Managing Storage Without Boundries: Managing Growth & Mitigating Risk…On A Budget

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CA BrightStor Solutions

Abstract

- Efficiently managing storage and mitigating the risk of data loss are tremendous challenges today. As storage complexity increases and budgets flatten out or decrease, it becomes even more challenging. This session discusses these challenges and lays out a logical, defendable strategy to more efficiently manage storage and cost-effectively mitigate risk.

Agenda

- Introduction

- Storage Efficiency
  - What is Efficient Storage?
  - Planning for Efficiency
  - Managing for Efficiency
  - Automating for Efficiency

- Risk Mitigation
  - Determine value of data
  - Link threats to protections
  - Select appropriate solutions

Storage Challenges

- Rapid storage growth and complexity
- Shrinking backup window
- No time for downtime
- Overburdened storage administrators
- New government-mandated regulations
- Multiple:
  - Platforms, databases, applications and storage types (DAS, NAS, SAN)
- Budget constraints

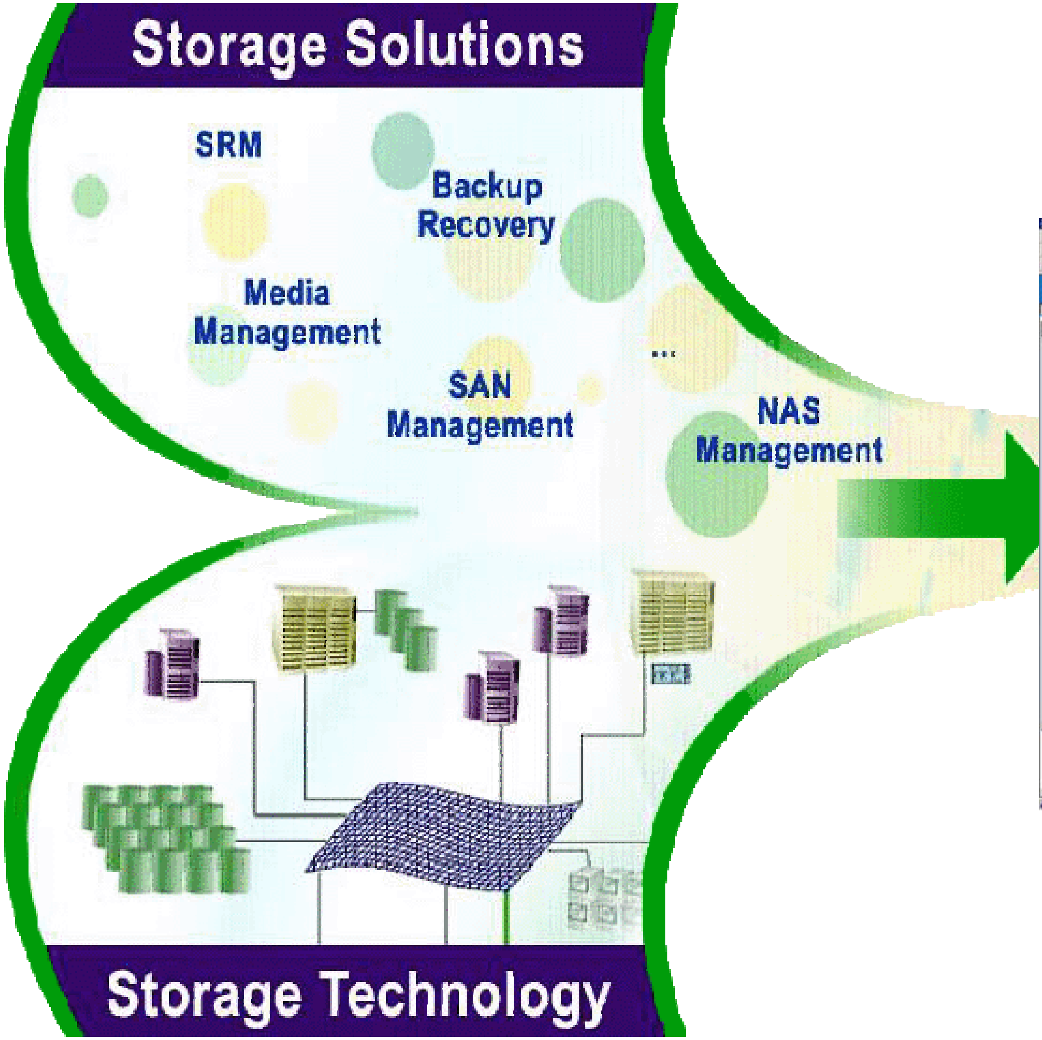
"How do I mitigate risk, keep up with growth and stay within budget?"

Enterprise Requirements

- Application / data must be 100% protected
- Maximum application / data availability
- Efficiently Handle Growth
- Hit the backup window
- Reduce operator oversight and intervention
- Increase operational efficiency
- Price/performance ratio which meets internal SLA requirements and budget constraints
- Meet regulatory requirements

“Storage everywhere…how to consolidate it …how to protect it…how to stay within budget?”

Order to the Chaos



Storage Solutions

SRM

Backup Recovery

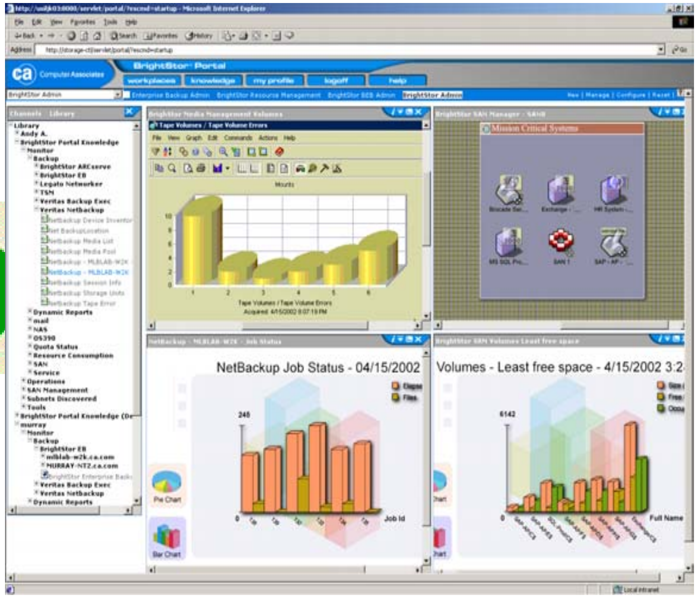
Media Management

SAN Management

...

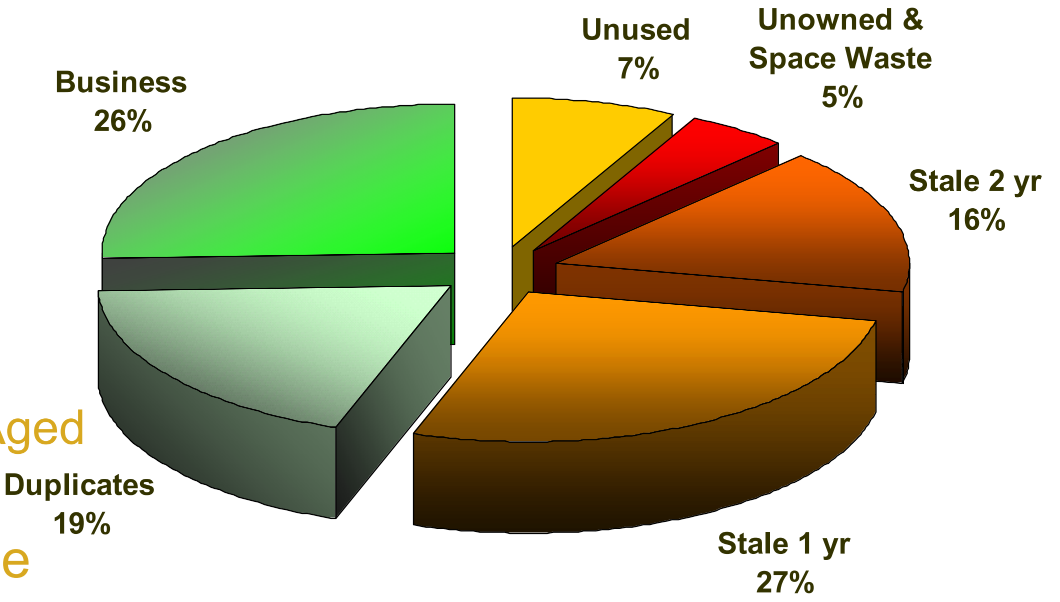
NAS Management

Storage Technology


BrightStor Portal
workplaces
knowledge
my profile
logoff
help
Enterprise Backup Admin
BrightStor Resource Management
BrightStor Admin
Channels Library
BrightStor Media Management Volumes
Tape Volumes / Tape Volume Errors
BrightStor SAN Manager
Mission Critical Systems
NetBackup Job Status - 04/15/2002
Volumes - Least free space - 4/15/2002 3:2

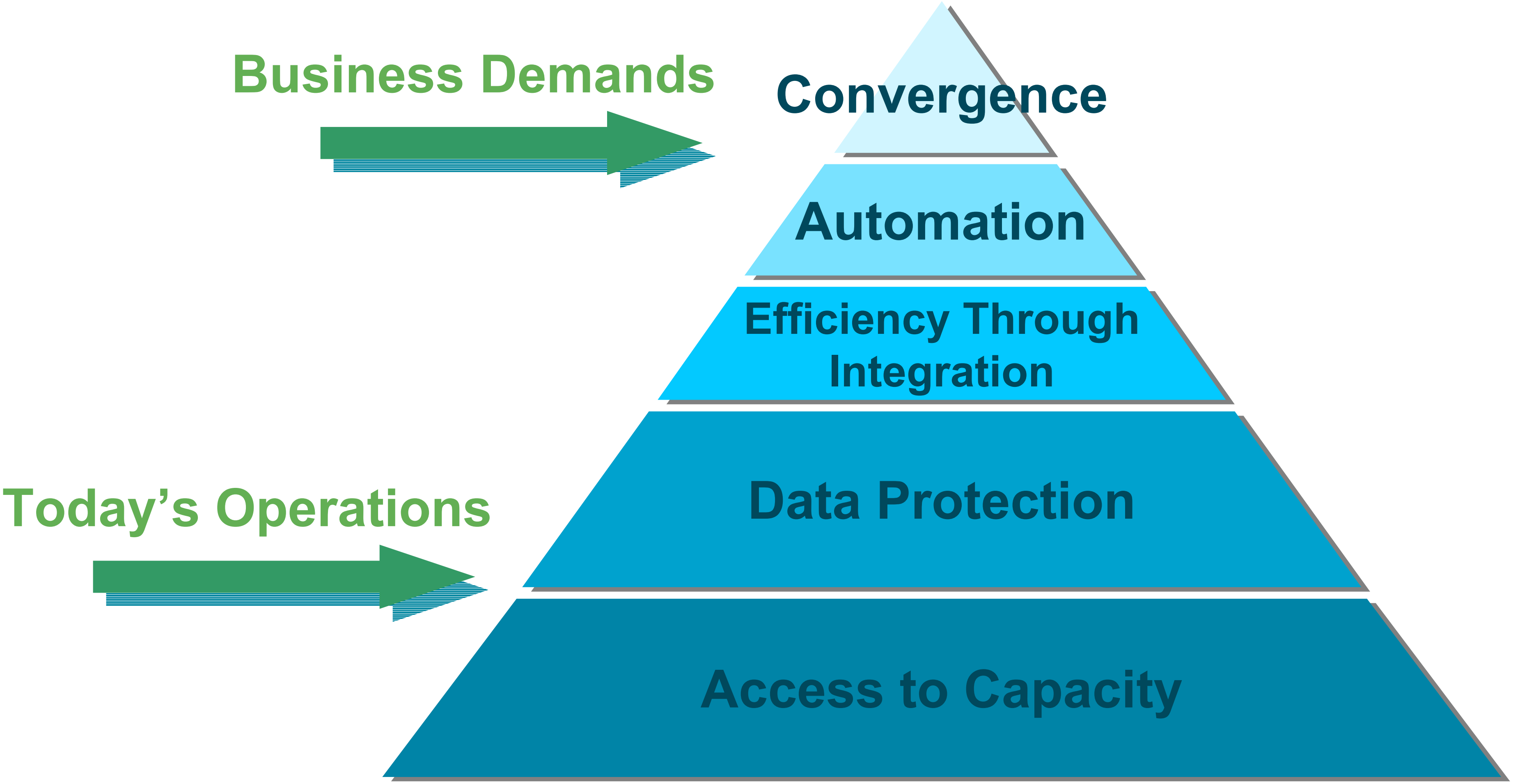
Inefficient Storage

- Storage Growth Inevitable
  - % of Hardware Budget
  - % of Operation Cost
- Volume Frustrates Retrieval
  - Increases User Driven Replication
- Stub-style HSM Does Not Scale
  - Think Tiered Storage Not Aged Storage
- Oversupply Causes Wastage



Managing Storage is about Managing Behavior

Storage Hierarchy of Needs



Business Demands

Convergence

Automation

Efficiency Through Integration

Data Protection

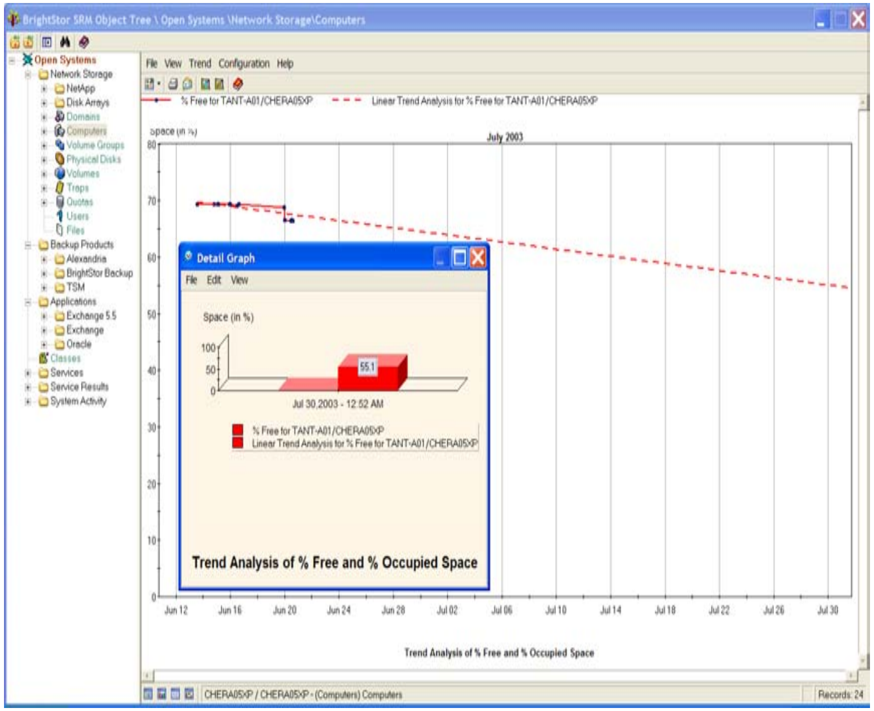
Today's Operations

Access to Capacity

Planning for Efficiency

Storage Capacity Planning

- Proactive capacity planning ensures data and application availability
  - Exception-based management (threshold monitoring)
  - Trending of historical data and analysis of storage patterns
  - Tracking of free space on critical volumes
  - Detailed, point-in-time growth comparisons

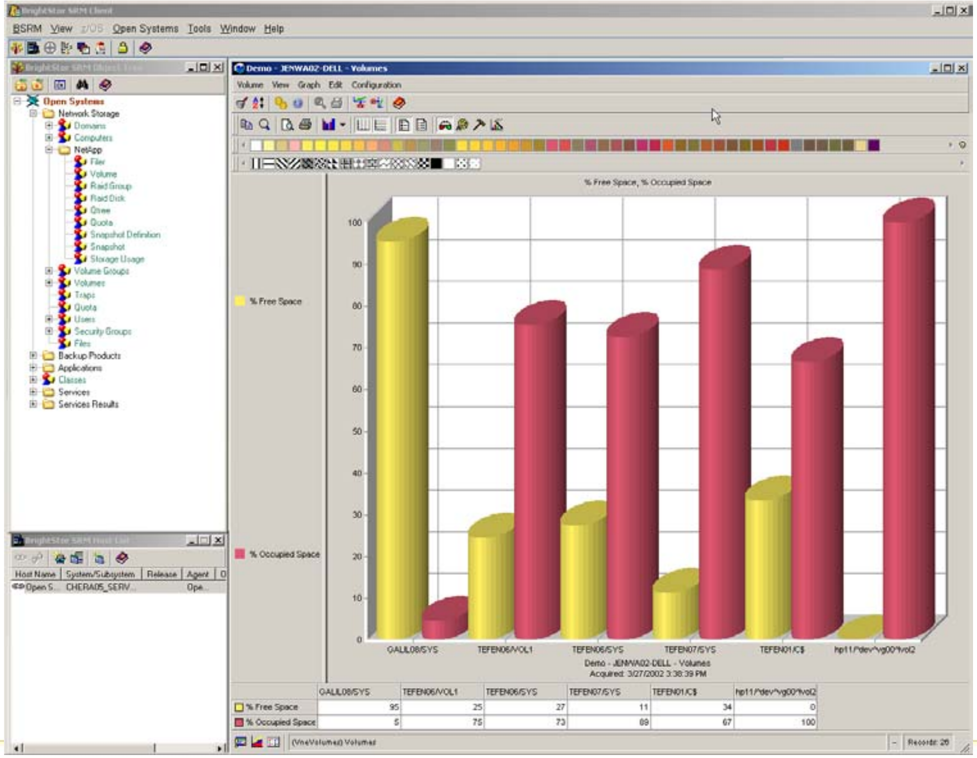

BrightStor SRM Object Tree \ Open Systems \Network Storage\Computers
Open Systems
Network Storage
NetApp
Disk Arrays
Domains
Computers
Volume Groups
Physical Disks
Volumes
Traps
Quotas
Users
Files
Backup Products
Alexandria
BrightStor Backup
TSM
Applications
Exchange 5.5
Exchange
Oracle
Classes
Services
Service Results
System Activity
File View Trend Configuration Help
% Free for TANT-A01/CHERA05XP
Linear Trend Analysis for % Free for TANT-A01/CHERA05XP
Space (in %)
July 2003
80
70
60
50
40
30
20
10
0
Jun 12
Jun 16
Jun 20
Jun 24
Jun 28
Jul 02
Jul 06
Jul 10
Jul 14
Jul 18
Jul 22
Jul 26
Jul 30
Trend Analysis of % Free and % Occupied Space
Detail Graph
File Edit View
Space (in %)
100
50
0
55.1
Jul 30,2003 - 12:52 AM
% Free for TANT-A01/CHERA05XP
Linear Trend Analysis for % Free for TANT-A01/CHERA05XP
Trend Analysis of % Free and % Occupied Space
CHERA05XP / CHERA05XP - (Computers) Computers
Records: 24

Storage-Intensive Applications

- Which application is the major storage space user?
- When will new storage capacity be required to support data growth?
- Can I manage the same type of applications as one logical unit/object?
- Can I manage my backup/recovery, database or messaging applications?

Storage-Intensive Applications

- Application-based storage management
  - Backup/recovery
  - Database
  - Messaging/collaboration
  - Enterprise storage automation
  - Storage chargeback

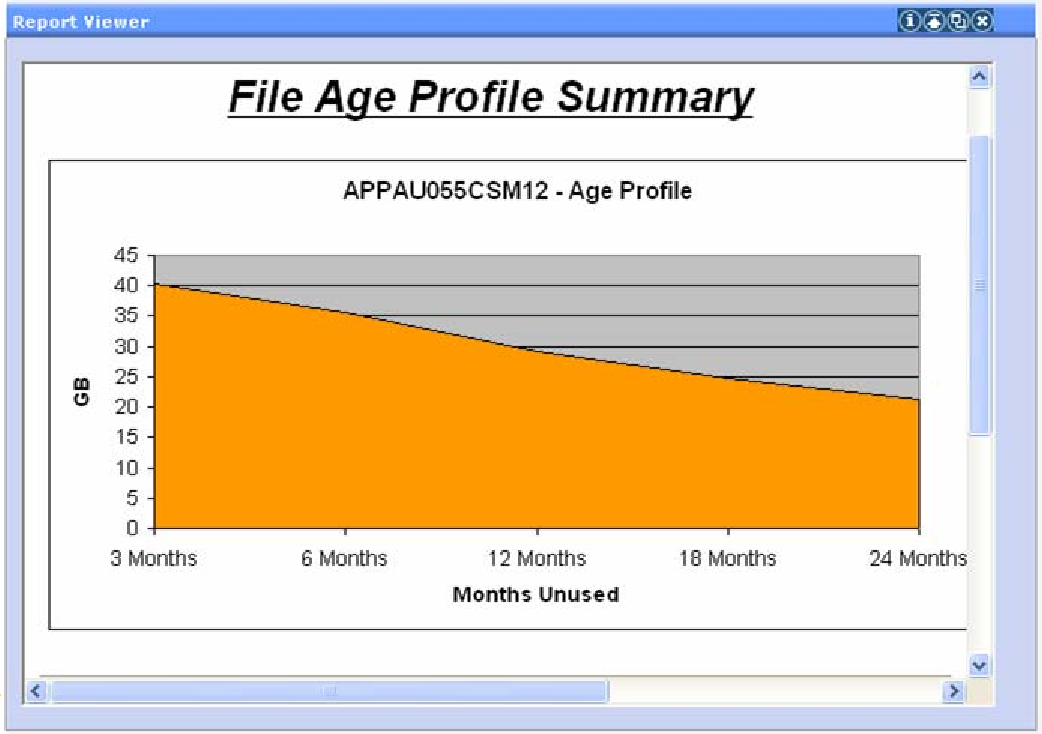

BrightStor SRM Client
BSRM View z/OS Open Systems Tools Window Help
BrightStor SRM Object Tree
Open Systems
Network Storage
Domains
Computers
NetApp
Filer
Volume
Raid Group
Raid Disk
Qtree
Quota
Snapshot Definition
Snapshot
Storage Usage
Volume Groups
Volumes
Traps
Quota
Users
Security Groups
Files
Backup Products
Applications
Classes
Services
Services Results
BrightStor SRM Host List
Host Name | System/Subsystem | Release | Agent
Open S... CHERA05_SERV... Ope...
Demo - JENWA02-DELL - Volumes
Volume View Graph Edit Configuration
% Free Space, % Occupied Space
% Free Space
% Occupied Space
100
90
80
70
60
50
40
30
20
10
0
GALIL08/SYS
TEFEN06/VOL1
TEFEN06/SYS
TEFEN07/SYS
TEFEN01/C$
hp11/^dev^vg00^lvol2
(VneVolumes) Volumes
Records: 26

Demo - JENWA02-DELL - Volumes
Acquired: 3/27/2002 3:38:39 PM

	GALIL08/SYS	TEFEN06/VOL1	TEFEN06/SYS	TEFEN07/SYS	TEFEN01/C$	hp11/^dev^vg00^lvol2
🟨 % Free Space	95	25	27	11	34	0
🟥 % Occupied Space	5	75	73	89	67	100

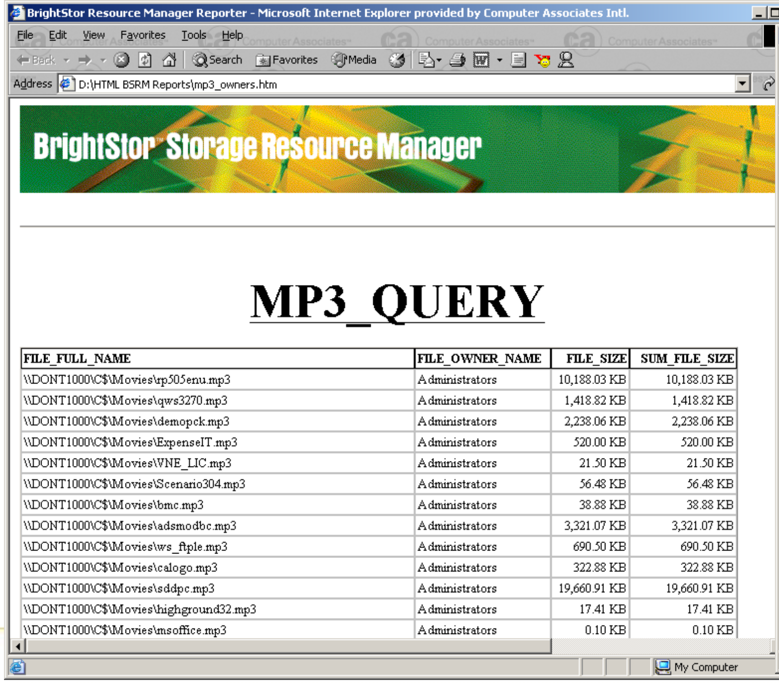
Migration Planning

- What are the file types, applications and data that must be migrated?
- Which are the most accessed objects and where are they located?
- Who are the biggest storage users that need to be accommodated?


Report Viewer
File Age Profile Summary
APPAU055CSM12 - Age Profile
45
40
35
30
25
20
15
10
5
0
GB
3 Months
6 Months
12 Months
18 Months
24 Months
Months Unused

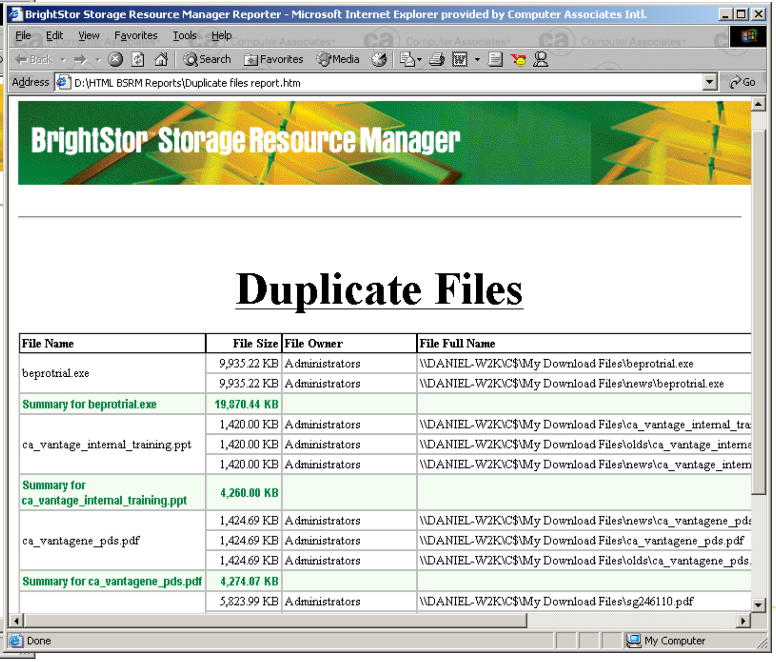
Backup Planning and Management

- How much data has to be backed up?
- What data sets have to be backed up?
- Should certain files be migrated or archived?
- How much storage capacity is required for backups?
- Are there duplicate files that are taking up additional storage?


BrightStor Resource Manager Reporter - Microsoft Internet Explorer provided by Computer Associates Intl.
File Edit View Favorites Tools Help
Back Search Favorites Media
Address D:\HTML BSRM Reports\mp3_owners.htm
BrightStor Storage Resource Manager
My Computer

MP3_QUERY

FILE_FULL_NAME	FILE_OWNER_NAME	FILE_SIZE	SUM_FILE_SIZE
\\DONT1000\C$\Movies\rp505enu.mp3	Administrators	10,188.03 KB	10,188.03 KB
\\DONT1000\C$\Movies\qws3270.mp3	Administrators	1,418.82 KB	1,418.82 KB
\\DONT1000\C$\Movies\demopck.mp3	Administrators	2,238.06 KB	2,238.06 KB
\\DONT1000\C$\Movies\ExpenseIT.mp3	Administrators	520.00 KB	520.00 KB
\\DONT1000\C$\Movies\VNE_LIC.mp3	Administrators	21.50 KB	21.50 KB
\\DONT1000\C$\Movies\Scenario304.mp3	Administrators	56.48 KB	56.48 KB
\\DONT1000\C$\Movies\bmc.mp3	Administrators	38.88 KB	38.88 KB
\\DONT1000\C$\Movies\adsmodbc.mp3	Administrators	3,321.07 KB	3,321.07 KB
\\DONT1000\C$\Movies\ws_ftple.mp3	Administrators	690.50 KB	690.50 KB
\\DONT1000\C$\Movies\calogo.mp3	Administrators	322.88 KB	322.88 KB
\\DONT1000\C$\Movies\sddpc.mp3	Administrators	19,660.91 KB	19,660.91 KB
\\DONT1000\C$\Movies\highground32.mp3	Administrators	17.41 KB	17.41 KB
\\DONT1000\C$\Movies\msoffice.mp3	Administrators	0.10 KB	0.10 KB


BrightStor Storage Resource Manager Reporter - Microsoft Internet Explorer provided by Computer Associates Intl.
File Edit View Favorites Tools Help
Back Search Favorites Media
Address D:\HTML BSRM Reports\Duplicate files report.htm
Go
BrightStor Storage Resource Manager
Done
My Computer

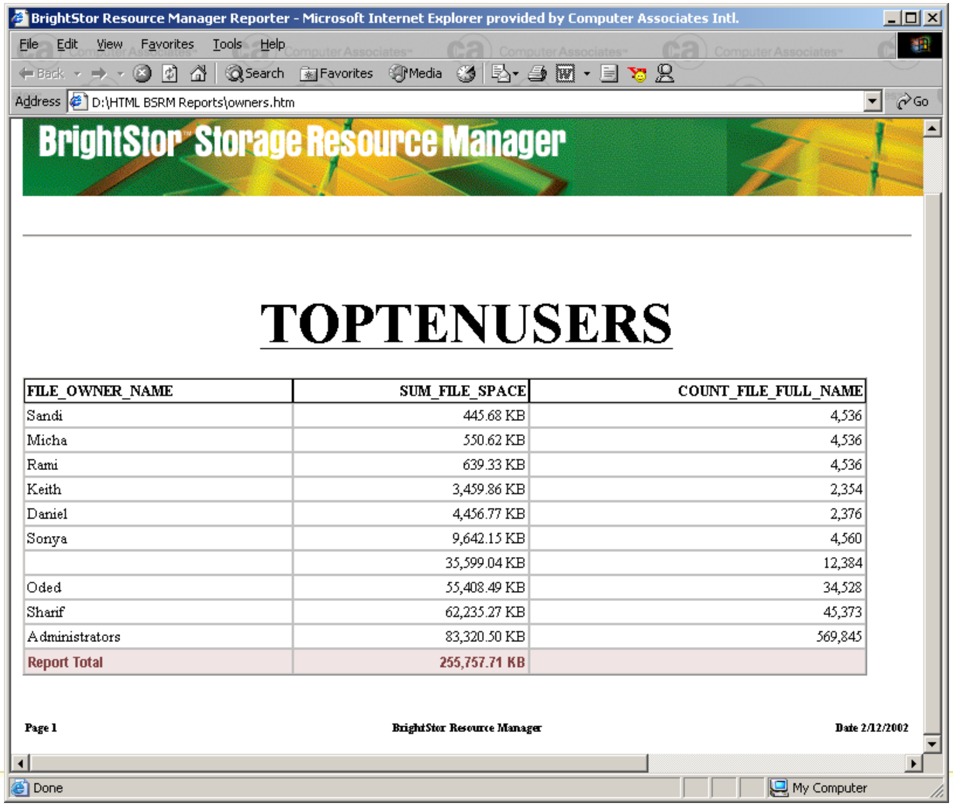
Duplicate Files

File Name	File Size	File Owner	File Full Name
beprotrial.exe	9,935.22 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\beprotrial.exe
	9,935.22 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\news\beprotrial.exe
Summary for beprotrial.exe	**19,870.44 KB**		
ca_vantage_internal_training.ppt	1,420.00 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\ca_vantage_internal_tra
	1,420.00 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\olds\ca_vantage_interna
	1,420.00 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\news\ca_vantage_intern
Summary for ca_vantage_internal_training.ppt	**4,260.00 KB**		
ca_vantagene_pds.pdf	1,424.69 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\news\ca_vantagene_pds
	1,424.69 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\ca_vantagene_pds.pdf
	1,424.69 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\olds\ca_vantagene_pds.
Summary for ca_vantagene_pds.pdf	**4,274.07 KB**		
	5,823.99 KB	Administrators	\\DANIEL-W2K\C$\My Download Files\sg246110.pdf

Managing for Efficiency

User Quota Management

- Who are the top 10 users in XYZ department?
- Are there any users on server XYZ who have MP3 files?
- How can I notify users who have exceeded their quotas?
- How can I effectively implement enterprise-wide policies for user space quotas?


BrightStor Resource Manager Reporter - Microsoft Internet Explorer provided by Computer Associates Intl.
File Edit View Favorites Tools Help
Back Search Favorites Media
Address D:\HTML BSRM Reports\owners.htm
Go
BrightStor™ Storage Resource Manager
Done
My Computer

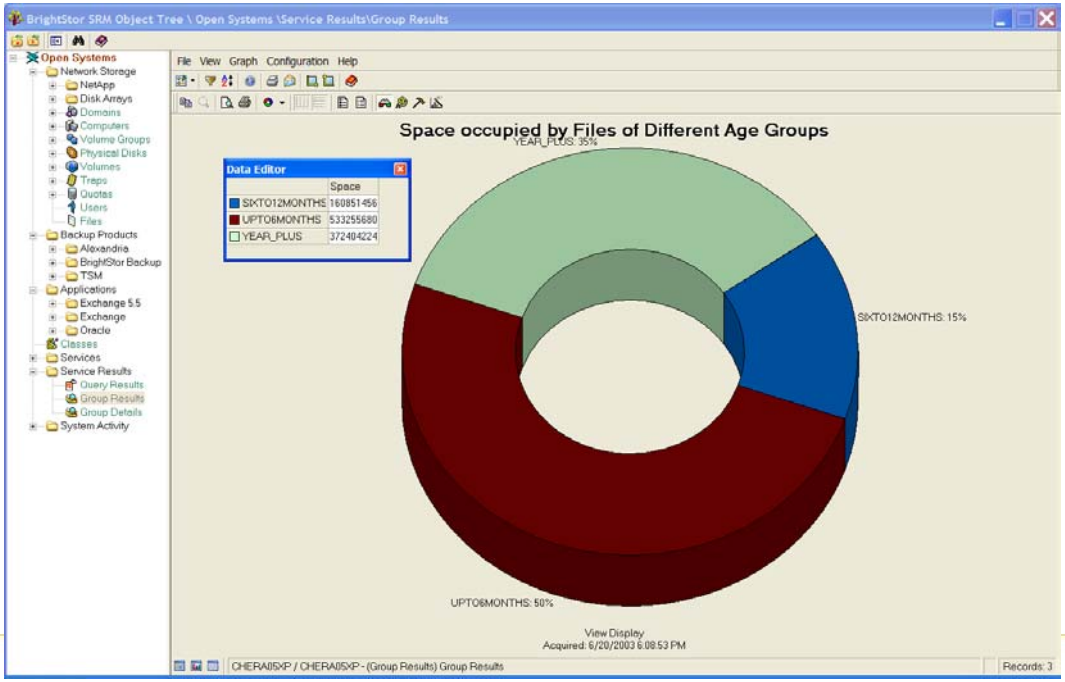
TOPTENUSERS

FILE_OWNER_NAME	SUM_FILE_SPACE	COUNT_FILE_FULL_NAME
Sandi	445.68 KB	4,536
Micha	550.62 KB	4,536
Rami	639.33 KB	4,536
Keith	3,459.86 KB	2,354
Daniel	4,456.77 KB	2,376
Sonya	9,642.15 KB	4,560
	35,599.04 KB	12,384
Oded	55,408.49 KB	34,528
Sharif	62,235.27 KB	45,373
Administrators	83,320.50 KB	569,845
Report Total	**255,757.71 KB**	

Page 1 BrightStor Resource Manager Date 2/12/2002

Storage Usage and Chargeback

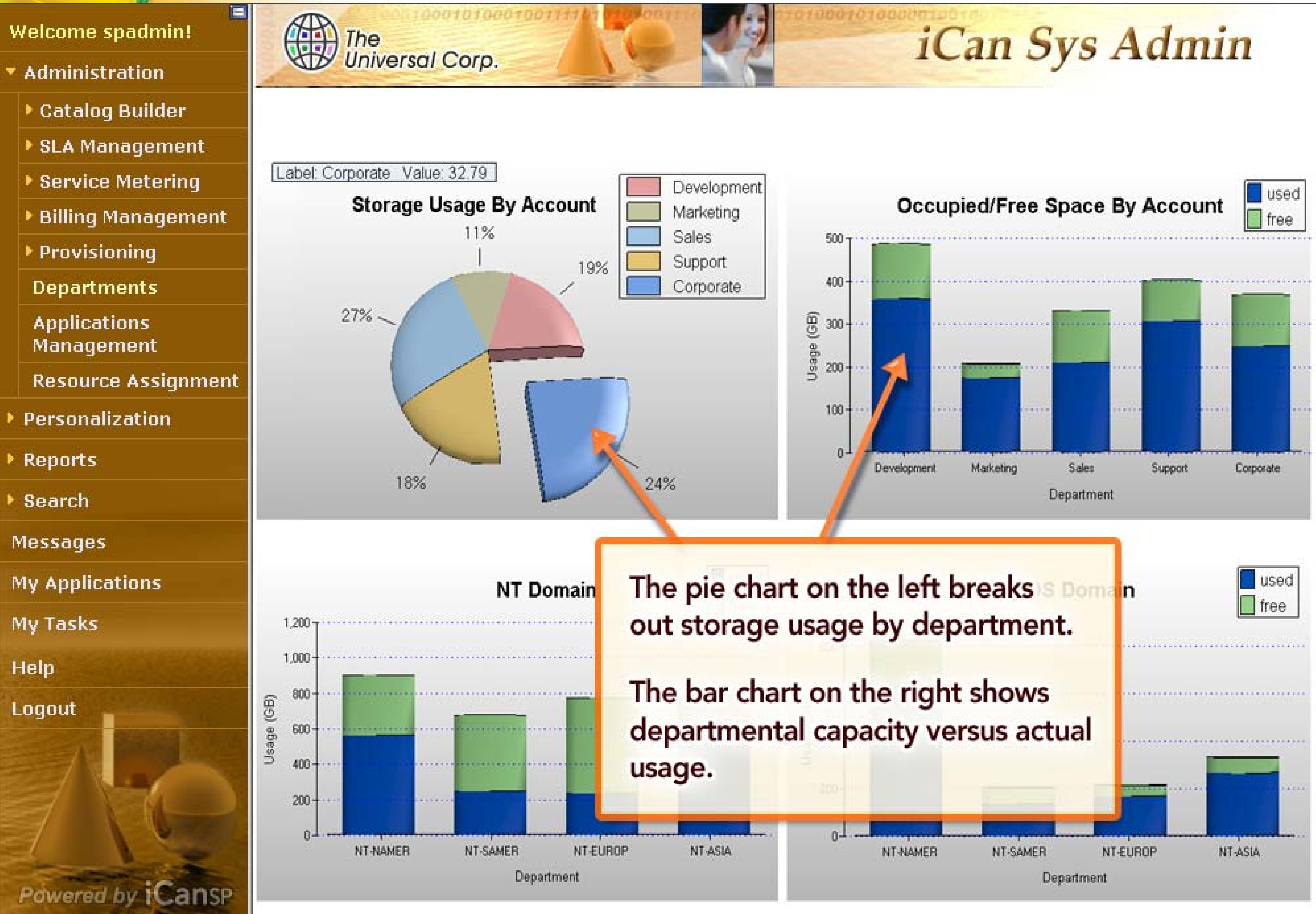
- How much storage space is consumed by user or department?
- Can I measure the storage capacity consumption of users and departments?
- I have no intention of adding a chargeback application, but can I meter storage consumption?


BrightStor SRM Object Tree \ Open Systems \Service Results\Group Results
Open Systems
Network Storage
NetApp
Disk Arrays
Domains
Computers
Volume Groups
Physical Disks
Volumes
Traps
Quotas
Users
Files
Backup Products
Alexandria
BrightStor Backup
TSM
Applications
Exchange 5.5
Exchange
Oracle
Classes
Services
Service Results
Query Results
Group Results
Group Details
System Activity
File View Graph Configuration Help
Space occupied by Files of Different Age Groups
YEAR_PLUS: 35%
SIXTO12MONTHS: 15%
UPTO6MONTHS: 50%
View Display
Acquired: 6/20/2003 6:08:53 PM
CHERA05XP / CHERA05XP - (Group Results) Group Results
Records: 3

Data Editor

	Space
🟦 SIXTO12MONTHS	160851456
🟥 UPTO6MONTHS	533255680
🟩 YEAR_PLUS	372404224

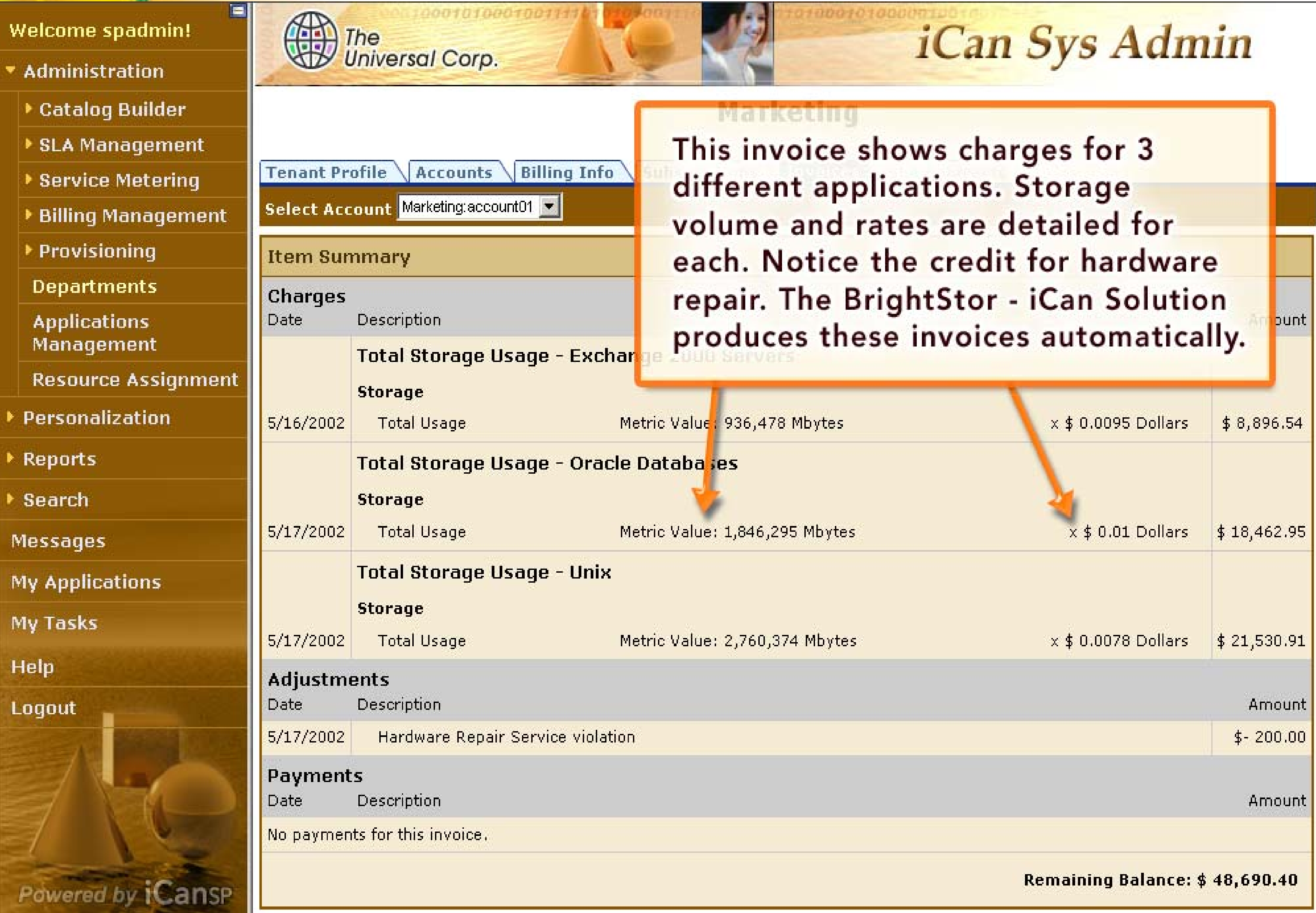
Storage Usage


Welcome spadmin!
Administration
Catalog Builder
SLA Management
Service Metering
Billing Management
Provisioning
Departments
Applications Management
Resource Assignment
Personalization
Reports
Search
Messages
My Applications
My Tasks
Help
Logout
Powered by iCanSP
The Universal Corp.
iCan Sys Admin
Label: Corporate Value: 32.79
Storage Usage By Account
11%
19%
27%
18%
24%
Development
Marketing
Sales
Support
Corporate
Occupied/Free Space By Account
used
free
Usage (GB)
500
400
300
200
100
0
Development
Marketing
Sales
Support
Corporate
Department
NT Domain
1,200
1,000
800
600
400
200
0
NT-NAMER
NT-SAMER
NT-EUROP
NT-ASIA
Department
used
free
NT-NAMER
NT-SAMER
NT-EUROP
NT-ASIA
Department

The pie chart on the left breaks out storage usage by department.

The bar chart on the right shows departmental capacity versus actual usage.

Sample Storage Chargeback


Welcome spadmin!
Administration
Catalog Builder
SLA Management
Service Metering
Billing Management
Provisioning
Departments
Applications Management
Resource Assignment
Personalization
Reports
Search
Messages
My Applications
My Tasks
Help
Logout
Powered by iCanSP
The Universal Corp.
iCan Sys Admin
Marketing
Tenant Profile
Accounts
Billing Info

This invoice shows charges for 3 different applications. Storage volume and rates are detailed for each. Notice the credit for hardware repair. The BrightStor - iCan Solution produces these invoices automatically.

Select Account Marketing:account01

Item Summary

Charges

Date	Description			Amount
	Total Storage Usage - Exchange 2000 Servers			
	Storage			
5/16/2002	Total Usage	Metric Value: 936,478 Mbytes	x $ 0.0095 Dollars	$ 8,896.54
	Total Storage Usage - Oracle Databases			
	Storage			
5/17/2002	Total Usage	Metric Value: 1,846,295 Mbytes	x $ 0.01 Dollars	$ 18,462.95
	Total Storage Usage - Unix			
	Storage			
5/17/2002	Total Usage	Metric Value: 2,760,374 Mbytes	x $ 0.0078 Dollars	$ 21,530.91

Adjustments

Date	Description	Amount
5/17/2002	Hardware Repair Service violation	$- 200.00

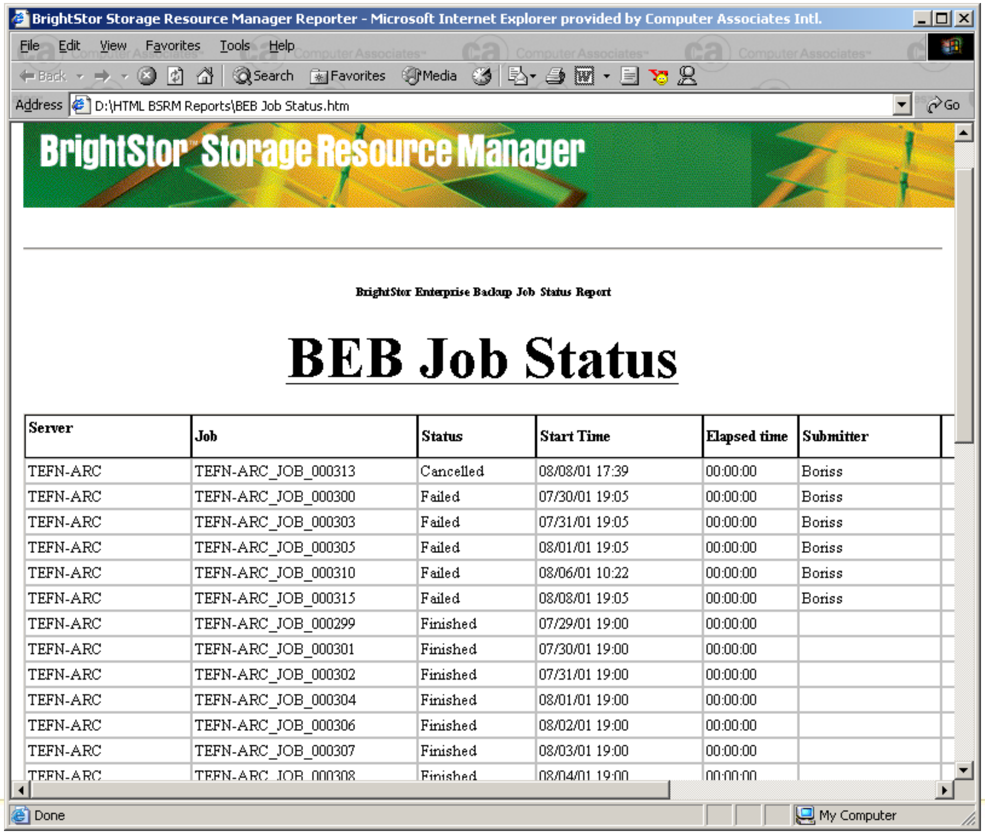
Payments

Date	Description	Amount
No payments for this invoice.		

Remaining Balance: $ 48,690.40

Improved Service Levels

- Were yesterday’s backup jobs successful?
- Is there enough capacity to support server growth?
- Is there sufficient disk storage capacity to support application data growth requirements?


BrightStor Storage Resource Manager Reporter - Microsoft Internet Explorer provided by Computer Associates Intl.
File Edit View Favorites Tools Help
Back Search Favorites Media
Address D:\HTML BSRM Reports\BEB Job Status.htm
Go
BrightStor Storage Resource Manager
Done
My Computer

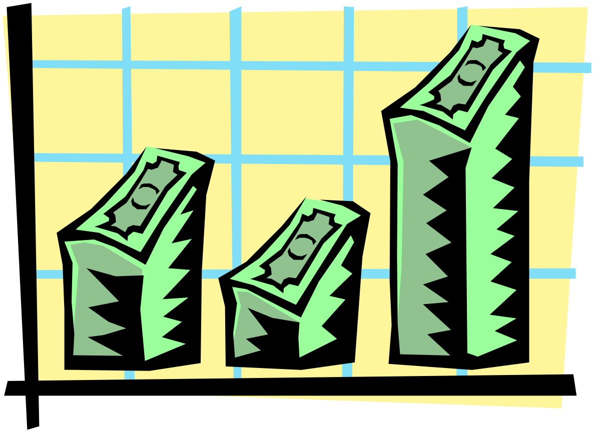
BrightStor Enterprise Backup Job Status Report

BEB Job Status

Server	Job	Status	Start Time	Elapsed time	Submitter
TEFN-ARC	TEFN-ARC_JOB_000313	Cancelled	08/08/01 17:39	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000300	Failed	07/30/01 19:05	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000303	Failed	07/31/01 19:05	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000305	Failed	08/01/01 19:05	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000310	Failed	08/06/01 10:22	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000315	Failed	08/08/01 19:05	00:00:00	Boriss
TEFN-ARC	TEFN-ARC_JOB_000299	Finished	07/29/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000301	Finished	07/30/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000302	Finished	07/31/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000304	Finished	08/01/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000306	Finished	08/02/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000307	Finished	08/03/01 19:00	00:00:00	
TEFN-ARC	TEFN-ARC_JOB_000308	Finished	08/04/01 19:00	00:00:00	

SRM Benefits

- Increased disk utilization
- Improved storage management (staffing)
- Less floor space
- Improved disaster recovery capabilities
- Improved data recovery options
- Increased performance
- Improved backup operations



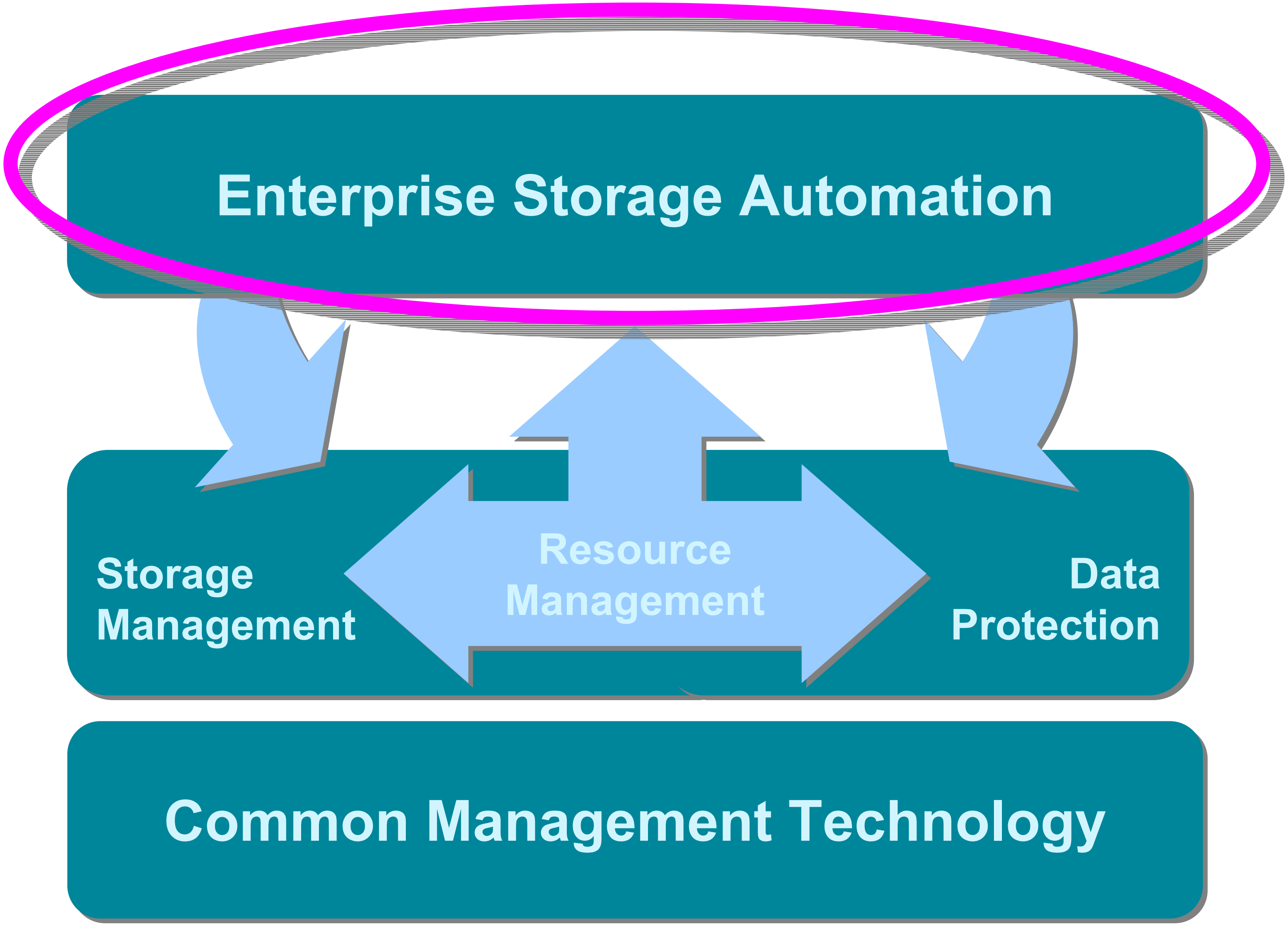
Potential Initial HW Cost Savings

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Capacity (TB)	50	50	100	100
Storage HW Costs ($/GB)	$60	$60	$60	$60
Utilization Rate	30%	40%	30%	40%
Underutilized Capacity (TB)	15	10	30	20
Potential Cost Avoidance	$900,000	$600,000	$1,800,000	$1,200,000

Notes: Objective of 60% utilization

Automating for Efficiency

Storage Solutions



Enterprise Storage Automation

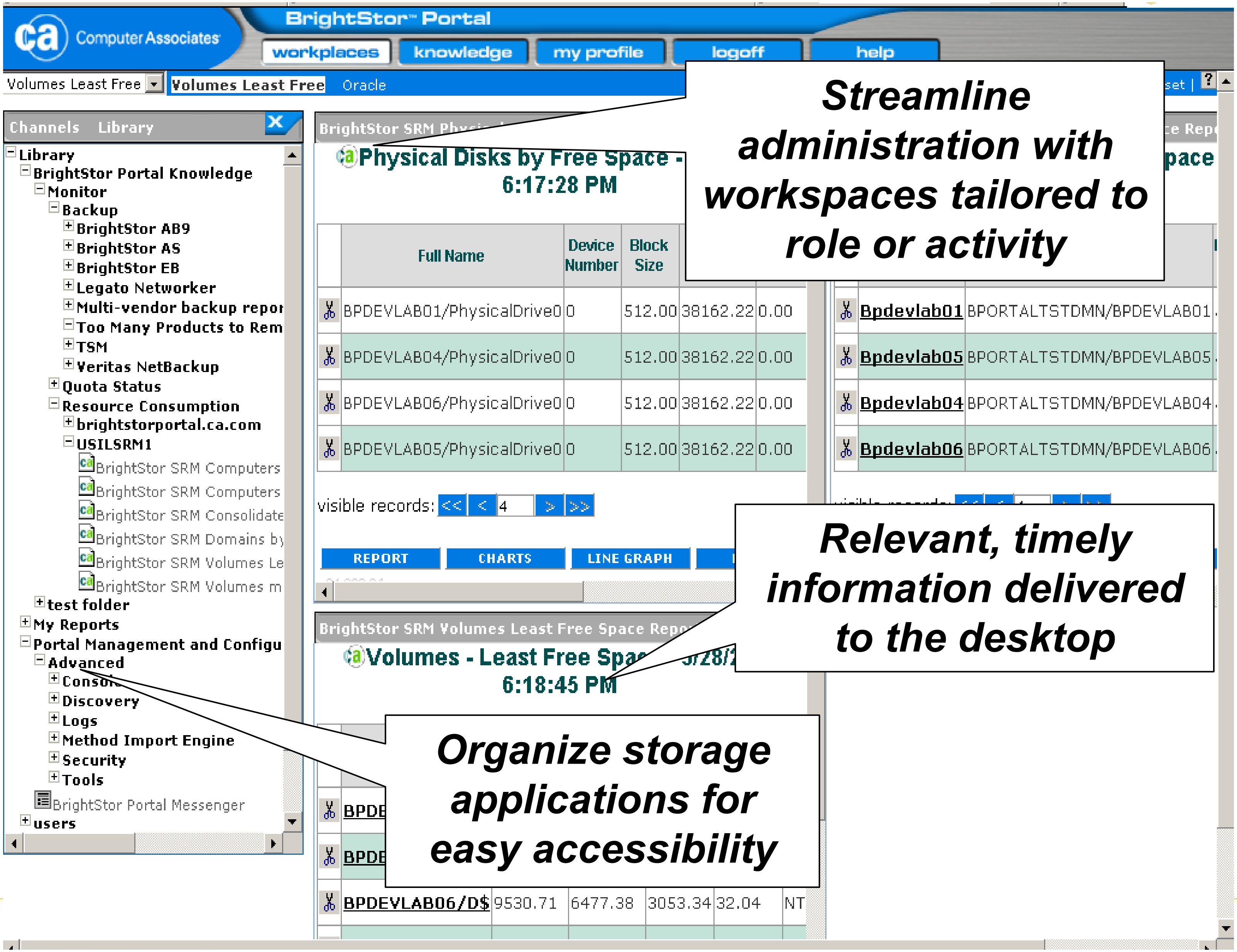
Storage Management

Resource Management

Data Protection

Common Management Technology

Single Point of Management



BrightStor™ Portal
Computer Associates
workplaces
knowledge
my profile
logoff
help
Volumes Least Free
Volumes Least Free
Oracle
set |
Channels
Library
REPORT
CHARTS
LINE GRAPH
visible records:
<<
<
>
>>

- Library
  - BrightStor Portal Knowledge
    - Monitor
      - Backup
        - BrightStor AB9
        - BrightStor AS
        - BrightStor EB
        - Legato Networker
        - Multi-vendor backup repor
        - Too Many Products to Rem
        - TSM
        - Veritas NetBackup
      - Quota Status
      - Resource Consumption
        - brightstorportal.ca.com
        - USILSRM1
          - BrightStor SRM Computers
          - BrightStor SRM Computers
          - BrightStor SRM Consolidate
          - BrightStor SRM Domains by
          - BrightStor SRM Volumes Le
          - BrightStor SRM Volumes m
    - test folder
  - My Reports
  - Portal Management and Configu
    - Advanced
      - Conso
      - Discovery
      - Logs
      - Method Import Engine
      - Security
      - Tools
    - BrightStor Portal Messenger
  - users

BrightStor SRM Physic

Physical Disks by Free Space - 6:17:28 PM

	Full Name	Device Number	Block Size		
	BPDEVLAB01/PhysicalDrive0	0	512.00	38162.22	0.00
	BPDEVLAB04/PhysicalDrive0	0	512.00	38162.22	0.00
	BPDEVLAB06/PhysicalDrive0	0	512.00	38162.22	0.00
	BPDEVLAB05/PhysicalDrive0	0	512.00	38162.22	0.00

visible records: 4

e Rep

pace

	Bpdevlab01	BPORTALTSTDMN/BPDEVLAB01
	Bpdevlab05	BPORTALTSTDMN/BPDEVLAB05
	Bpdevlab04	BPORTALTSTDMN/BPDEVLAB04
	Bpdevlab06	BPORTALTSTDMN/BPDEVLAB06

BrightStor SRM Volumes Least Free Space Repo

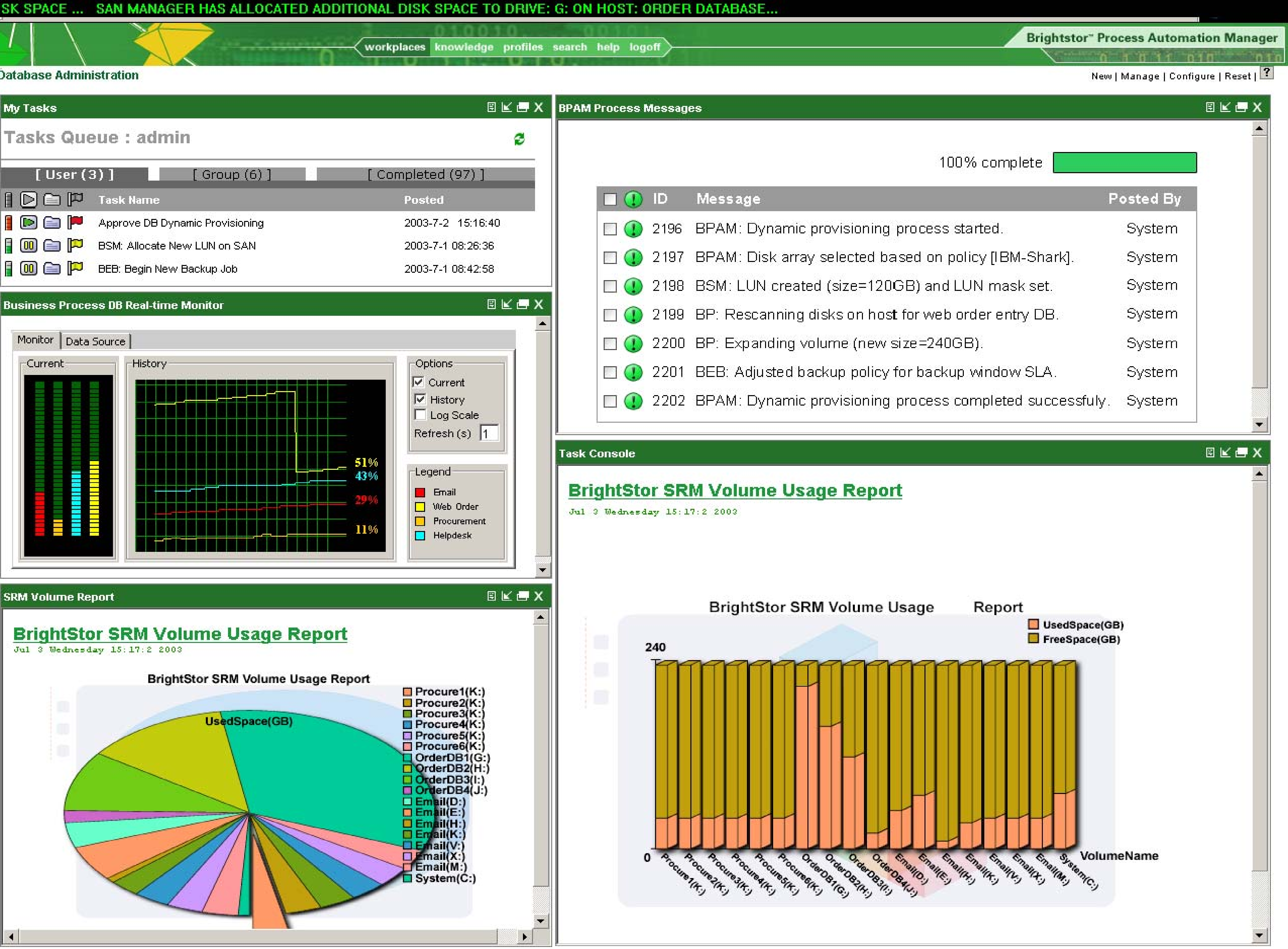
Volumes - Least Free Spa 5/28/ 6:18:45 PM

	BPDE					
	BPDE					
	BPDEVLAB06/D$	9530.71	6477.38	3053.34	32.04	NT

Streamline administration with workspaces tailored to role or activity

Relevant, timely information delivered to the desktop

Organize storage applications for easy accessibility



SK SPACE ... SAN MANAGER HAS ALLOCATED ADDITIONAL DISK SPACE TO DRIVE: G: ON HOST: ORDER DATABASE...
workplaces
knowledge
profiles
search
help
logoff
Brightstor™ Process Automation Manager
Database Administration
New | Manage | Configure | Reset | ?

My Tasks

Tasks Queue : admin

[User (3)] [Group (6)] [Completed (97)]

Task Name	Posted
Approve DB Dynamic Provisioning	2003-7-2 15:16:40
BSM: Allocate New LUN on SAN	2003-7-1 08:26:36
BEB: Begin New Backup Job	2003-7-1 08:42:58

BPAM Process Messages

100% complete

☐	ID	Message	Posted By
☐	2196	BPAM: Dynamic provisioning process started.	System
☐	2197	BPAM: Disk array selected based on policy [IBM-Shark].	System
☐	2198	BSM: LUN created (size=120GB) and LUN mask set.	System
☐	2199	BP: Rescanning disks on host for web order entry DB.	System
☐	2200	BP: Expanding volume (new size=240GB).	System
☐	2201	BEB: Adjusted backup policy for backup window SLA.	System
☐	2202	BPAM: Dynamic provisioning process completed successfuly.	System

Business Process DB Real-time Monitor

Monitor
Data Source
Current
History
51%
43%
29%
11%

Options

☑ Current
☑ History
☐ Log Scale
Refresh (s) 1

Legend

🟥 Email
🟨 Web Order
🟧 Procurement
🟦 Helpdesk

SRM Volume Report

BrightStor SRM Volume Usage Report

Jul 3 Wednesday 15:17:2 2003

BrightStor SRM Volume Usage Report
UsedSpace(GB)
Procure1(K:)
Procure2(K:)
Procure3(K:)
Procure4(K:)
Procure5(K:)
Procure6(K:)
OrderDB1(G:)
OrderDB2(H:)
OrderDB3(I:)
OrderDB4(J:)
Email(D:)
Email(E:)
Email(H:)
Email(K:)
Email(V:)
Email(X:)
Email(M:)
System(C:)

Task Console

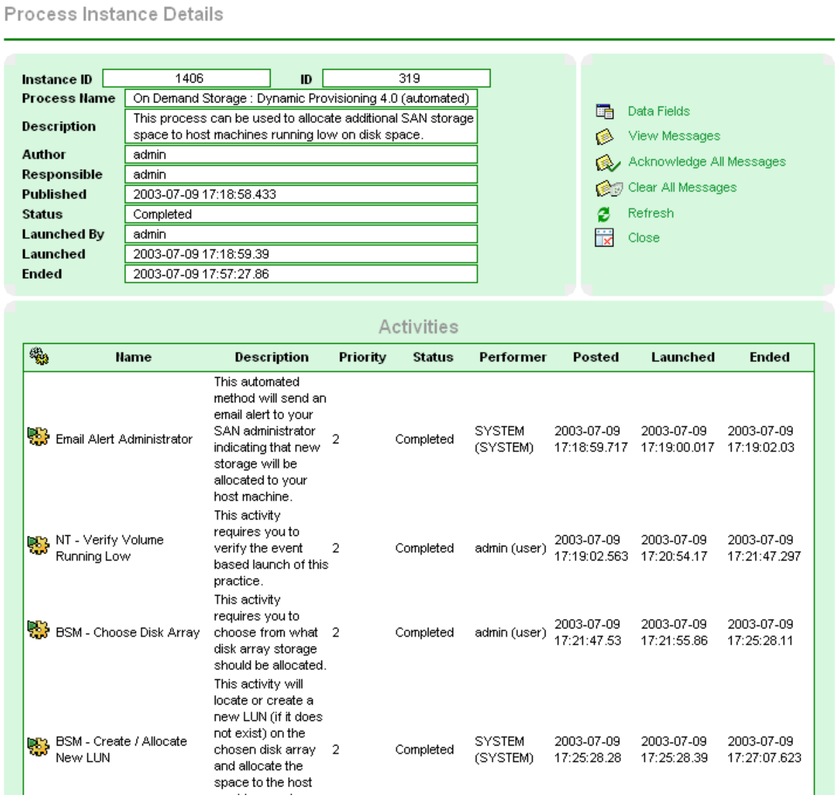
BrightStor SRM Volume Usage Report

Jul 3 Wednesday 15:17:2 2003

BrightStor SRM Volume Usage Report
UsedSpace(GB)
FreeSpace(GB)
240
0
Procure1(K:)
Procure2(K:)
Procure3(K:)
Procure4(K:)
Procure5(K:)
Procure6(K:)
OrderDB1(G:)
OrderDB2(H:)
OrderDB3(I:)
OrderDB4(J:)
Email(D:)
Email(E:)
Email(H:)
Email(K:)
Email(V:)
Email(X:)
Email(M:)
System(C:)
VolumeName

Operational Automation

- Encapsulation of any operational procedure
- Out of the box ‘Best Practice Definitions’
  - Customize to your environment
  - Create new
- Workflow driven execution
- Fully automated, or not



Process Instance Details

Instance ID 1406 **ID** 319
Process Name On Demand Storage : Dynamic Provisioning 4.0 (automated)
Description This process can be used to allocate additional SAN storage space to host machines running low on disk space.
Author admin
Responsible admin
Published 2003-07-09 17:18:58.433
Status Completed
Launched By admin
Launched 2003-07-09 17:18:59.39
Ended 2003-07-09 17:57:27.86

Activities

Name	Description	Priority	Status	Performer	Posted	Launched	Ended
Email Alert Administrator	This automated method will send an email alert to your SAN administrator indicating that new storage will be allocated to your host machine.	2	Completed	SYSTEM (SYSTEM)	2003-07-09 17:18:59.717	2003-07-09 17:19:00.017	2003-07-09 17:19:02.03
NT - Verify Volume Running Low	This activity requires you to verify the event based launch of this practice.	2	Completed	admin (user)	2003-07-09 17:19:02.563	2003-07-09 17:20:54.17	2003-07-09 17:21:47.297
BSM - Choose Disk Array	This activity requires you to choose from what disk array storage should be allocated.	2	Completed	admin (user)	2003-07-09 17:21:47.53	2003-07-09 17:21:55.86	2003-07-09 17:25:28.11
BSM - Create / Allocate New LUN	This activity will locate or create a new LUN (if it does not exist) on the chosen disk array and allocate the space to the host	2	Completed	SYSTEM (SYSTEM)	2003-07-09 17:25:28.28	2003-07-09 17:25:28.39	2003-07-09 17:27:07.623

Automated Processes

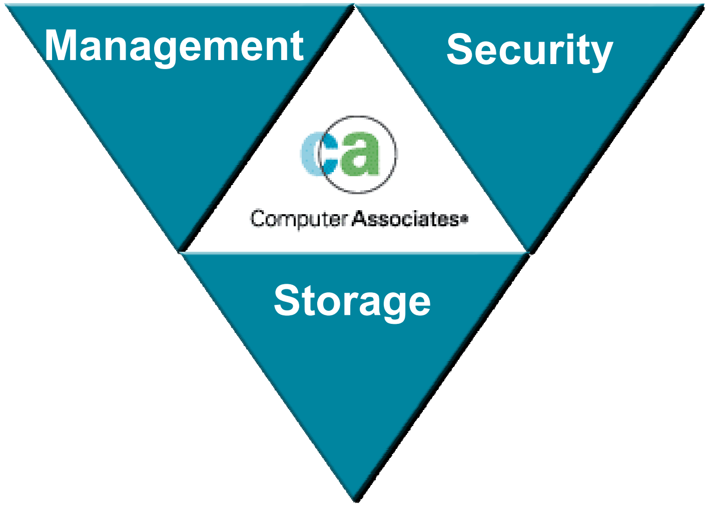
- Dynamic resource management
- Storage Provisioning
- Volume Management
  - Space Reclamation
- Storage Policies & Service Level Agreements
- Disaster Recovery & Business Continuity
- SAN Change Management
- Media Lifecycle Management

Expected Value of Automation

- Solutions that respond to business conditions
- Business continuity
- Operational efficiency
- Enables next generation storage management
  - Shift from backup to restore

Automation – Problem Simplification

- Enable Business to focus on Business
- Allows convergence
  - Within Storage
  - Between Enterprise Management disciplines
  - Natural maturation of industry


Management
Security
Computer Associates
Storage

Storage Risk Mitigation

Storage Risk Mitigation

- Maturing of Data Protection
- Applies Proven Methodology
- Cost Focused Discipline
- Exploits Existing Investments
- Simplifies Disaster Recovery and Business Continuity Decisions

Have a clear, logical, defendable strategy to mitigate risk AND stay within budget

Business Issues

- Changed Threat Definition
- Storage Blending with Security and Enterprise Management
- Standards and Law
  - HIPAA, SEC, Sarbanes-Oxley
  - Basel II

Technical Issues

- No Longer Simply Data Recovery
  - How Quickly Can I Restore?
  - What Window of Data Can I Lose?
  - What Should My Backup Window Be?
- Technology Evolution
- Minimize Storage Investment

Deliver Storage Risk Mitigation

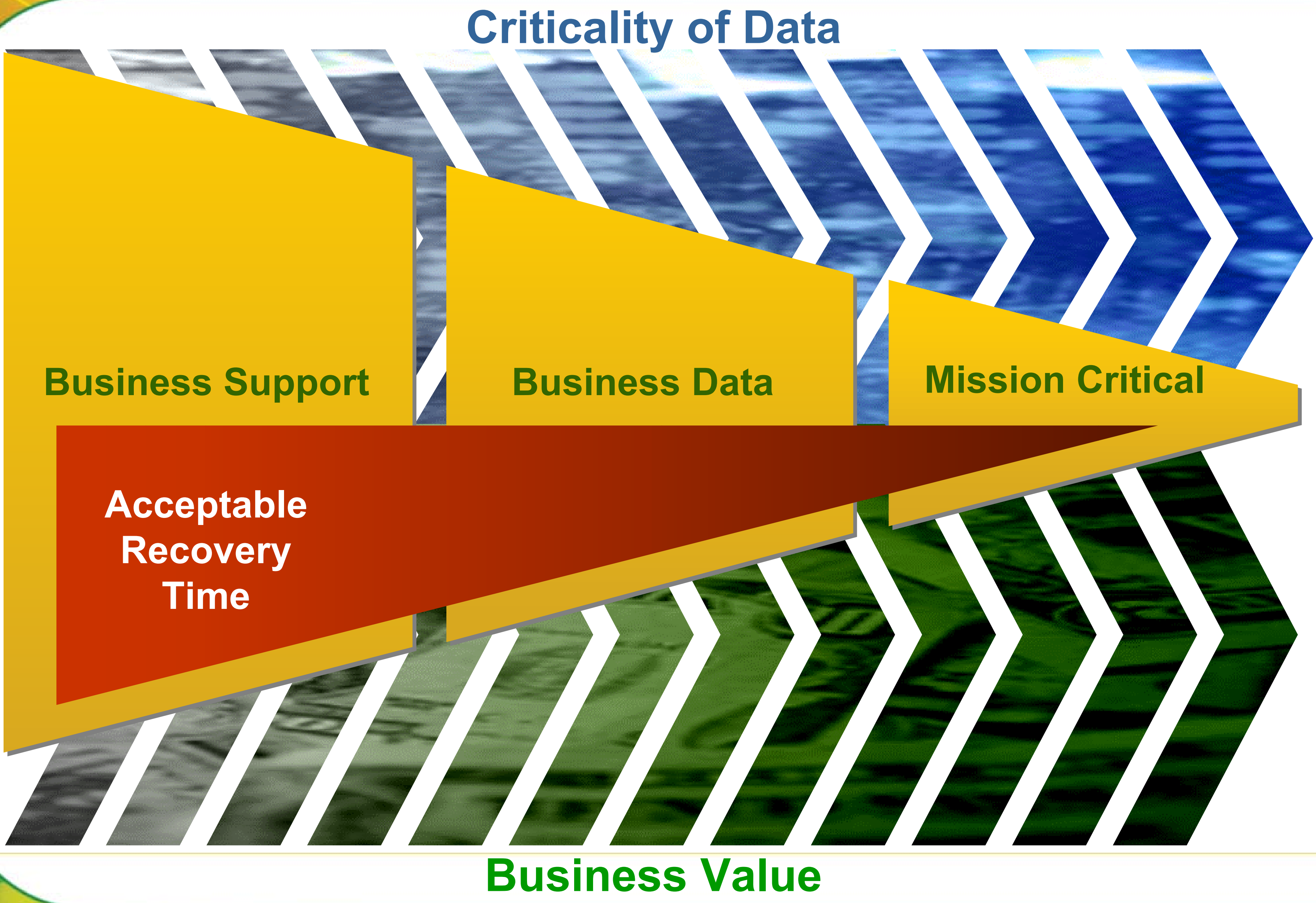
1. Determine value of data
2. Link threats to protections
3. Select appropriate solutions

Determine Value of Data

All Data is *Not* Equal

- Data has Unique Business Value
- IT Departments Must Understand the Relative Value of Data:
  - Cost of Downtime
  - Cost of Lost Data

Data Qualities



Criticality of Data

Business Support

Business Data

Mission Critical

Acceptable
Recovery
Time

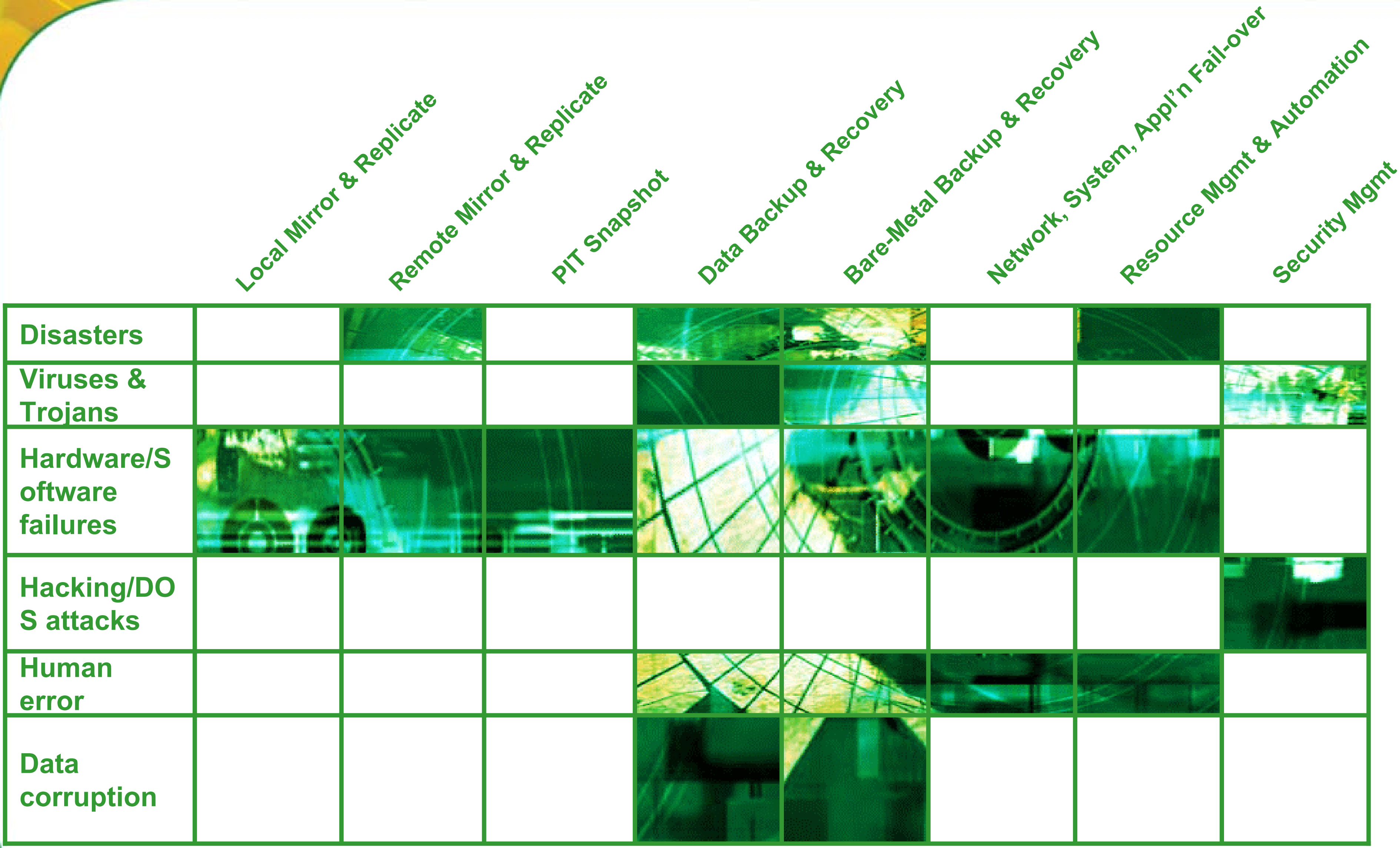
Business Value

Understand Threats

- IT Must Identify Potential Risks
- Data has Acceptable Risks
- Select Mitigations to Protect Against Unacceptable Risks

Low Risk
High Risk

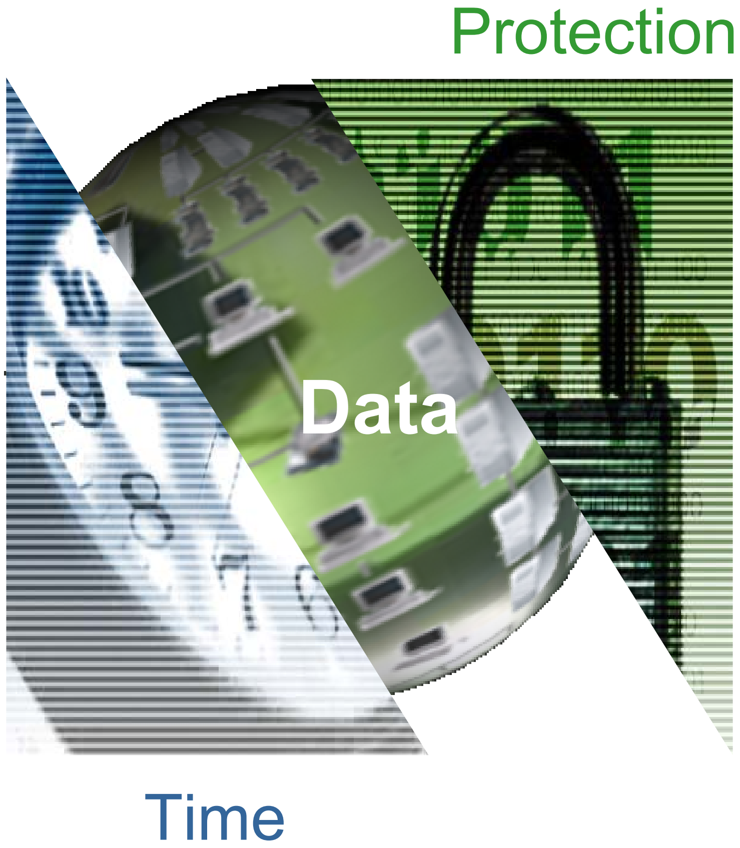
Relate Threats to Mitigations



	Local Mirror & Replicate	Remote Mirror & Replicate	PIT Snapshot	Data Backup & Recovery	Bare-Metal Backup & Recovery	Network, System, Appl'n Fail-over	Resource Mgmt & Automation	Security Mgmt
Disasters		🟩		🟩	🟩		🟩	
Viruses & Trojans				🟩	🟩			🟩
Hardware/Software failures	🟩	🟩	🟩	🟩	🟩	🟩	🟩	
Hacking/DOS attacks								🟩
Human error				🟩	🟩	🟩	🟩	
Data corruption				🟩	🟩			

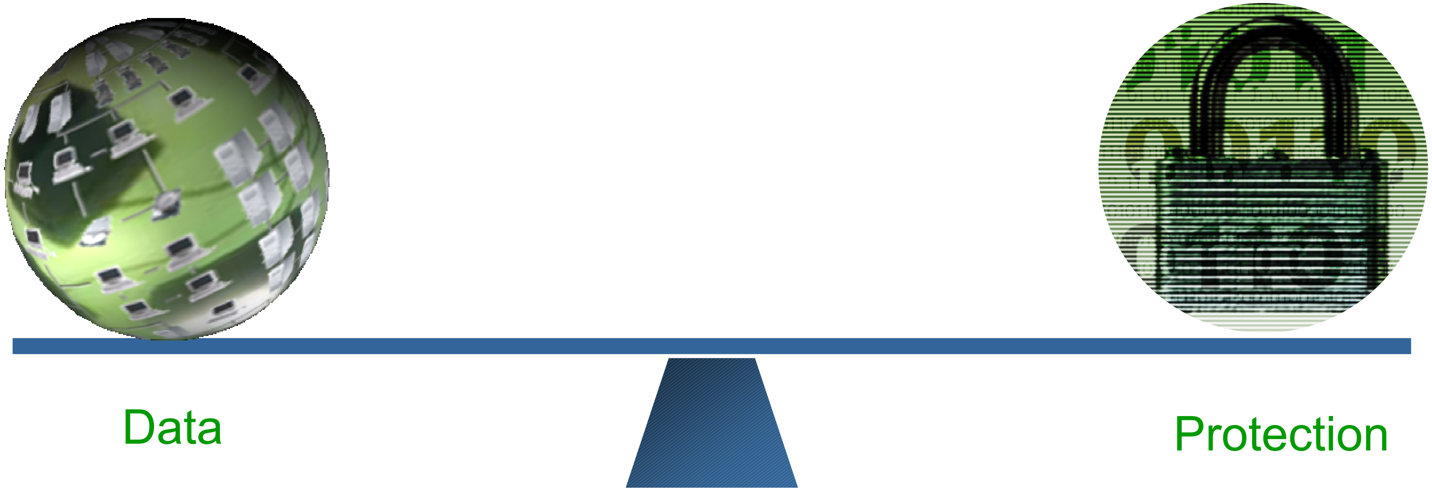
Select Cost-Effective Protection

- Value of Data vs. Cost of Protection
- Many Data Protection Solutions, Not Just One
- Data Value Changes Over Time … Data Protection Must Change Too


Protection
Data
Time

Seek Balance

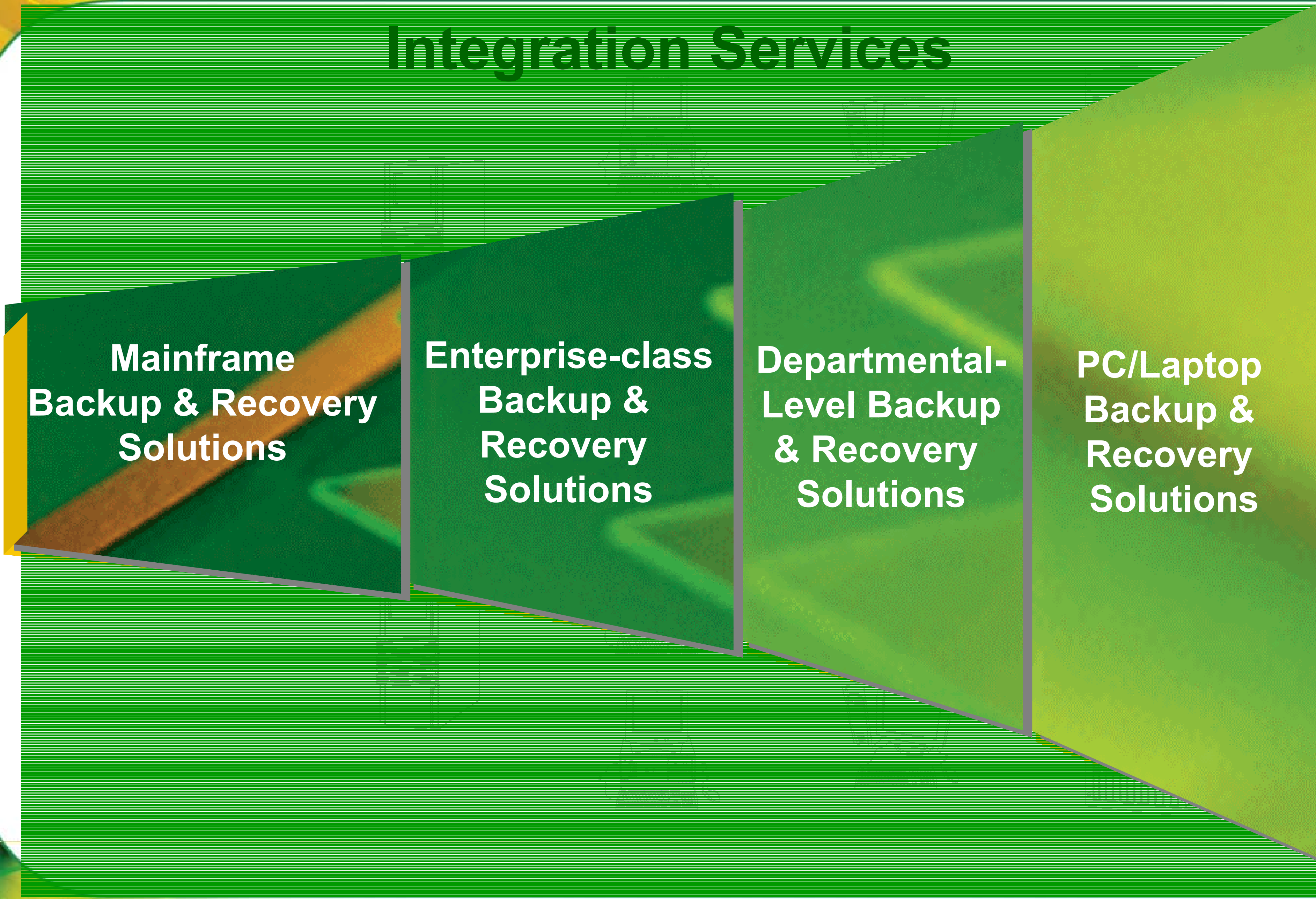
- Don’t Waste $10,000 Protecting Data Worth $1,000
- Don’t Risk Data Worth $100,000 by Protecting it with $1000 Solution


Data
Protection

Outcome

- Enterprise Always a Mixture of Distributed and Centralized Environments!
- ‘One Size Fits All’ - Wasteful
- Integration is KEY
  - Reduces Overhead While Mitigating Risk

Data Protection Solutions



Integration Services

Mainframe Backup & Recovery Solutions

Enterprise-class Backup & Recovery Solutions

Departmental-Level Backup & Recovery Solutions

PC/Laptop Backup & Recovery Solutions

Classify Data Example

- Class A: Critical Mainframe/Open Systems Applications (Financial Systems, CRM, etc.)
- Class B: Supporting Apps. (Payroll, E-mail, branch office servers, web servers, etc.)
- Class C: Lower Priority Apps. (Departmental servers, PCs/Laptops (filtered), etc.)
- Class D: Lowest priority apps, etc.

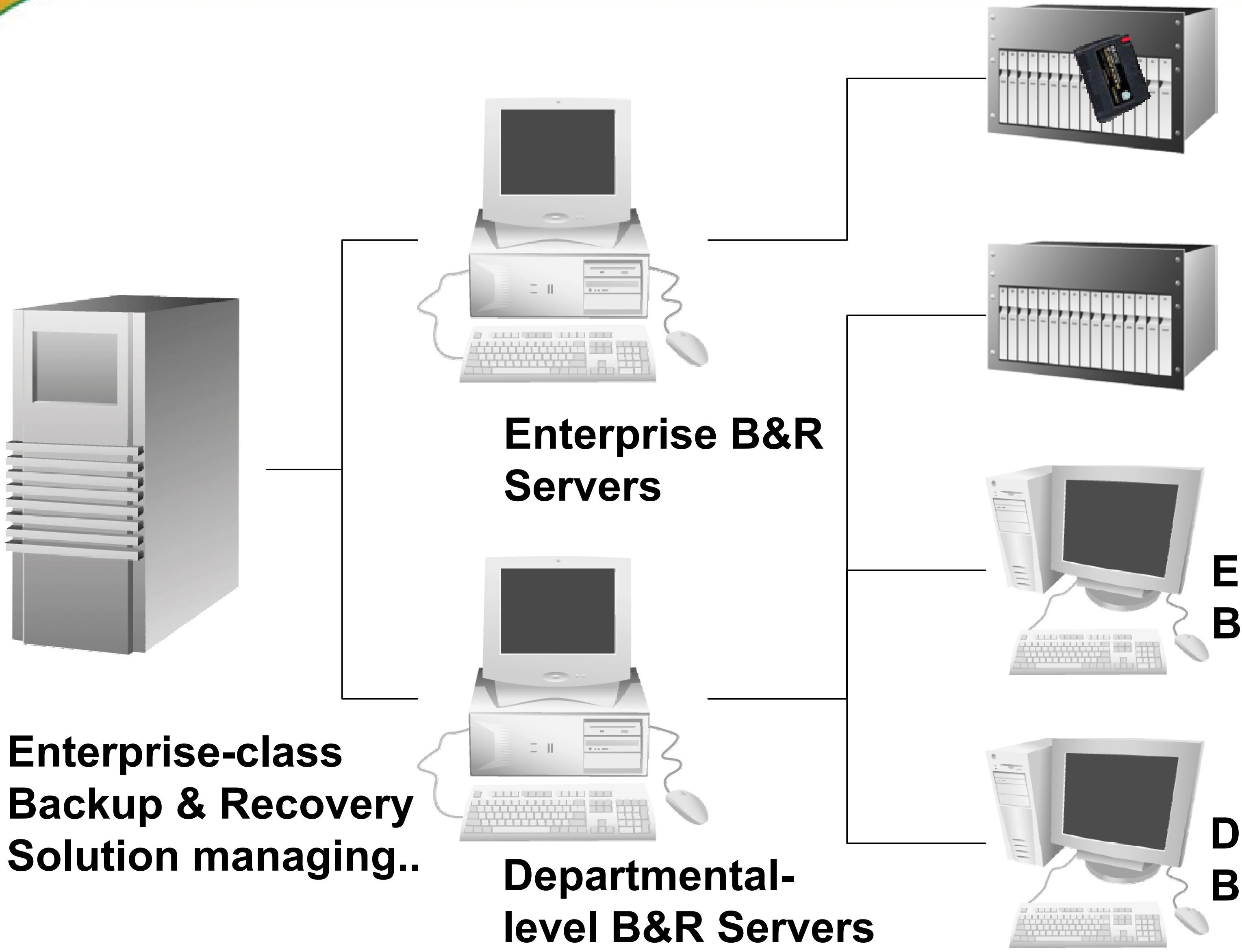
Apply Protection Example

- Class A: Mainframe & Enterprise-class Backup & Recovery Solutions
- Class B: Enterprise-class and Departmental-level B&R Solutions
- Class C: Departmental-level and Mobile Computing B&R Solutions
- Class D: No backup (or user-initiated only)

Apply Protection Example

- Class A: Snapshot hourly and copy to “hot site” AND daily off-site tape vaulting/archive (for x yrs); each server has bare-metal DR capability
- Class B: Full backup every 4 hours to tape, daily off-site tape vaulting (x# yrs)
- Class C: Weekly full, daily incremental tape backup (local only)
- Class D: No backup

Integration Gives Flexibility



Enterprise-class Backup & Recovery Solution managing..

Enterprise B&R Servers

Departmental-level B&R Servers

Enterprise B&R Agents

Departmental B&R Agents

Storage Risk Mitigation

- Backup Evolving into Mitigation
- Balances Data Value Against Cost
- Critical Success Factor - Built-in Integration
- Storage, Security and Enterprise Merging
- Contains Hardware and Software costs
- Logical, Flexible, Defendable Strategy

Check out the "Storage Risk Mitigation" Whitepaper for more information

CA BrightStor HP Support

- Key New Support:
  - BrightStor Enterprise Backup v10.5 for HP-UX and Tru64 - introduced May 2003
  - Integrated management of hardware snap-shot (StorageWorks Business Copy) for HP XP arrays
  - BrightStor ARCserve Backup v9 support for HP-UX and Tru64servers
- Ongoing Support
  - Broad Support for HP Storage, Server and PC Products (see on-line “Certified Device Lists)

Managing Storage Without Boundries

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CA BrightStor Solutions