

EMC BuRA

Backup, Recovery, and Archiving



Kurt Kimmel

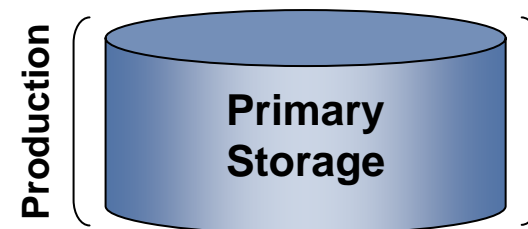
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Mobil: 0175/5821797
Berlin, 21.09.2005



Backup, Recovery, and Archive: Three Separate Challenges

1 Production Environment Is Growing

- Growth in the production environment is costly
- Requires more staff for performance tuning, allocation, backup, configuration management



2 Backup Requirements Are More Difficult to Meet

- Too long to restore
- Backups are not completing consistently
- Tape backup infrastructure is costly and complex to manage



3 Archiving Doesn't Meet New Business Needs

- Archived data is difficult to access
- Using backup as the archive source causes duplicate data
- Difficult to meet compliance and business practice standards



Quick Glance Report Card

Report Card for nbsp00 for Last Week

Node	23 Nov	24 Nov	25 Nov	26 Nov	27 Nov	28 Nov	29 Nov
admigrate							
aegaeon-bak							
am2cat-bak							
am2erpt-bak							
am2s1-bak							
am2s2							
am2sdba							
am2srep-bak							
am2sweb-bak							
amelia							
ao-unix2							
ao-unix3							
ao-unix6-bak							
ao1-bak							
ao4-bak							
arcsdb01-bak							
arcsdev1-bak							
arcsdev2-bak							
arcsweb01-bak							
atanasoff							
backus-bak							
bison							
cardbe1b-m01							
casanova							
cetus-bak							
cheez							
convert-bak							
cray-bak							

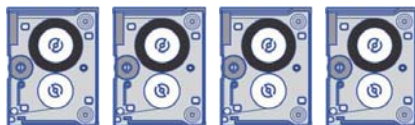
Quickly see which servers have not been backed up successfully and those that were not even attempted.

Notes:

- Green: Completed
- Red: Failed
- G&R: Some complete, some failed
- Blank: No backup job run

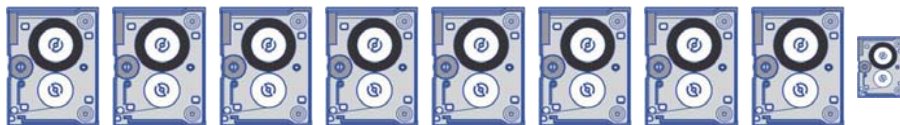
Best-Practices Discussion: How Much Backup Data Is Enough?

Ratio of Backup Data on Tape to Total Data on Disk

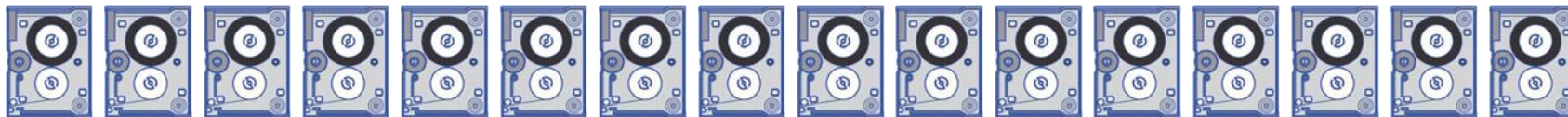


4:1 or less is best practice

Central control of backup frequency and retention period



8.5:1 is average



16:1 is highly inefficient

Backup: Common Challenges

- Performance
 - Not meeting backup windows
 - Cannot provide adequate restore service levels
- Availability
 - Limited reliability of tape infrastructure
- Management
 - Constant tuning of environment
 - Incrementals, fulls, etc.
- Data retention
 - Reliance on old backup images for long-term retention



“75% of storage management is backup and recovery yet 30% of all data recovery instances fail...”

— Forrester Research, 2003

All can be addressed through an integrated Backup, Recovery and Archive approach

How Do You Speed Up . . .

Backups?

- Use incremental or differential technologies
- Stream multiple servers on to a single tape
- Backup less frequently
- Only backup some data

How Do You Speed Up . . .

Backups?

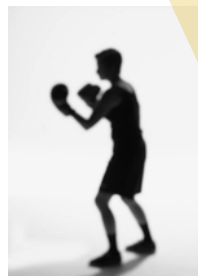
- Use incremental or differential technologies
- Stream multiple servers on to a single tape
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- Only backup some data



Backup Speed

Recoveries?

- Utilize full backup images wherever possible
- Only allow one server per tape
- Backup as often as possible, reduce log impacts
- Backup everything



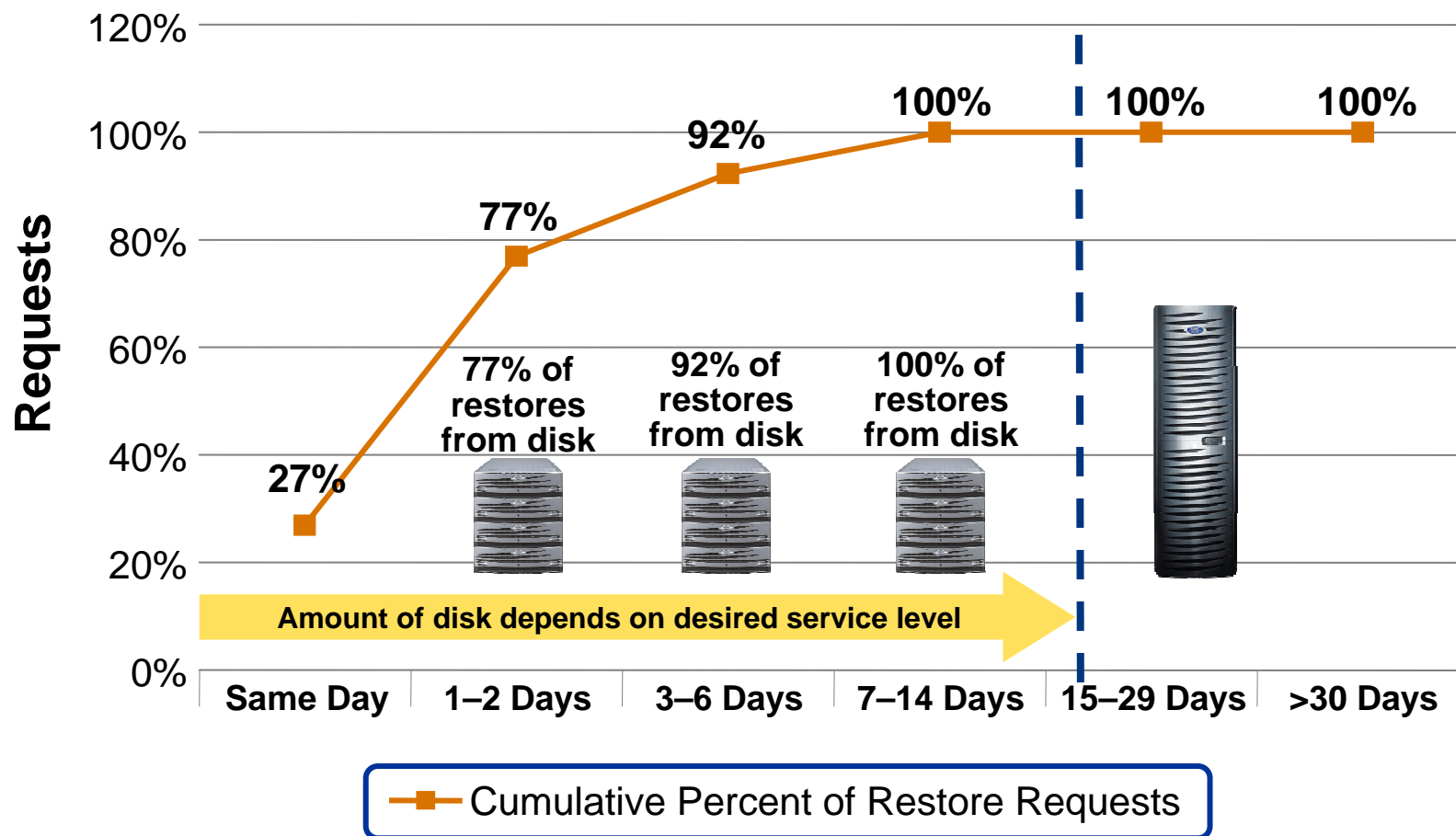
Recovery Speed

Saving Time and Money with Backup to Disk

EMC Internal Case Study

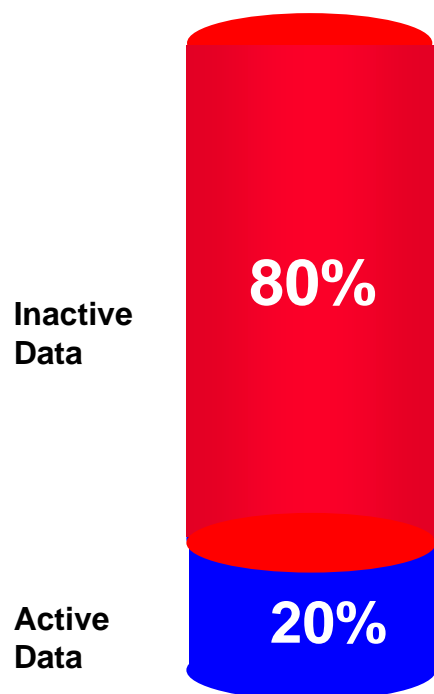
E-mail Restore Requests Since Backup

On-site Retention Period

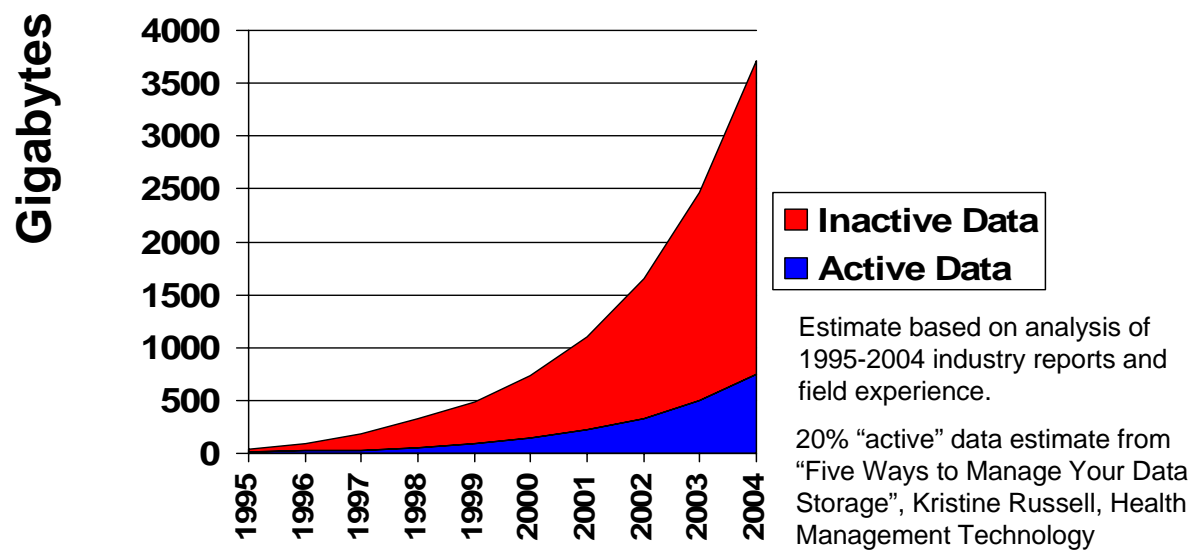


Inactive Data Consumes Storage/Staff Resources

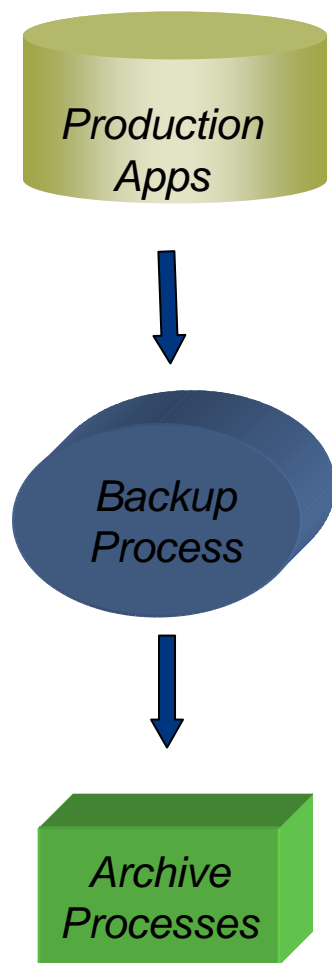
- Often **80%** of all stored files have not been accessed in last **30 days**
- Primary storage of inactive data is increasingly costly and inefficient



Typical Enterprise Data Growth



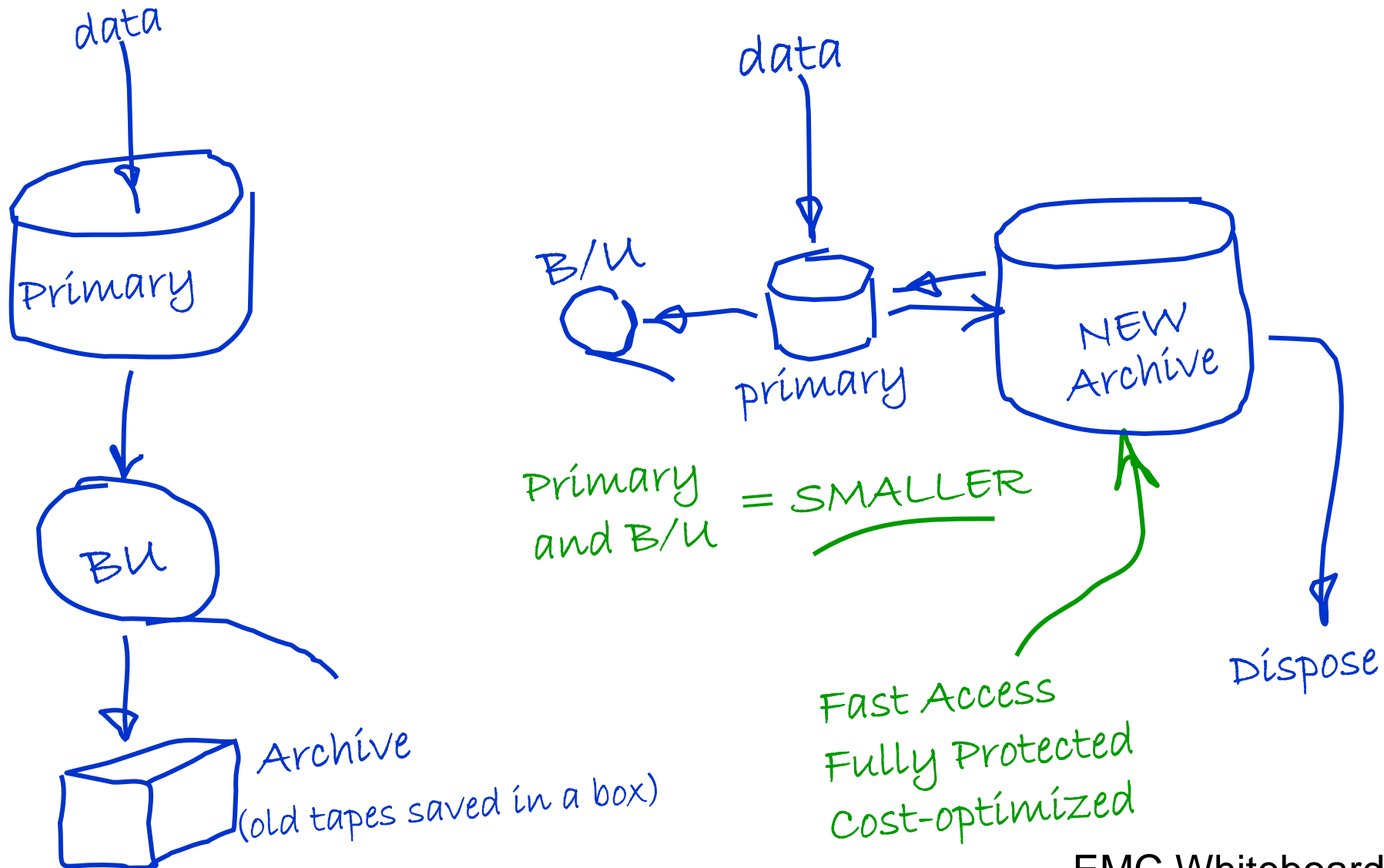
Traditional Approach



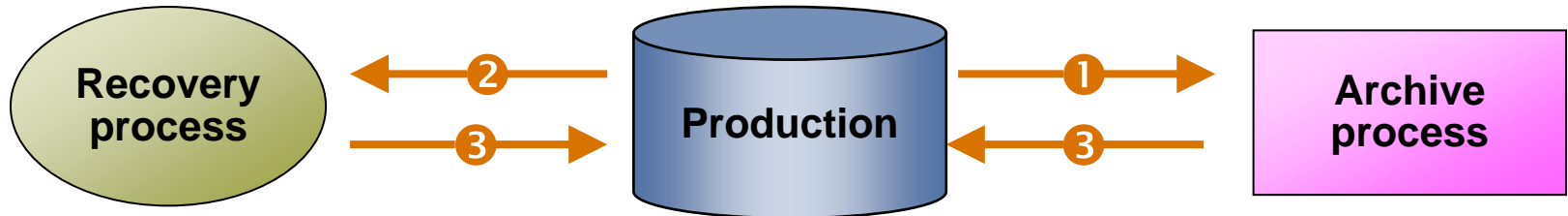
Issues With This Approach



The POWER of ARCHIVE



New Architecture for Backup/Recovery and Archive

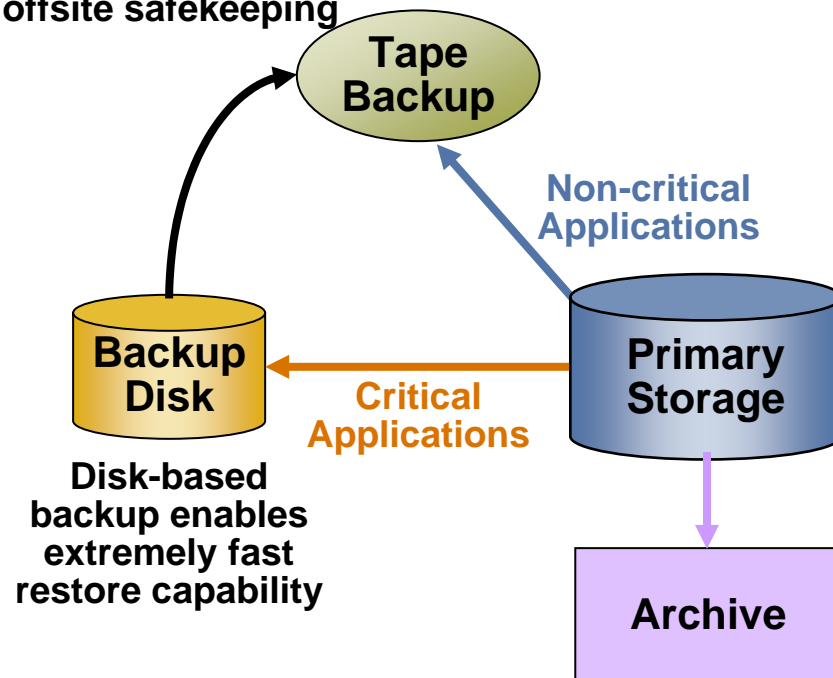


- ① **Archive** valuable information to tiered storage
 - Increases performance and TCO
- ② **Backup-to-disk** for active production information
 - Much less content, better chance of full backups
 - Backup-to-disk performance, reliability benefits
- ③ **Retrieve** from archive or **recover** from backup
 - Archive information is now available for new business uses
 - Recoveries faster, more simplified

EMC's Approach: Backup-to-Disk for Fast Recovery

- **Centera Archive**
 - Compliance
 - Online Access in Internet Response Time
- **CLARiiON Disk Library**
 - Speed and reliability benefit of disk-based backup
 - Operated by traditional tape commands
 - No need to change backup management software
 - Seamless implementation
- **Fast restore of critical applications**
 - Full backup and incrementals run at disk speed
 - More reliable media (RAID protected)
- **Complements current tape backup**
 - Non-critical applications continue to use existing tape
 - Critical applications leverage disk and can be transferred to tape for offsite storage

Move data to tape for offsite safekeeping



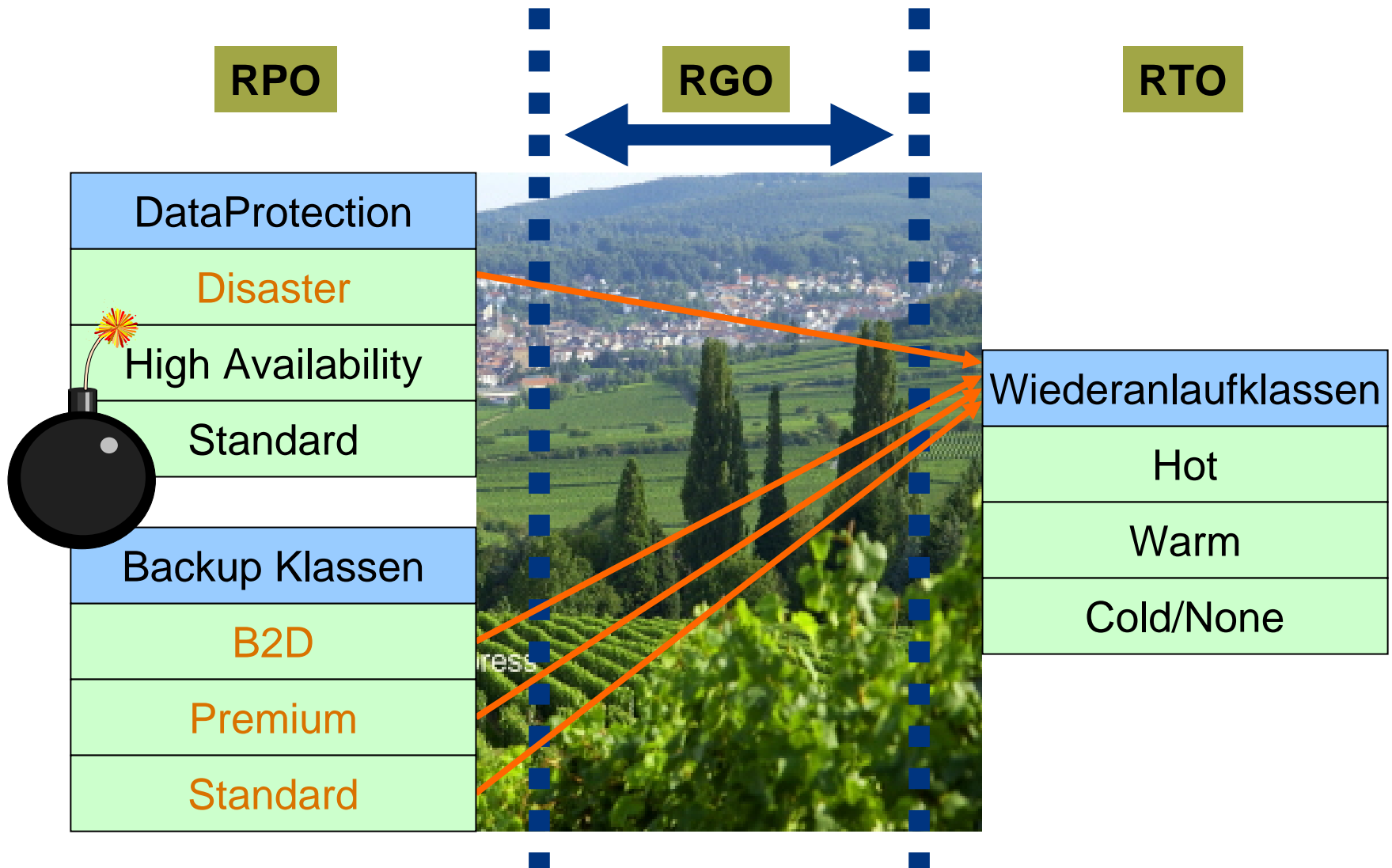
Enablers:

ATA technology for backup-to-disk at low cost and high performance

CLARiiON Disk Library for ATA without changing backup management software

Centera's CAS Technology for archiving

Recovery/Restart Classes



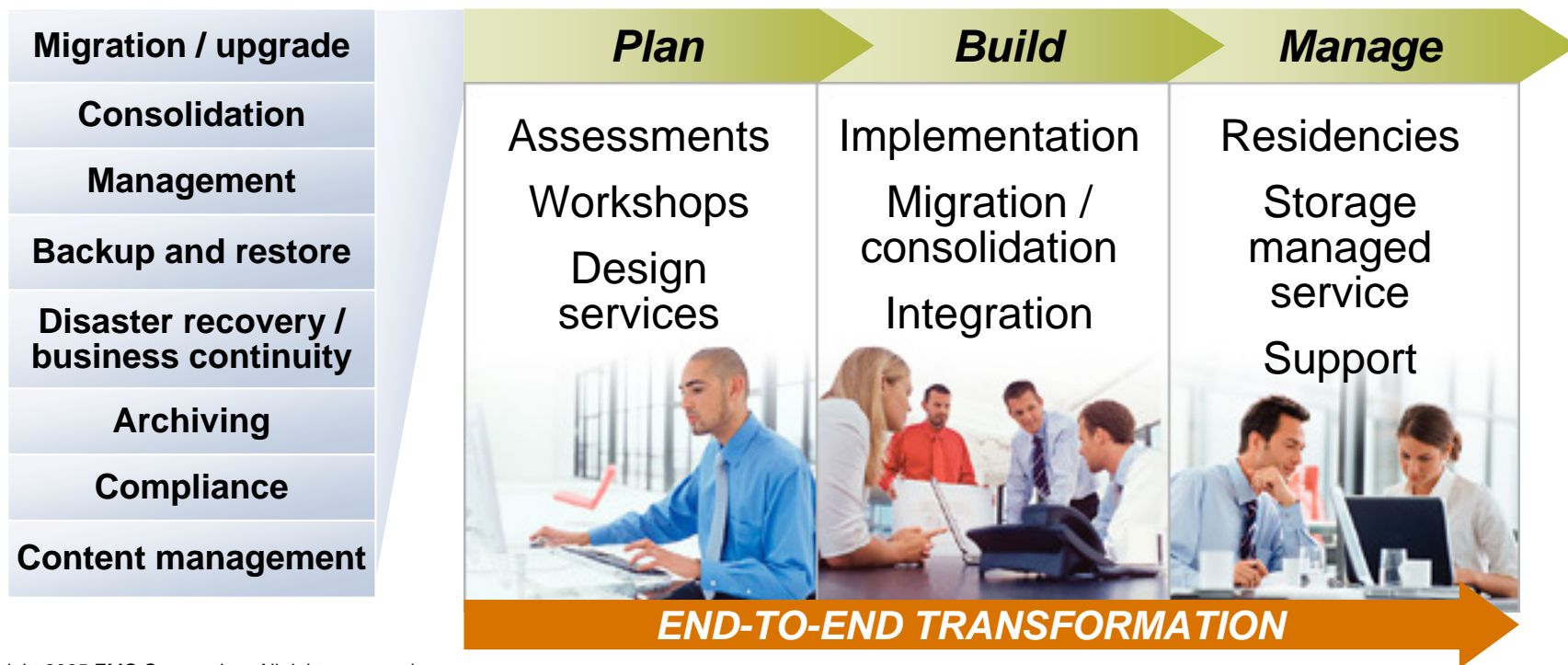
Backup-to-Disk Services

Assessment

- Backup software topology
- Current performance
- Backup completion / failure rates
- Network utilization
- Current backup / window and RTO for each backup stream

Design and Implementation

- Design recommended backup-to-disk architecture based on requirements
- Determine sizing and optimum LUN—LUN / Meta layout for CLARiiON ATA, filesystem for NS ATA

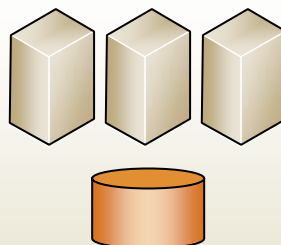


Comprehensive Backup, Recovery, and Archive

Identify and Archive Infrequently Used Data

For e-mail, databases, file systems, content repositories

- Smaller production environments
- Less primary storage
- Less server resources
- Easier management

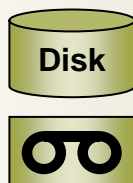


*EmailXtender
DatabaseXtender
DiskXtender
Documentum CSS
SAP/PBS Archiv*

Reduced Backup Volumes

Enables use of disk as backup medium

- Faster backup
- Faster recovery
- Less cost
- Less effort



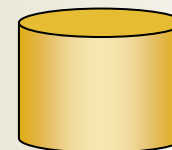
Tape

*CLARiiON Disk Library
CLARiiON / ATA
Celerra / ATA
NetWorker
ADIC Tape Library*

Active Archive

Keeps data protected, accessible, and compliant

- Simplified management
- Easier access
- More value from information



*Centera
CLARiiON ATA
Celerra ATA*

Plan • Build • Manage • Support

Experienced professionals help define service levels and speed deployment

- Consistent SLAs
- Measurable processes
- Faster deployment



*Information Protection Services
Data Classification Services*

EMC²
where information lives[®]