



**Driving Innovation
Through the Information
Infrastructure**

SPRING 2011

Sibling Rivalries: Integrating Data Management Technologies

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Agenda

- Perspective
- Sibling elements in managing storage of data
 - Data Protection
 - Tiering
 - Archiving
- Integrating elements for economic value
- Summary



Data Protection

- A basic function --- and requirement
- How to do it is the big question
- Perceived as a necessary evil – not a revenue generator for a company
- Costly – opex and capex
 - Unsustainable for most with capacity demand

Rethinking Data Protection

- Questions about data
 - How is your data protected?
 - What is required?
 - How long does a recovery take?
 - How long will data be retained?
 - What are the compliance requirements?
 - How much does this cost?
- Answer
 - Re-examine: develop a new strategy
 - Must be affordable and effective



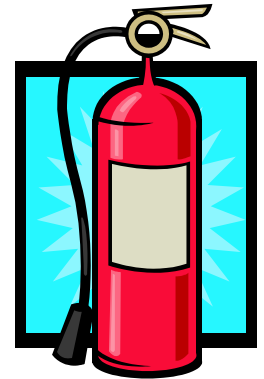
Reasons for Protecting Data

- Protect from when a disaster occurs
 - Second copy of information
 - Copy on removable media at checkpoints
 - Replicated copy of data
 - At a remote location – outside disaster area
 - At a known point of consistency
 - Can resume operations at remote location
 - Time element is a matter of money and the type of protection that done



Reasons for Protecting Data

- Protect against data destruction / data unavailability
 - Accidental deletion
 - Corruption
 - Hardware failure
 - Recovery time is usually critical
 - Frequency of protection
 - Time to restore data
 - Highly changing vs. static data – difference in protection needs

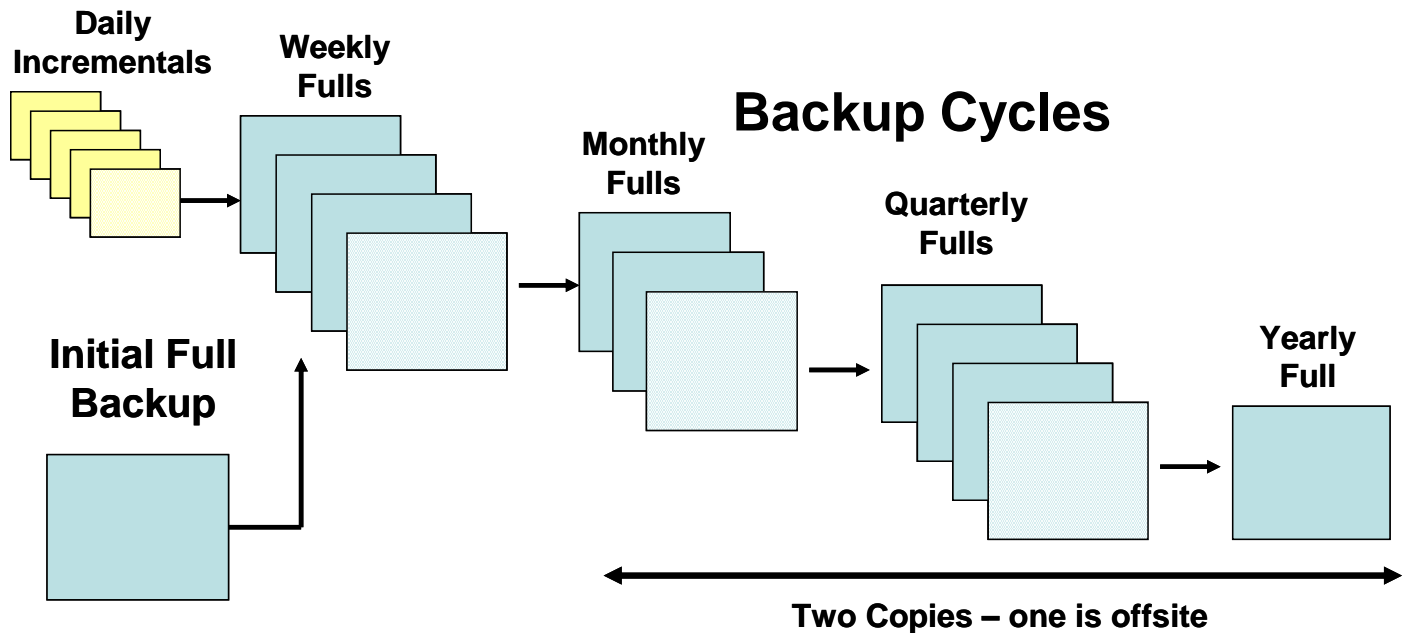


Historical Method

- Backup
 - Use backup software to capture data
 - Write in encapsulated format
 - Sequentially access
 - Requires backup software to restore
 - To tape systems
 - Sequential media with % of unsuccessful restores
 - 7 years before migrate to new generation drives
 - Requires backup software
 - To disk systems
 - 5 to 6 years before migrate / replace systems

Historical Methods

- Continuing problems
 - Time to get the backups done – growing capacity
 - Amount of space consumed for backups - generations
 - Cost of technology transitions – capital and migration
 - Cost of backup software and administration

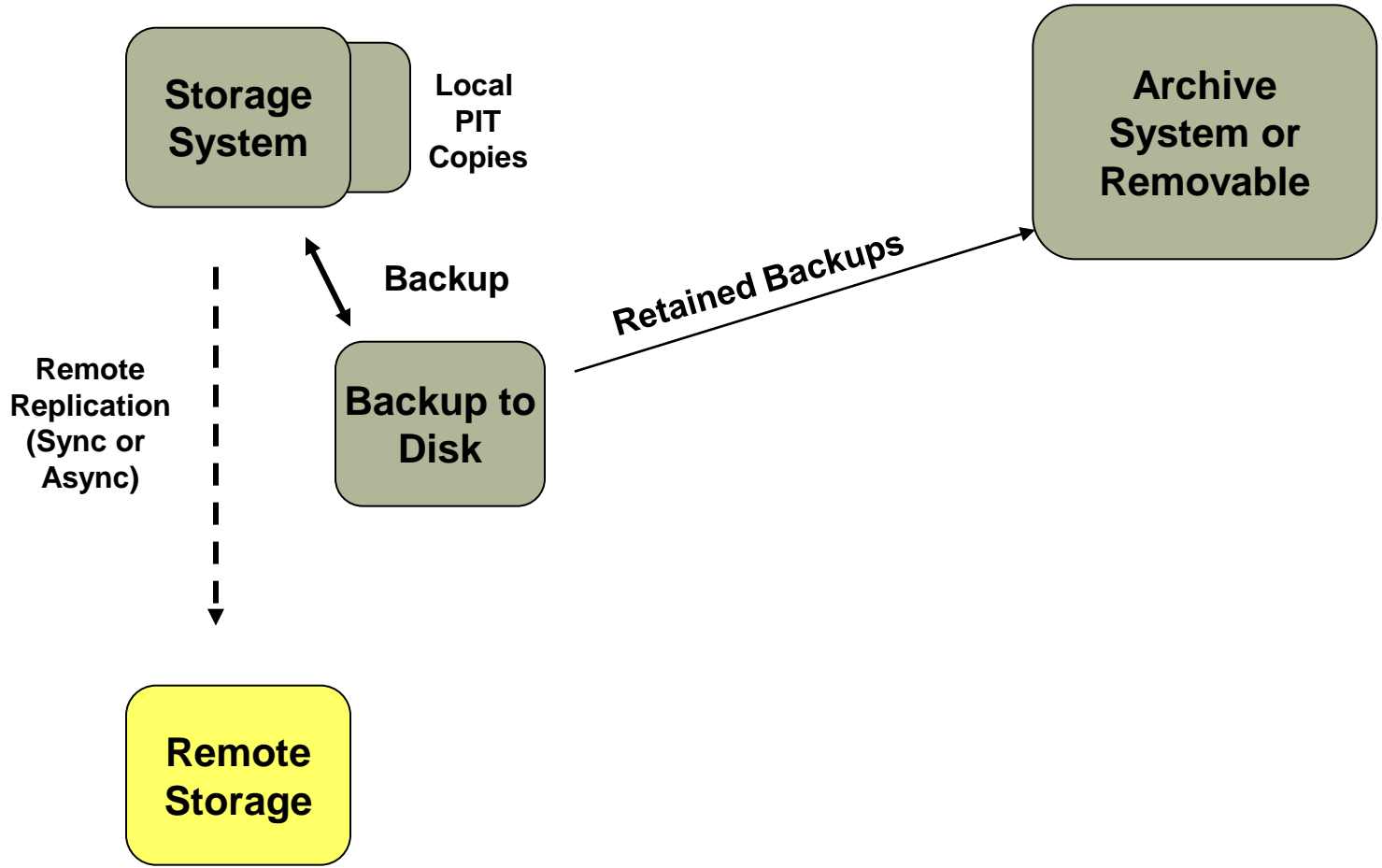




Disk-Based Approaches

- Data protection using disk-based storage technology
 - Ongoing trend that is increasing
 - Specialized devices
 - Features of storage systems
 - Data reduction technologies

Data Protection



Data Protection

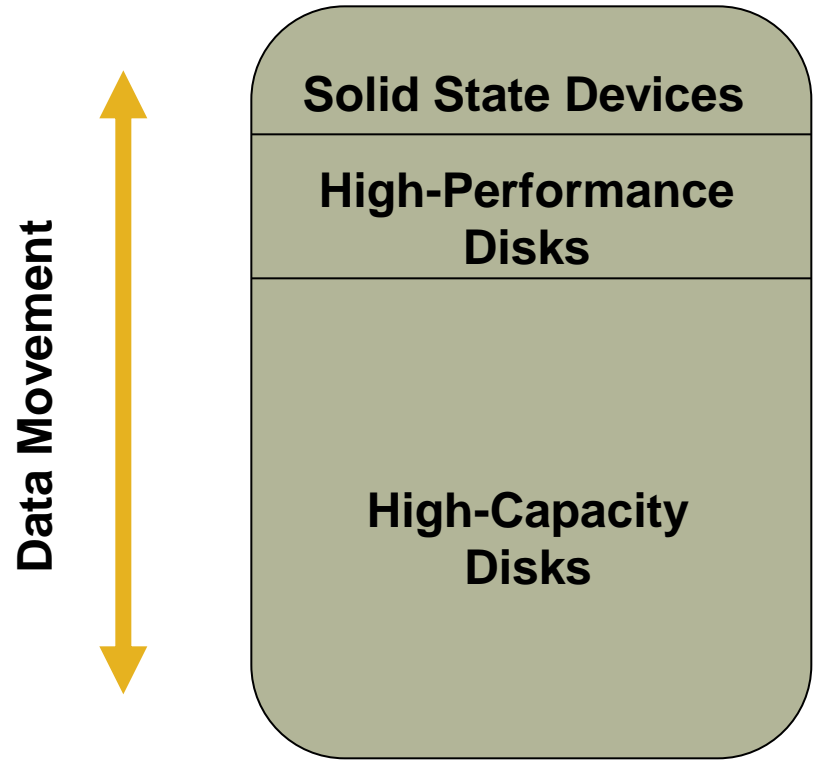
- Still backup
 - Use of disk and data deduplication technologies have become prevalent
 - Still perceived as a “tax”
- Being done in isolation
 - Improve the backup process
 - Near-term objectives



Tiering

- Several types of tiering
 - In the box
 - Between different classes of storage
- Use of Flash / SSDs has crystallized attention for tiering
 - Use within storage systems
 - Use as an extension of cache
- Performance gains and costs managed compared to other solutions

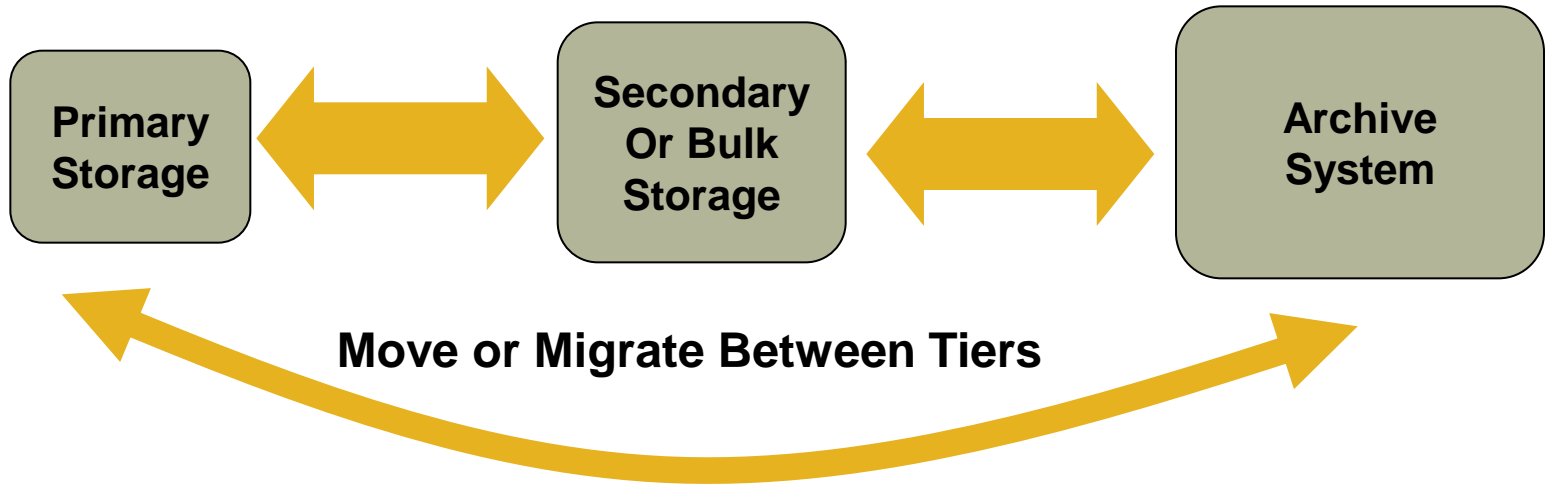
Storage System Tiering “Within-the-Box”



Volume or sub-LUN level

May include virtualized external storage

External Tiering



Tiering

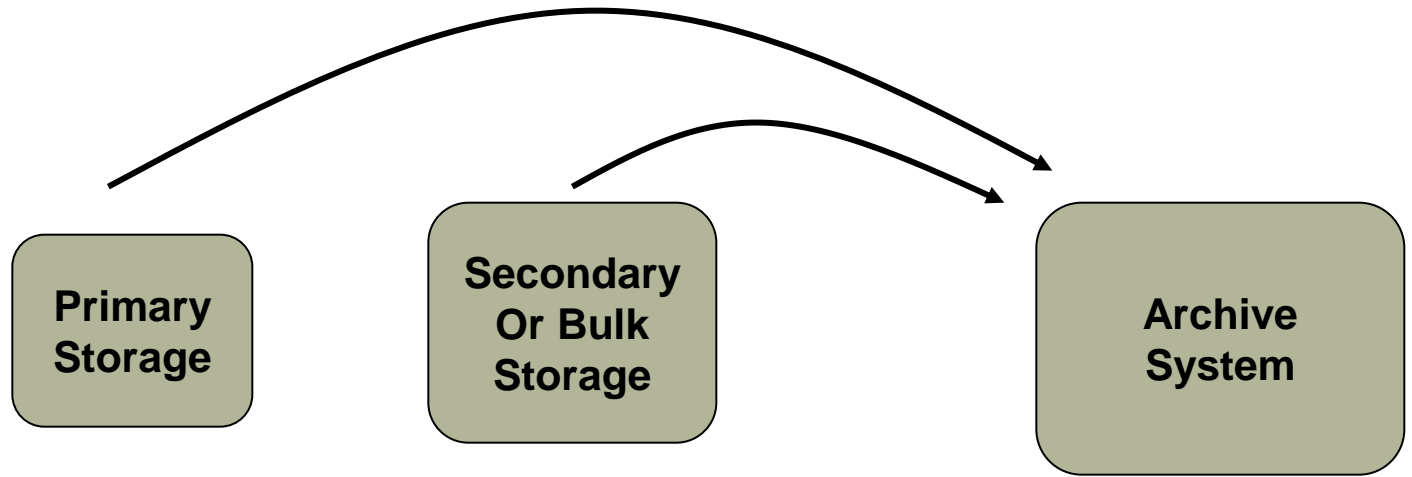
- In-the-box tiering
 - Major performance boost
 - Limit economic impact of costs of higher performance drives
- External tiering
 - Economic benefits
 - Performance management by placing data



Archiving

- Moving data that is not immediately required
 - Less cost for storage
 - Still retrievable and searchable
 - Preserve --- for decades
- May require regulatory or business governance requirements
 - Strict rules
 - Integrity of data
- It's not backup

Archiving



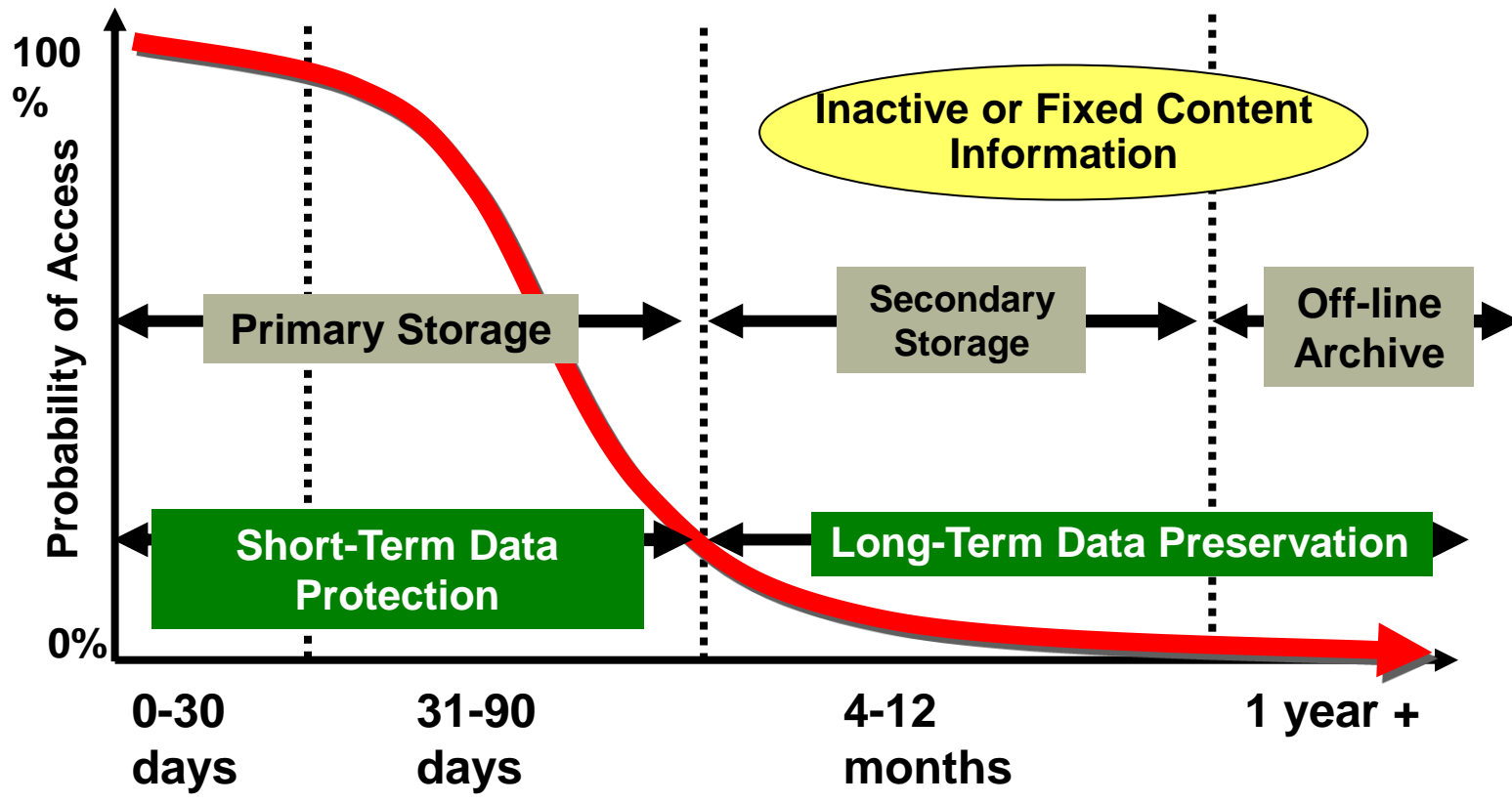
Archive Based on Criteria or Selection

Archiving

- Different than backup
 - One time operation – move the data or store it directly in an archive
 - Protection is done at time of archiving
 - Multiple copies are made
 - **NO MORE BACKUPS** of archived data



Access to Information





Archiving

- Archiving controlled by policies – criteria
 - Age of information / last time used
 - Type of data
 - Owner
 - Business criticality
 - Size
 - Space available

Archiving

- Typical actions for archiving – generally associated with unstructured data
 - Archive and leave – copies data to archive device and leaves original copy
 - Archive and stub – copies data and leaves a “stub” that has attributes and when access will retrieve file
 - Archive and delete – moves data and deletes from the file system. Alternate path (link) may be set to the archive system for access



Archiving

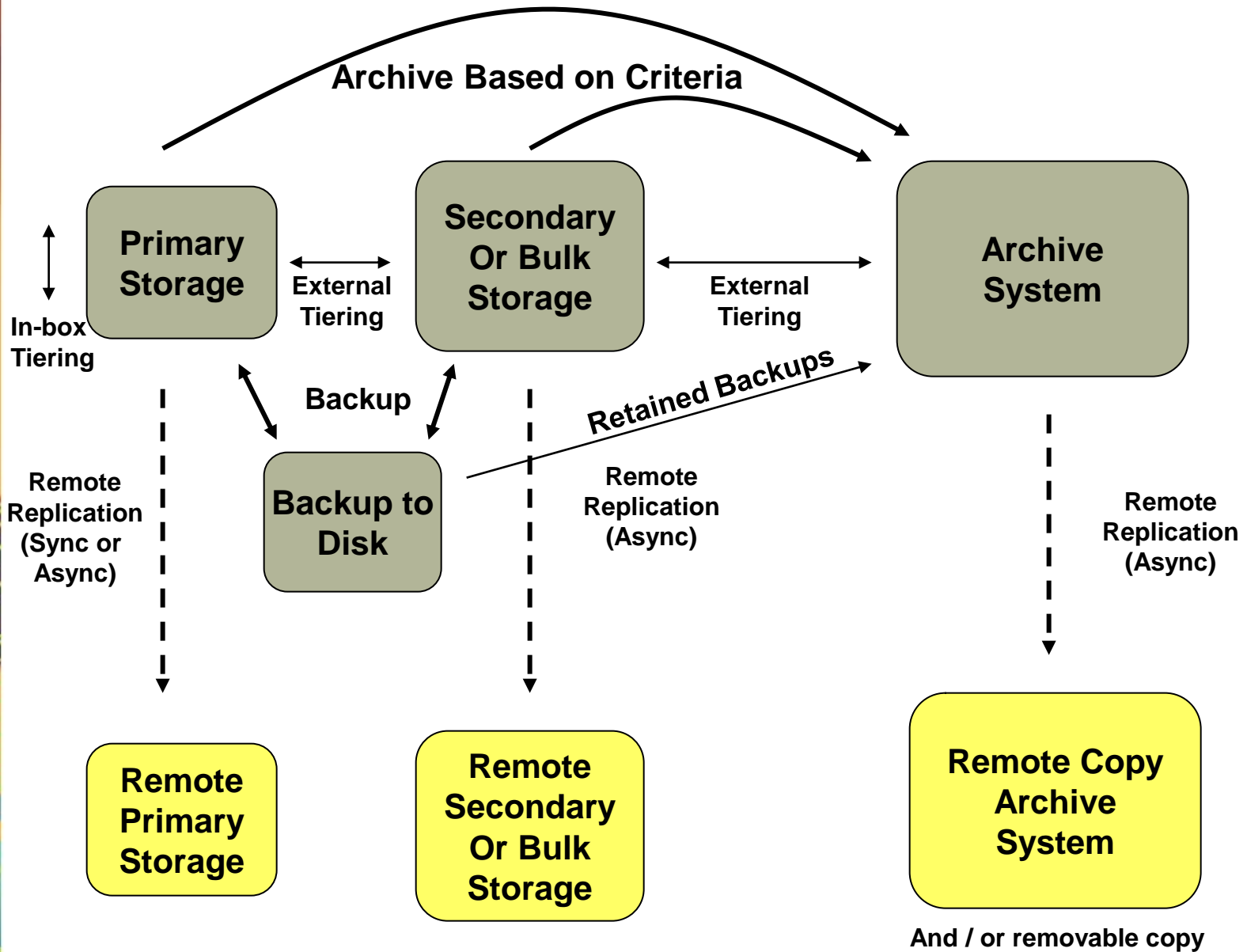
- Economic impact – probably the greatest potential for cost savings
 - Data stored on less expensive technology
 - Storage for longer term
 - Free up capacity for other data
 - Meet other demands – compliance / governance



Integrating the Elements

- Coordinating the implementation of data protection, tiering, and archiving
 - Greater economic impact
 - Are interrelated
 - Operational – workflow implications for each
 - Need to be coordinated

Integrating Data Management Elements



And / or removable copy



Summary

- Integrating the elements: Needs to be part of overall storage strategy
 - Meet demands
 - Protect data
- Requires understanding of technologies and techniques



Thank You

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