Network Backup with HYPERtape
BoF Session at the San Jose CUG Conference

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San Jose BoF Session Concerning HYPERtape

- Brief Introduction to HYPERtape and HYPERtape/Media (On Request)
- Special Features of HYPERtape Usage with Regards to UNICOS- and IRIX-Platform as Server
- HYPERtape Experiences at CRI/SGI Sites
- Questions, Answers & Suggestions from Audience
- Any Other Things Concerned with HYPERtape

This is a User Driven BoF Session

The HYPERtape Concept

- HYPERtape knows three logical instances
  - ControlNode
    - Scheduler, dispatcher, controller of Backup-Complex
    - Uses control path to initiate backup from ServiceNode
  - ServiceNode (elsewhere known as client)
    - Uses data path towards BackupNode to back data
  - BackupNode (elsewhere known as server)
    - Stores data according template-predestined storage media
- HYPERtape Actions
  - Actions are SAVE, RESTORE and LIST

HYPERtape/Media

- HYPERtape/Media: Implemented for several platforms
- HYPERtape/Media: A comprehensive Media Library Management System
- Catalog / Scratch Pool / Tape Pool
  - maintains a list of datasets and associated volumes, owners, media types, scratch tapes, associated tape drives
- HYPERtape/Media reduces manual intervention, improving
  - efficiency, accuracy, control of information center
- Complete media management for tapes, cartridges or other media
- Accidential corruption of datasets is virtually eliminated
- Media is automatically selected from available scratch pool
- Performance improvement by segmentation of savesets

HYPERtape Organization & Backup Technique at UoK

- ControlNode
  - A SUN under Solaris
  - Option to have a second ControlNode
- BackupNode
  - A CRAY Y-MP EL, connected to STK ACS-4400
    - Receives backup-data on disk (here, backup is completed)
    - Stages backup-data from disk to cartridges
- Additional Special BackupNode
  - BackupNode DEC ALPHA for special Department-Archival
    - Uses HYPERtape/Media for Digital UNIX
    - Bulk storage is Quantum 4700 Tape Loader

Supported Clients at UoK

HW Platform	OS	Bkp-Utility
• DEC Alpha	Digital UNIX	CPIO
• SUN	SunOS, Solaris	CPIO
• IBM RS6000	AIX	CPIO
• SGI	IRIX	CPIO
• SNI RM400	SINIX	CPIO
• VAX (-Cluster)	VMS	Backup
• CRAY Y-MP EL	UNICOS	CPIO

- Client platforms, planned 1997: Windows NT, HP-UX, LINUX

Statistical Evaluation of HYPERtape ControlNode-Logfiles at UoK

	Topic	CRAY EL-SN
☺	Monthly # of Ht-Client-Jobs (appr.)	9,000
☺	Monthly Backup-Amount (MB)	200,000
☺	Monthly job-connect (hours)	370
☺	Number of clients	53
☺	Total sum of Backup-Objects	370
☺	Average size of Full-Backup (MB)	290
☺	Average Incremental-Size (MB)	13
	(% from full)	4.5

HYPERtape Usage, step 2: 2,000 cartridges 3480/250MB native

HYPERtape Usage, step 3: 2,000 cartridges 3490-E/800MB native

Performance Aspects at UoK

	GB/h	MB/s
DEC-ALPHA	5.040 (max 9.720)	1.400 (max 2.700)
SUN	2.520 (max 5.400)	.700 (max 1.500)
IBM-RS6000	1.944	.540
SGI	2.880	.800
SNI-RM400	2.520	.700
VAX	1.080	<.300>
CRAY Y-MP EL	2.736	.760

- Backup windows
  - Full backups, starting at 08 pm, 2 jobs in parallel
  - Incremental backups, starting at 10 pm, 4 jobs in parallel

Future Aspects at UoK

The University of Kiel

- Will go for additional decentralized fileservers
- Network backup will be done with HYPERtape & decentralized servers (depends on budget, nothing else)
- Network backup will be controlled by one central Ht-ControlNode
- Network backup will be performed by Departmental BackupNodes
- Potential hardware platforms: Cray or SGI, maybe others
- Software platforms
  - HYPERtape for network backup and associated caching level
  - UNICOS-DMF or AMASS for staging level