



Computer Associates®

The Power of Virtual Tape

BrightStor® CA-Vtape™
Virtual Tape System

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Agenda

- Why virtual tape and What is it?
- BrightStor CA-Vtape facts
- Make it happen
- BrightStor CA-Vtape at UNMS
- Q&A

The Trouble with Tape

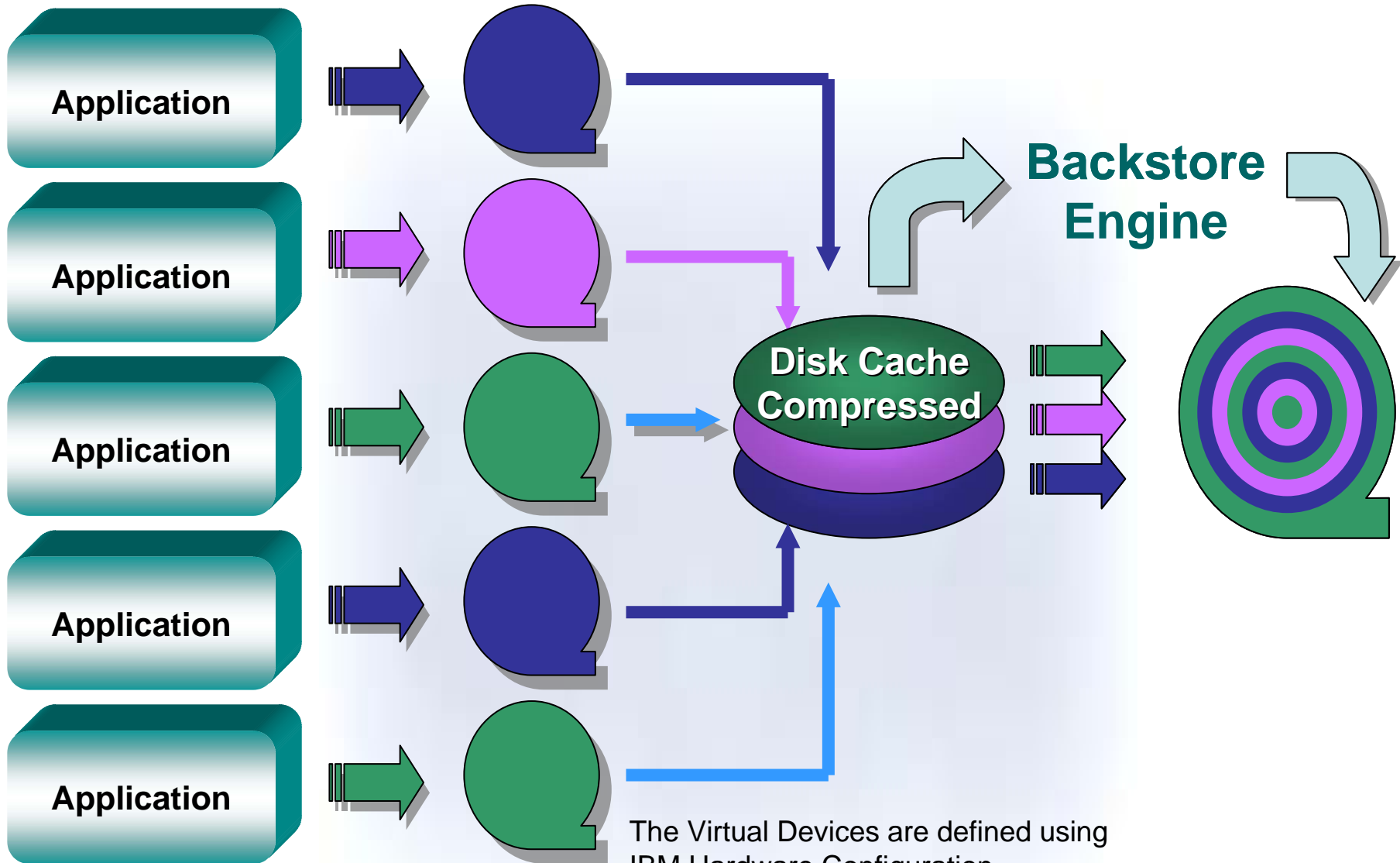
- Physical tapes are not fully utilized
- Only a fraction of drive potential is utilized
- Mount delays and bottlenecks
- Tape maintenance is **EXPENSIVE**
 - Gets higher as equipment ages
- Technologies constantly changing
 - Performance, Connectivity, Media
- Requirements constantly changing
 - Hardware, Security, Disaster Recovery, Data retention

Virtual Tape is

- More tape drives than you actually have
- Direct physical tape requests to DASD (tape CACHE), then “offload later”
- Optimize tape utilization by “stacking”
- Transparent to users
 - No JCL changes required

Always a combination of software and hardware resources.

How BrightStor CA-Vtape Works



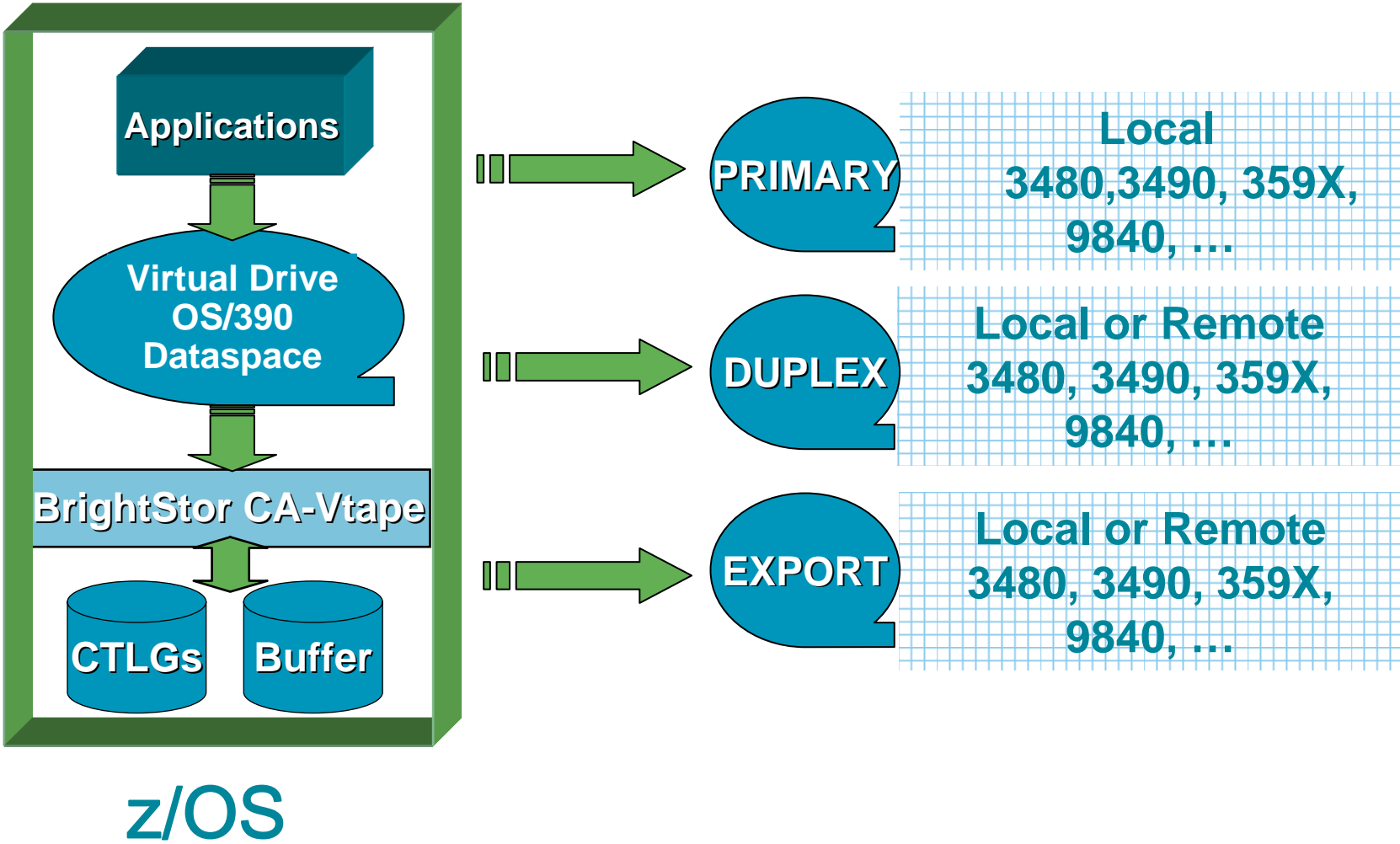
The Virtual Devices are defined using IBM Hardware Configuration Definition (HCD) software during installation.

Facts

BrightStor CA-Vtape resources...

- Uses ANY z/OS mainframe TAPE and DASD
 - No compromises on hardware functionality
 - No tape drive or robotic upgrades required
 - With or without Tape management system integration.
 - No dedicated physical tape drives
 - Duplication as you require
 - Dynamically add cache or virtual devices
- Simplified Disaster Recovery
- Easy to implement

Facts



Facts

- We are pleased to announce the availability of BrightStor CA-Vtape Virtual Tape System (BrightStor CA-Vtape) r11.5. (6 Sept 2005)
- Disk Buffer Management
 - This enhancement provides efficient, dynamic disk buffer management and increases performance. By replacing the current Data-In-Virtual (DIV) access method with DFSMS Media Manager I/O services CPU, utilization is reduced while improving throughput. The DASD cache buffer, which must be DFSMS managed, does not require pre-formatting and has no limitation on total capacity.
 - Parmlib attribute named CacheManagement= [Static|Dynamic]

Facts

- Virtual volume sizes: 400MB or 800MB or 2GB
- Maximum number of subsystems per LPAR is 8
 - This enhancement provides functionality to enable 24*7 availability even while maintenance is being applied
 - Based on the same or different complexes
- Maximum number of Virtual Devices per subsystem is 512.
- Maximum number of Virtual Devices per LPAR is 2,048
- Maximum number of Virtual Volumes: 500,000*

Facts

- Maximum size of DASD buffer pool: 12.5 TB*
 - The LDS_DELETE command is introduced. This command allows you to delete in real time and without an outage, the predefined (static) VSAM Linear Data Sets (LDS) that make up the DASD buffer.
 - An percentage parameter can be specified to limit the cache released to a percentage of the total allocated cache. An exception report will be generated as well as data sets that can be used to reallocate, initialize, and add the deleted VSAM data sets if you determine they need to be reallocated for any reason.

Facts

- Virtual Drives support up to 8 CHPIDs.
- Can now automatically take advantage of high performance channel programs (IBM ESS) via DFSMS Media Manager
- BrightStor CA-Vtape will generate one ICF catalog entry for each Externalized Virtual Volume.

If duplex tapes are being created, two catalog entries will be generated.

Facts

■ Client/Server architecture

- Primary and Secondary Externalization Servers
- Recall Server
- It is recommend that only one Backstore Engine be configured as both Recall and primary Externalization Servers.

■ The PARMLIB feature

- control processing attributes, options, and additional features of BrightStor CA-Vtape

```
ParmlibDirectory read from VTPARMS :  
  
Maps <sections> to PDS Members  
  
ParmlibDirectory..... VTPARMS  
StartupOptions..... VTPARMS  
DynamicOptions..... VTPARMS  
VirtualDeviceList..... VTDRIVE  
GroupDefinitions..... VTGROUP  
DatasetFilters..... VTFILTR  
StartupCommands..... VTSCMDS  
ShutdownCommands..... VTPCMDS  
  
StartupOptions read from PARM61 :  
  
BypassUCBChecking..... N  
MIHTimeoutValue (in seconds) ... 15  
SubAddressSpaceName..... SVTSAS  
BypassOfflinePhysicalDevices... Y  
LogDataspacesize..... 8  
LogCSAsize..... 16  
Tasklib..... AUTOMATIC  
  
DynamicOptions read from PARM61 :  
  
BypassRLLCompression..... Y  
HardwareCompressionOption..... GROUPS  
MinimumCompressionRate..... 15  
MaximumCompressionCPU..... 100  
FullMaxdrivesEnforcement..... N  
LogDetailLevel..... 3  
LogStream..... VTAPE.XE61.LOG  
BackstoreRetryCount..... 16  
CacheWarningThreshold..... 99  
CacheAutoHoldThreshold..... 95  
CacheAutoReleaseThreshold..... 30  
CacheAutomationSchedule..... (00:00-23:59)  
ForeignTapesExpdt..... 1998/000  
CatalogManagedDate..... -1  
NeverExpireDate..... 1999/365
```

Make it happen...

- Very important is the fact that it is easy to get what you want
 - Via Parmlib
 - Or via ISPF
 - Or via Console commands
 - Or via a PC GUI: BrightStor CA-Vantage GMI

...in 3 steps

|

Make it happen step 1: You select what is directed to Virtual Tape

- Fact: no dedicated physical tape drives
- BrightStor CA-Vtape intercepts tape mounts based on Data Class or Data Set Name Filters.
- The esoteric specified in the UNIT JCL parameter must contain Virtual Devices addresses.

Make it happen step 2: Groups are doing it all...

- Esoteric unit
 - To indicate the physical location, ...
- Duplex or not
- To data.

Group Number	Primary	Duplex Copy	Export Copy
Group x1	Y		
Group x2	Y	Y	
Group x3	Y		Y
Group x4	Y	Y	Y

- Subgroups (Short | Medium | Long) to optimise recycling
 - Expiration date subdivision
 - Each stacking group has three subgroups (short, medium, & long)
 - Expiration date ranges can be customized.

Make it happen step 3: Backstore Management

- SVTS SET MAXDRIVES=*nn*
- AutomatedSubgroups queues is determined by comparing DASD buffer utilization versus the DASD buffer thresholds percentages:
 - CacheWarningThreshold
 - CacheAutoHoldLowThreshold
 - CacheAutoReleaseHighThreshold
 - CacheAutomationSchedule.

And... data with no need to go to physical tape...

Some more things to do

- Recycling
 - Data is moved, tape-to-tape.
 - All application data remains accessible during processing.
 - Threshold-based processing reduces volume reorganization requirements to a minimum.
 - Command options enable processing by selected groups to further control processing.
 - Command options enable processing by selected VOLSERS.
 - The output Backstore tapes can optionally be duplexed.
 - Any number of concurrent processes can be run
 - SIMULATE processing provided
 - Reports provide extensive knowledge of all actions taken.
 - NEW: Recycle has been enhanced to allow you to specify a list of physical volumes to be used for input selection and/or a list of physical volumes to be excluded from input selection. The lists are referenced by two new optional DD Statements: PINCLUDE and PEXCLUDE.
- Activate Integration with tape management
- D/R set-up
- Monitoring / Reporting...

Menu	List	Mode	Functions	Utilities	Help
File Help					

CA-Vtape Virtual Volume Display Panel					
Command ==>					
Cache Limit(MB)	13480	Cache Inuse(MB)	13120	MB Free	
Use S to display additional virtual volume data					
Valid	Tape	DSN		Cmp%	
102208	SVTS.TGRP51.RETPD022			0	
102209	SVTS.TGRP52.RETPD022			0	
102210	SVTS.VTAPE3.RETPD022			0	

```

BrightStor CA-Vtape V2R00 S V T S U T I L - X E 6 1 - Thursday SEP 04, 2003 16:46:28
----- Utility Control Statement(s) & Report Log -----
SVTSU0171I LIST=BACKSTORE
SVTSU1657I GLOBAL VCAT and Local VCAT DDName statements defined. Using specified DD statements to
identify GLOBAL VCAT and Local VCAT datasets
List Backstore Log                2003.247 16:46:29

```

Virtual	Volser	Data Set Name	Prim	Primary	Primary2	Duplex	Duplex2	Group	Sub	MB	Size	Cmp%
			FS#	Volser	Volser	Volser	Volser	Group	Group			
100002	SVTS.TGRP52.P1441.TEST1A	0022	520673			721102		52	S	388	44	89%
100004	SVTS.TGRP51.P1441.TEST1A	0015	522132					51	S	388	388	0%
100005	SVTS.TGRP51.P1441.TEST1B	0016	522132					51	S	8	8	0%
100006	SVTS.TGRP51.P1441.TEST1C	0017	522132					51	S	8	8	0%
100007	SVTS.TGRP51.P1441.TEST1D	0018	522132					51	S	8	8	0%
100008	SVTS.TGRP51.P1441.TEST1E	0019	522132					51	S	8	8	0%
100009	SVTS.TGRP51.P1441.TEST1F	0020	522132					51	S	8	8	0%
100010	SVTS.TGRP51.P1441.TEST1G	0021	522132					51	S	8	8	0%
100011	SVTS.TGRP51.P1441.TEST1H	0022	522132					51	S	8	8	0%

BrightStor CA-Vantage GMI

- **BrightStor CA-Vantage GMI** - BrightStor CA- Vtape is now one of several CA products that make use of the same Graphical Management Interface (GMI) known as BrightStor CA-Vantage GMI.
 - View and analyze BrightStor CA-Vtape subsystems across the enterprise, including information like cache utilization, thresholds and settings.
 - View and analyze Virtual Volumes and its data sets with options to zoom to the BrightStor CA-1 or BrightStor Dynam/TLMS GMI details or to 3rd party tape management systems volume details if BrightStor CA-Vantage Tape Resource Option is installed.
 - View and analyze Group Definitions, including the externalization queue, group status and Backstore activity.
 - View and analyze virtual device activity and check dataset and Dataclass filter lists.
 - Execute console commands in real time.
- All of these are available free to licensed customers of the following CA products:
 - BrightStor CA-1 Tape Management (BrightStor CA-1)
 - BrightStor CA-ASTEX Performance (BrightStor CA-ASTEX)
 - BrightStor CA-Disk (NEW)
 - **BrightStor CA-Vtape Virtual Tape System (BrightStor CA-Vtape) (NEW)**
 - BrightStor CA-Dynam/TLMS Tape Management Systems (BrightStor CA-Dynam/TLMS)
 - Advantage CA-Datacom/DB Database (Advantage CA-Datacom/DB)
 - Advantage CA-IDMS/DB Database (Advantage CA-IDMS/DB)

BrightStor CA-Vantage GMI

The screenshot displays the BrightStor SRM Object Tree on the left and two main windows in the center: 'CA-Vtape Systems' and 'CA-Vtape Virtual Volumes'.

BrightStor SRM Object Tree:

- Hardware Errors - Disk/Tape
- Performance Management (DASD)
- Raid Devices
- Storage Groups
- Tape Resource Management
 - Active Tape Units
 - Tape Management Systems
 - Robotic Systems
 - Virtual Tape Systems
 - BrightStor CA-Vtape
 - Systems
 - Group Status
 - Virtual Device Activity
 - Backstore Activity
 - Virtual Volumes
 - Virtual Volume Data Sets
 - Externalization Queue
 - Parameters
 - Group Definitions
 - Data Set Filter Lists
 - Dataclass Filter Lists
 - IBM VTS
 - StorageTek VSM
 - Tape Devices and Media

CA-Vtape Systems Window:

File View Edit Commands Actions Help

Show Line: Actions Help

Vtape ID	Max Drives	Used MB	Reclaimable	Cache Free	Scr Virt Vols	Work Queued
1 SVT1	6	805,920	760,720	1,200	12,340	Y
2 SVT3	8	10,600	10,640	2,000	4,926	N
3 SVT4	8	4,000	0	400	1,322	N
4 SVT6	6	297,400	280,800	2,600	3,496	Y

CA11 / QC62

1 SVTSPTU | 007E | Pausing before requeueing recall | Queued: None | 0

CA11 / QC62 - (OBJ10560) CA-Vtape Backstore Activity RT Records: 1

CA-Vtape Virtual Volumes Window:

File View Edit Commands Actions Help

Show Line: Add Volumes Delete Volumes WP On VWP WP Off VWP Deq Virt Volume WP On Virt Vol WP Off Virt Vol Start Recall Stop Recall

Virtual Volume	VRM	Prim	1st DSN on VV	Cmp Size of VV	Size
1 AC0000	0000	521	SYS02084.T124054.RA000.RSTR.R0272351	52	
2 AC0001	0000	524	SYS05005.T181526.RA000.ESDGENIN.R0106673	48	
3 AC0002	0000	520	SYS05005.T183005.RA000.ESDGENSY.R0106959	40	
4 AC0003	0000	523	SYS03121.T132513.RA000.ESDGENSY.R0315167	56	
5 AC0004	0000	523	SYS03125.T143057.RA000.ESDGENSY.R0577027	52	

CA11 / QC62 - (I) al Volumes LI Records: 106300

Practical information

- *Please note :*
The sunset date for BrightStor CA-Vtape r11 is September 30, 2006.
- For more information:
<http://supportconnect.ca.com>

BrightStor CA-Vtape at UNMS

Presentation Christian Stiévenard



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Questions



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V-TAPE à L'UNMS

Christian Stiévenard


U.N.M.S

Qui sommes-nous ?


La Belgique compte 7 Organismes Assureurs

...


 **Mutualités
Chrétiennes**
4.447.673 membres
43,76% *pdm*

 **Mutualités Libérales**
597.755 membres
5,84% *pdm*

 **Mutualités
Socialistes**
2.853.367
membres
27,89% *pdm*

 **SNCB**
137.387 membres
1,34% *pdm*

 **Mutualités
Libres**
1.670.620 membres
16,33% *pdm*

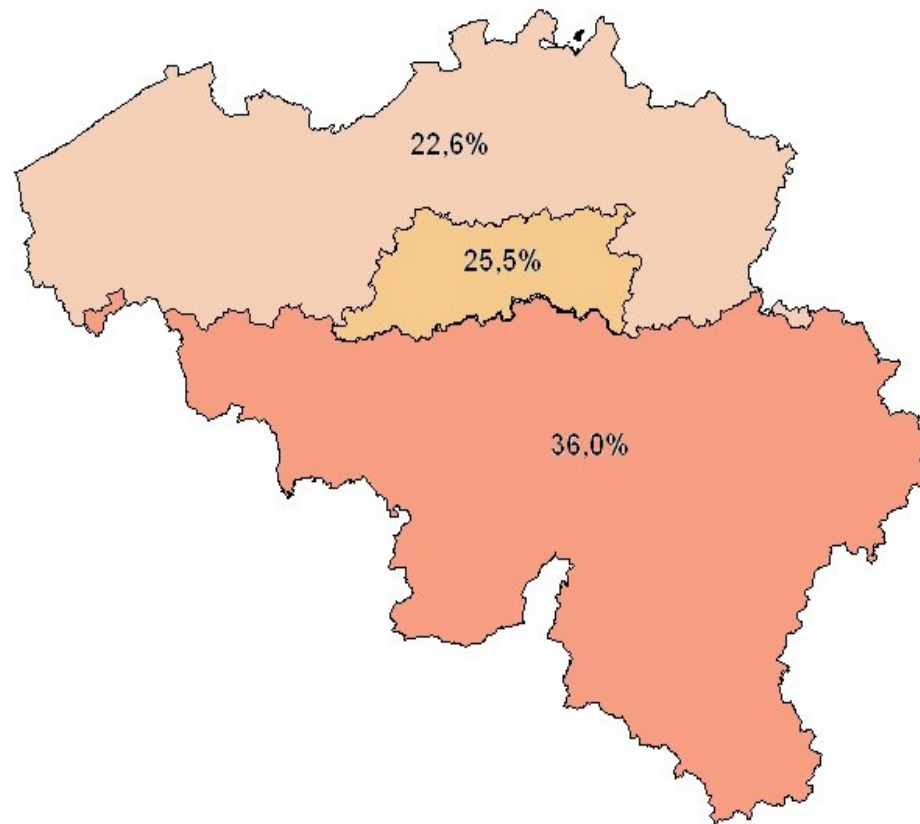
 **CAAMI**
75.764 membres
0,74% *pdm*

 **Mutualités Neutres**
478.854 membres
4,09% *pdm*

...qui se partagent 10.231.420 clients  Computer Associates®

Une présence diversifiée

Parts de marché par Région



- 16 Mutualités locales
- 5.100 travailleurs directs
- 5.000 travailleurs dans les asbl et le réseau socio-sanitaire
- 750 bureaux et points de contacts

Une des 20 plus grandes entreprises de Belgique

Notre infrastructure Hardware

- Mainframe :

IBM 2084-302 + ICF. (16384MB, MIPS=**855**, MSU=**147**)

8 parallel channels. (escon converters)

60 ESCON channels.

1 OSA-2 To/Eth.

- Tape Library server :

1 powderhorn 9310 Storagetek (capacité 5000 slots)

1 powderhorn 9310-20c Storagetek(capacité 5000 slots)

- Tape Drive :

12 drive Storagetek 9840 haute capacité (Eagle)

8 drive Storagetek type 3490 (Timberline)

L'acquisition de V- Tape Pourquoi ?

- Réduire le nombre de cassettes
+/- 16.0000 cassettes actives
- Simplifier la gestion de la Bandothèque
(deux personnes full-time)
- Réduire les coûts de notre infrastructure
Tape Library
- Améliorer la disponibilité des datas
- Renforcer la sécurité des datas

Le Projet V-Tape

Trois étapes

- Réorganisation de la bandothèque
- Implémentation
- Reprise de l'existant

Réorganisation de la bandothèque

- Toutes les cassettes connues et correctement répertoriées selon les règles du tape management (C.A 1)
- Rétentions correctes
- Réduction du parc de 16.000 à 10.000 cassettes avant implémentation

Réorganisation de la bandothèque



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- Durée +/- 1 an
- Fondamentale pour la réussite du projet

Implémentation

(Equipe Système)

- Installation software
- Définition du cache (80 GB)
- Backstore (Default)

Implémentation

(Equipe opérations)

- Définition des groupes (Minimum)
- Encodage des dataset names (parmlib)
- Modification des JCLS (UNIT)
- Dual Copy
- Recycle (1x par semaine)

Reprise de l'existant

- Planning
- Migration par année d'expiration
- Copycat
- Durée +/- 6 mois

Nos bénéfices

- L'ensemble des datas migrés V-Tape représente maintenant 150 cassettes haute densité en dual copy.
- Notre parc total réduit à 2000 cassettes.
- Suppression d'un silo du tape library server (capacité 5000 cassettes).
- Suppression de 6 drives de type 3490.

Nos bénéfices

- Data disponibles en permanence dans le tape library server
- Gestion de la bandothèque par une seule personne (deux heures par jour)
- Tous nos datas ont une copie sécurisée dans un site extérieur

Les coûts engendrés

- Acquisition de drives haute densité supplémentaires
- Destruction du parc de cassettes type 3490

Evolution future

- CA – VANTAGE GMI

Questions ?

Merci de votre
attention



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V-TAPE à L'UNMS

Christian Stiévenard