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Data Protection in an Enterprise Environment

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Enterprise NAS Assets

A variety of requirements

- All Application Data is not equal
  - Performance
  - Availability
  - Latency
- All Business Requirements are not equal
  - Procedural
  - Regulatory
  - Risk / Cost / Complexity

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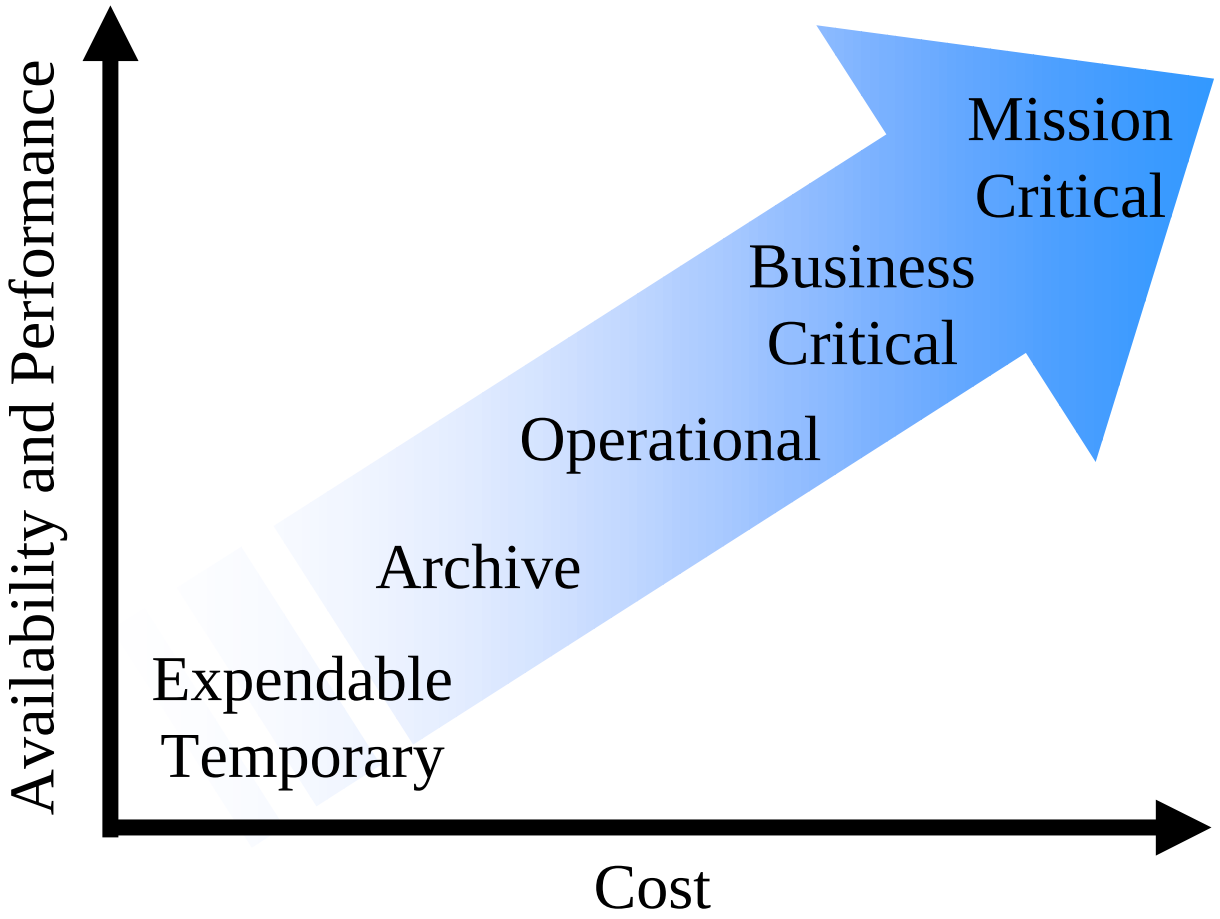
Application Data

A wide range of requirements



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Classification Tiers

Tier Description	Definition
Tier 1 – Mission Critical	Enterprise wide custom or packaged applications that affects business productivity Significant revenue loss from downtime
Tier 2 – Business Critical	Business unit custom or packaged applications that affects business productivity Revenue loss from downtime
Tier 3 – Business Important	Business unit custom or packaged applications that affects business productivity Limited revenue loss from downtime
Tier 4 – Productivity Important	Departmental applications or databases that affects business productivity Limited revenue loss from downtime
Tier 5 – Non-Critical	Personal applications or data that affect business productivity Minimal revenue loss from downtime

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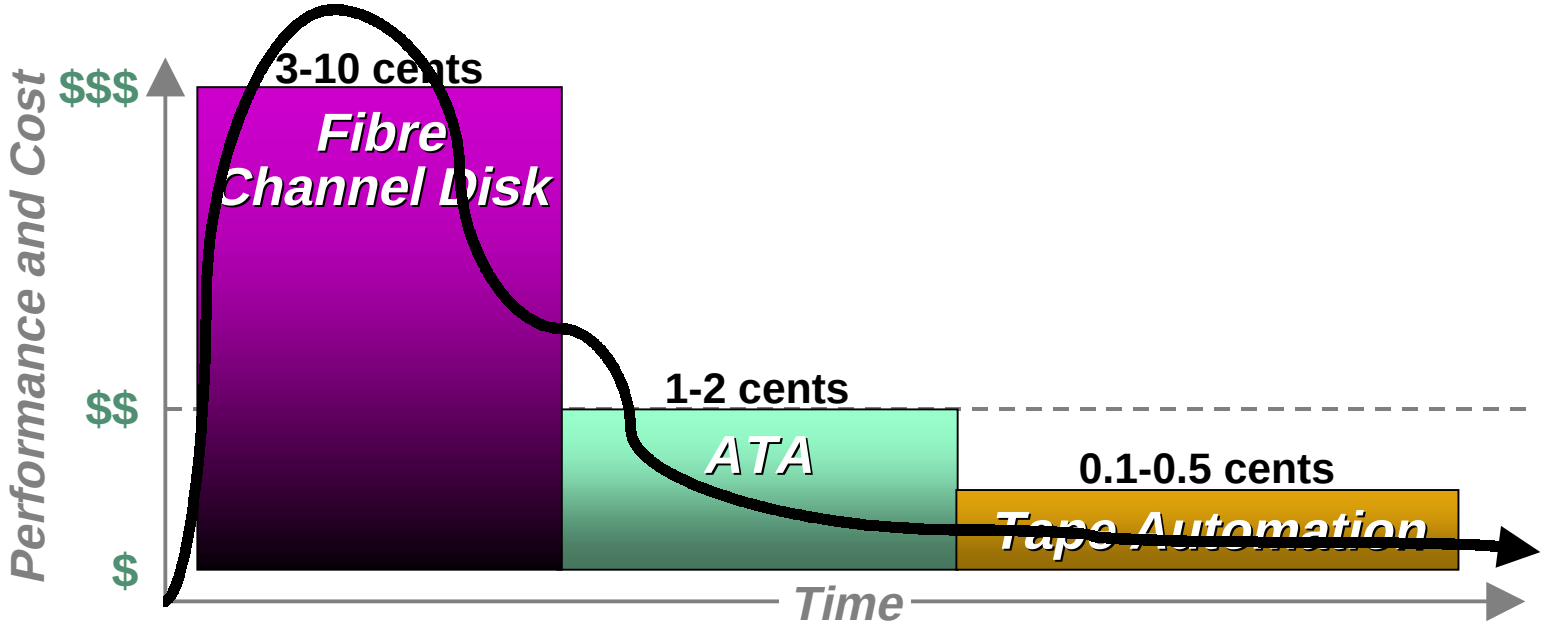
Data Ages

Data placement is not a static discussion



Data ages in value, and hence needs to age across the storage mediums

Business Requirements

Application data needs vs. business requirements

- Procedural
- Regulatory
- Cost
  - **Vs. Risk and Complexity**

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Business Requirements

Driven by cost

- Optimal use of resources (both people and equipment)
- Having data in the right place at the right time to support the business
- “One size fits all” application support is not cost efficient
- Emerging regulatory requirements force businesses to comply with documented data policies and behaviour
- Regulatory requirements are driving need to retain data for longer periods of time

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So how does this apply to NAS?

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The Impact on NAS

Blossoming complexity

- Increased Capacities and Functionality

(2) Lead to economies of scale

(3) Lead to complex placement – one device handling multiple levels of service

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The Impact on NAS

Increased capacities and functionality

- Replica management
  - Local and Remote Physical Copies
  - Local and Remote Logical Copies
  - Asynchronous Replication
  - Synchronous Replication
- Tiered disks, tiered offerings
- Capacities

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The Impact on NAS

Complex placement of multiple service levels

Performance

1ms — **500ms**

Availability

Six 9s — **Three 9s**

Functionality

Automated Integrated — **Manual Standalone**

Economics

Pay now — **Pay later**

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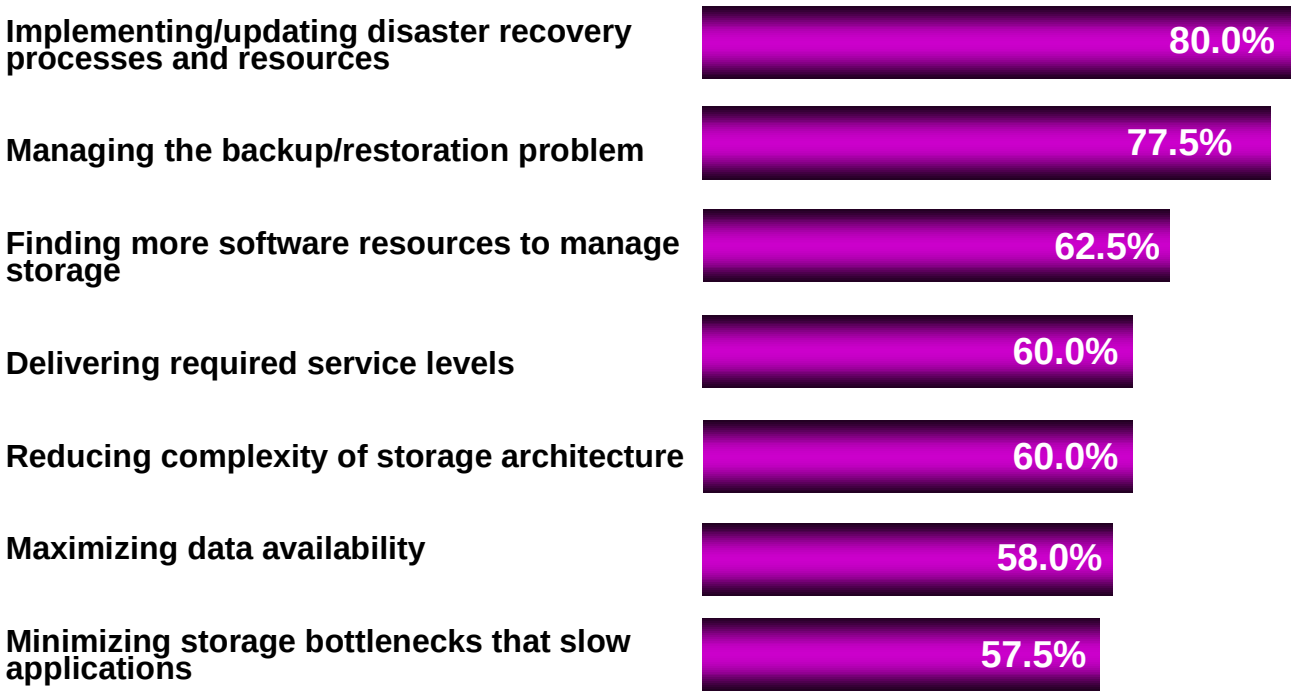
The Impact on NAS

What's the number one concern we hear?

Managing Disaster Recovery in a cost effective way….



Source: Aberdeen Group April 2003

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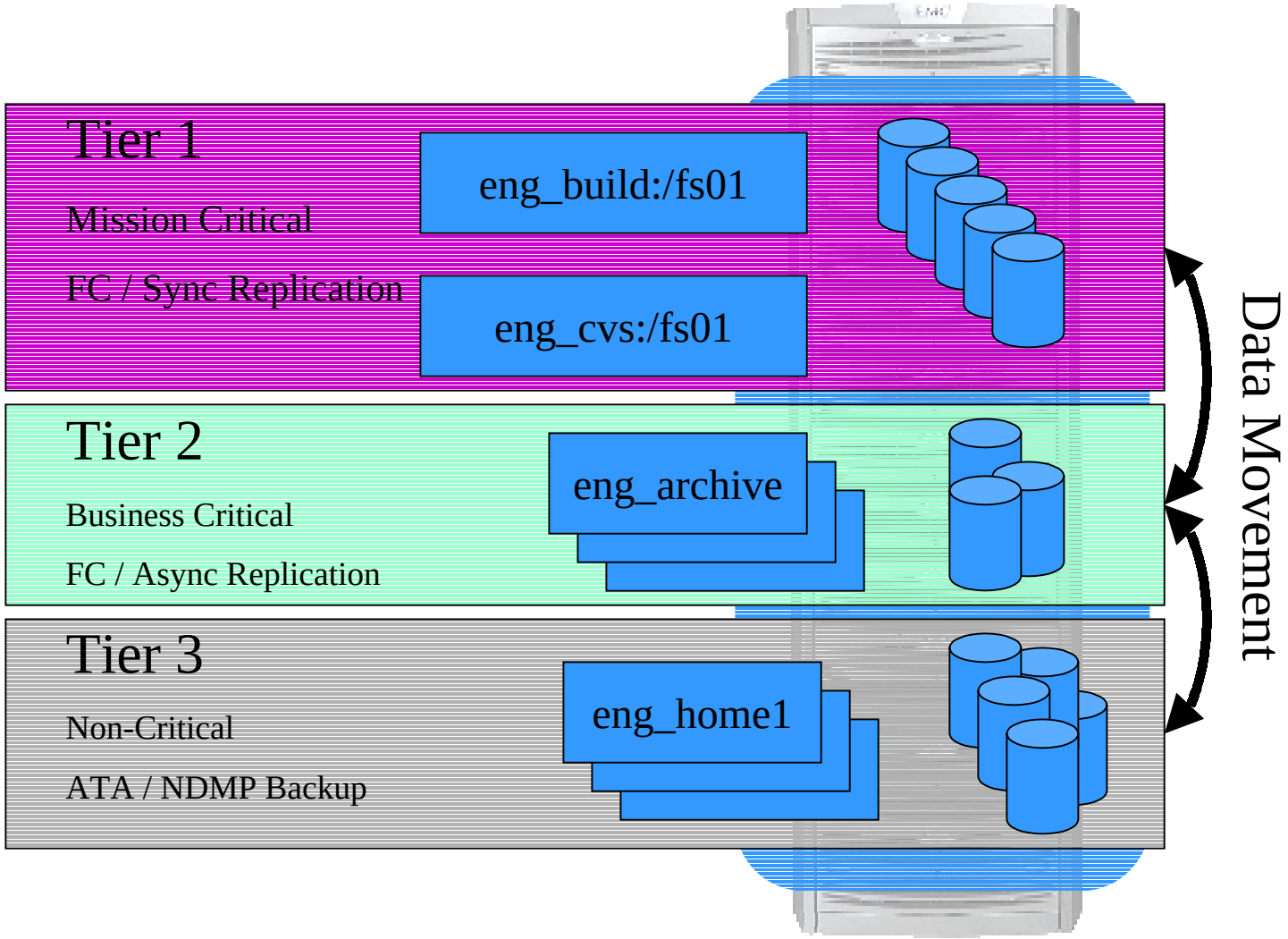
The Impact on NAS

Complex tiered environments



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The Challenge

Simply put…

- **Business drivers result in complex multi-service level solutions**
- **Managing and changing these levels must be a simple process**
- **The primary concern is management (which is really a discussion about cost)**

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The Challenge

Simply put… Simple is a requirement

- **Simplicity is required: lower end of the market needs much more ease-of-use; is also more price sensitive**
- **Simplicity costs money: providing flexibility that's simple to use requires more engineering**
- **Make it up on volume**

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The Challenge

Simply put… Simple isn't easy

- **Local and remote replication**
  - **Synchronous and asynchronous**
- **Local and remote disk tier**
- **But most of all these are live environments…..**

All While Maintaining Ease of Use?

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The Challenge

Live environments are the largest challenge of all

- **A business rarely values a filesystem or the data – they value access to that data**
- **It's a matter of insuring access via NFSv2,v3,v4 and CIFS**
  - **During Hot Migration among tiers**
  - **For DR, while replicating environments**

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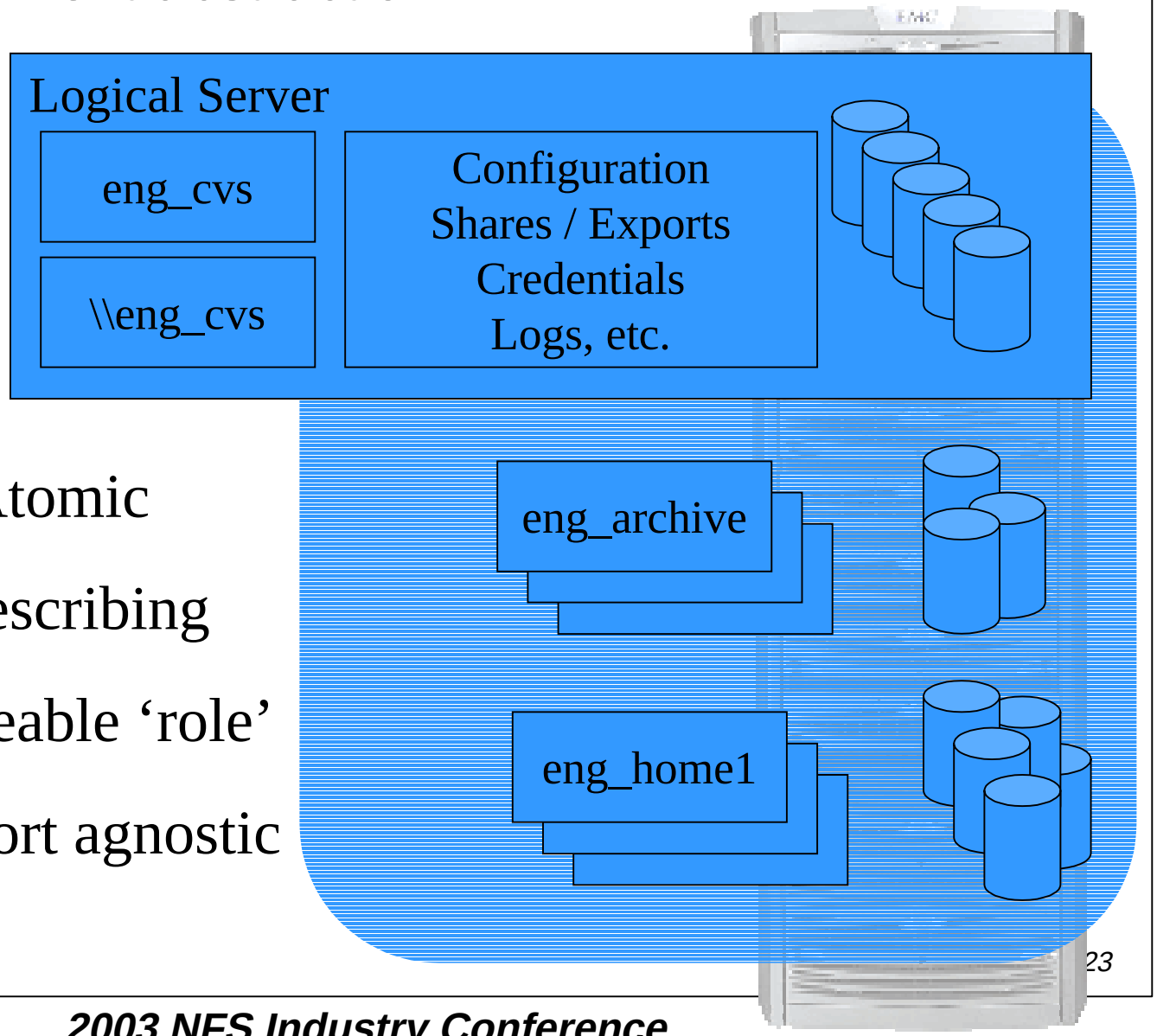
Approaching the Issue

A development strategy

- **Implementing the abstraction layer that the customer operates at in the device**
- **Separate the management and tiering discussion from the discussion of transport**

Approaching the Issue

Management abstraction



- Fully Atomic
- Self-Describing
- Manageable ‘role’
- Transport agnostic

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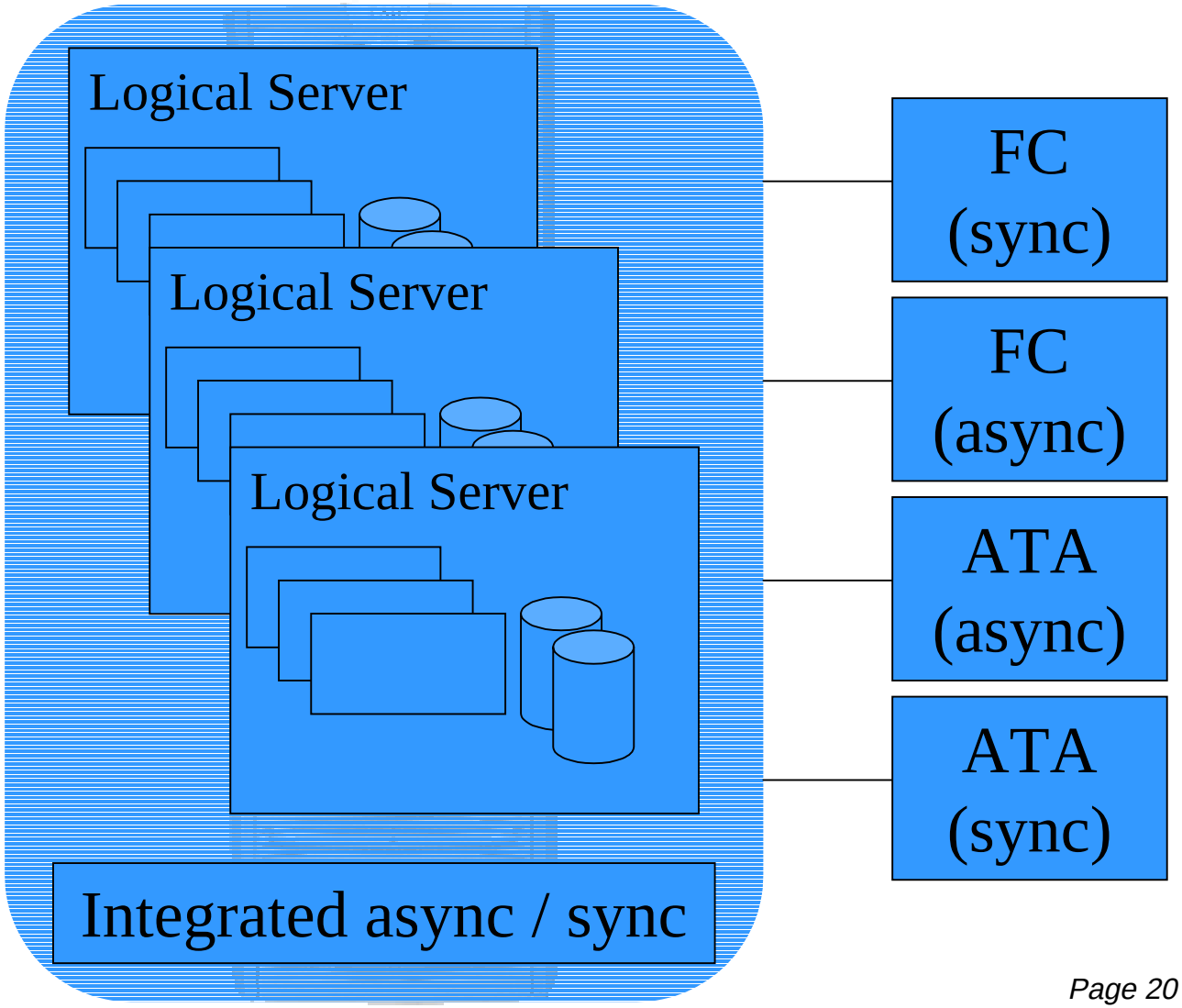
Approaching the Issue

Transport independence



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Advantages

Choice and simplicity

- **Management model for DR matches the abstraction model for control**
  - **i.e. Failover testing**
- **Offers the full choice of transports from NAS based IP replication or mirroring to subsystem based replication – i.e. SRDF, MirrorView, iSCSI**
- **Allows users to match service level required end to end**
  - **Celerra DataMover + Disk + Transport = Service Level Architecture**

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Recommendations

What do we need to focus on as an Industry

- **Preserving simplicity, while retaining choice**
- **The server or the system is the key abstraction**
- **We live in a multi-tiered, multi-protocol environment; managing that environment simply is key**

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