



## Information Storage and Management - Strategies and Solutions

### Evaluator Group Education Series

#### Course Overview

Data has value. For companies and organizations, data is the lifeblood for operation. The data is used in processing required to yield information, make decisions, conduct business, and produce results. Data also has value when further analysis yields immediate, important actions to take and for longer term strategic decisions.

Storing, managing, and accessing information is the most critical purpose for information technology professionals and technologists who deliver those capabilities. This importance has created a discipline for information storage and management. The discipline continues to see technology advances and changes in demands resulting in a continuous learning curve for practitioners.

This education course will cover the strategies and directions for managing information and explain the technologies used. How the technologies are delivered as solutions by vendor companies must be understood to make informed decisions. Ultimately, the decisions must have a sound economic basis and the methods to approach an economic analysis will be explained as well.

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### Section 1: Industry Overview

Information Technology or IT continues to evolve with new applications and new technology. Changes are ongoing but there are some significant developments that change how IT operates. Use of public clouds, solid state technology such as flash, virtual machines, and now containers have all made impacts. While these will continue and some potential new developments may cause even greater change, it is useful to understand both what is dominating and what direction IT organizations are headed.

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### Section 2: Technology Developments

New solutions and technologies continue to be offered by vendors and promoted as a transformative change in the industry. Some are significant while others may not have the significance their promoters put forth in their messages. This section will look at the



technology and usage and explain the significance without the hype associated. A clear view of the trends and developments enable decisions that contribute to the long-term strategy and not a detour that may be less than effective.

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## Section 3: IT Infrastructure Directions

Enterprise IT organizations have many challenges in meeting requirements to support their organization and operational units, which have increasing demands: capacity, performance, executive challenges to transform the operational service delivery, and economic pressure. The approaches used by most are to make incremental improvements with introduction of new technology and by starting a project that will transform IT. Many IT organizations are in the process of deploying a Hybrid Multi-Cloud Infrastructure for IT Transformation. As new developments have driven interest, most new hybrid multi-cloud infrastructure developments are now focused on container-based environments. The effort to move to containers in IT outside of developers is significant and complex, requiring new skills and understanding.

### Hybrid Container-Based Infrastructure

Understanding what is involved and the vendor offerings will give a foundation to build upon in making informed decisions. A perspective on what is being accomplished with changes in IT Infrastructure is needed:

- Operate IT services delivery to be more like a public cloud provider where resources can be assigned dynamically and their clients can self-manage their selected environment.
- Deploy applications designed for container environments, meant to operate on public clouds or on-premises hybrid cloud infrastructure.
- Address existing virtual machine environments while deploying new, container-based infrastructure.
- Select container native storage or use of existing storage systems as container ready storage involves considering operations and performance.

For enterprises planning to deploy private or hybrid clouds, there are many different solutions available and different approaches to deliver services. The different options and their characteristics can be confusing with an overwhelming amount of information available. There are solutions that are more complete, delivered as pre-packaged (in-a-box) products with installation and support. Offerings and value are discussed in this section.



## Initiatives in Optimizing Infrastructure – the Rise of AIOps

“Doing things better” or “Doing more with less” are phrases commonly used to describe making improvements. Some are part of the natural order of technology change in IT; new processors in servers, updated storage systems, etc. But others are more operational in nature, exploiting new technology. The optimizations in progress generally include a transition to all-flash storage systems with NVMe devices, an NVMe over Fabric upgrade to the existing physical network, and automation of operational processes. This section will review the optimization changes for traditional IT and how AIOps will factor into future operation practices.

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## Section 4: Information Management

There are many different points for management of information. This section will explain what those management elements are and how they are related. Managing information encompasses many tools with overarching Multi-Cloud Data Management developing as the most complete approach for managing data that is spread across public clouds and on premises. This includes Data Protection and the mechanisms to protect and make data available with the recovery of data in case of failures. Part of overall Enterprise Data Management is about moving data to different types of storage (at different cost and performance characteristics) based on the business value of data. Covered areas include:

### Data Protection

Data protection is a wide-ranging area, beyond what was originally termed backup and restore. Topics covered in this section includes software, data protection systems, snapshots, and replication.

### Cyber Resilience – Recovery from Ransomware

The focus for IT is on ransomware because of the increasing number of high-profile attacks. Resilience includes prevention, detection, and recovery. This section will detail how to develop a strategy for recovery.

### Global File Systems

Remote working has led to an increase in interest in Global File Systems. The solutions to provide access to files with centralized security and distributed data will be reviewed.

### Multi-cloud Data Management



Data no longer is captive in a single environment. It moves to different systems for a variety of reasons: testing, protection, cost of storing, etc. And, it moves off premises including to multiple public cloud locations. Managing across the locations where it may live is a growing demand that some vendors are attempting to address with new products and modification of existing products (including acquisitions). This section will discuss the need and the products that fit in this area.

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## Section 5: Information Storage Technologies

Developing a strategy for employing solutions for Information Storage and Management requires an understanding of underlying storage technologies. This section will delve into the technologies to create a common level of understanding for employing solutions.

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## Section 6: Information Storage Solutions from Vendors

In providing **block, file, and object access** to storage systems, the major storage vendors have multiple solutions, some that are specific to a type of usage and some that provide multiple access types. Additionally, many of the vendors provide solutions that support access for special purposes such as a data protection target. Evaluator Group has Product Briefs describing the products and Evaluator Group opinion of how the products meet customer requirements on the Evaluator Group website. Also available on the website are Product Analyses for a deeper understanding of solutions and matrices that compare product characteristics. In this section, products offered as solutions by significant vendors will be covered, showing the different solutions with an overview of each product.

Different storage technology elements are being integrated to provide solutions for storing and protecting information. Driven by improving the time to deployment, these integrations provide alternatives to the more traditional storage systems available and can be building blocks for cloud environments. This section will examine the different types of integrations including definitions of characteristics and the vendor product offerings.

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## Section 7: Understanding Performance and Value

This section will explain testing of products to understand their real value. Performance and cost relationship examples will be shown. The types of standardized tests available will be discussed along with an explanation of what they really test.



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## Section 8: Consumption-Based Models – STaaS and Managed Services

Switching to an OPEX driven cost model has value for many IT operations. Vendors have different types of offerings that provide Storage as a Service. This section will review what the goals for STaaS are and the different offerings available as well as the financial offering including consumption-based charging. Managed services as an option for the aaS offering has also become interesting for some and will be discussed.

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## Section 9: Transitions of IT Professionals

The perception of IT specialists has been changing for some time. They are seen by executives as administrators in very specific areas aligned to products such as storage systems or backup software and viewed as overhead where they would no longer be needed if the system went away. The issue is that the context of dealing with information asset is the value delivered by the IT professional is not understood because it has not been effectively communicated. This section will discuss the evolution and how the work of IT professionals has to be positioned correctly. This is important for the long-term success of IT and for the professionals in the organization.

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## Section 10: Economic Considerations in IT

Managing information requires an understanding of the financial considerations of different approaches and solutions. In this section, several topics will be presented to illustrate the methods to make informed evaluations with the economics applied with the perspective that data has a potentially long lifespan. Included will be specific examples used in decisions to be made.

Additionally, the financial considerations for justifying infrastructure and solutions for enterprises will be discussed. The considerations ultimately must show economic value and be presented in a complete fashion.

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## Section 11: Changing Storage Vendors



Changing storage vendors is a decision that is not taken without careful consideration by IT professionals. There are a number issues when changing vendors: operational changes required, different business relationships, transitions for data and workloads, etc. These changes introduce risk and additional effort from IT – to the point that changing vendors is a project.

This section will explain some of the considerations that must be made and the implications. Armed with the considerations, a meaningful plan can be constructed and the risks explained to those advocating change.

## General Discussion

The Evaluator Group analysts will gather and discuss the changes underway in the industry. This will be an interactive discussion with the class attendees invited to ask and answer questions and provide opinions.