

A decorative graphic consisting of multiple parallel, wavy lines in various colors including purple, blue, orange, and grey, flowing from the left side of the slide towards the right.

Data Protection in Transition to the Cloud

David A. Chapa, CTE
EVault, a Seagate Company

- ◆ The material contained in this tutorial is copyrighted by the SNIA unless otherwise noted.
- ◆ Member companies and individual members may use this material in presentations and literature under the following conditions:
 - ◆ Any slide or slides used must be reproduced in their entirety without modification
 - ◆ The SNIA must be acknowledged as the source of any material used in the body of any document containing material from these presentations.
- ◆ This presentation is a project of the SNIA Education Committee.
- ◆ Neither the author nor the presenter is an attorney and nothing in this presentation is intended to be, or should be construed as legal advice or an opinion of counsel. If you need legal advice or a legal opinion please contact your attorney.
- ◆ The information presented herein represents the author's personal opinion and current understanding of the relevant issues involved. The author, the presenter, and the SNIA do not assume any responsibility or liability for damages arising out of any reliance on or use of this information.

NO WARRANTIES, EXPRESS OR IMPLIED. USE AT YOUR OWN RISK.

About the SNIA DPCO Committee

- This tutorial has been developed, reviewed and approved by members of the Data Protection and Capacity Optimization (DPCO) Committee which any SNIA member can join for free
- The mission of the DPCO is to foster the growth and success of the market for data protection and capacity optimization technologies
 - ◆ Online DPCO Knowledge Base: www.snia.org/dpco/knowledge
 - ◆ Online Product Selection Guide: <http://sniadataprotectionguide.org>
- 2014 goals include educating the vendor and user communities, market outreach, and advocacy and support of any technical work associated with data protection and capacity optimization

Check out these **SNIA-DPCO Tutorials** at www.snia.org/education/tutorials

- **What's Old is New Again: Storage Tiering**
- **Protecting Data in the Big Data World**
- **Understanding Data Deduplication**
- **Deduplication's Role in Disaster Recovery**



Organizations of all types and sizes are moving many, but usually not all, applications and data to public and private clouds, and the hybrid environments thus created are an increasing challenge for those responsible for data protection. There are many new services available in the cloud for backup and disaster recovery that can help, but IT managers want to avoid setting up separate data protection procedures for each of the parts of their hybrid environments.

Topics will include:

- ◆ Trends in cloud usage and the impact on data protection
- ◆ New services available for backup and disaster recovery
- ◆ Benefits of managing data protection in today's cloud environment

Overview

- Cloud: Defined
- Research & Trends
- Deployment Models & Challenges
- Key Takeaways

➤ SNIA Dictionary

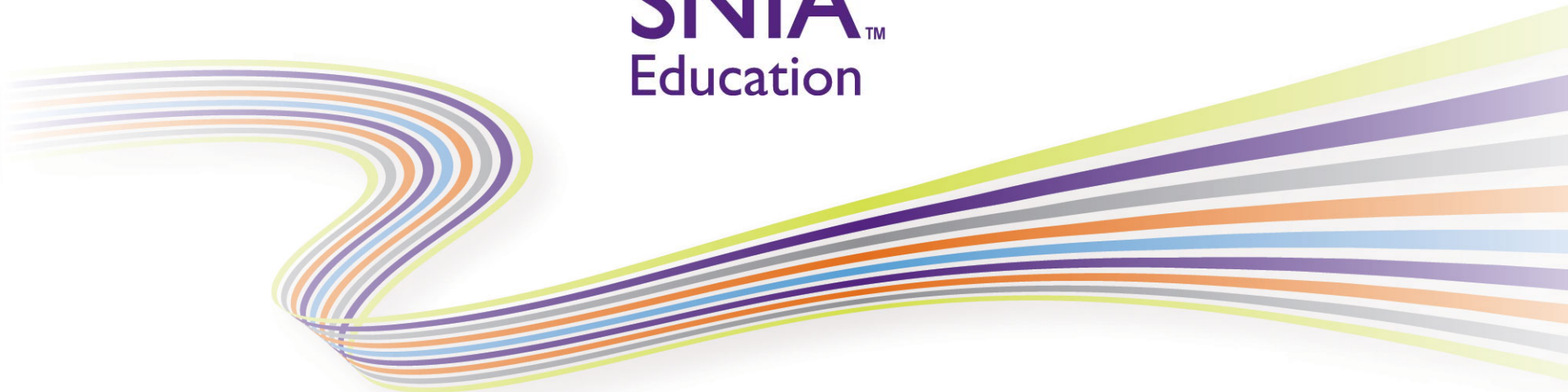
- ◆ [Cloud] A set of data processing components that can be automatically provisioned by consumers, over a network and that provide secure multi-tenancy.

➤ Wikipedia

- ◆ Cloud computing, or something being in the cloud, is an expression used to describe a variety of different types of computing concepts that involve a large number of computers connected through a real-time communication network such as the Internet.






➤ Cloud Computing for Dummies

- ◆ The “cloud” in cloud computing can be defined as the set of hardware, networks, storage, services, and interfaces that combine to deliver aspects of computing as a service.





Research & Trends

Top of Mind: Key IT Priorities

- 32% Security (first time in the top 5)
- 32% Virtualization 
- 29% Improve Backup/Recovery 
- 25% Manage Data Growth 
- 23% Cloud Infrastructure Services 
- 21% Disaster Recovery/BC initiatives 

Source: Enterprise Strategy Group, 2014 IT Spending Intentions Survey

- 70% Use Cloud Services Today  13% spike from 2013
- 20% Plan to use Cloud Service  11% drop from 2013

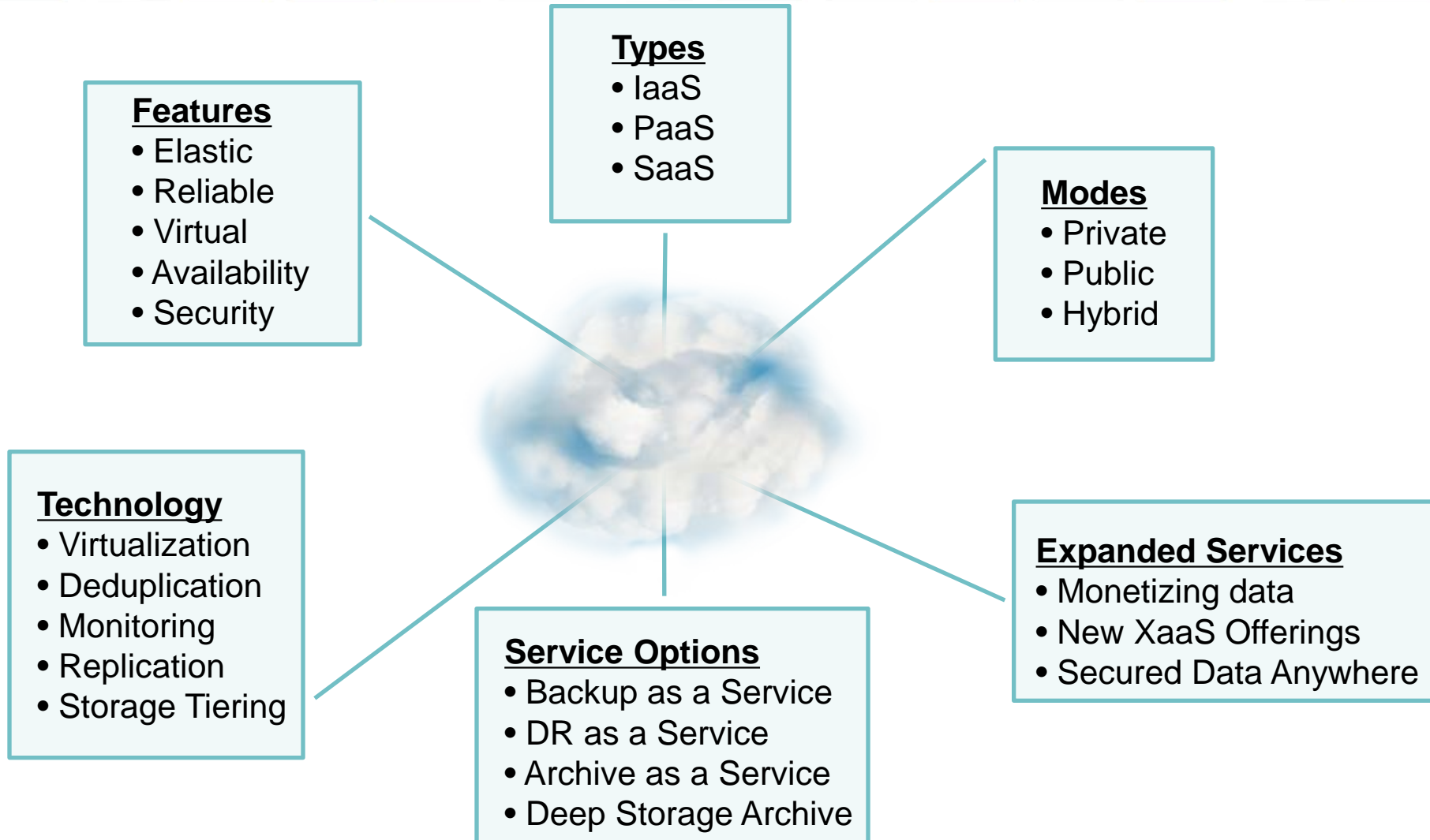
- 2008 - 2011: Top three barriers to entry
 - ◆ Security, Access and Control
- Cloud solutions have matured
- Many concerns relieved
- Driving nearly 90% who plan, or are using cloud today

Source: Enterprise Strategy Group, 2014 IT Spending Intentions Survey

A decorative graphic consisting of multiple parallel, wavy lines in various colors including purple, blue, orange, grey, and yellow-green. The lines flow from the left side of the slide, curving downwards and then upwards towards the right side.

Deployment Models & Challenges

Main Aspects of Cloud

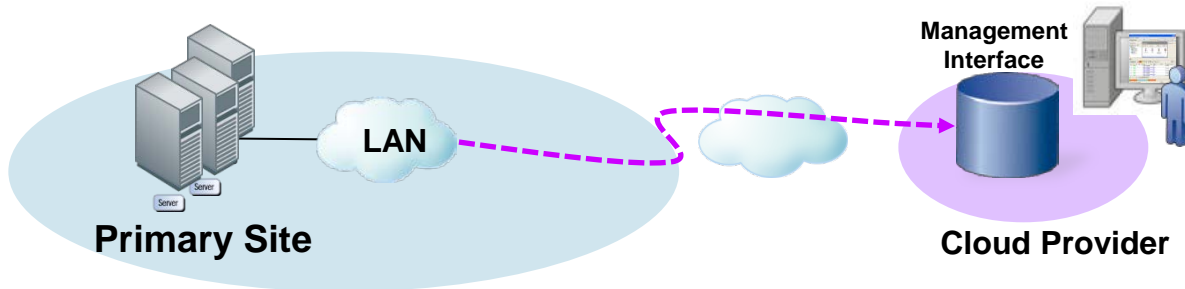


Source: EU CORDIS

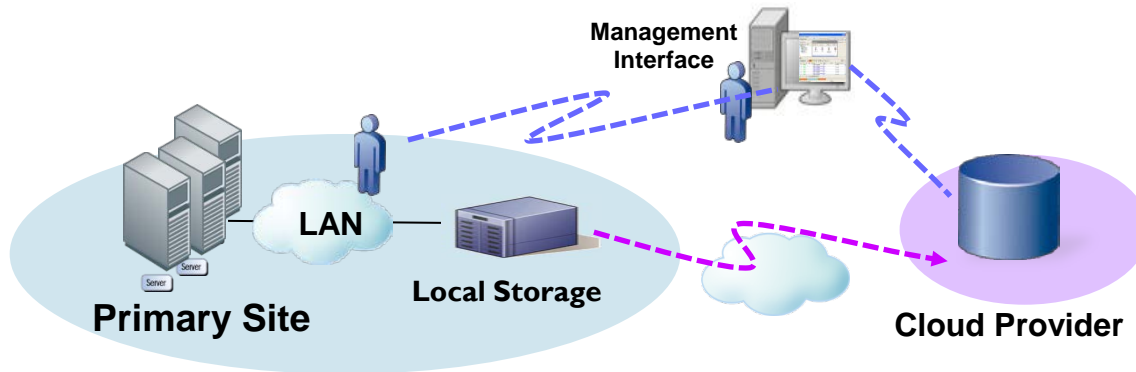
*aaS Types: Simple Overview

- ❖ **Software as a Service (SaaS)**
 - ◆ HR Solutions
 - ◆ CRM
 - ◆ Cloud backup solutions
- ❖ **Infrastructure as a Service (IaaS)**
 - ◆ Foundation to run your system or solution
 - ◆ Hardware, network, firewalls, etc.
 - ◆ Disaster Recovery as a Service
- ❖ **Platform as a Service (PaaS)**
 - ◆ An architecture on which to build your applications/services

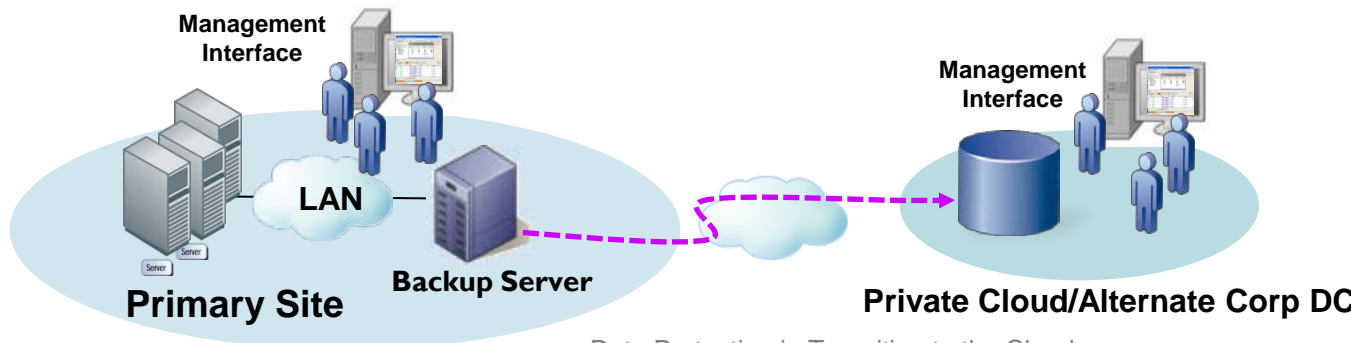
Deployment Models for Backup



**Public Cloud SaaS:
Secure &
Multi-tenant**



**Hybrid Cloud:
Secure &
Multi-tenant**



**Private Cloud:
Secure &
Single Tenant**

➤ Public Cloud

- ◆ 100% connected cloud solution, e.g., SaaS
- ◆ No on premise equipment
- ◆ Secure and Multi-tenant

➤ Hybrid Cloud

- ◆ On and off premise assets
- ◆ In-house servers and storage + cloud resources
- ◆ Public cloud, private cloud, both

➤ Private Cloud

- ◆ Either owned or rented
- ◆ Only 1 tenant

Considerations

- Key considerations for choosing a deployment model
- What are the benefits?
- Top of mind when selecting a CSP for data protection

Choosing a Deployment Model

◆ Key considerations

- ◆ Budget constraints
- ◆ Total amount of data to protect
- ◆ Type(s) of Data
- ◆ RTO / RPO
- ◆ Is your data already in the cloud?
- ◆ Frequency of restores/recoveries
- ◆ Limited or no IT staff

Cloud Based Data Protection: Benefits

- Replication based data protection
 - ◆ Efficiently use resources
 - ◆ Transfer data incrementally

- Eliminate costs and complexities
 - ◆ Reduce or eliminate tape

- Security
 - ◆ Data encryption at rest and in flight
 - ◆ Securely store data offsite
 - ◆ Ubiquitous data access

Cloud Based Data Protection: Benefits (Cont.)

- ◆ Limit Exposure and Reduce Risk
 - ◆ Hybrid Cloud for faster recovery
 - ◆ Meet offsite compliance faster over legacy solutions

- ◆ CSP: Extends your IT environment
 - ◆ Interview CSP as though a badged employee
 - ◆ Documented Process and Procedures
 - > Access
 - > Upgrades
 - > Security breaches
 - > Communication...

Cloud Based Data Protection: Benefits (Cont.)

➤ Security

- ◆ When and where is data encrypted?
- ◆ Who managed the keys?
- ◆ Does the CSP have unencrypted access to data (backdoor)?

➤ Cost of ownership

- ◆ Compare existing solution vs. Proposed Cloud Solution
- ◆ Amortize acquisition costs over three years

➤ Recovery

- ◆ May be slow for full volume recovery, but virtual spin-up in the cloud
- ◆ Mitigate with Hybrid deployment model
- ◆ RTO defines best of breed option

Cost Comparison (Example)

Cloud Data Protection Solution (Data to Protect=10TB, 10% Annual Growth)				
	Year 1	Year 2	Year 3	Cost/Month/3 Years
Cloud Backup Service	48,000	48,000	48,000	\$4,000/mo
Hybrid Appliance w/SW	150,000	0	0	4,200/mo
HW Maintenance	15,000	15,000	15,000	\$1,250/mo
SW Maintenance	18,000	18,000	18,000	\$1,500/mo
			Total Monthly Cost	\$10,950/mo
			Total Solution Cost	\$394,200

Traditional HW/SW Backup Solutions (Data to Protect=10TB, 10% Annual Growth)				
	Year 1	Year 2	Year 3	Cost/Month/3 Years
SW Acquisition Costs	145,000	0	0	\$4,025/mo
Software Maintenance	30,450	30,450	30,450	\$2,540/mo
Tape/D2D HW costs	230,000	12,000	12,000	\$7,055/mo
Maintenance	23,000	23,000	23,000	\$1,900/mo
			Total Monthly Cost	\$15,520/mo
			Total Solution Cost	\$558,720

Key Takeaways: Cloud Data Protection

- **Cloud enables IT agility**
 - ◆ Do more with what you have today
 - ◆ Cloud + Data Protection = Perfect Storm
 - ◆ From data protection to disaster recovery
 - ◆ Ubiquitous cloud storage access
- **Optimize IT staff resources**
 - ◆ Set it and forget it protection
 - ◆ Increase IT bandwidth focus on more projects

Key Takeaways (Cont.)

- ◆ **Offset CAPEX with OPEX**
 - ◆ Reduce onsite footprint (CAPEX)
 - ◆ Move some operations to cloud (OPEX)
 - ◆ Lower total cost of ownership

- ◆ **Maintain better control**
 - ◆ Minimize local copies for fast recovery
 - ◆ Actively Archive Data from primary to cloud
 - ◆ Reduce physical onsite storage requirement

Key Takeaways (Cont.)

- Cloud Provider 1 versus Cloud Provider 2
 - ◆ Based on individual requirements
 - ◆ Go to RFP
 - ◆ Ask for Proof of Concept (POC)

➤ Cloud, Defined

- ◆ SNIA
 - > <http://snia.org/education/dictionary/c>
- ◆ Wikipedia
 - > http://en.wikipedia.org/wiki/Cloud_Technology
- ◆ Cloud Computing for Dummies
 - > <http://www.dummies.com/how-to/content/what-is-cloud-computing.html>

➤ Research and Trends

- ◆ Source: Enterprise Strategy Group
- ◆ 2014 Spending Intentions Report
- ◆ <http://www.esg-global.com/blogs/2014-cloud-spending-intentions-research-trends-and-analysis/>

➤ Main Aspects to Cloud

- ◆ Source: EU Commissioned Research Report
- ◆ “The future of cloud computing”
- ◆ <http://cordis.europa.eu/fp7/ict/ssai/docs/cloud-report-final.pdf>

The SNIA Education Committee thanks the following individuals for their contributions to this Tutorial:

Authorship History

Name/Date of Original Author here:
DPCO Committee – 01/2014

Updates:
DPCO Committee – 03/2014

Additional Contributors

Ashar Baig
David A. Chapa
Kevin Dudak
David Hill
Gene Nagle
Thomas Rivera
Tom Sas
Gideon Senderov

Please send any questions or comments regarding this SNIA Tutorial to tracktutorials@snia.org