids errors in VM restores that have raw device mappings.

Add VMWare support for backup/restore of VMs with Raw Device Mappings



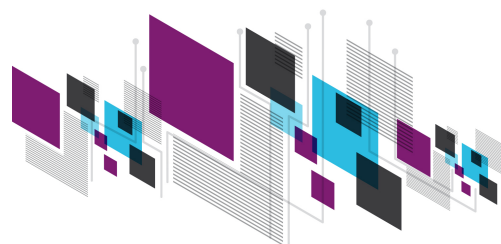
- **Types of RDMs:**
 - pRDMs (physical) and vRDMs (virtual)
- **FCM's Support:**
 - FCM supports both in toleration mode
- **FCM's Toleration Mode:**
 - Clear indication that the virtual disk was skipped inserted in the OVF configuration file and in saved Object Info Disk structure
 - Disks treated exactly as if the user had excluded these disks from the backup
- **How to protect them:**
 - FCM inside the VM can be used to protect RDMs
- **Examples of Applications and Databases that may use RDMs:**
 - Oracle, Informix, SQL Server, MYSQL
 - DB2 on Linux
 - MS Exchange
 - BEA Tuxedo





Levels of RDM Support

	vRDM	pRDM
FCM	Toleration Mode	Toleration Mode
TSM for VE	Fully Supported	Toleration Mode

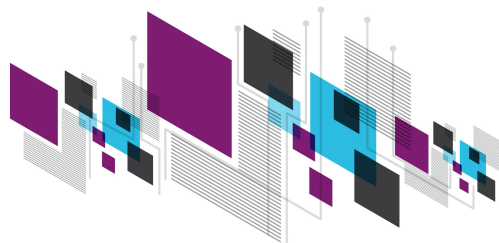




Concurrent Attach of Multiple VMs from same Backup

- ❑ **FCM 3.1**
 - ❑ Manages VMs one at a time, customers cannot attach/detach multiple VMs concurrently

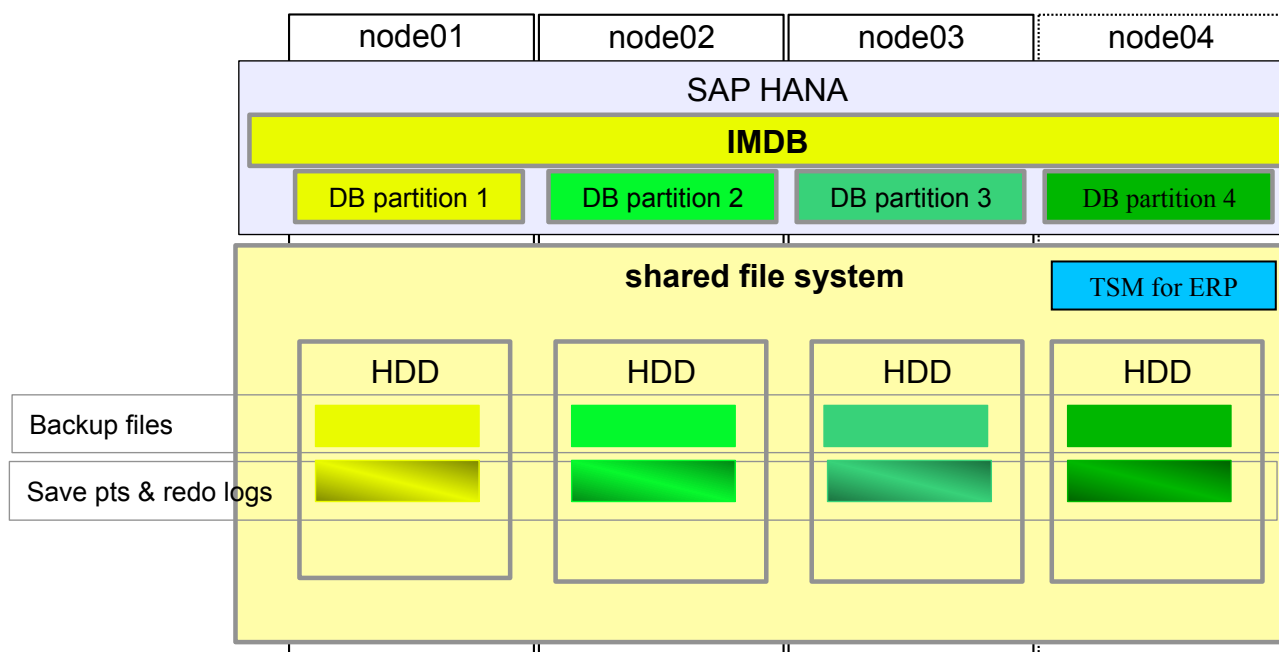
- ❑ **FCM 3.2:**
 - ❑ Allows concurrent attach of multiple VMs from the same backup
 - ❑ Supports granular detach operations which allow to detach VMs at the VM level so that other attached VMs within the same backup are not affected
 - ❑ Allows concurrent operations while VMs of a backup are attached, e.g. restore and tape backup
 - ❑ Maintains meta information of attached VMDKs in its internal repository, which will allow additional attach operations for the same backup and concurrent operations
 - ❑ Provides a new view in the GUI that displays all attached VMs and gives the possibility to detach virtual disks on VM level granularity



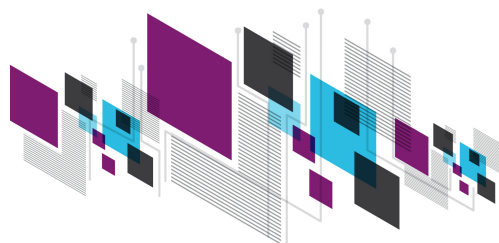
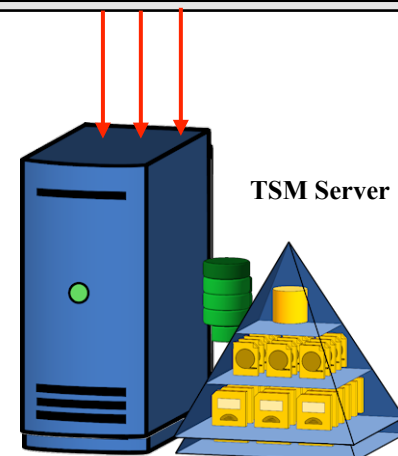


IBM Tivoli Storage Manager for SAP HANA databases

- Backup / Recovery for
- SAP HANA Database
 - Redo Logs
 - Configuration Files



- TSM Data Protection for SAP HANA databases**
- Run on 1 node in HANA cluster
 - Trigger HANA backup into filesystem
 - Send backup files for all nodes to TSM
 - Exploit high performance
 - features as needed



IBM TSM User Forum



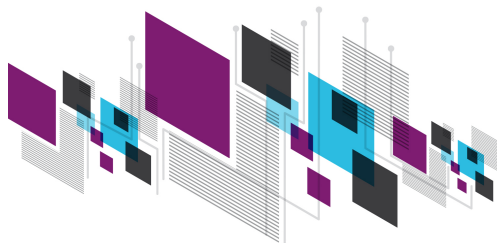
Backup Flow

❑ Backup Process

- ❑ Step 1: DB Consistency : SAP HANA is setting itself into backup mode
- ❑ Step 2: File DUMP: SAP HANA is backing up itself to the filesystem
- ❑ Step 3: DB Consistency : SAP HANA is resuming from backup mode
- ❑ Step 4: TSM for ERP reads all files which make up the database (backup.sh – data) and sends them to TSM. Configuration files are also included.
Alternatively Logs can be backed-up (backup.sh –logs)

❑ **All steps are automatically initiated by TSM for ERP via the backup.sh command**

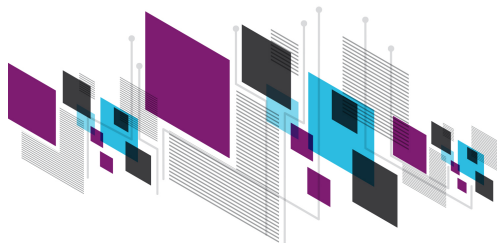
❑ **This command can be scheduled via CRON, Tivoli Workload Scheduler, TSM Scheduler,...**





Agenda

- TSM Server V6.3.3 News
- TSM Client V6.4 News
- TSM for Virtual Environments V6.4 News
- TSM for Mail / DB news
- TS Flash Copy Manager V3.2 News
- Questions**





Dashboard

TSM Next Gen GUI – Dashboard view

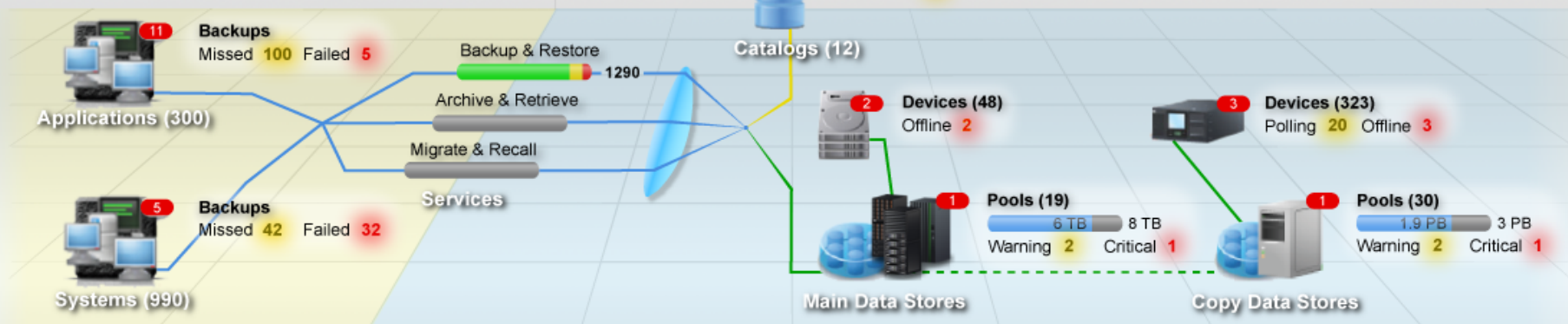
Last 24 hours collected at: Fri Aug 3 2012 15:18:57

Protected Clients (1290)

Sessions Completed		Data Transferred	
Systems	3621	Systems	1.2 TB
Applications	3621	Applications	3.68 GB

TSM Servers (12)

Catalogs	Active Log	Archive Log
3 TB Warning 2	0.6 TB / 1 TB	1.4 TB / 2.2 TB

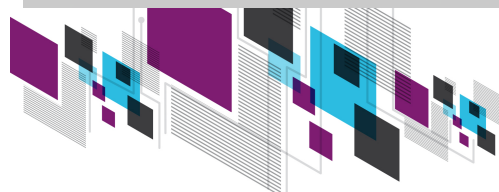


Alerts

ID	Category	Server Name	Symptoms	Assign To	Notes
4	Client	Server1	TEST PARAMETER process 162070790 terminated - for some reason	Rob	A note on the issue or how it was fixed
10	Device	YOUNG	TEST PARAMETER process 353796449 terminated - for some reason	Rob	A note on the issue or how it was fixed
59	Storage	RODGERS	TEST PARAMETER process 1415998114 terminated - for some reason	Joseph	A note on the issue or how it was fixed
120	Client	SAN_FRANCISCO	TEST PARAMETER process 1486100973 terminated - for some reason	Craig	A note on the issue or how it was fixed
136	General	IRVIN	TEST PARAMETER process 1287339900 terminated - for some reason	Craig	A note on the issue or how it was fixed
142	Client	PITTSBURGH	TEST PARAMETER process 20454842 terminated - for some reason	Harry	A note on the issue or how it was fixed
167	Device	PANTHERS	TEST PARAMETER process 1108481210 terminated - for some reason	Del	A note on the issue or how it was fixed
330	Storage	DENVER	TEST PARAMETER process 1146930667 terminated - for some reason	Harry	A note on the issue or how it was fixed
342	Storage	ANKMAN	TEST PARAMETER process 1297658308 terminated - for some reason	Del	A note on the issue or how it was fixed
404	Device	PHILADELPHIA	TEST PARAMETER process 1675844193 terminated - for some reason	Harry	A note on the issue or how it was fixed
429	Storage	FAVRE	TEST PARAMETER process 264120453 terminated - for some reason	Harry	A note on the issue or how it was fixed
445	Storage	FALCONS	TEST PARAMETER process 35772698 terminated - for some reason	Joseph	A note on the issue or how it was fixed
461	Device	BREES	TEST PARAMETER process 508977321 terminated - for some reason	Del	A note on the issue or how it was fixed
634	General	ARIZONA	TEST PARAMETER process 1652343219 terminated - for some reason	Craig	A note on the issue or how it was fixed
659	Device	STAUBACH	TEST PARAMETER process 682586482 terminated - for some reason	Rob	A note on the issue or how it was fixed
677	General	INDY	TEST PARAMETER process 2133312542 terminated - for some reason	Craig	A note on the issue or how it was fixed
766	General	ARLINGTON	TEST PARAMETER process 256943064 terminated - for some reason	Del	A note on the issue or how it was fixed

Showing 88 items | Selected 8 items

- TSM dashboard with “at a glance” visibility to entire backup environment
- Drastically improves usability and reduces complexity of managing TSM
- Summary status for key domains with a detailed alert list to take corrective actions
- Configurable analytics with thresholds and ability to drill down on areas of interest
- Mobile device visibility, alerts
- Common look & feel with IBM Storage Unified UI experience



IBM TSM User Forum



TSM useful links

- **TSM Wiki**
 - <https://www.ibm.com/developerworks/wikis/display/tivolistoragemanager/Home>
- **Enhancement Requests stellen**
 - <https://www.ibm.com/developerworks/rfe/>

