



Education

Creating a Catalog for ILM Services

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- Organizations looking to improve efficiencies in the data center should have policies in place to assign information assets to the appropriate level of service. Some organizations may find it difficult to create and use information lifecycle management policies due to their perceived complexity. This tutorial will discuss the concept of a storage services catalog and how it can be leveraged to facilitate the creation and use of storage levels of service.

- Understand what a storage services catalog is and how it can benefit organizations looking to implement storage services policies and potentially lower their costs using ILM
- Show examples of how service level requirements can be matched to storage services policies for different types of information assets

- What is a Services Catalog?
- Why Have a Services Catalog?
- Information Lifecycle Management
- ILM Maturity Model
- Getting to a Services Catalog
- Services Catalog Example
- Mapping Service Levels to Infrastructure
- Summary

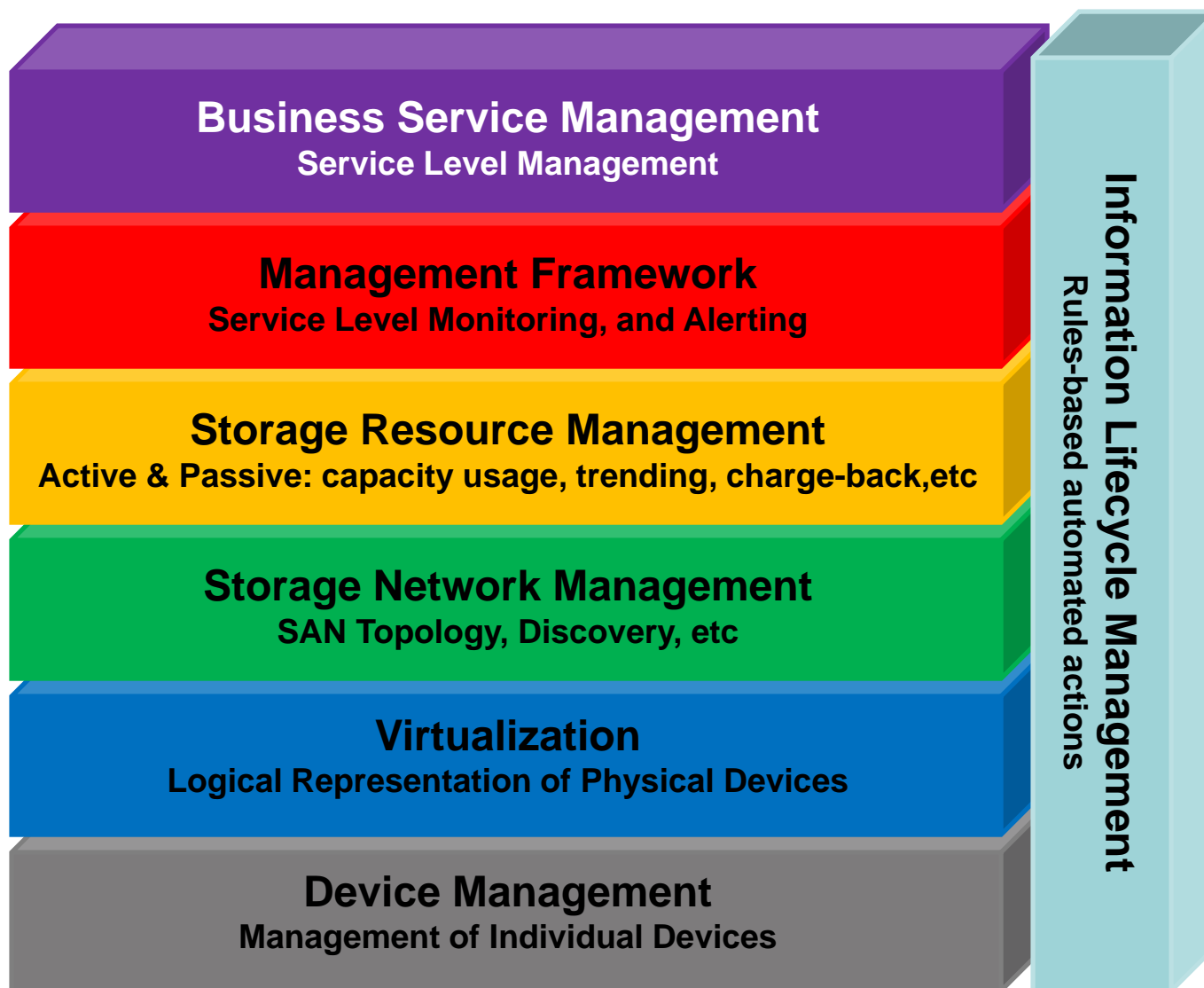
Why Have a Services Catalog?

- Provide a structure so application owners and organizational needs can select an appropriate class of service for their information
 - ◆ Based on performance, protection requirements, costs, etc.
- Map service level objectives to catalog levels and then to infrastructure
- Allow the IT organization to match infrastructure to information, and potentially to lower their costs and improve their green footprint, while providing appropriate service levels

Definitions

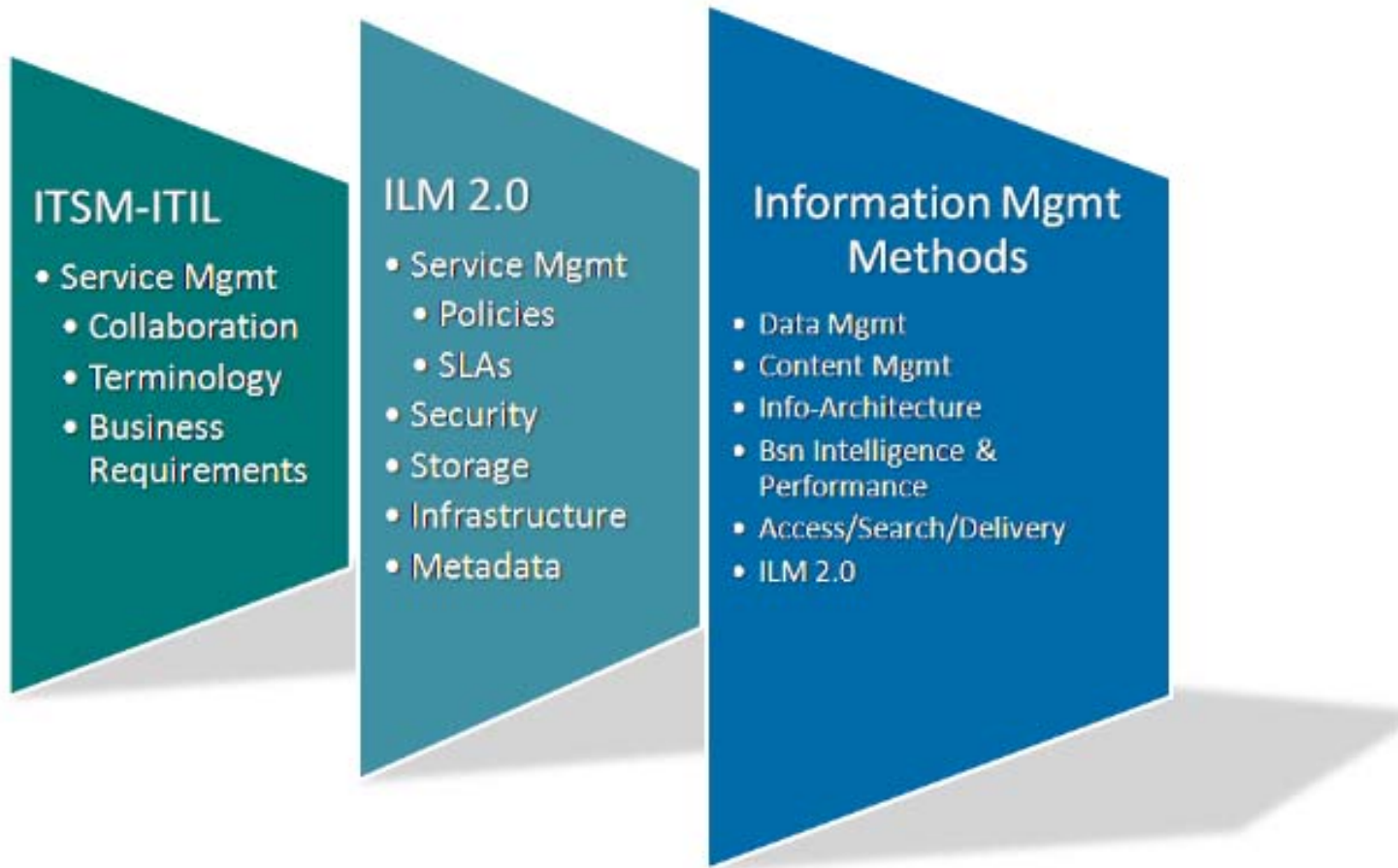
Term	Meaning
Service Catalog	A list of services relating to performance, protection, and preservation based on service level objectives
Class of Service	A level of service, such as for performance and data protection, designed to match a service level agreement
Service Level Objectives	“Best effort” attempt to meet or exceed performance and data protection metrics
Service Level Agreements	Formalized agreements between stakeholders describing service metrics and constraints
Information valuation	Describes priorities between workloads and types of information assets to resolve resource constraints

Information Lifecycle Management



- The policies, processes, practices, services and tools used to align the business value of information with the most appropriate and cost-effective infrastructure from the time information is created through its final disposition.
- Information is aligned with business requirements through management policies and service levels associated with applications, metadata and data.

Source: The SNIA Dictionary, January 17, 2008



Information Technology Infrastructure Library (ITIL)

- ◆ A library of books describing best practices for IT Service Mgt
 - ◆ Describes goals, activities, inputs & outputs of processes
 - ◆ Not a “standard” – just best practices
 - ◆ Specific procedures can vary from organization to organization
-
- ◆ Focus is Business-IT Integration
 - ◆ OPEN approach – not tied to any particular vendor



ITIL is a registered trademark of the UK Government Office of Government Commerce (OGC)

- Provides a standardized tool to allow organizations to determine where they stand relative to best practices in managing their information
- Helps organizations improve their ILM practices in order to balance their information technology service levels and to lower costs
- Helps organizations prioritize their IT investments, better aligning their costs with the value of their data as this changes over time

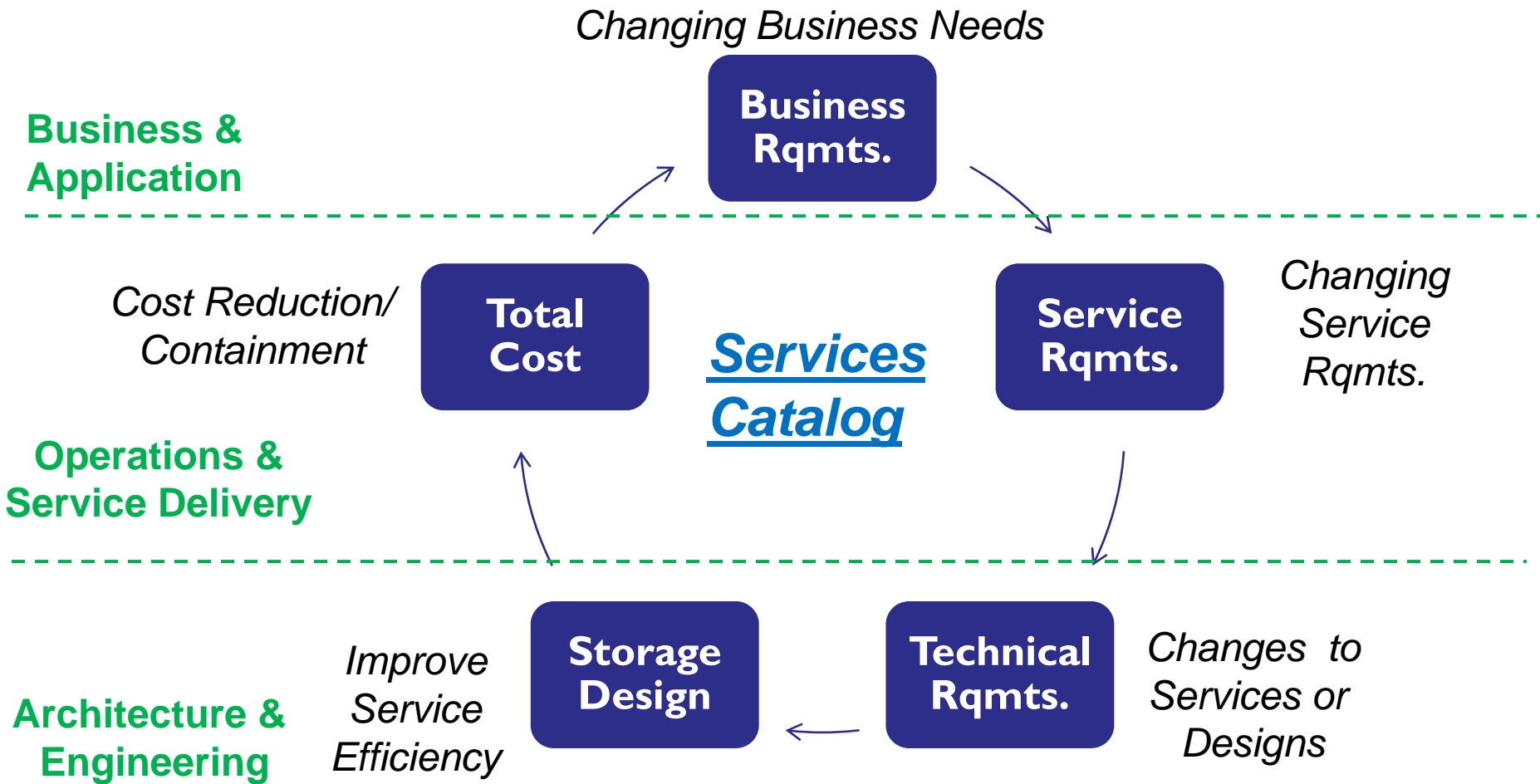
ILM as a Service Maturity Model Assessment

		Initial (Ad Hoc)	Repeatable (Documented)	Defined & Measured (Standardized & Correlated)	Quantitatively Managed (Automated ILM)	Optimizing (Continuous Improvement)
ILM as a Service	Spans all domains: <ul style="list-style-type: none"> •Business •Application •Information •Data •Storage 	<ul style="list-style-type: none"> •No storage service strategy •No service lifecycle process •No service levels •No service metrics 	<ul style="list-style-type: none"> •Introduction of service design processes and functions •Event/fault monitoring •Manual configuration management •Some reporting 	<ul style="list-style-type: none"> •Storage service catalog •Service level transition •Capacity management •ILM reporting 	<ul style="list-style-type: none"> •Storage service catalog •Configuration and asset management •Tools •Processes •Config mgmt database •All storage classes in CMDB 	Highly automated CMDB processes and support
	Service Lifecycle	Strategy defined	Design of process and functions	Transition of services	Service operation	Full service lifecycle with continuous improvement

** If ILM is being offered as a service, these Maturity Model levels can help identify areas of improvement in order to reach a desired end state*

- Determine any existing service levels and agreements
- Identify gaps
- Expand or create a services catalog
- Understand costs, determine chargeback metric, and assign a price for each service level or component
- Design and modify the infrastructure to ensure capabilities to provide the service levels
- Implement service level management
- Monitor and measure actual service levels
- Get feedback and modify the service levels as needed
- Get new costs and update the service prices

Services Catalog – Continuous Evolution



➤ Information Value

- ◆ Based on the yield to the business brought by having information available

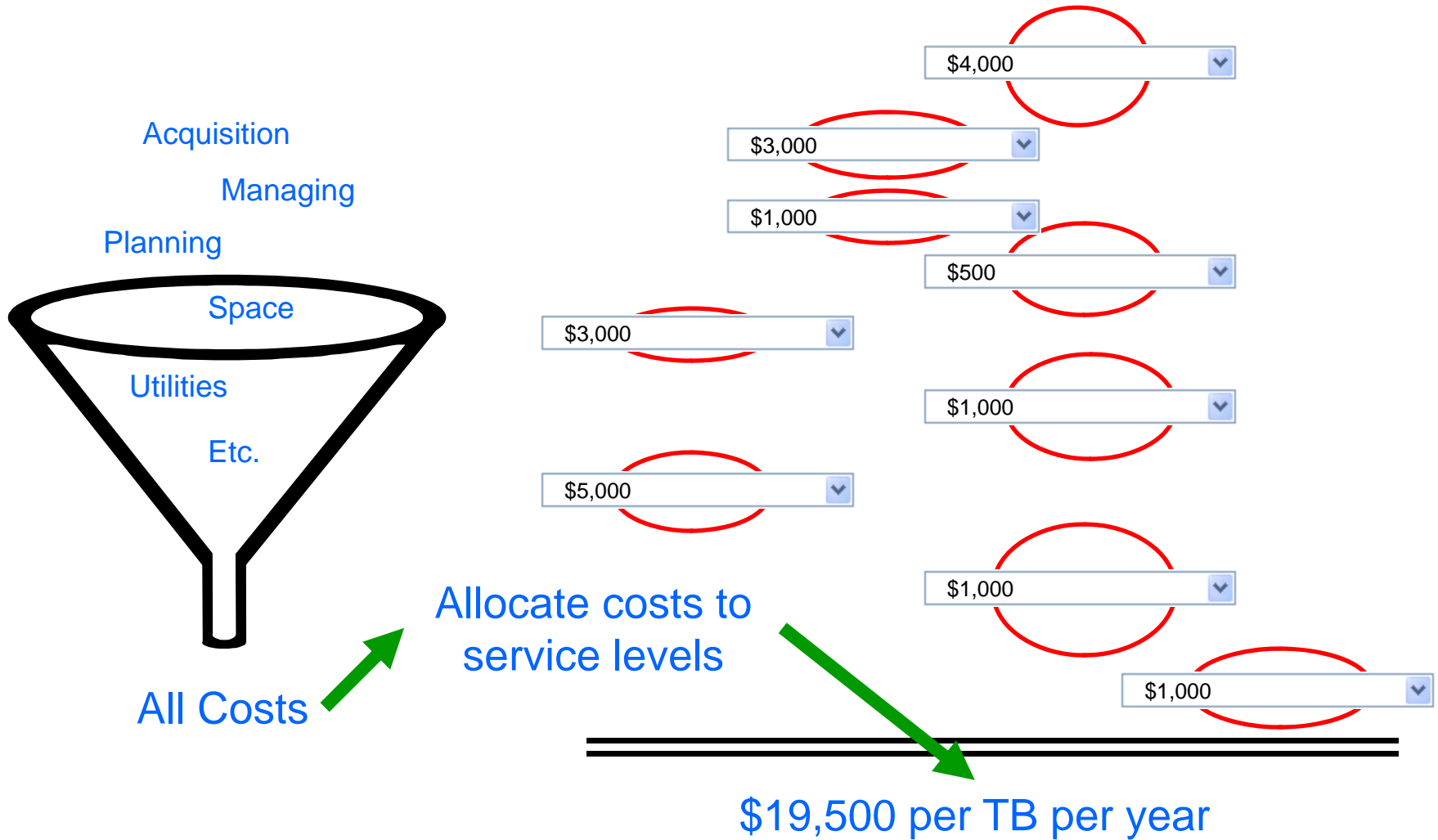
➤ Opportunity Cost (Risk)

- ◆ Based on the cost to the organization of not having information (converse of value)

➤ Infrastructure Cost

- ◆ Services apportioned based on IT cost center allocation

Creating a Price



Services Catalog Example

Relative Cost	Highest	Higher	Medium	Lower	Lowest
Amount of current storage Storage growth rate	High High	High Medium	Medium Medium	Medium Low	Low Low
Availability – Uptime	99.999%	99.99%	99.9%	99%	98%
Performance – Data Access •Active data •Over 30 day old data •Over 1 year old data	<0.5 Sec <2 Sec <5 Sec	<1 Sec <5 Sec <10 Sec	<2 Sec <10 Sec <5 Min	<3 Sec <1 Min <10 Min	<4 Sec <5 Min <30 Min
Recovery time from failure (RTO) •Active data •Over 30 day old data •Over 1 year old data	<20 Sec <1 Min <2 Min	<5 Min <10 Min <20 Min	<30 Min <2 hours <4 hours	<4 Hours <8 hours <24 hours	<48 Hours <48 hours <48 hours
Data loss tolerance (RPO)	0	1 Min	5 Min	30 Min	1 Hour
Data Security •Encryption in flight (at source) •Encryption at rest •Secure delete	•Yes •Yes •Yes	•No •Yes •Yes	•No •Yes •No	•No •Yes •No	•No •No •No
Data retention	Indefinite	20 years	7 years	3 years	1 year

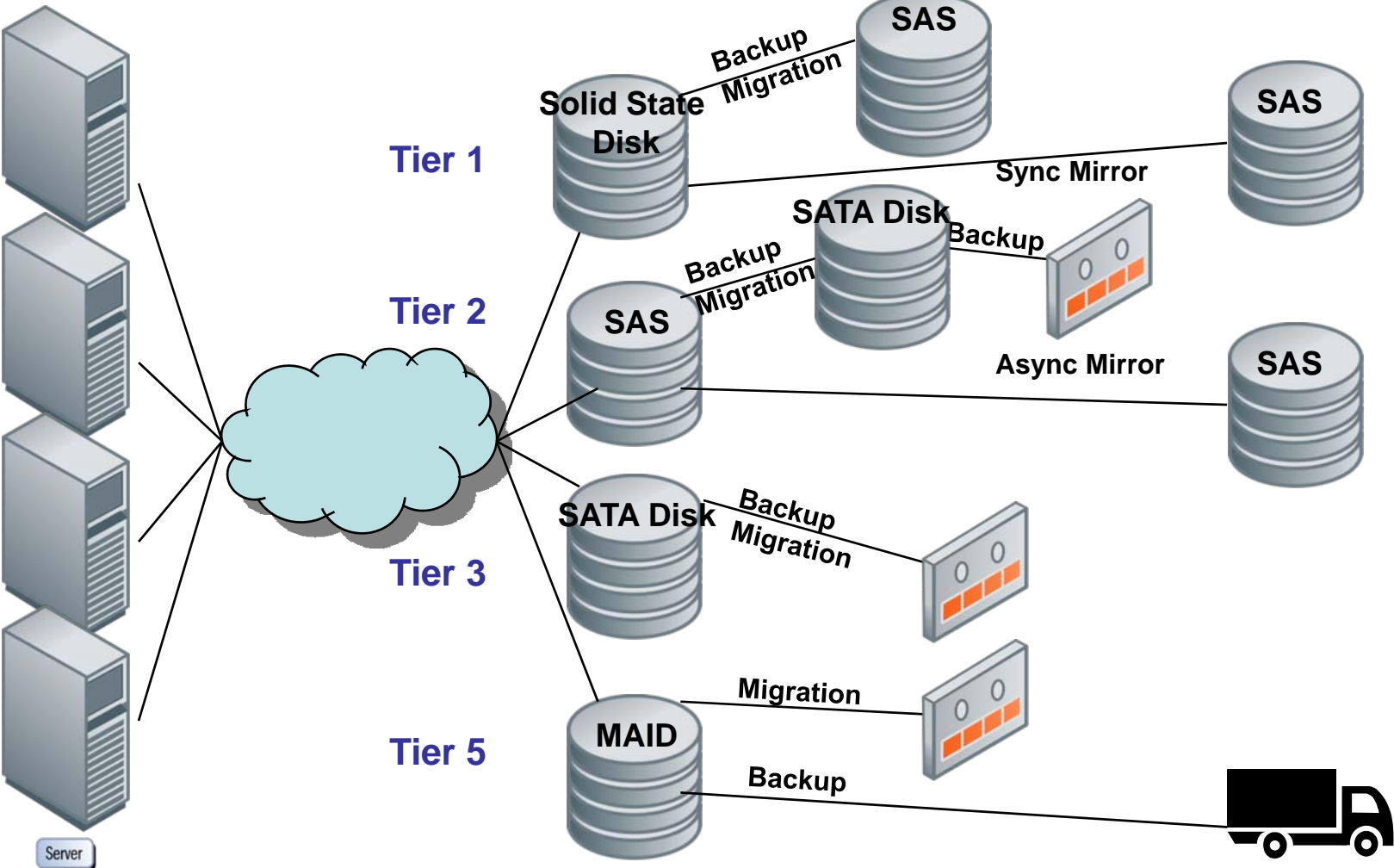
Services Catalog Selections

Relative Cost	Highest	Higher	Medium	Lower	Lowest
Amount of current storage Storage growth rate	High High	High Medium	Medium Medium	Medium Low	Low Low
Availability – Uptime	99.999%	99.99%	99.9%	99%	98%
Performance – Data Access •Active data •Over 30 day old data •Over 1 year old data	<0.5 Sec <2 Sec <5 Sec	<1 Sec <5 Sec <10 Sec	<2 Sec <10 Sec <5 Min	<3 Sec <1 Min <10 Min	<4 Sec <5 Min <30 Min
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Data loss tolerance (RPO)	0	1 Min	5 Min	30 Min	1 Hour
Data Security •Encryption in flight (at source) •Encryption at rest •Secure delete	•Yes •Yes •Yes	•No •Yes •Yes	•No •Yes •No	•No •Yes •No	•No •No •No
Data retention	Indefinite	20 years	7 years	3 years	1 year

Mapping Service Levels to Infrastructure

Relative Cost	Highest	Higher	Medium	Lower	Lowest
Amount of current storage Storage growth rate	Large Thin provisioning	Large Thin provisioning	Medium Thin provisioning	Medium Full provisioning	Small Full provisioning
Availability – Uptime	No single point of failure	Component redundancy	Component redundancy	Some redundancy (RAIDx)	Some redundancy (RAIDy)
Performance •Active data •Inactive •Over 30 day old data •Over 1 year old data	Solid State Disk SATA disk SATA disk	FC/SAS disk SATA disk SATA disk	SATA disk SATA disk Online tape	SATA disk MAID disk Online tape	MAID disk Online tape Offline tape
Business Continuity (BC) Recovery time (RTO) •Active data •Over 30 day old data •Over 1 year old data	Clone disk Snapshot disk Virtual tape	Virtual tape Online tape Nearline tape	Nearline tape Offline tape Offline tape	Offline tape Offline tape Offsite tape	Offsite tape Offsite tape Offsite tape
Data loss tolerance (RPO)	Journalled	Point InTime (PIT) Snapshots	VTL	Online tape	Offline tape
Data Security •Encryption in flight •Encryption at rest •Secure delete	•At source •Included •Hardware destruction	•None •Disk / tape •Software shredding	•None •Tape •Key Deletion	•None •Tape •None	•None •None •None
Data retention	Periodic migration and deletion at expiration				

Service Level Infrastructure



- A services catalog can help an organization better match their IT infrastructure to the value of their information
- An organization can assess its level of ILM maturity and make progress in steps to achieve its objectives



**Check out SNIA Tutorial:
Retaining Information for
100 Years**

This tutorial has been developed, reviewed and approved by members of the **Data Management Forum (DMF)**

- The DMF is an industry resource to those responsible for protecting, controlling, and preserving their organization's information
- The DMF focuses on the technologies and trends related to Data Protection, ILM, and Long-term digital information retention and preservation

DMF Workgroups:		
Data Protection Initiative (DPI)	Information Lifecycle Management Initiative (ILMI)	Long-term Archive and Compliance Storage Initiative (LTACSI)
Defining best practices for data protection and recovery technologies such as Backup, CDP, Data deduplication and VTL	Developing, educating and promoting ILM practices, implementation methods, and benefits	Addressing the challenges of retaining, securing, and preserving digital information for the long-term

Please send any comments on this tutorial to SNIA at:
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The DMF would like to thank the following individuals for their contributions to the development of to this tutorial.

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