How to Restore a Server Within Minutes Using VMWare and TSM

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Requirements for a backup

- Consistency
- Actuality
- Speed
- Hardware independancy
- Continuity of service

Standard Solutions

Application specific backup mechanismens - *consistency*

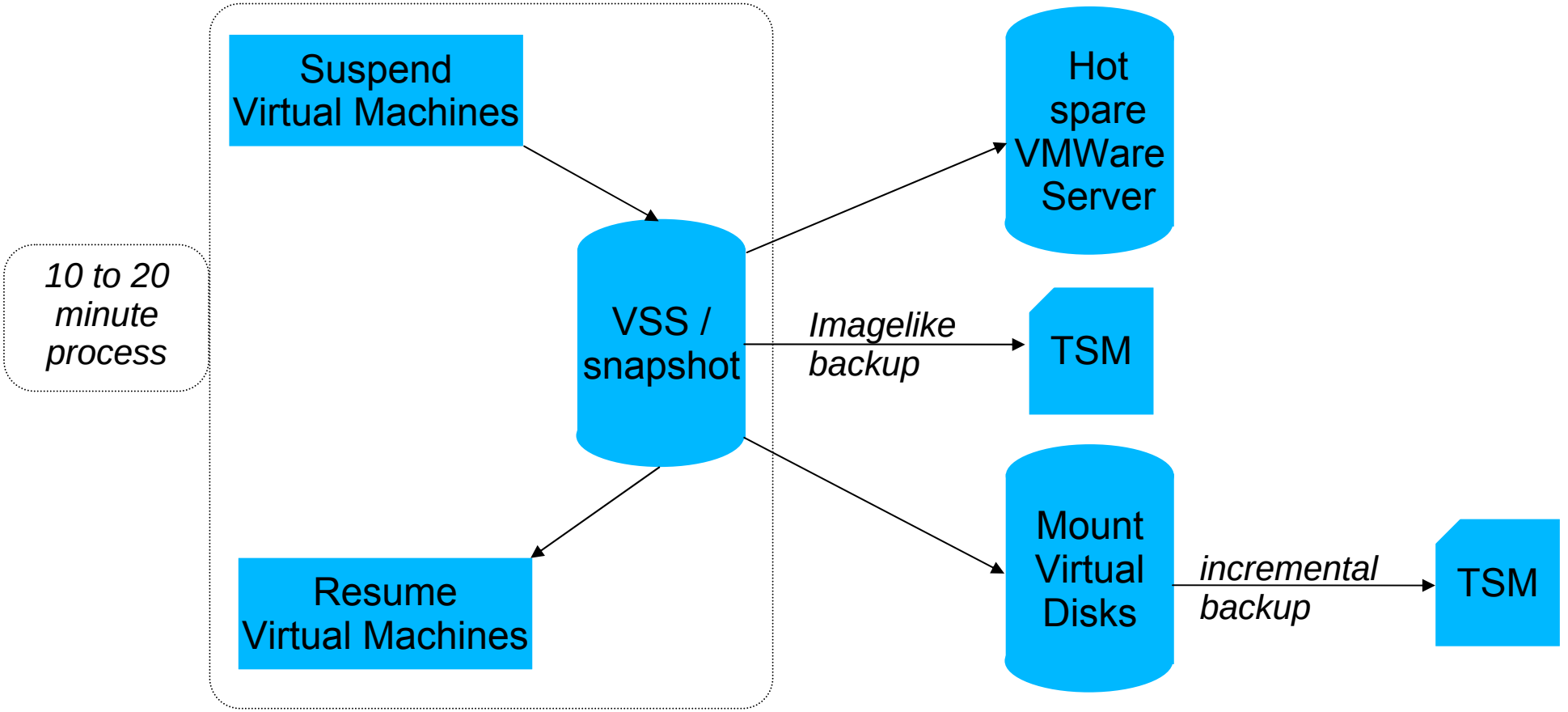
Frequent incremental Backups - *actuality*

Imaging Technologies - *speed*

Bare Metal Restore - *hardware independancy*

Snapshotting - *Continuity of service*

VMWare approach



The disaster

Option 1:

1 VMWare Server with 5 virtual machines failed (no stand-by server available)

- Fresh installation Windows 2003 and VMWare GSXServer: ~60 minutes
- Restore of virtual machines (6GB disk + 0,5GB suspend file) ~70 minutes
- Total ~120 minutes

Option 2:

1 VMWare Server with 5 virtual machines failed (stand-by server available)

- Resume the suspended Virtual machines ~2 minutes
- Even if the stand-by server is slow, slow service is better then no service!

Option 3:

1 Virtual machine failed with a 10 GB HDD

- Restore of the virtual machine ~15 minutes

All numbers are based on PIV, 3GHz, 2GB RAM, SI SATA RAID 200GB, 1 GBit/s

Automation

Suspend all running machines	VMWare Scripting API http://www.vmware.com/support/developer/
Create Volume Shadow Copy	Microsoft Volume Shadow Copy Service SDK http://www.microsoft.com/downloads/details.aspx?FamilyID=0B4F56E4-0CCC-4626-826A-ED2C4C95C871&displaylang=en
Backup Volume Shadow Copy	TSM CLI / API
Copy Virtual Disks (if necessary)	
Mount Virtual Disk	VMWare Disk Mount Utility http://www.vmware.com/download/diskmount.html
Incremental backup of virtual disk	TSM CLI / API

Additional Benefits

- New fascinating ways of development, testing and tracing for productive systems
- Server-to-go (Take your server with you)
- Rapid deployment of additional services
- New way for the provisioning of preconfigured servers to customers
- Improved utilisation of hardware

Pros & Cons

- Consistent
- Real hardware independence
- Almost high availability if paired with stand-by Server capacity
- Restore of Servers according to priority
- Restore of single virtual machines
- Faster restore of virtual servers compared to incremental backup
- Flexible

- Need suspend time
- Not real (TSM) image backup
- No „fits everything“ solution
- Not suitable for highest availability
- Hardware failure of VMWare Server concerns all Virtual Machines
- Backup space consuming, if all possible backups are done

Future demands & Outlook

- Native VSS support for TSM, eventually as Image Backup
- Testing of „suspendless snapshotting“ and Volume replication to different locations (see also iX /2005)
- Perfomance tuning for the restore process