



Go further, faster

Datacenter Virtualization

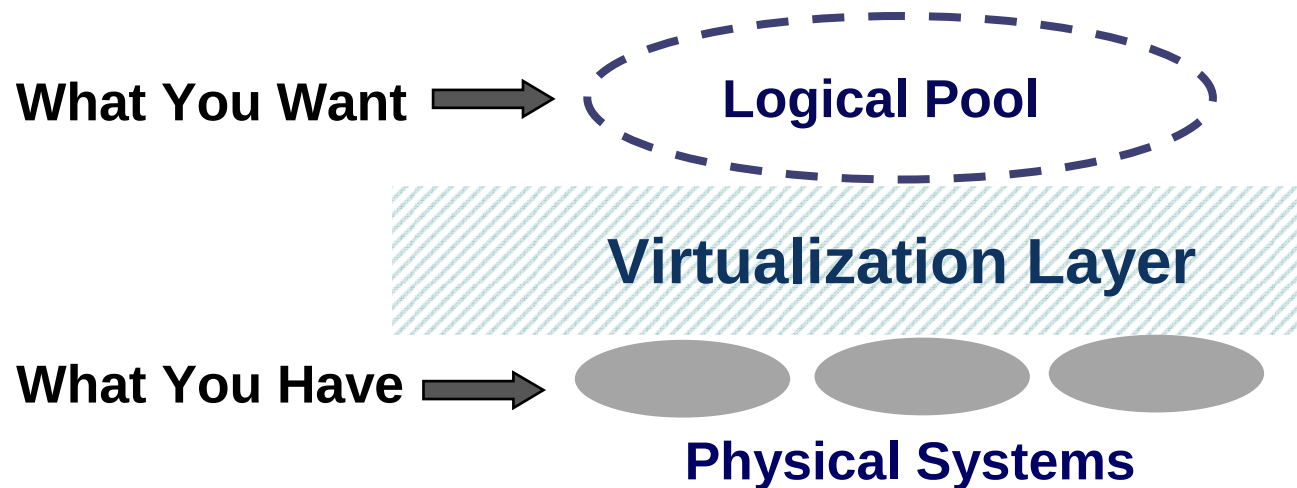
Ing. Bernhard Kainrath
Head of PMO Austria





What is Storage Virtualization ?

- Pooling of physical Storage Devices
- Single Storage Pool
- Better Storage Utilization
- Simplified Storage Management
- Dynamic Allocation of Capacity



Reasons for Storage Virtualization



Storage Challenges

- ▶ Need cost-effective storage
- ▶ Storage reliability becomes critical
- ▶ Server-based backups no longer practical
- ▶ Need rapid storage provisioning for VMs

Storage Opportunities

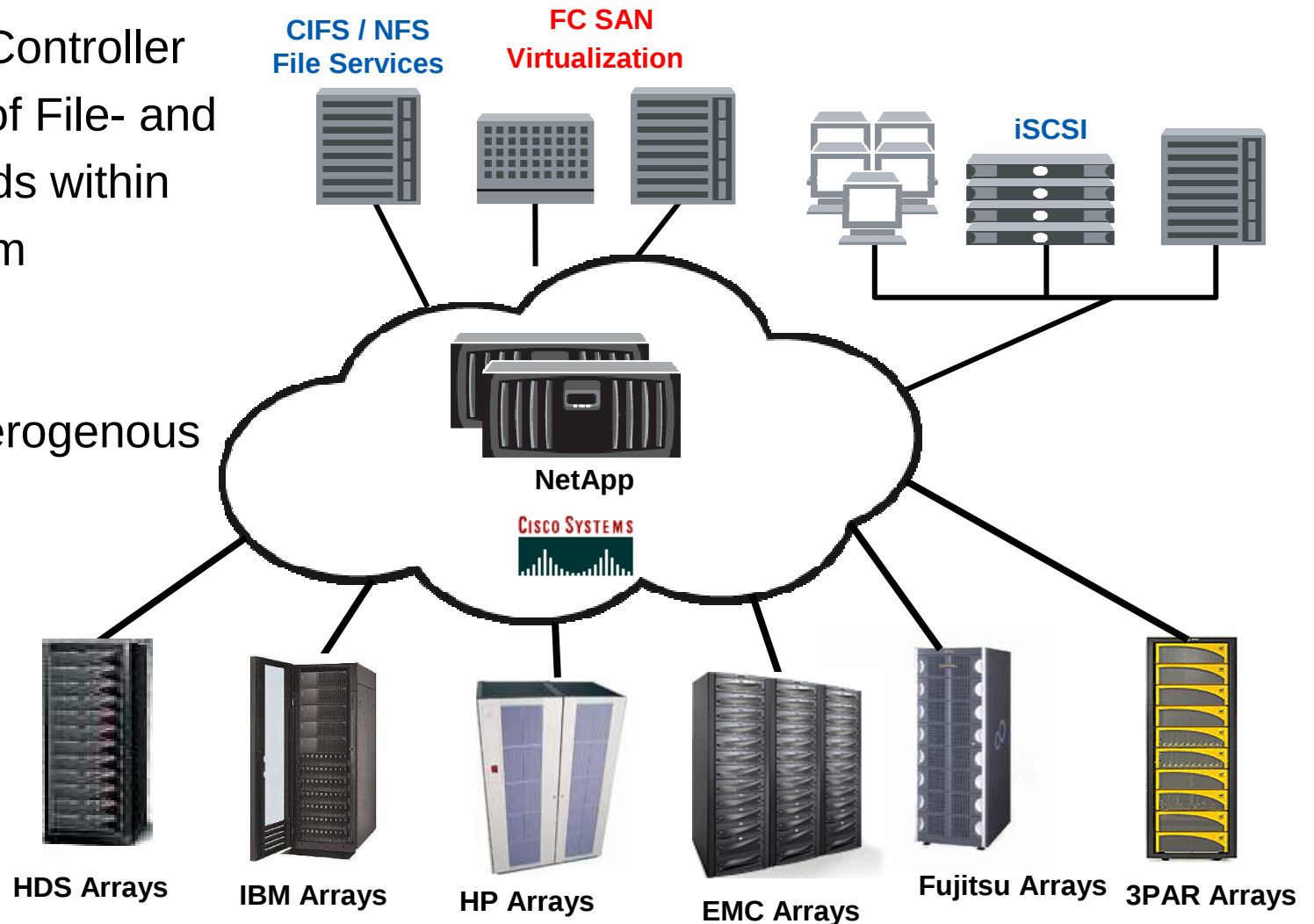
- ▶ Pools of shared storage
- ▶ Data deduplication
- ▶ Simplified DR across all applications
- ▶ Common physical & virtual storage environment



Controller-based Virtualization

First Choice

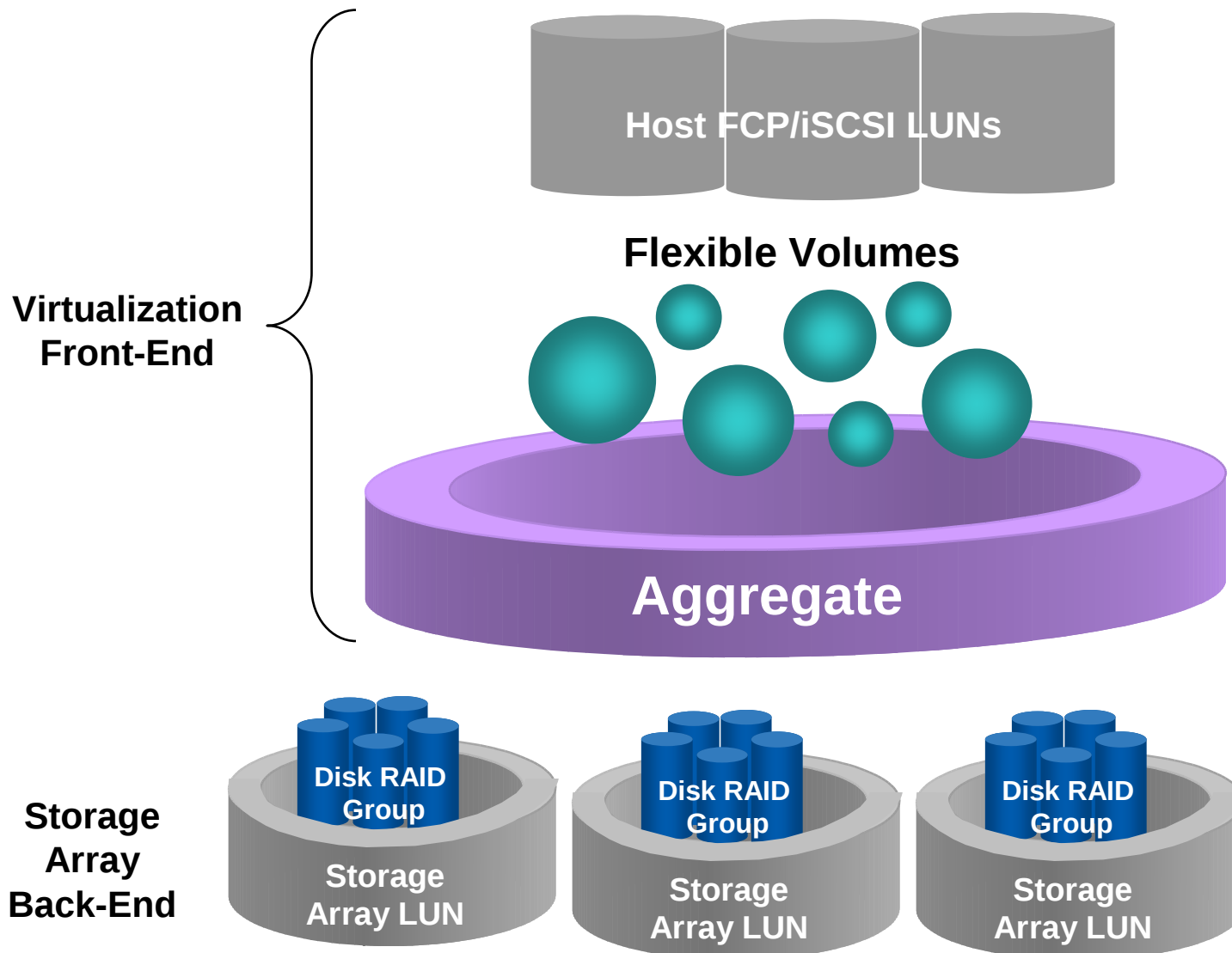
- Multi Protocol Controller
- Consolidation of File- and Block-Workloads within common system
 - NFS, CIFS
 - iSCSI, FCP
- Support of heterogenous storage Arrays





Controller-based Virtualization

Logical Topology





Added Value of Virtualization

Capabilities

App Integration
App Development
Instant BU/Restore
Biz Continuance
Disaster Recovery
Compliance
Thin Provisioning
File Services

Add-On Features

Snapshot-based Backup & Based Restores for SQL, Oracle, Exchange
Flexible Clones
Snapshot-based Restores
Mirroring
Snapshots, Metrocluster
Disk-based WORM functionality
FlexibleVolumes
NFS, CIFS

Block Services
Migration
Provisioning

} *Standard Functionality*



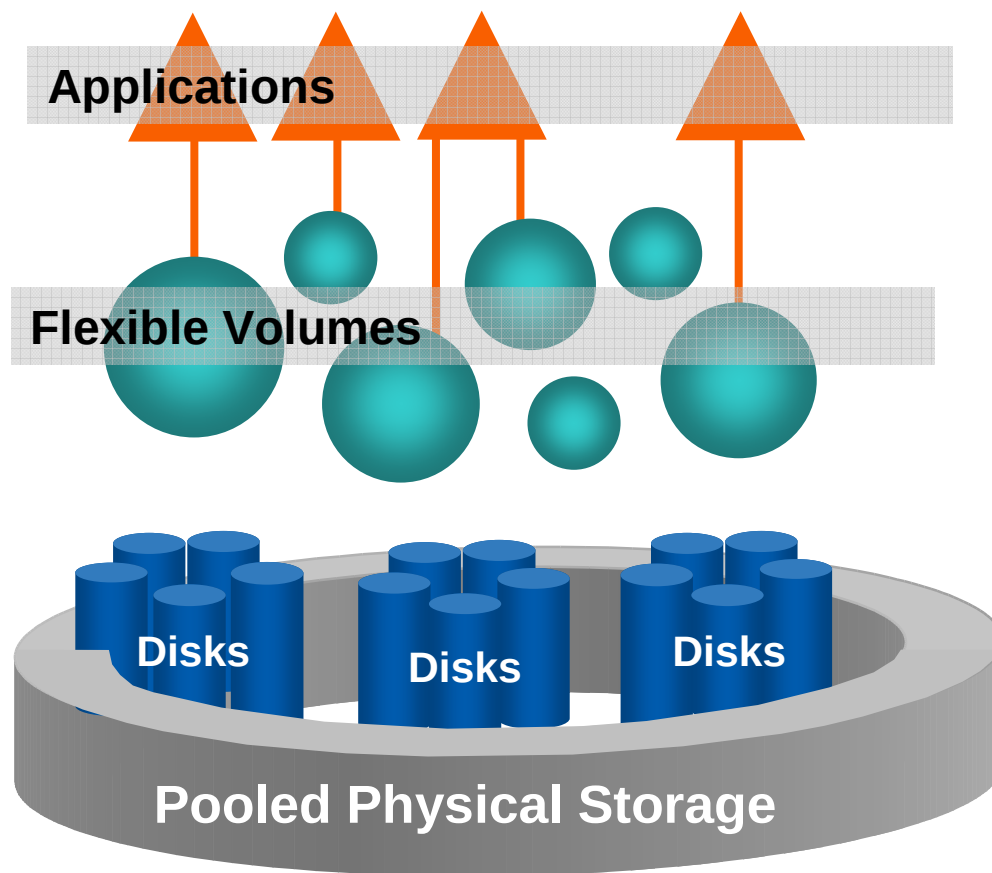
Physical Systems



Flexible Volume - Technology

Flexible Partitioning

Manage data, not disks



- Logical Data Container
- Flexible Partitioning
- Resizable



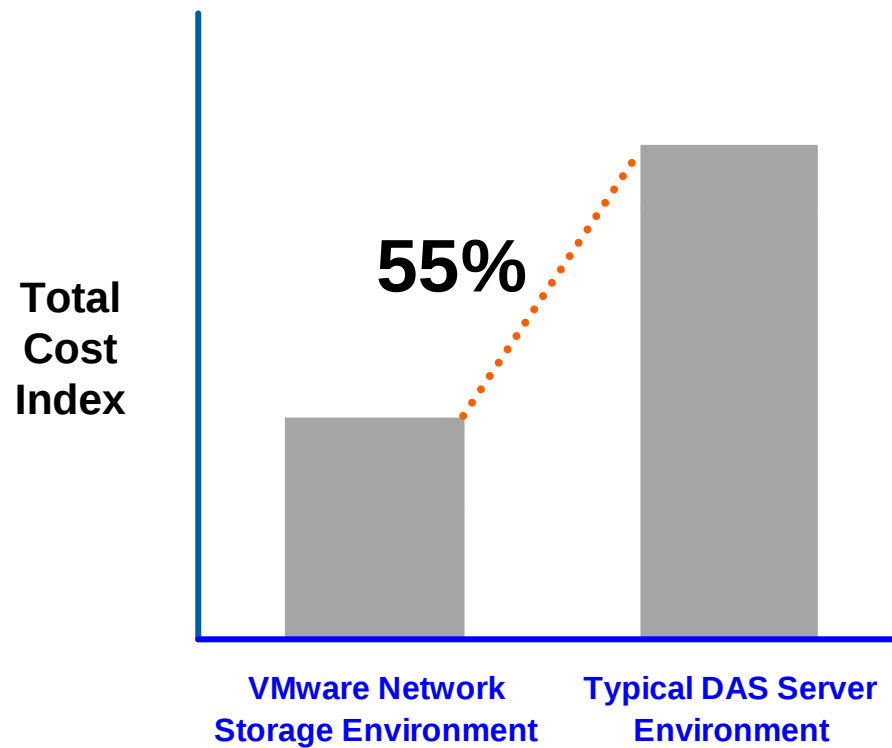
Thin Provisioning

- Allows to „oversubscribe“ physical diskspace
- LUNs and Volumes do not contain data immediately when created
- Typically filled with data over time
- Physical diskspace is really needed when data is written to LUN

„Buy storage when it is really needed !“



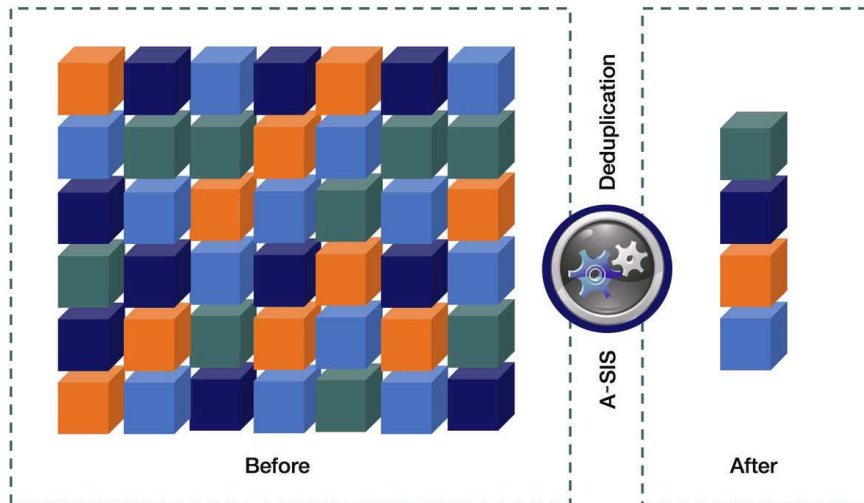
Storage Virtualization and Optimization



Source: Oliver Wyman VMware Storage Total Cost Comparison Interviews, Aug-Sept 2007.



Deduplication Momentum



- Customers are adopting
- Analysts are taking notice



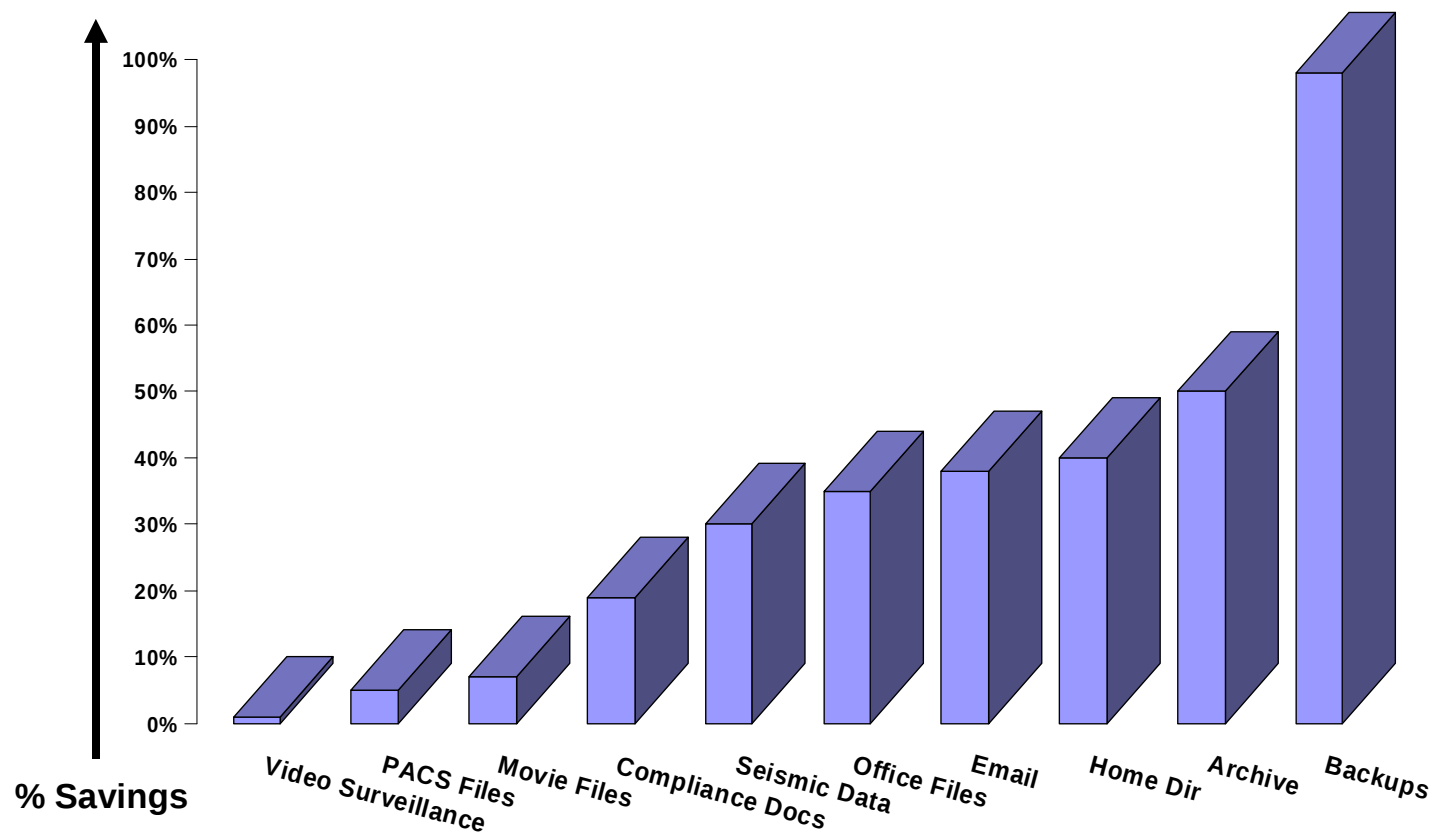
What is Deduplication ?

- Recognize and eliminate redundant data
- No Compression
- Not a performance killer

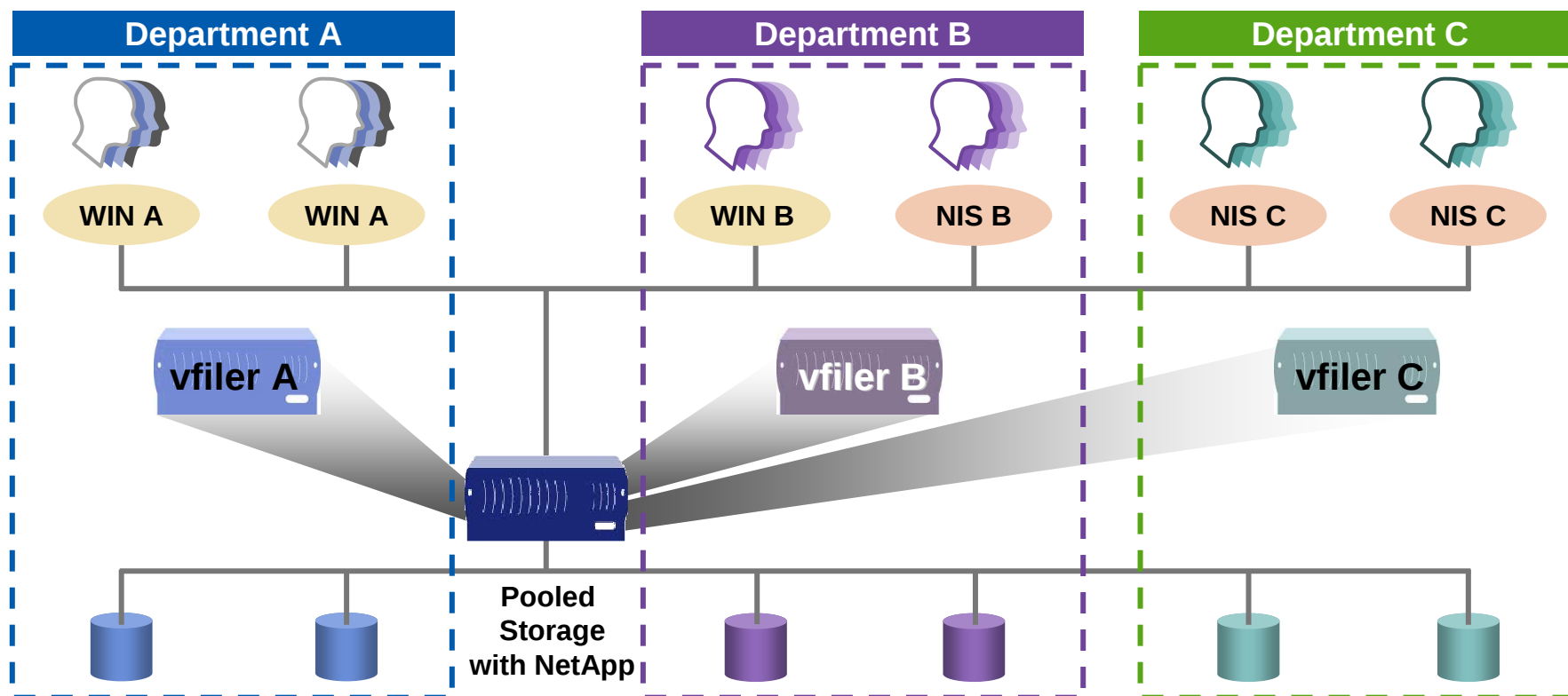


Space Savings with Deduplication

- Space Savings will vary based on Data Set



Multi-Domain Virtualization



- Virtualisation of physical filers in virtual instances
- Own IP Space and domain



Multi-Domain Virtualisation

Added Value

- Multi-Domain Consolidation
 - Departments
 - Enterprises
 - Customers (Outsourcing)
- Easy Migration of data
- Easy Management



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