



Storage grids: current approaches, relationship with other grids, possible directions

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Overview

- Evolving I.T. environments
- Grids
- Storage and grids



Evolving I.T. models: Solution requirements

Today

- Tiered storage
- Integrated view of infrastructure management
- Basic infrastructure instrumentation
- Network storage architecture

Next 3 years

- Eliminate silos (Virtualization)
- Automation
- Stronger security models
- ILM

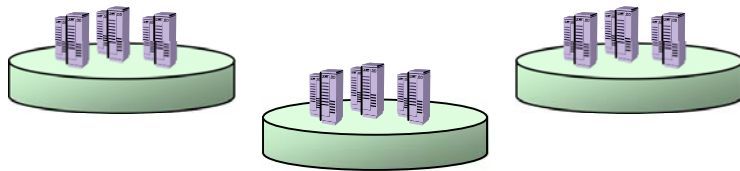
Longer term

- SOA
- Application integration
- Flexible, scale-out architecture
- Automation
- Single system management

Our changing world: Evolving resource models

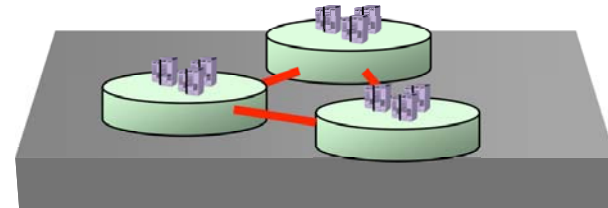
Dedicated resources

- Benefits
 - Preconfigured resources
 - Isolated, domain-level management
 - Security model (silos)
 - Conventional model (administrative familiarity)



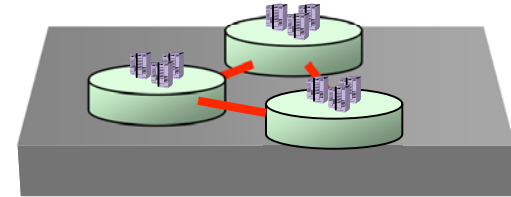
Shared resources

- Benefits
 - High asset utilization
 - Flexibility
 - Consolidated management
 - Simplified data sharing

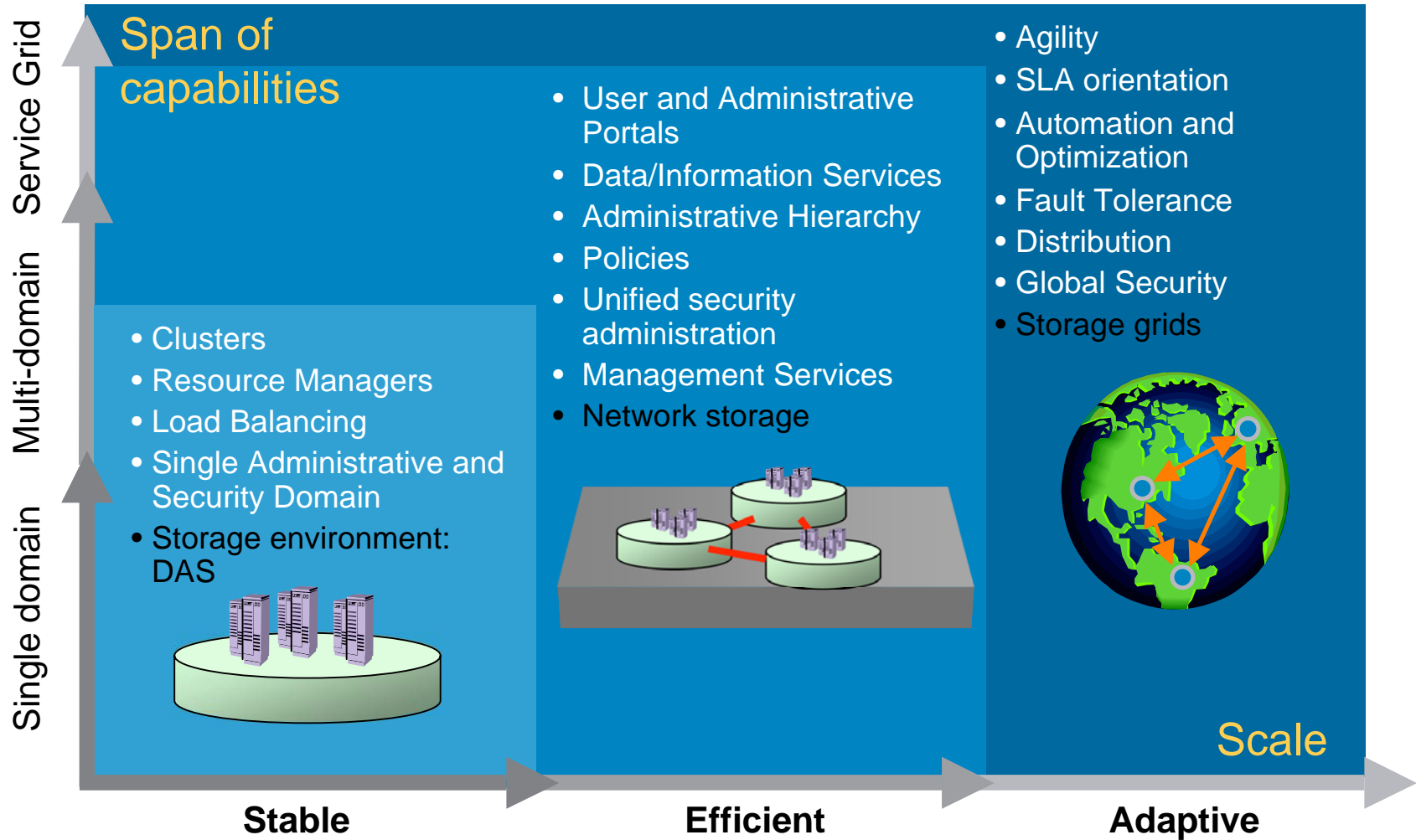


Grid attributes

- An environment for sharing loosely coupled infrastructure and services
- Service-Oriented Architecture (SOA)
 - Based on emerging open standards and protocols
- Flexible and dynamic
 - can use pre-existing and transient resources
 - incremental, non-intrusive deployments possible
- Facilitates secure sharing of heterogeneous IT resources
 - Across geographies, organizations

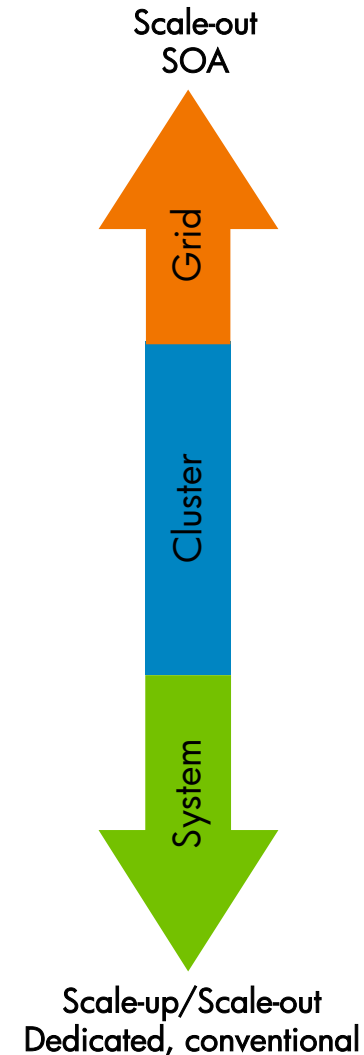


Grid Computing Evolution



Storage grids and clusters

- Common features
 - Scale-out
 - High availability
 - Multi-node system
- Storage Clusters
 - Provide a focused set of fixed capabilities
 - Array or NAS or nearline, etc.
- Storage grid (grid-enabled storage)
 - Service Oriented Architecture
 - Incorporate broad functionality
 - Array + NAS + nearline, etc.
 - Resources can be repurposed
 - Storage functionality applications deployed on common infrastructure



An approach to grid storage (HP)

Smart cells

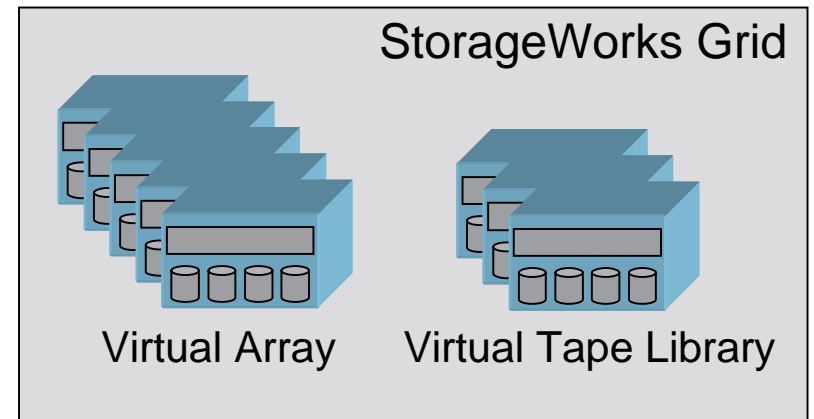
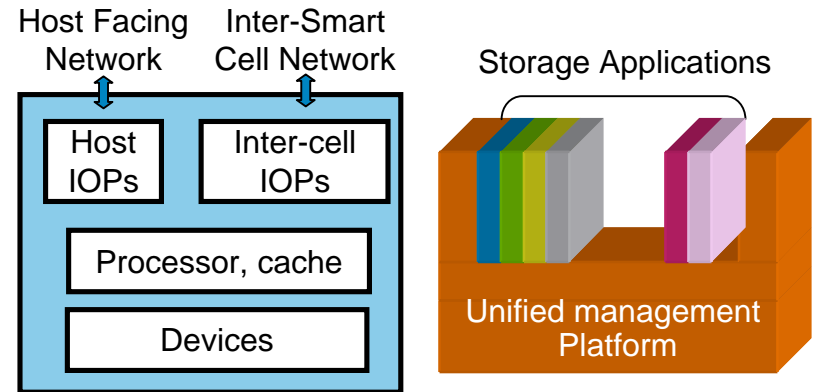
- Intelligent nodes combining storage capacity and processing power
- Value-added software provides specialized storage capabilities

Federations

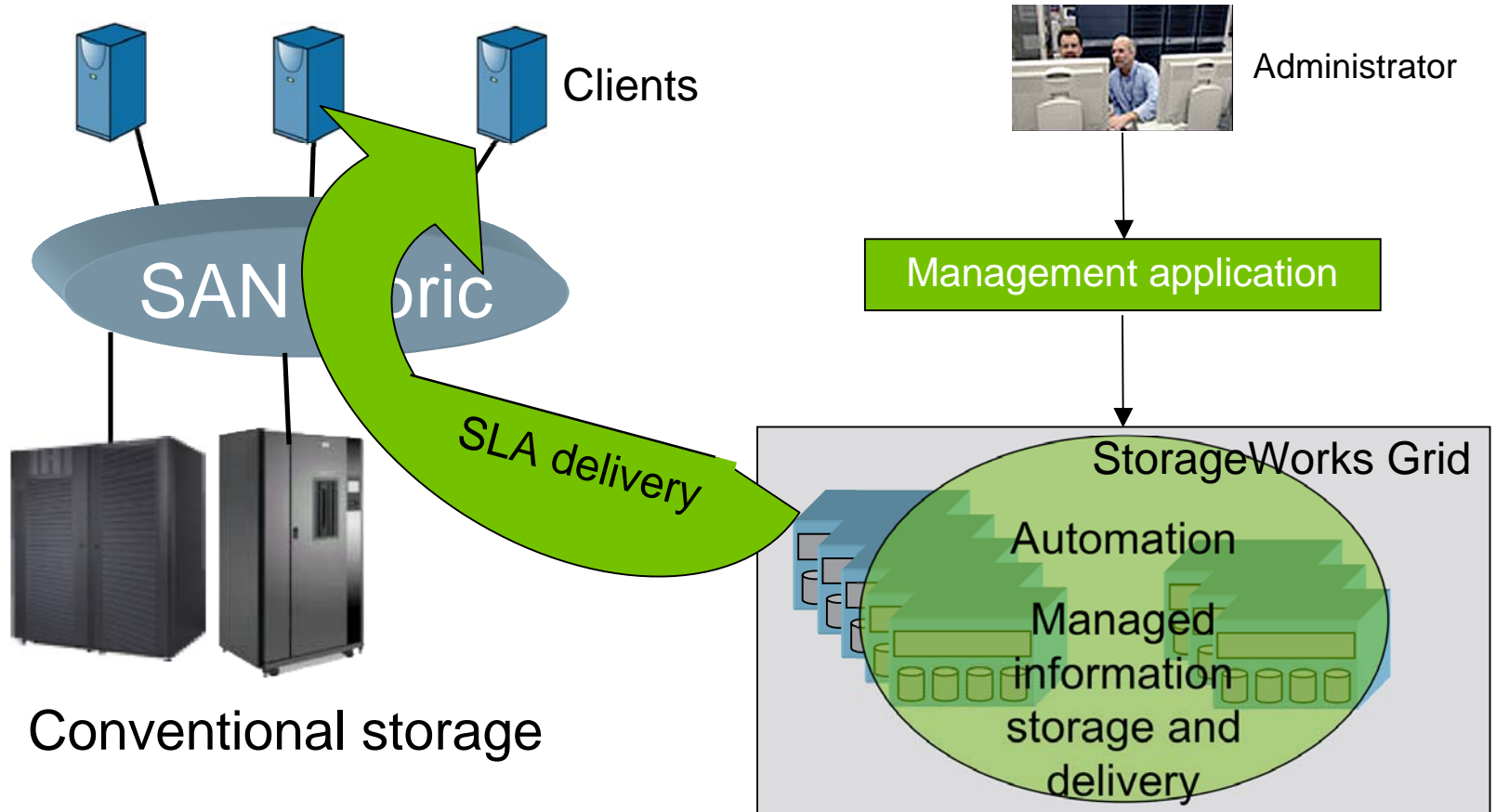
- A federation is a collection of smart cells joined together with software
- Provides intelligent storage services to business applications

StorageWorks Grid

- A collection of federations unified by common management and accessed as a single system



Automation + SOA



Summary

- I.T. concerns are shifting, and this is driving the evolution of computing and storage solutions
 - Shift over time is *from* infrastructure *to* improving application productivity while reducing cost
 - Service-oriented, scale-out architectures can help
- Grid architectures are increasingly interesting to an increasing number of industries
 - Started with technical computing, now interesting to commercial applications
- To build the I.T. utility of the future, we expect grids to play an increasing role
 - Compute + storage + application grids will work together