



FAN - An Architecture for Data Management

Presented by:
Richard Gillett
VP – Data Systems Architecture

THE WORLD RUNS BETTER WITH F5



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Agenda

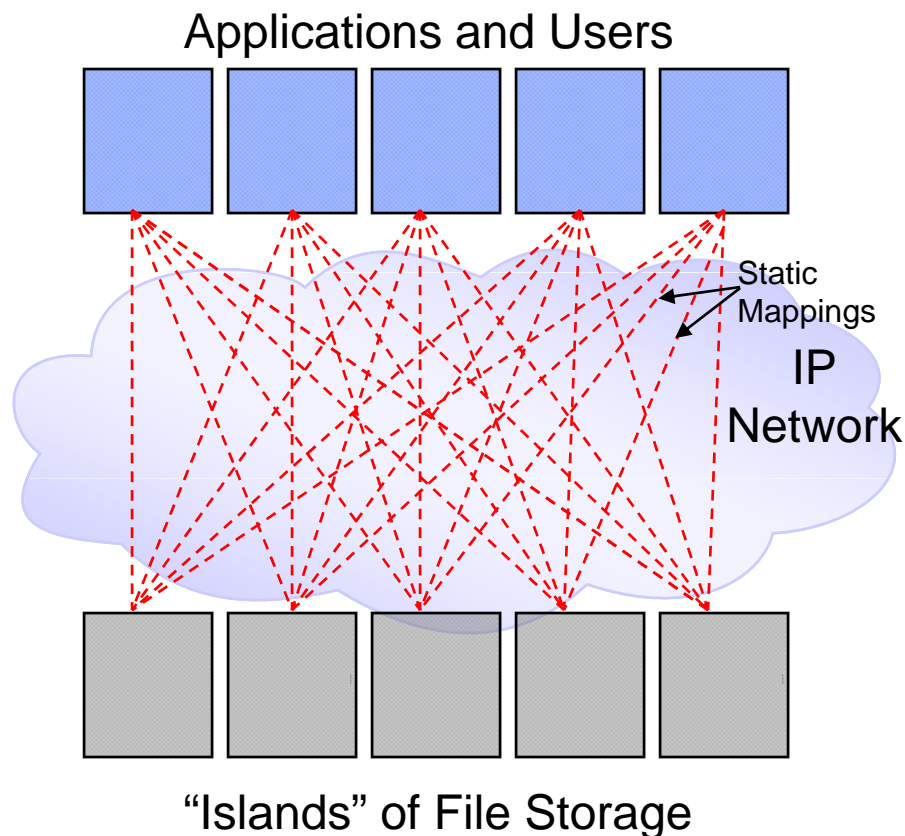
- ❖ What is a FAN and why should you care?
- ❖ Fundamental approaches to building a FAN
- ❖ Basic FAN Services and Approaches
- ❖ Advanced FAN Services
- ❖ FAN and Virtual Servers
- ❖ Summary

- ❖ Q&A

FAN = File Area Network

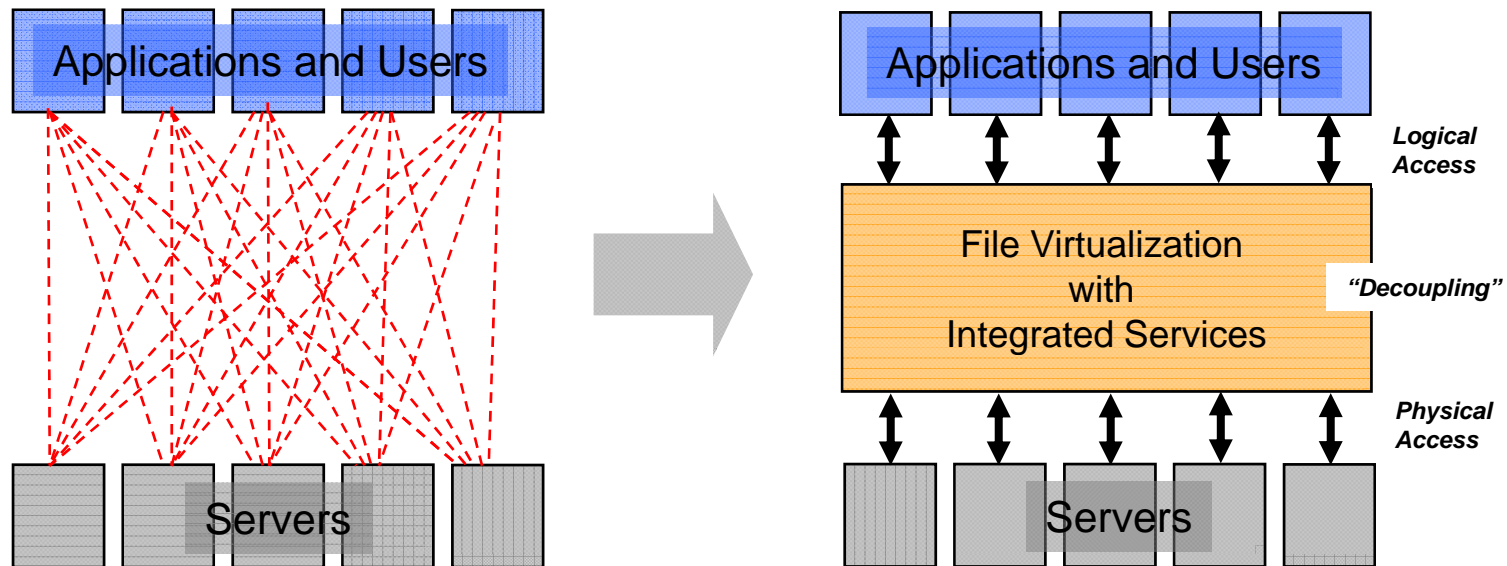
- ❖ A FAN enhances standard network and storage infrastructure with technology that provides centralized, heterogeneous, and enterprise-wide network file management and control.
- ❖ This technology includes a decoupling or virtualization layer that separates logical file access from physical file locations and a variety of value-added file services.

IT Challenges / Business Needs



- ❑ Files represent the largest portion of enterprise storage
- ❑ Highest growth rate
- ❑ Growing complexity
 - Mixed vendors, platforms, file systems
 - Increased application demands
 - Increased availability requirements
 - Enterprise-wide scope
 - This complexity is hampering the deployment of advanced file management services

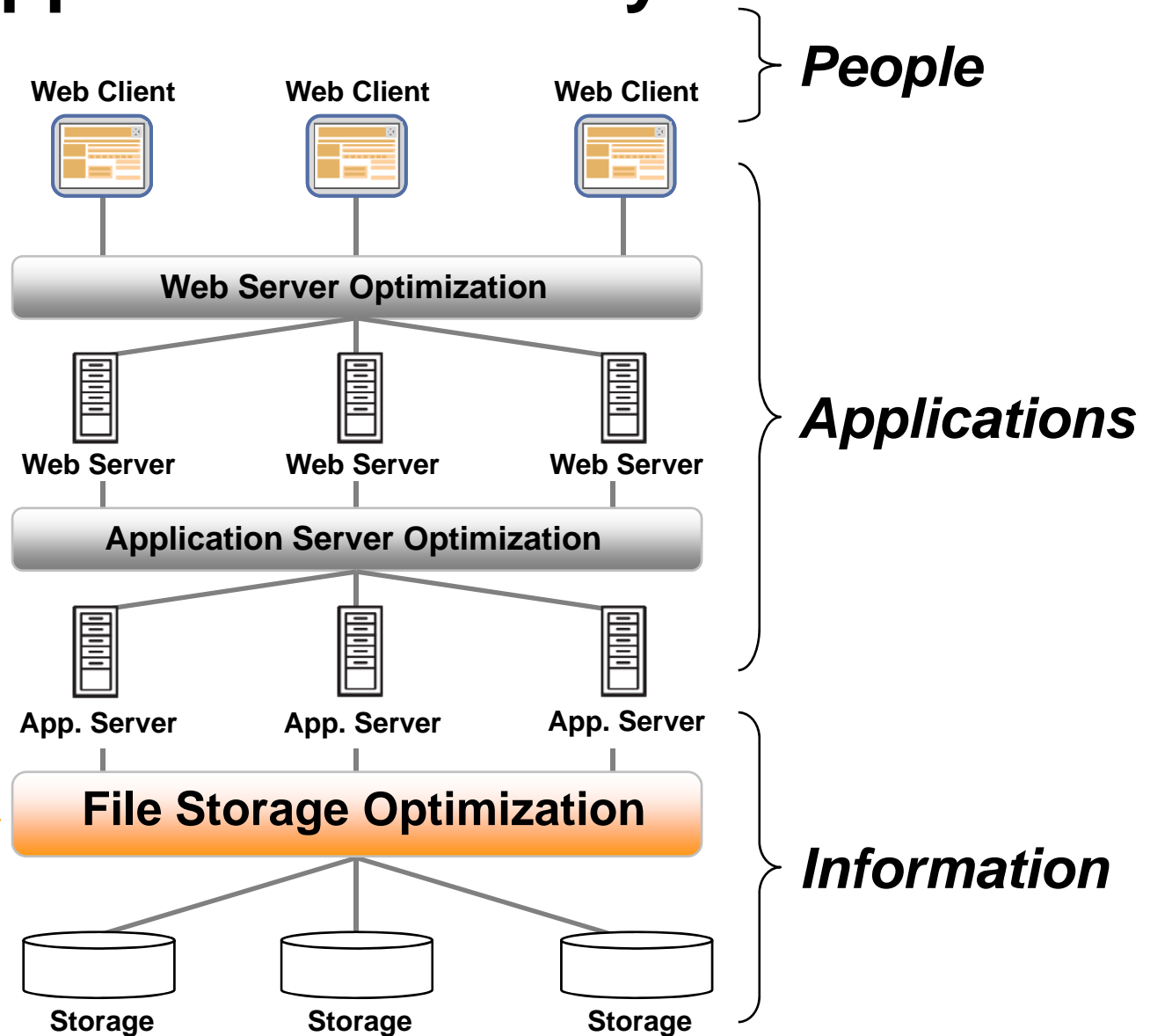
FAN Targets These Challenges



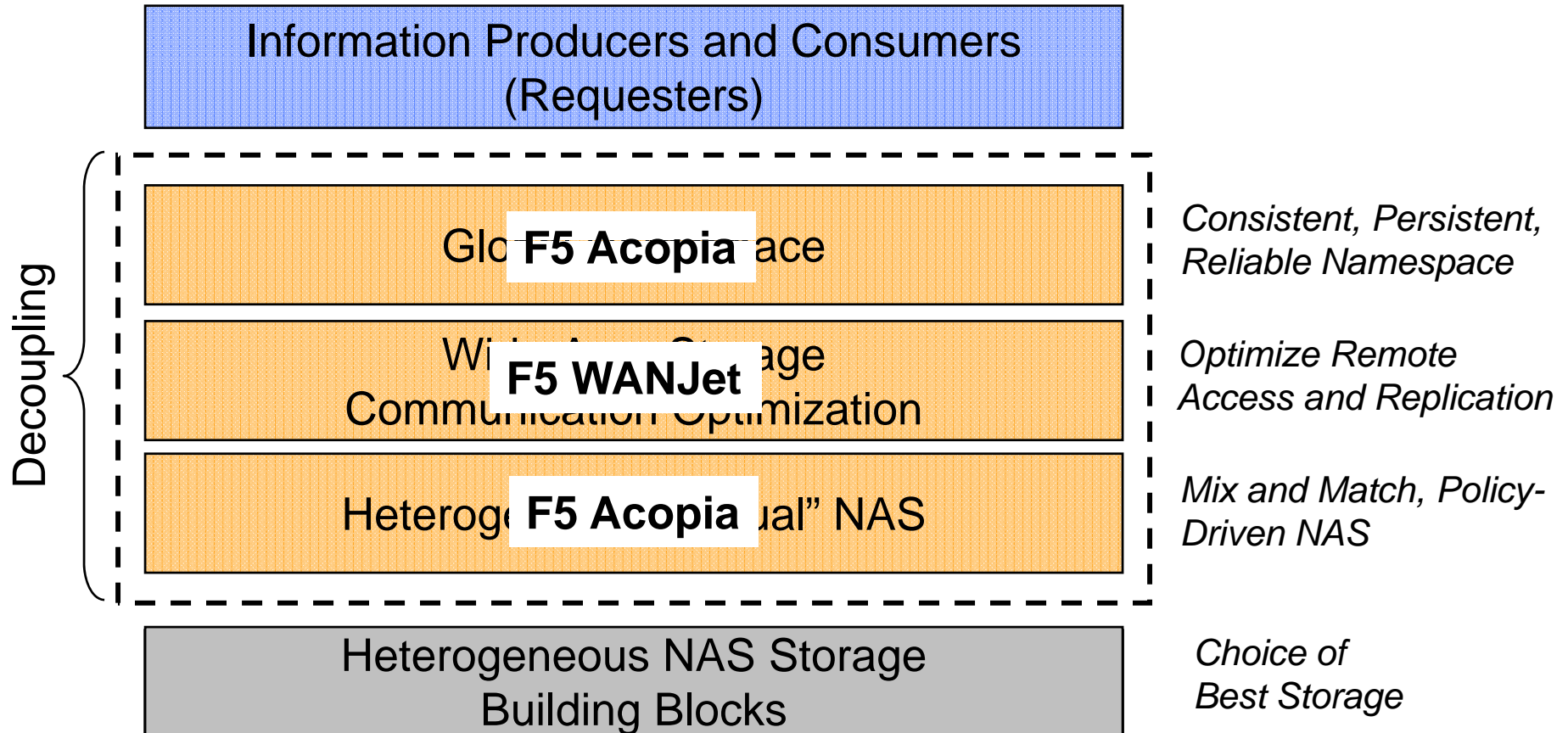
- ❖ The Problem:
 - The tight bindings between applications and storage are preventing the evolution of storage management (users and applications must be disrupted)
- ❖ The Solution:
 - File Virtualization “decouples” the application and physical storage location
 - Storage management can now be performed without any downtime or impact to applications
 - This enables both basic and advanced storage management services

Part of an Application Delivery Network

FAN



A Simple FAN Model



Overview of FAN Basic Services and Approaches

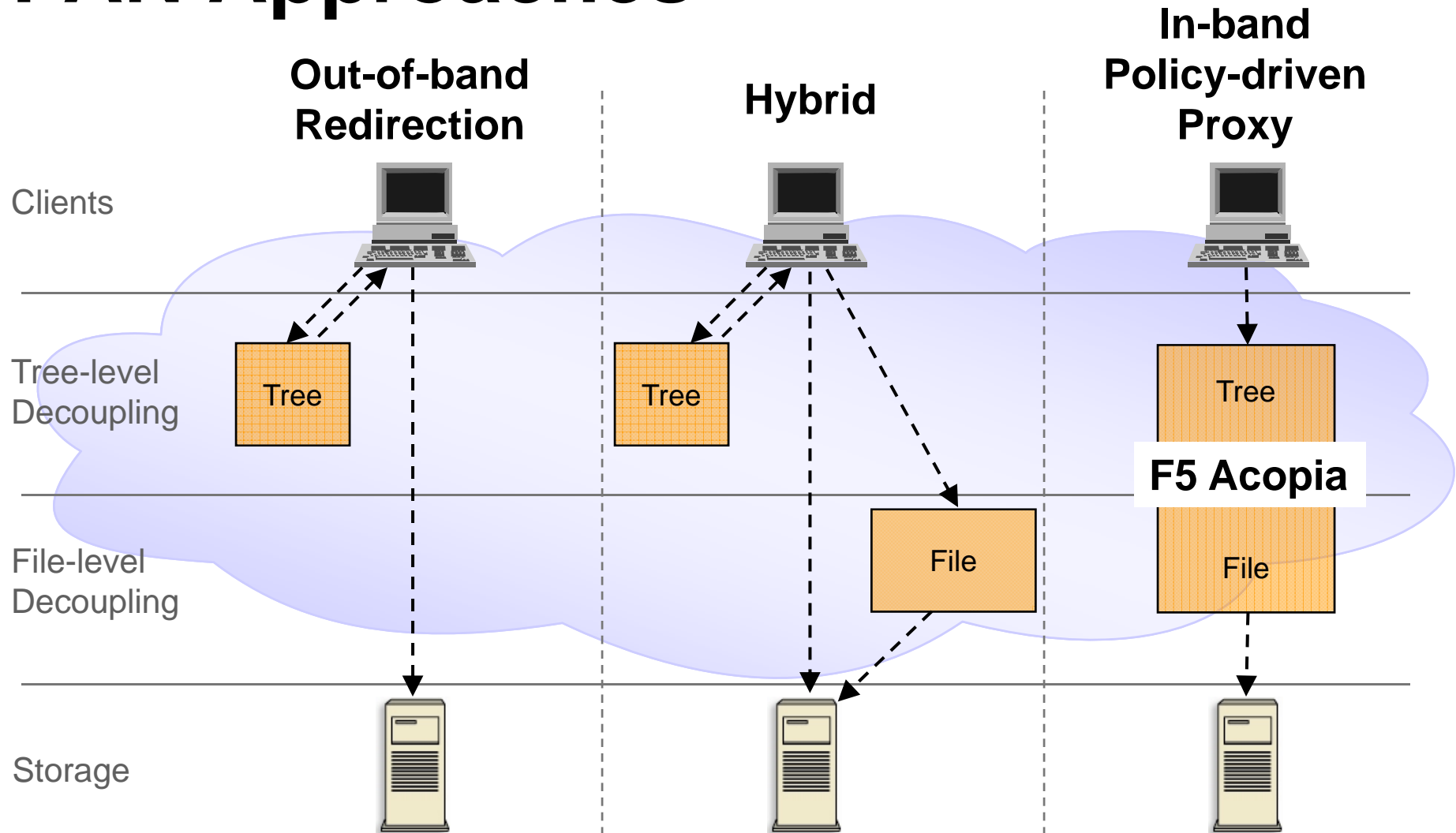
“Basic” FAN Services

- ❖ Migration
 - Move files from one server to another
- ❖ Tiering / ILM
 - Place files via policy on the “best” storage
- ❖ Load Balancing
 - Place files to better distribute capacity or load
- ❖ Replication
 - Replicate files to support failover

Comparison of Approaches in Two Worlds

	Application Switching	File Virtualization
Simplest Implementation	Server Load Balancing (DNS)	Server-level Redirection (DFS)
	Server Load Balancing (L4)	Simple HSM ("stub"-based)
Most Capable Implementation	Full-proxy, Policy-driven, Request Router	Full-proxy, Policy-driven, File Router

FAN Approaches

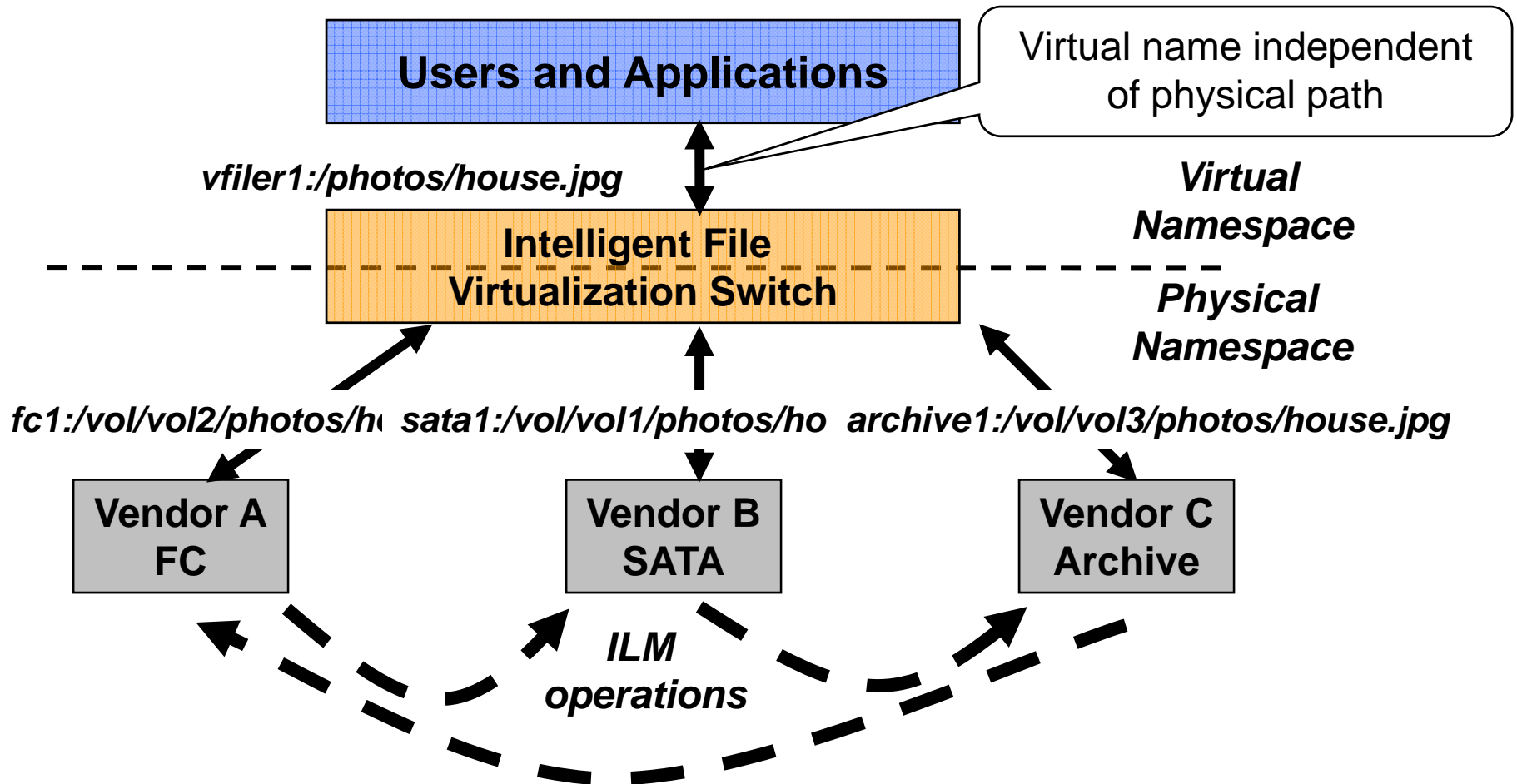


“On-Line” Service Capability

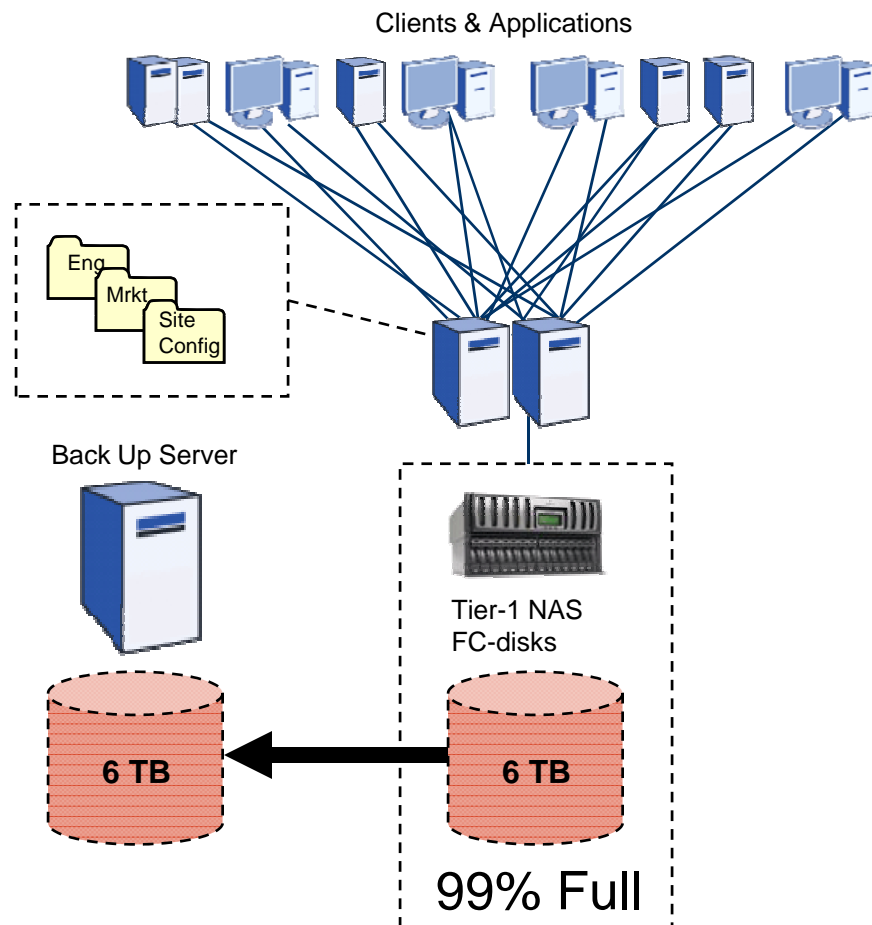
Approach	Migration	Tiering	Dynamic Load Balancing	Replication
Out-of-band Server-level Redirection	Yes (but disruptive)	No	No	Yes (async)
Hybrid	Yes (but disruptive)	Yes (but requires file server “stub” support)	No	Yes (async)
In-band File-level Policy-driven Proxy	Yes	Yes	Yes	Yes (async or sync)

Customer Case Studies

File-Level Decoupling



High Technology Company



IT Storage Challenges:

- ❑ Out of Capacity (99% Full)
- ❑ Help Desk – “Out of Space”
- ❑ Weekly backups take 3 days
- ❑ Growth /reorganization needs

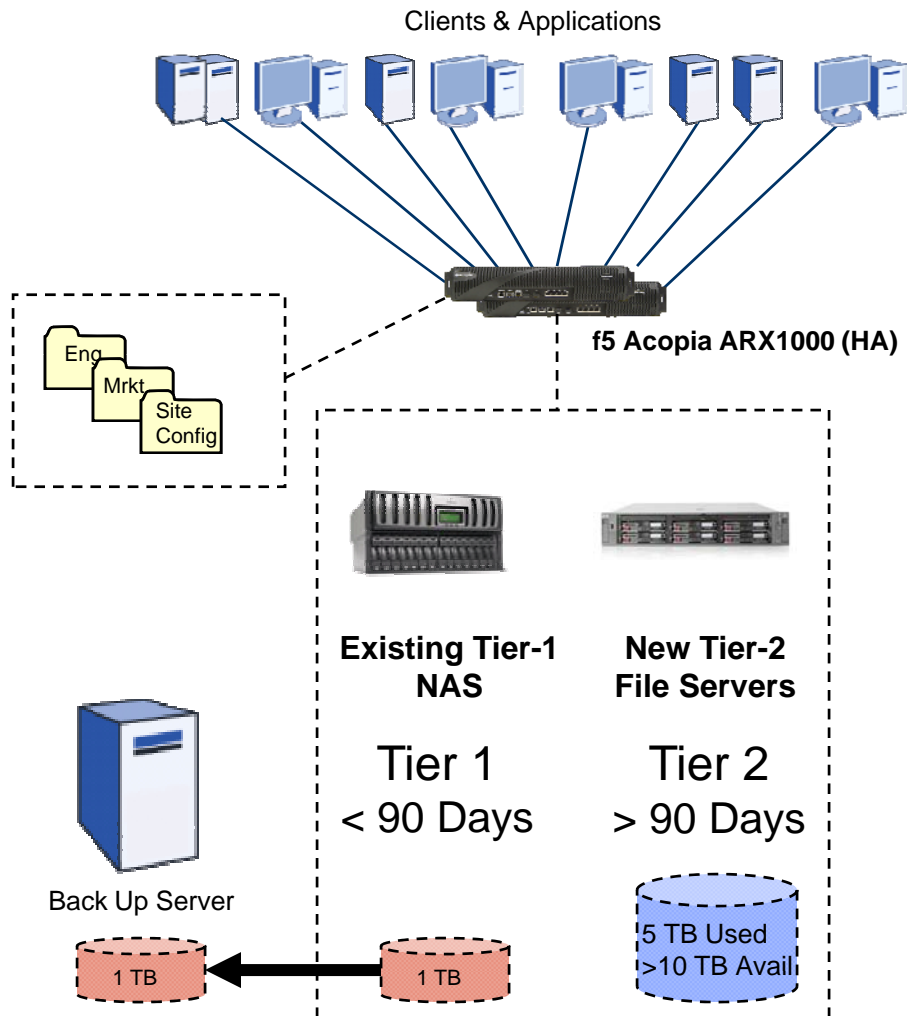
Traditional Plan/Solution:

- ❑ Buy Additional Tier 1 Capacity
- ❑ Downtime / Manual

Environment:

- ❑ Tier-1 NAS for CIFS
- ❑ 6 TB Data

High Technology Company



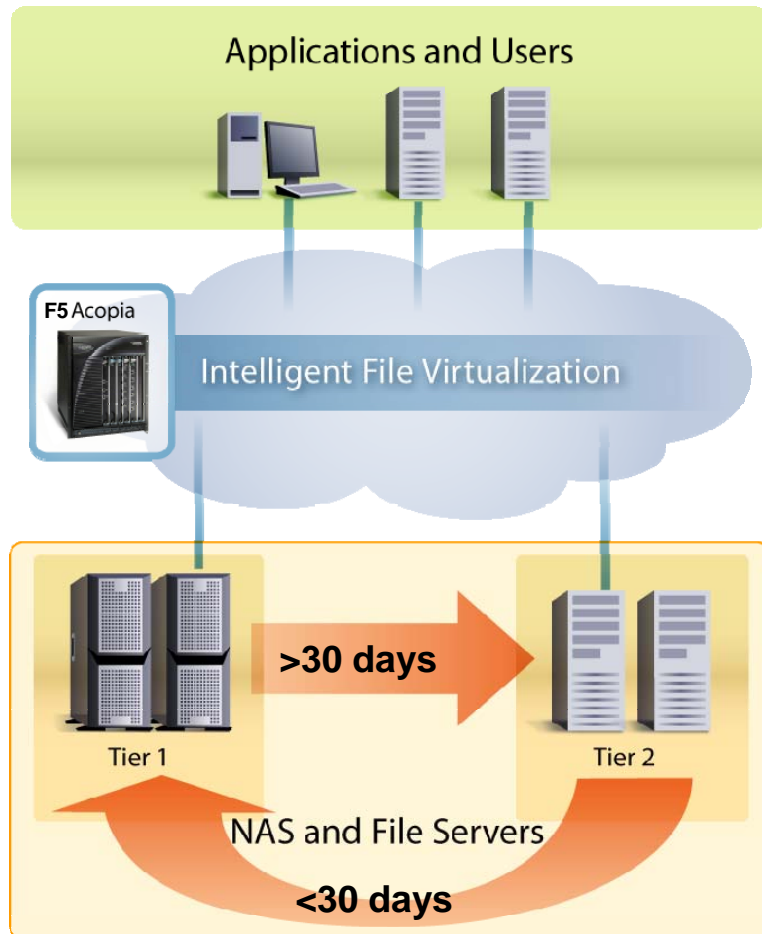
Solution:

- F5 Acopia ARX1000 cluster
- Tiered Storage Policy
 - If not changed for >90 Days then move to Tier 2
 - 80% of data moves to Tier 2
- Uses much lower cost storage for Tier 2
 - < 1/5 cost of current Tier 1

Benefits:

- Reduced capacity cost by 80%
- Reduced backup time by 30x
- Reduced backup costs by 70%
- No more “Out of Space” Calls
- 100% ROI over 4 months

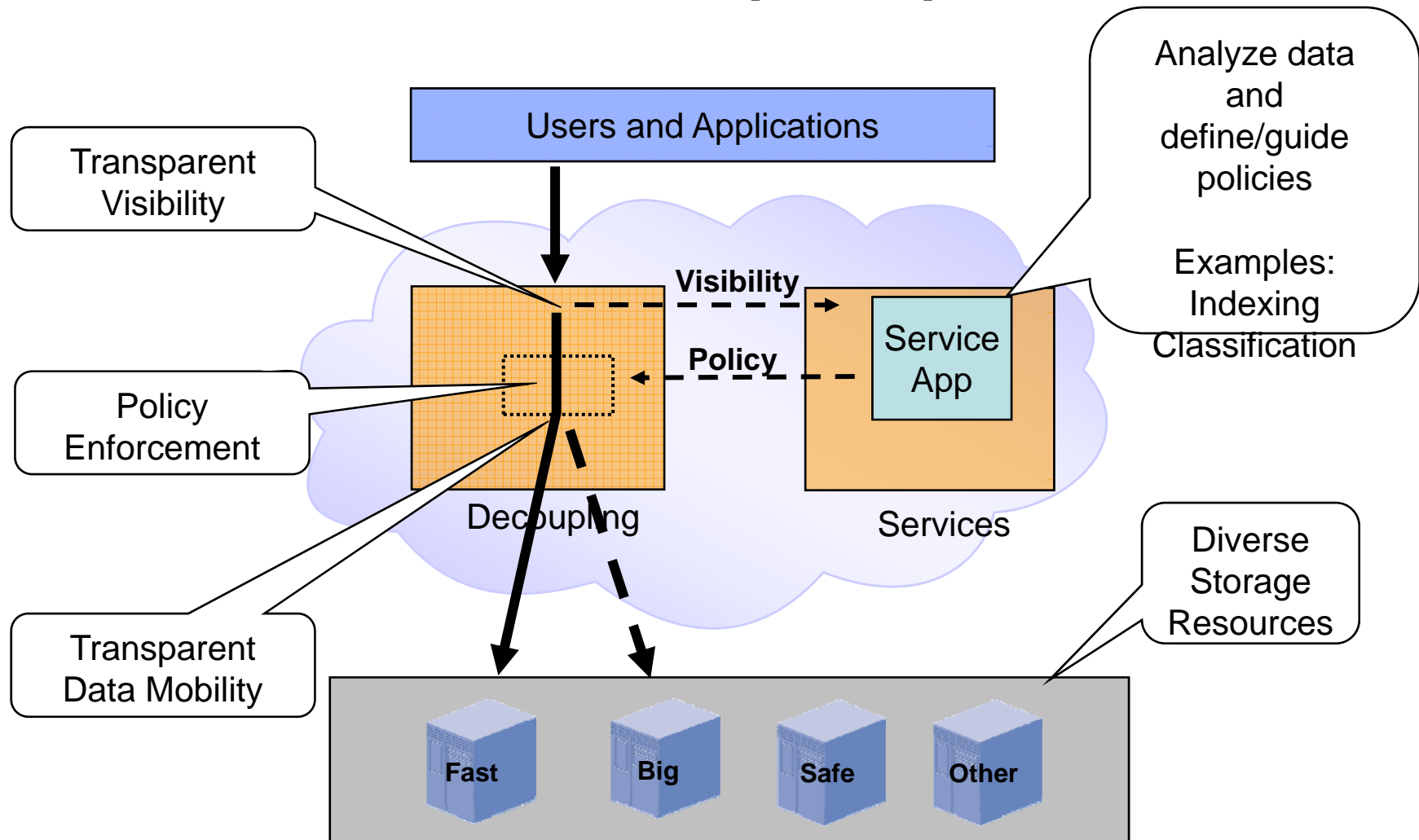
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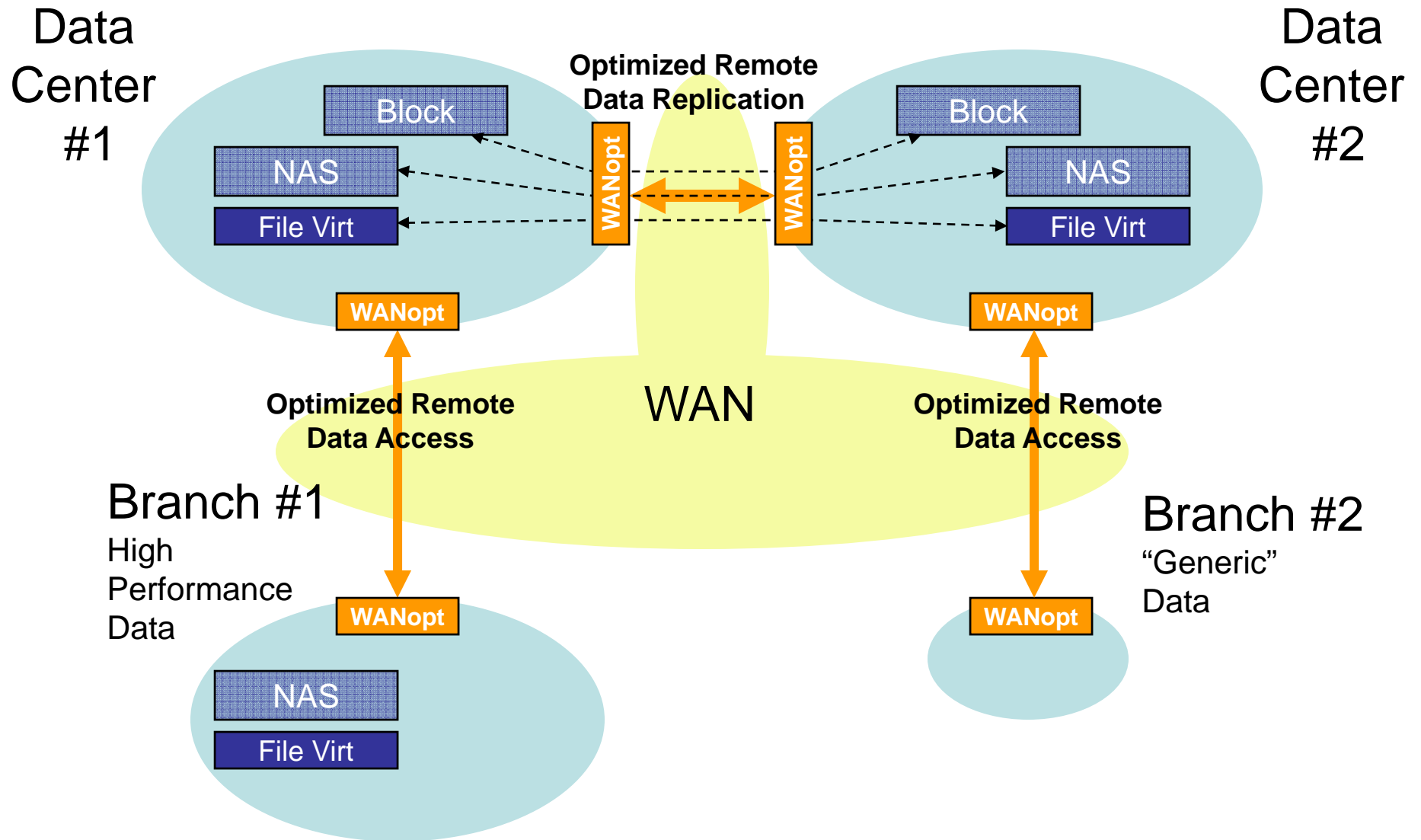
- ❖ Similar Challenge to Previous Example
 - Solution: File Virtualization-based Tiered Storage
- ❖ Disk Storage Cost Savings
 - 90% of data went to Tier 2
 - No more new Tier 1 purchases for a long time
 - New capacity is all Tier 2 (<1/2 cost)
- ❖ Tape Storage Cost Savings
 - With only 10% of the data left on Tier 1, tape consumption dropped by 10x
- ❖ Backup Time Reduction
 - With only 10% of data left on Tier 1, backup times dropped by >30x

“Advanced” FAN Services

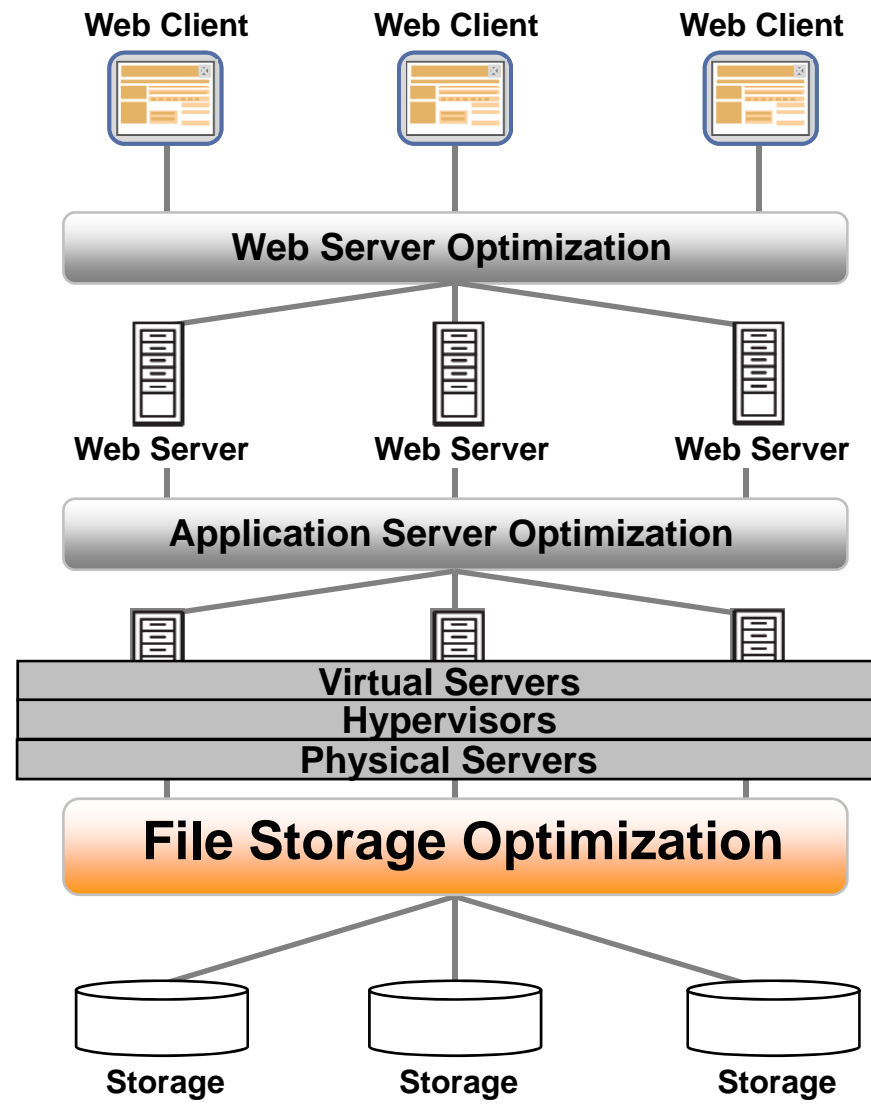
Advanced Services (LAN)



Advanced Services (WAN)



VMs Drive Need for File Storage Optimization



Why Optimized File Storage for VMs ?

- ❖ Provides a universal storage layer
 - Supports virtual boot storage, application block storage, application and user file storage
- ❖ Native shared access with flexible security
 - Supports full VM mobility across multiple physical servers
- ❖ Easiest to manage
 - Fastest to provision
 - Highest storage efficiency (“Thin provisioning” by default)
 - Uses standard Ethernet
 - Expands transparently without disruption to servers
- ❖ Wide vendor choice
 - Variety of performance, functionality, availability, and cost-focused options from many vendors
 - 10Gb Ethernet for high-performance environments

Summary

- ❑ FAN is a term used to describe a more formal approach to architecting a heterogeneous, enterprise-wide, service-oriented file storage infrastructure
 - FAN maps to the “data” layer of the ADN “stack”
 - Think “File Storage Optimization” (analog to “Application Server Optimization”)
- ❑ FAN implements a set of powerful foundation technologies that support both basic and advanced storage management services
- ❑ FAN could turn out to be as revolutionary for files (and down the road for objects...) as SAN was for block storage
 - Complements server virtualization



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