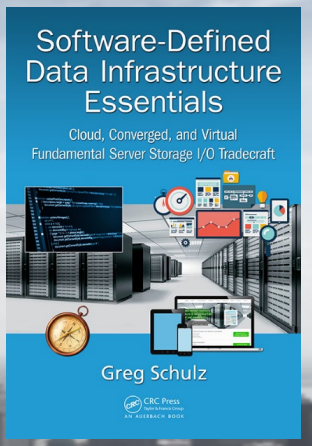
Software Defined Data Infrastructures (SDDI) and Hybrid Clouds

Everything Is Not The Same

Industry Trends Perspectives

StorageIO

September 14, 2017



vmware vEXPERT VSAN 2016

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Fujifilm Global Summit – Seattle WA 2017

Presented by Greg Schulz Server StorageIO®

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Cloud Storage Decision Making – More than Cost per Capacity

Location (On/Off-Premise), Resiliency/Durable, PACE Attributes, Functionality, SLAs

Everything Is Not The Same, Why Treat Everything The Same?

Block, Blob/Page	File, Queue, Table, Object	Object/Blobs

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Everything Is Not The Same, Why Treat Everything The Same?

Have It Your Way To Meet Your Needs, Bridge Past, Present and Future

Cloud and Storage Decisions

Mix of Technologies
Different Abstractions

Some Inter-Cloud
(using more than one)

Hybrid
Some Legacy
Some Clouds

Trend

Trend

No Cloud
All Legacy

All Cloud
All In

Examples among others Alibaba, AWS, Azure, Backblaze, Box, Crashplan/Code42, Virtustream, Dropbox, Google, IBM Bluemix/Softlayer, Mega, Oracle, Rackspace, Yandex

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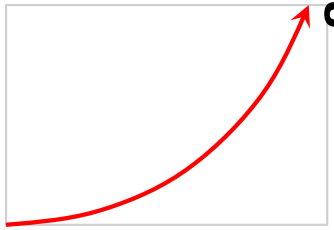
Common Challenge = Sustained Growth Demands

How To Address Demands, Challenges and Mandates?

Legacy and Emerging
Application and Workloads

Data Growth Demand
Relative Forecast



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Constraints, Mandates
Security, Budgets

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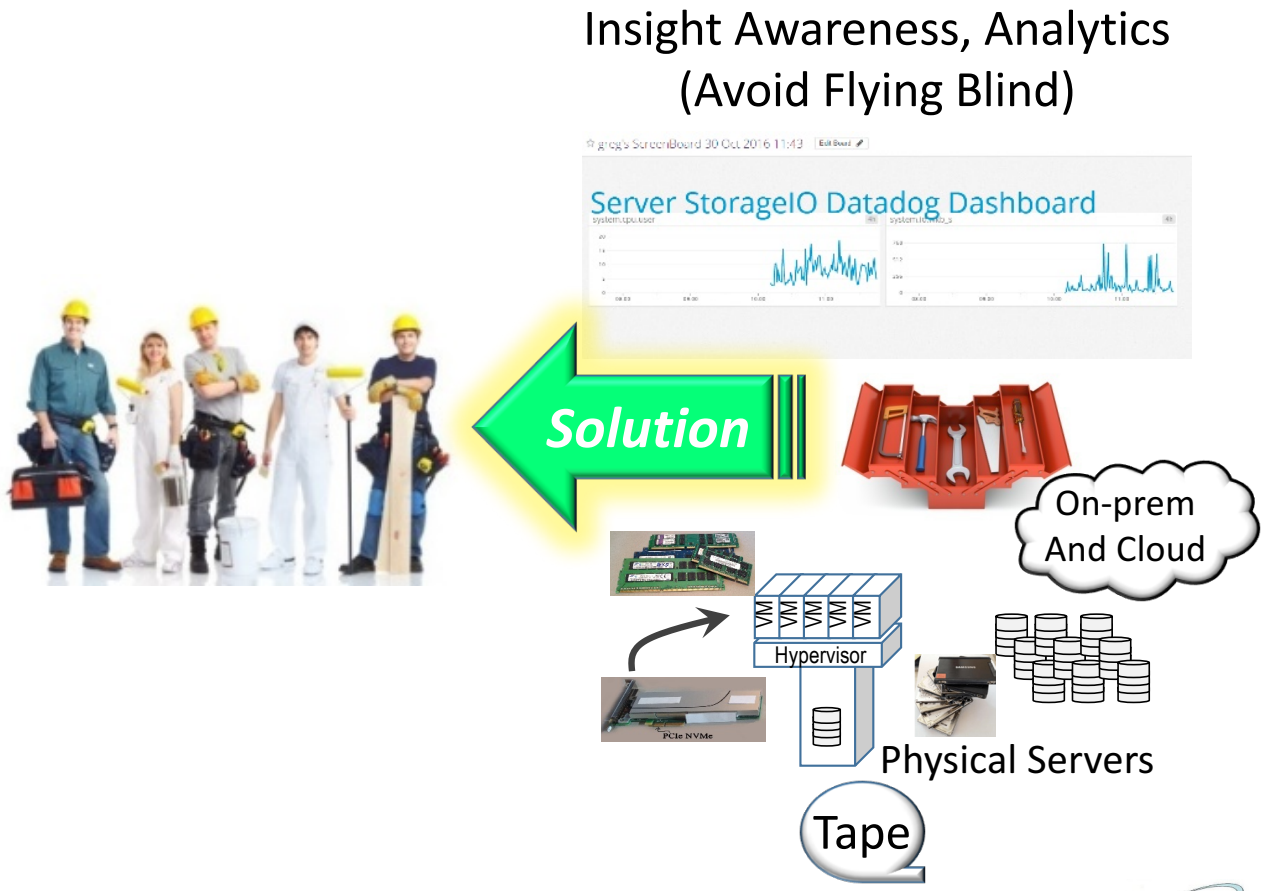
Common Challenge = Technology Evolution Trend Options

How To Navigate and Leveraged Available Resources



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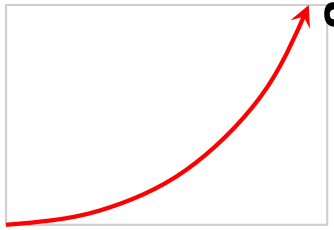
Common Challenge = Enabling Growth Without Compromise

Address Challenges (Left), Leveraging Experience (Center), Balance Solutions (Right)

Legacy and Emerging
Application and Workloads

Data Growth Demand
Relative Forecast



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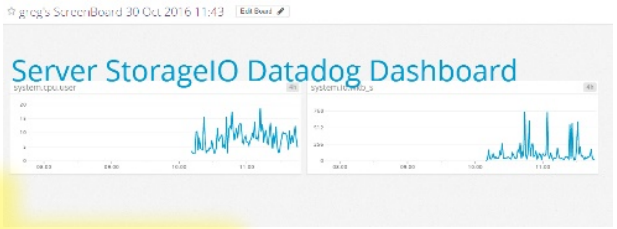
Constraints, Mandates
Security, Budgets

Challenge

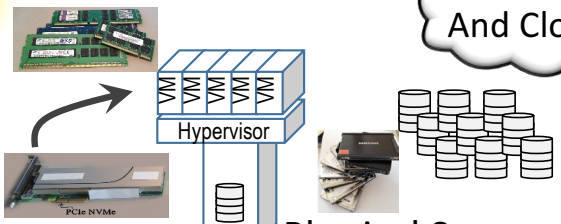
Tradecraft Skills
Tools, Technologies
Techniques, Best Practices
Policies

Solution

Insight Awareness, Analytics
(Avoid Flying Blind)



On-prem
And Cloud



Physical Servers

Tape

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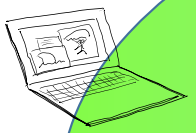


Trend

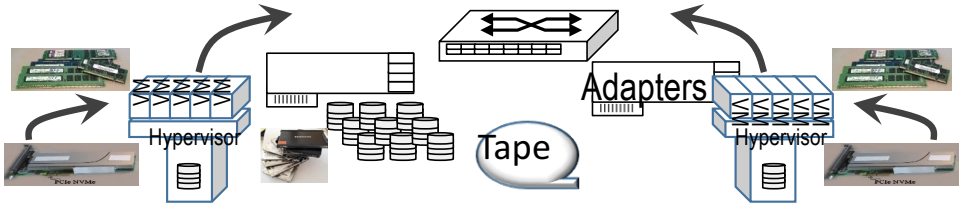
Some Legacy
Some Clouds

Trend

No Cloud
All Legacy

Data Infrastructures
Resources (Server, Storage, I/O Networks)

All Cloud
All In



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What Is Your Cloud Objective?

How and Why Are You Using (or going to use) Clouds?

- To reduce, move, shift or hide costs?
- To improve scalability, remove complexity?
- For storage, networking, applications, compute, all of these?
- For IaaS, PaaS, SaaS, AaaS or Something else as a Service?
- As a destination for data protection (backup, archives, BC, DR)?
- As a peer site for resiliency, elasticity, bursting of workloads?
- As a place where applications run or can failover to?
- As a hub repository for various sites to collaborate?
- AS a place for logs, events, telemetry, messages?
- As a management plane for local and remote?
- As an authoritative copy for local cached data?
- Single Availabity Zone (AZ), single region, multiple clouds?

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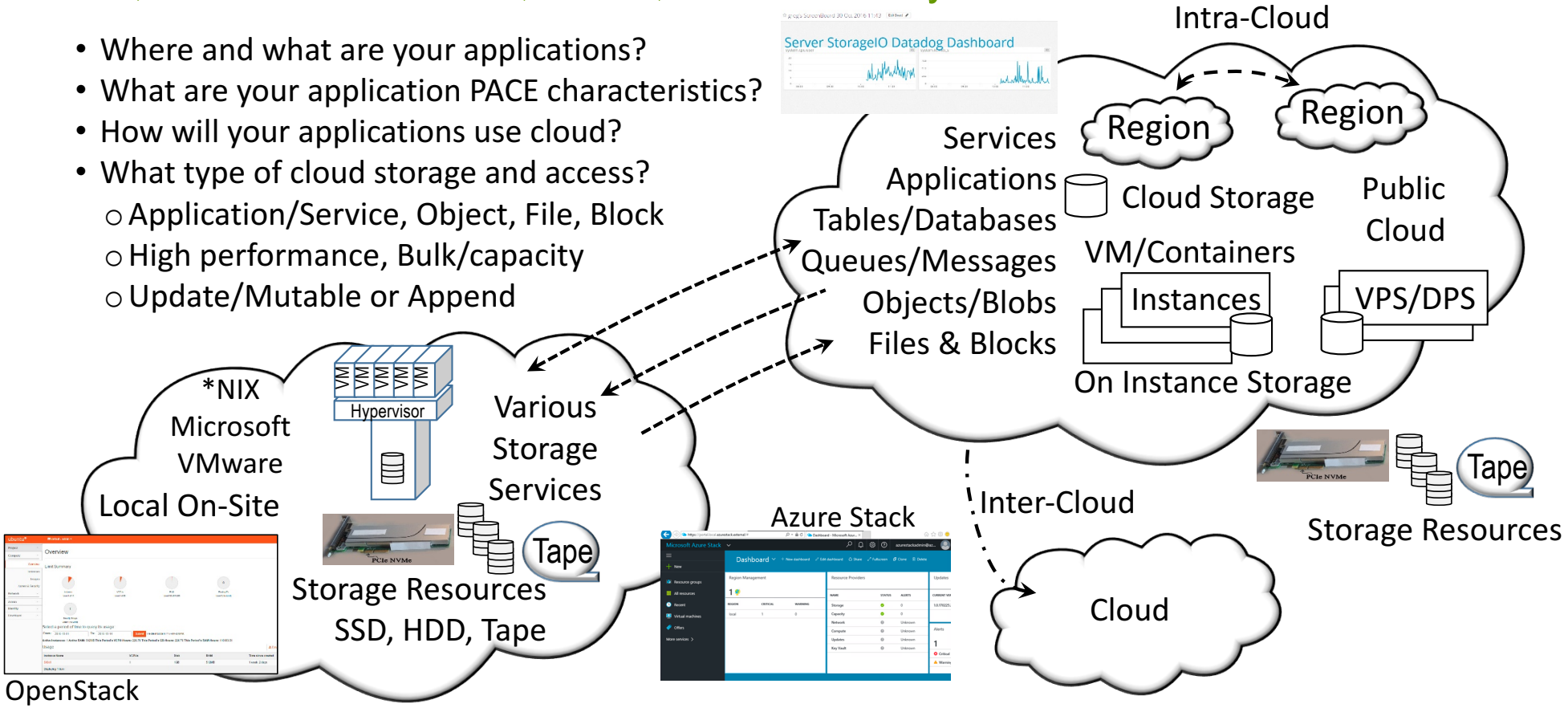
Cloud Storage Decision Making – What Are Your Requirements?

Local, On-site/On-Premise, Public, Private and Hybrid-Cloud

- Where and what are your applications?
- What are your application PACE characteristics?
- How will your applications use cloud?
- What type of cloud storage and access?
  - Application/Service, Object, File, Block
  - High performance, Bulk/capacity
  - Update/Mutable or Append



PACE = Performance, Availability, Capacity, Economics

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Cloud Storage Decision Making – More than Cost per Capacity

Location (On/Off-Premise), Resiliency/Durable, PACE Attributes, Functionality, SLAs

High Performance	Good Performance	Some Performance
Good Capacity	Good Capacity	High Capacity
Efficient and Effective	Cost Efficient	Very Cost Efficient
Hot/Active	Warm/Active	Warm, Cool, Frozen
Geo-Resilient	Resilient	Durable
Block, Blob/Page	File, Queue, Table, Object	Object/Blobs

Cloud Storage Does Not Have To Be All or Nothing, One Size Fits All!
Have it Your Way, When, Where, What, How Needed For Your Applications

- ✓ Mix of Services and functions
- ✓ Mix of PACE attributes
- ✓ Various media/mediums tiers
- ✓ (RAM, SSD, HDD, Tape)
- ✓ On-instance, non-instance

- ✓ Append or Update
- ✓ Support different use scenarios
- ✓ Avoid one size/approach fits all
- ✓ Mix of on-/off-premise
- ✓ Move beyond cost per capacity

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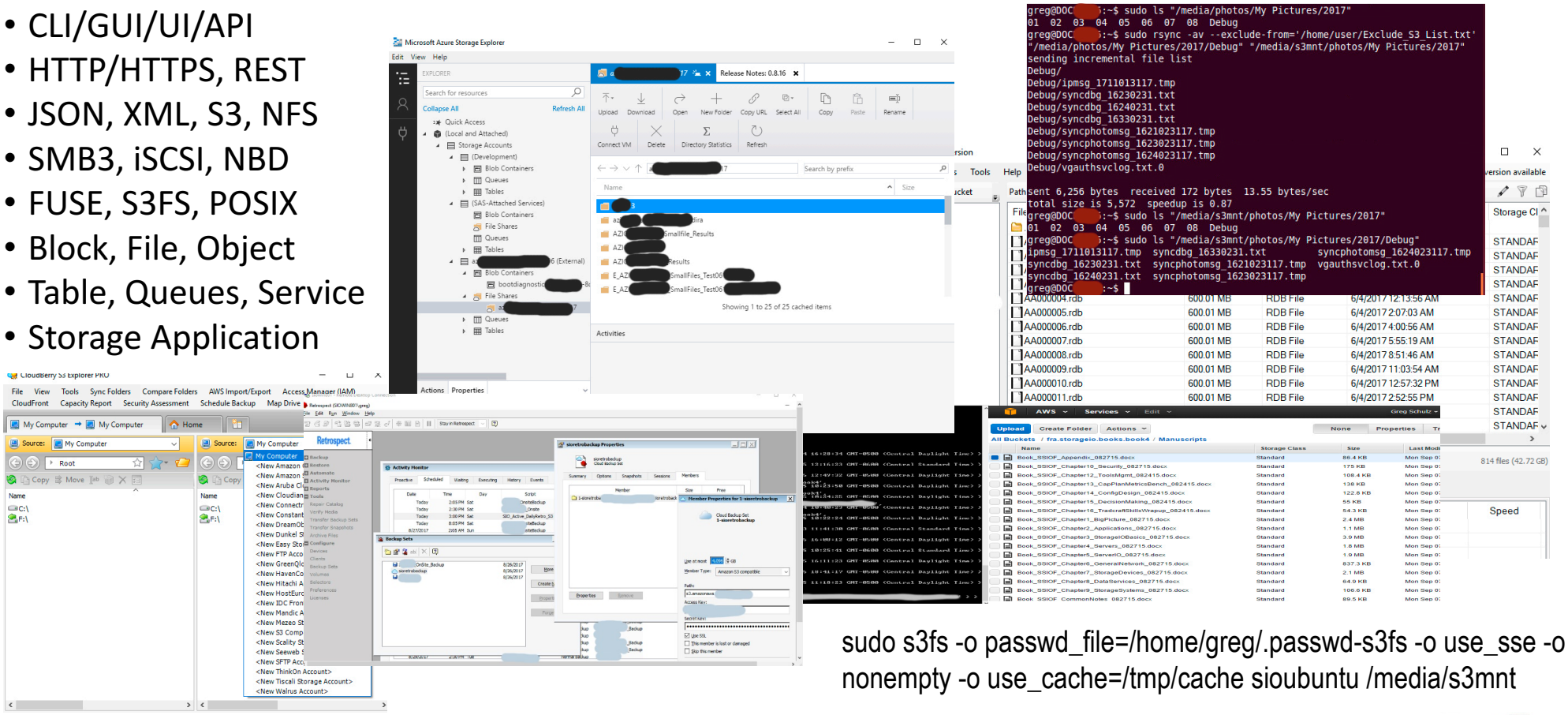
Cloud Storage Decision Making – Access and Management

How Will You and Your Applications Manage As Well As Access Cloud Storage?

- CLI/GUI/UI/API
- HTTP/HTTPS, REST
- JSON, XML, S3, NFS
- SMB3, iSCSI, NBD
- FUSE, S3FS, POSIX
- Block, File, Object
- Table, Queues, Service
- Storage Application




```
sudo s3fs -o passwd_file=/home/greg/.passwd-s3fs -o use_sse -o
nonempty -o use_cache=/tmp/cache sioubuntu /media/s3mnt
```

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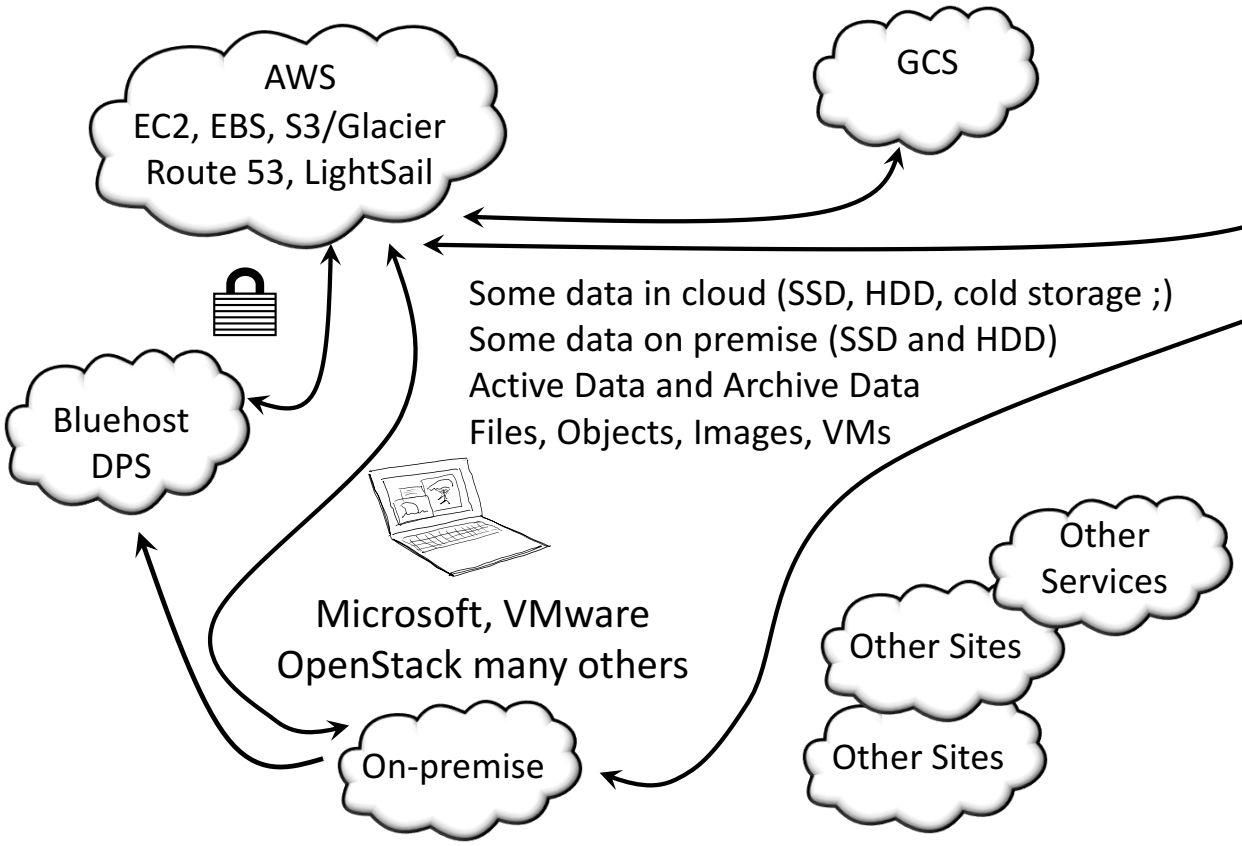
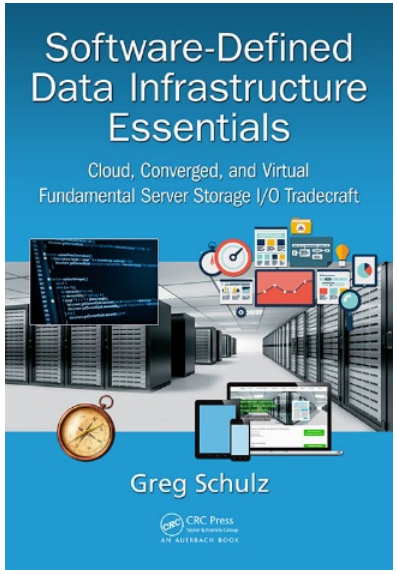
An example: My Hybrid Cloud and SDDI Environment

Walking The Talk, Eating My Own Dog Food – Supporting My New Book Project





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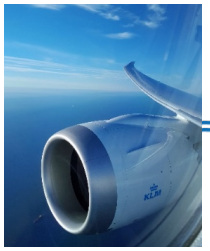
Preparing For Our Wrap-up (landing) – What can you do *today!*

IT has been on a journey for decades, IT will continue to be on journeys for decades

Head in the clouds (vision, strategy), Feet on the ground (plan, implement, mange)

Head In the Clouds



- ✓ Don't be afraid, be prepared, do your homework
- ✓ Expand your tradecraft, skills, experiences
- ✓ Identify your concerns and questions
- ✓ Ask new and additional questions
- ✓ Talk with others today

- ✓ Learn the language and trends of SDx
- ✓ Plan what you need to take with, what to leave behind
- ✓ What resources (HW, SW, people, services) are needed
- ✓ What needs to be converted or adapted to the destination
- ✓ Reduce your footprint, travel light, bulk ship things if needed

- Understand your needs, know your options
- Establish metrics to compare and optimize SDx
- You need to know (have insight into)
  - Where you are going, what you have
  - When you are there, what is needed
  - Service management, how performing

Feet On The Ground

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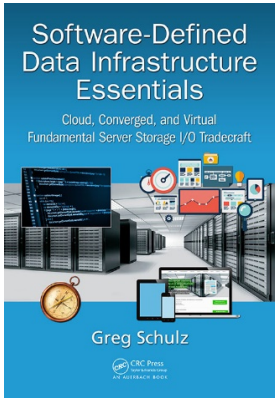
Closing comments, for now…

Know where you are going, why and what are your objectives

Expand your Data Infrastructure and Cloud Tradecraft Experiences

- Avoid flying blind, have insight and awareness
- Growth demands need multiple resource types
- Tape remains relevant, its location and use is changing
- Do not be scared of clouds, be prepared
- What can you do today:
  - ✓ Ask questions, identify new questions or concerns, then address them
  - ✓ Learn from mistakes of others, as well as from the past
  - ✓ Do a POC, gets some insight, awareness and experience, have some fun



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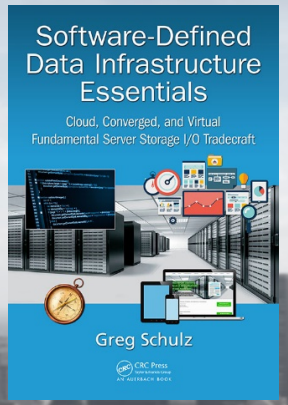

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