ADSM User Experience

by

Klaus Dilper

Computing Centre - University of Karlsruhe

Box 6980, 76128 Karlsruhe, Germany

Klaus.Dilper@rz.uni-karlsruhe.de

2nd ADSM Workshop Karlsruhe

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Brief History

- October 1993 - Testing DFDSM
- January 1994 - Beginning Production with Version 1
- March 1994 - 1st ADSM Workshop Karlsruhe
- May 1995 - Early Support Program Version 2
- September 1995 - Production Version 2 MVS and AIX
- November 1995 - DRM Field Test
- November 1995 - Starting Software Port of ADSM Backup-Archive Client for UXP/M and UXP/V
- December 1995 - UoK became IBM European Reference Customer for ADSM
- March 1996 - 2nd ADSM Workshop
- June - October 1996 - Migrating from MVS to AIX

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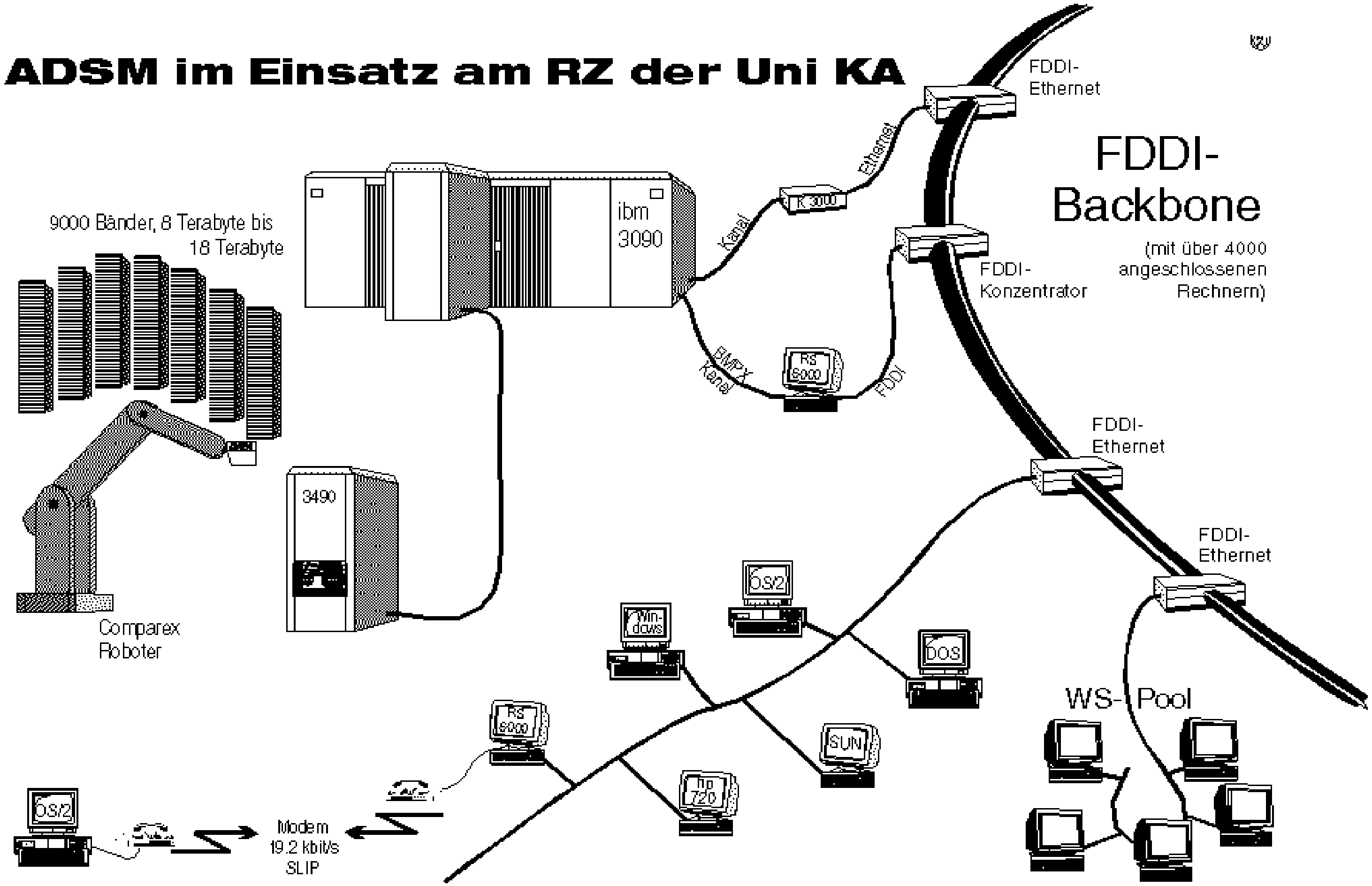

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ADSM Hardware I

- IBM 3090-300S
  - 128 MB Main Storage
  - 128 MB Extended Storage
  - 40 Channels
  - 150 GB 3380 and 3390 Disk Storage
  - 16 Cartridge Devices Type 3490E
  - 2 Ethernet Adapter (Fibronics and BMPX)
  - MVS 4.3 and TCP/IP Version 2
  - 5 ADSM Server for Backup only
- Comparex Cartridge Roboter System
  - 9000 Cartridges Type 3490E
  - 7.2 TB Total Capacity

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ADSM Hardware II

- IBM RS6000 Model 3BT
  - 128 MB Main Storage
  - 3 SCSI II Fast & Wide Adapter
  - 30 GB Disk Storage
  - 1 FDDI Adapter and 1 Ethernet Adapter
  - S370 Channel Emulator Adapter
  - AIX 3.2.5
  - 1 ADSM/6000 Server for Archive only
- Planned New Hardware Instead of IBM 3090-300S
  - 2 Multiprocessor RS6000 R30
  - 3590 Magstar Tape Technology
  - 200 GB Disk Storage

Amount of Data Managed with ADSM

- ADSM in 1994
  - 30 clients with about 75 GB disk storage
  - 750 MB new backuped data every night
  - 7.000.000 database entries
  - 1 GB database
  - 3 ADSM server (MVS)
- ADSM in 1996
  - 500 clients with about 1.500 GB disk storage
  - 15 GB new backuped data every night
  - 150.000.000 database entries
  - 15 GB database
  - 6 ADSM server (MVS and AIX)

Amount of Data to Manage with ADSM

- ADSM in 1998
  - 3000 clients with about 20 TB disk storage
  - 200 GB new backuped data every night
  - 1.000.000.000 database entries
  - 100 GB database
  - ? ADSM server (AIX)
- ADSM in 2000
  - ?
  - ?
  - ?
  - ?
  - ?

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Performance Considerations I

ADSM Performance depends on many different points.

- Server Consideratons
  - Server hardware - use as much power as you can get!
  - Amount of active clients - spread your backup activities over a large timeframe!
  - Amount of administration processes running at the same time - don't MIGRATE during BACKUP! Run EXPIRATION only once a day!
  - Size of database - don't oversize your database! Better run multiple servers on the same hardware!
  - Workload - spend a separate hardware for ADSM!

Performance Considerations II

- Client Considerations
  - Client hardware - CPU Power has a very important influence when using COMPRESSION!
  - Kind of data to archive or backup - many small files need very much more time to handle than less large files!!
  - Workload - try to reduce your activities during backup or archive processing!
- Network Considerations
  - Network topology - hope you have a high performance backbone!
  - Server connectivity - server should be a connected directly to the backbone!
  - Network transfer protocol - use IP when possible!
  - Network traffic

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Throughput Examples I

Client Hardware	System	Data	Comp.	Elapsed Time	Troughput
PS/2 - 33 MHz	OS/2	20971	ON	4:57	70.62
(Ethernet			OFF	1:12	291.26
to		2560*8	ON	11:00	31.77
FDDI)			OFF	7:22	47.44
HP-730	HP-UX	20971	ON	1:22	255.74
(Ethernet			OFF	0.36	582.53
		kByte		**min:sec**	**kByte/sec**

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Throughput Examples II

Client Hardware	System	Data	Comp.	Elapsed Time	Troughput
to		2560*8	ON	3:25	79.13
FDDI)			OFF	3:04	85.95
IBM - 3BT	AIX 3.2.5	20971	ON	1:21	258.90
(FDDI			OFF	0:19	1103.74
to		2560*8	ON	2:15	155.34
FDDI)			OFF	2:08	163.83
		kByte		**min:sec**	**kByte/sec**

ADSM Version 2

- Main Benefits for UoK
  - No more sleepless nights, because of very much better database backup facilities!!
  - No more sleepless nights, because of the possibility to backup the storage pools!
  - Little performance enhancements, because of a few new server option files parameters (MOVESIZETHRESH, MOVEBATCHSIZE)
  - HSM - not in use yet!

Hints & Tips I

- Performance
  - Remember topic **Performance Considerations**.
  - Use large disk storage pools. This gives a better throughput and minimizes the amount of tape mounts.
  - Empty disk storage pools down to 5-10% of their capacity on a daily base after backup processing has finished.
  - Turn CACHE of disk storage pools to OFF. This saves database entries and needs less database activities.
  - Do the first initial backup of a node directly to a tape storage pool. This minimizes data transfer and database activities.
  - In very fast network environments, turn COMPRESSION to off (use IDRC instead). In slow network environments turn COMPRESSION to on.
  - If possible, use a large TCPWINDOWSIZE and TCPBUFFSIZE to enhance network throughput.

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Hints & Tips II

- Performance
  - Set MOVESIZETHRESH and MOVEBATCHSIZE to their maximum to increase database performance.
  - Figure out your database cache hit rate (q db f=d) and increase the database buffers if neccessary.
  - Don't built very large filesystems at the client site. Recovery of large filesystems can cause problems.
- Availability & Security
  - Run at least one database backup daily!
  - Set recovery mode to ROLLFORWARD!
    Caution - this increases your recovery log rapidly!
  - Mirror at least your recovery log volumes. Better, mirror both recovery log and database volumes!

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UoK - Wishlist

- ADSM DB performance improvements
- Overall performance improvements
- Better support for Unix-cluster and file-server environments
- Full support for DCE/DSF environments
- Dynamic device sharing between multiple ADSM servers (AIX)
  - Tape drives should be unloaded automatically before the server stops (AIX).
- Unix like wild-card processing
- Assimilate command line functionality to the GUI
- Provision of a DB interrogation and manipulation tool
- Provision of a centralized error logging facility