Data Protection in Transition to the Cloud

David A. Chapa, CTE
EVault, a Seagate Company
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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
Abstract

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
Cloud: Defined

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.
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
Cloud Trends

- 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
Deployment Models & Challenges
Main Aspects of Cloud

- **Types**
  - IaaS
  - PaaS
  - SaaS

- **Modes**
  - Private
  - Public
  - Hybrid

- **Technology**
  - Virtualization
  - Deduplication
  - Monitoring
  - Replication
  - Storage Tiering

- **Features**
  - Elastic
  - Reliable
  - Virtual
  - Availability
  - Security

- **Service Options**
  - Backup as a Service
  - DR as a Service
  - Archive as a Service
  - Deep Storage Archive

- **Expanded Services**
  - Monetizing data
  - New XaaS Offerings
  - Secured Data Anywhere

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

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Deployment Models

- **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 ofsite 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)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Cost/Month/3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Backup Service</td>
<td>48,000</td>
<td>48,000</td>
<td>48,000</td>
<td>$4,000/mo</td>
</tr>
<tr>
<td>Hybrid Appliance w/SW</td>
<td>150,000</td>
<td>0</td>
<td>0</td>
<td>4,200/mo</td>
</tr>
<tr>
<td>HW Maintenance</td>
<td>15,000</td>
<td>15,000</td>
<td>15,000</td>
<td>$1,250/mo</td>
</tr>
<tr>
<td>SW Maintenance</td>
<td>18,000</td>
<td>18,000</td>
<td>18,000</td>
<td>$1,500/mo</td>
</tr>
<tr>
<td><strong>Total Monthly Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$10,950/mo</strong></td>
</tr>
<tr>
<td><strong>Total Solution Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$394,200</strong></td>
</tr>
</tbody>
</table>

### Traditional HW/SW Backup Solutions (Data to Protect=10TB, 10% Annual Growth)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Cost/Month/3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Acquisition Costs</td>
<td>145,000</td>
<td>0</td>
<td>0</td>
<td>$4,025/mo</td>
</tr>
<tr>
<td>Software Maintenance</td>
<td>30,450</td>
<td>30,450</td>
<td>30,450</td>
<td>$2,540/mo</td>
</tr>
<tr>
<td>Tape/D2D HW costs</td>
<td>230,000</td>
<td>12,000</td>
<td>12,000</td>
<td>$7,055/mo</td>
</tr>
<tr>
<td>Maintenance</td>
<td>23,000</td>
<td>23,000</td>
<td>23,000</td>
<td>$1,900/mo</td>
</tr>
<tr>
<td><strong>Total Monthly Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$15,520/mo</strong></td>
</tr>
<tr>
<td><strong>Total Solution Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$558,720</strong></td>
</tr>
</tbody>
</table>
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)
Source Citations

❖ 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
Source Citations (Cont.)

- Main Aspects to Cloud
  - Source: EU Commissioned Research Report
  - “The future of cloud computing”
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