Expanding (or refreshing) Your Data Infrastructure Tradecraft Skills In A Software Defined Era

Everything Is Not The Same

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Industry Trends Perspectives

StorageIO

September 21, 2017

vmware vEXPERT VSAN 2016

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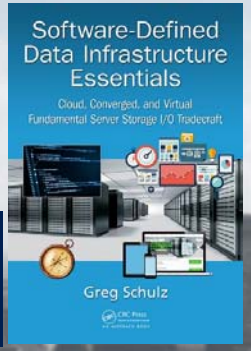

Minneapolis MN CMG

Presented by Greg Schulz Server StorageIO™

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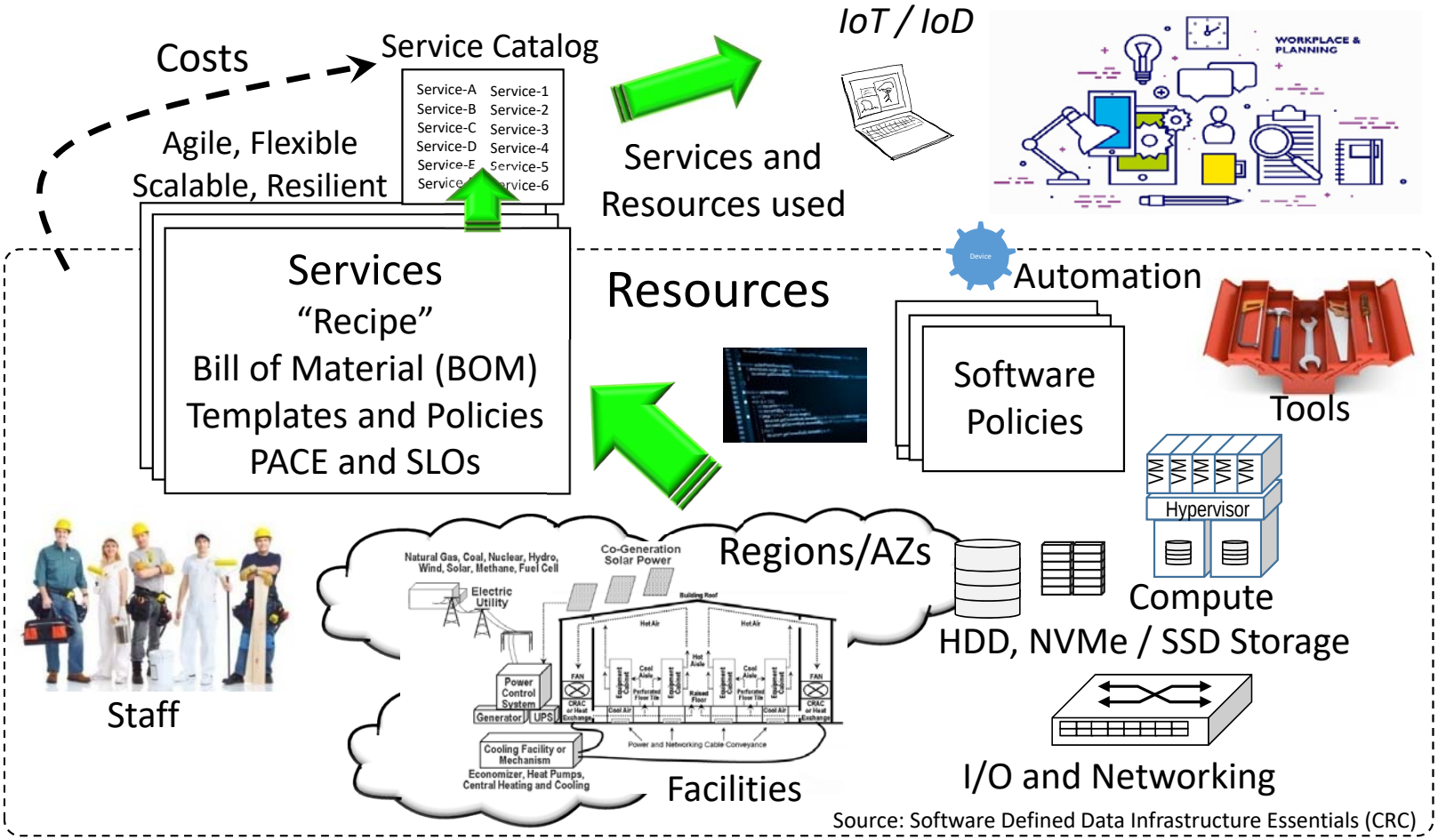
Industry Trends – Software Defined Data Infrastructures

Focus of Data Infrastructures is to support information services delivery



Source: Software Defined Data Infrastructure Essentials (CRC)

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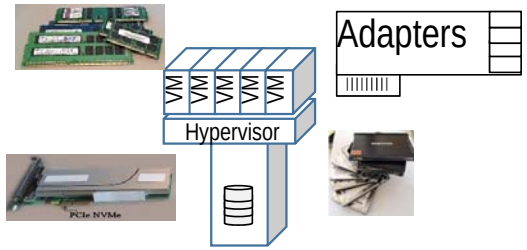
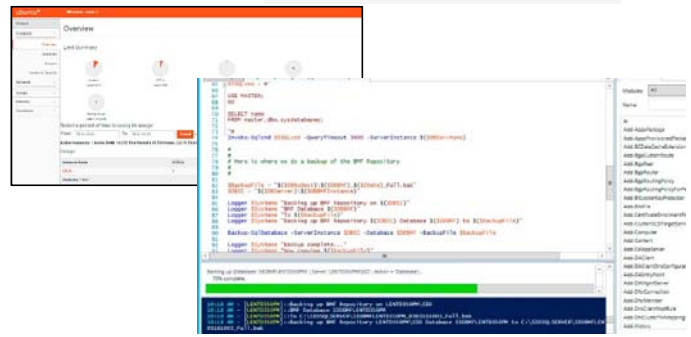
Context Matters and Terminology

Words, terms, acronyms have many meanings

- Data Infrastructure – Protect, Preserve, Secure, Serve Information
  - o Hardware (Server, I/O Network, Storage)
  - o Software and Management Tools
  - o Services (Network, Cloud, Managed)
  - o Policies, Procedures, Templates, Workflows
- Software Defined
  - o How "things" get composed, configured, defined for an outcome
  - o HW needs SW, SW needs HW, cloud and serverless need HW & SW
  - o Software gets packaged, deployed in various ways
- Tradecraft
  - o Your skillsets, education, experience, knowledge, techniques
  - o Beyond buzzword bingo and bandwagon trends





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Context Matters and Terminology

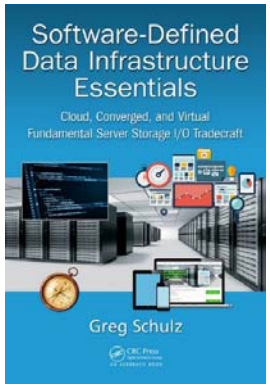
Words, terms, acronyms have many meanings

BLOB	Data base storage item, object storage entity, page, block, append among others
Bucket	How storage managed, allocated, or organized, object, database, other data structure
Container	A storage bucket, repository, unit of compute aka docker/micro services/server less
Composable	Combine, orchestrate, aggregate, define HW and SW resources to scale
Endpoint	Address, target, destination, how accessed managed of block, file, object or network entity.
File system	Various layers, from low level in flash devices to higher level in databases
Flash	Adobe visualization software or NVM SSD media
MAP	Mirrored Assisted Parity/Erasure Code
Namespace	Collection of endpoints, addresses, resources for a given scope
Object	An entity, thing, database, file system, OS, hypervisor, network or other data structure item
PM	Physical Machine aka Bare Metal (BM) server, Persistent Memory
Role	Functionality, Capability, Feature, Service Enabled or what something does
SAS	Shared Access Signature, Serial Attached SCSI, Statistical Analysis Software
SCM	Storage Class Memory
SSD	Solid State Devices, Solid State Drives, Solid State Disks
Tiers & Tiering	Different types, categories, classes of resources, moving data or items between tiers
Volume	Block, File, Object among other storage allocation, organization

OS = Operating System; FS = File System; VM – Virtual Memory, Virtual Machine

Also keep context of NVM vs. NVMe in perspective, one is the media/medium, the other is how accessed.

Refer to SDDI Essentials Glossary for more examples



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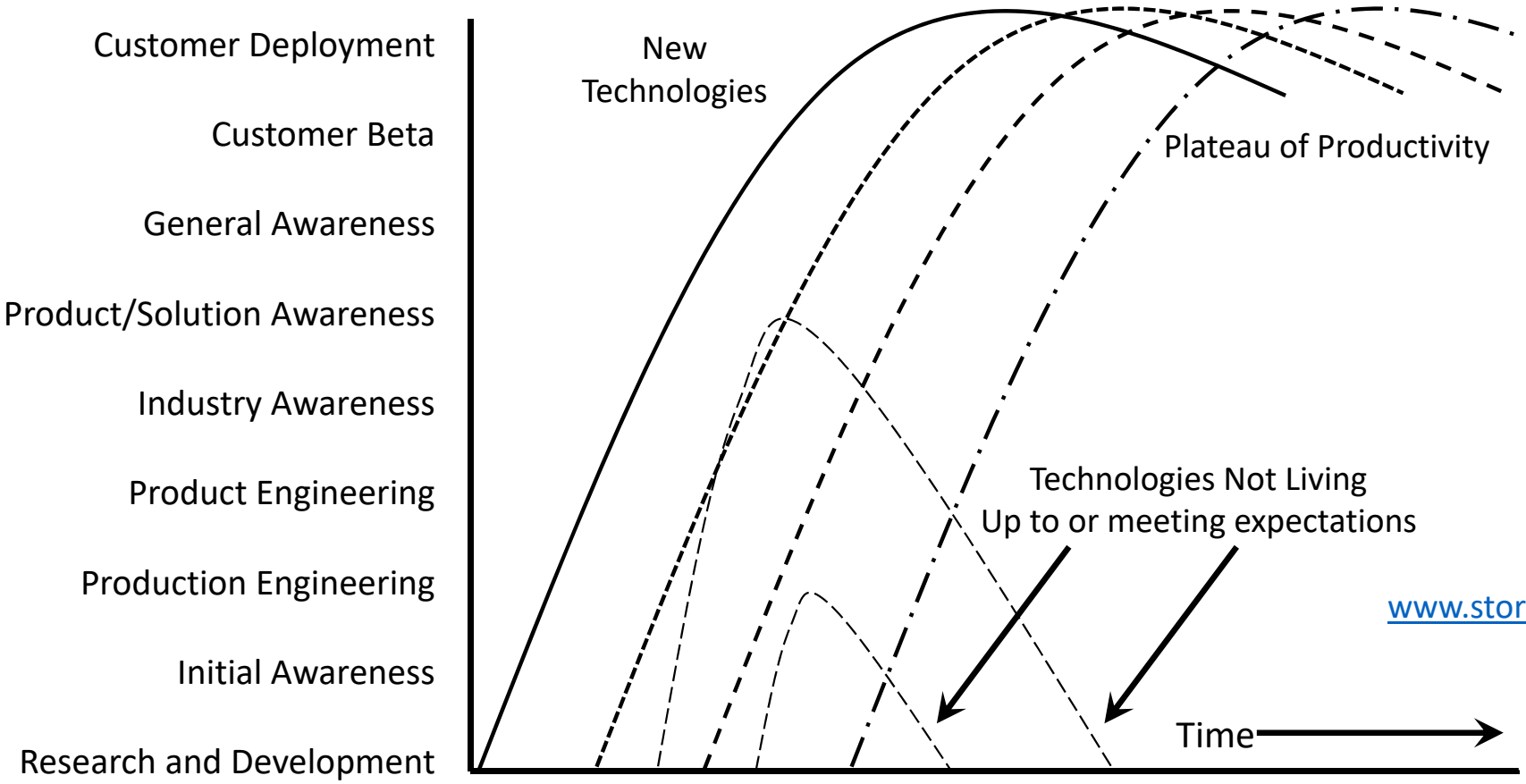
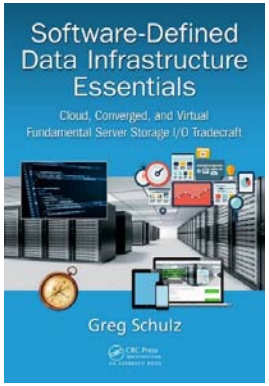
Data Infrastructure Industry Trends and Different Timelines

Everything Is Not The Same Across Different Focus Areas and Audiences





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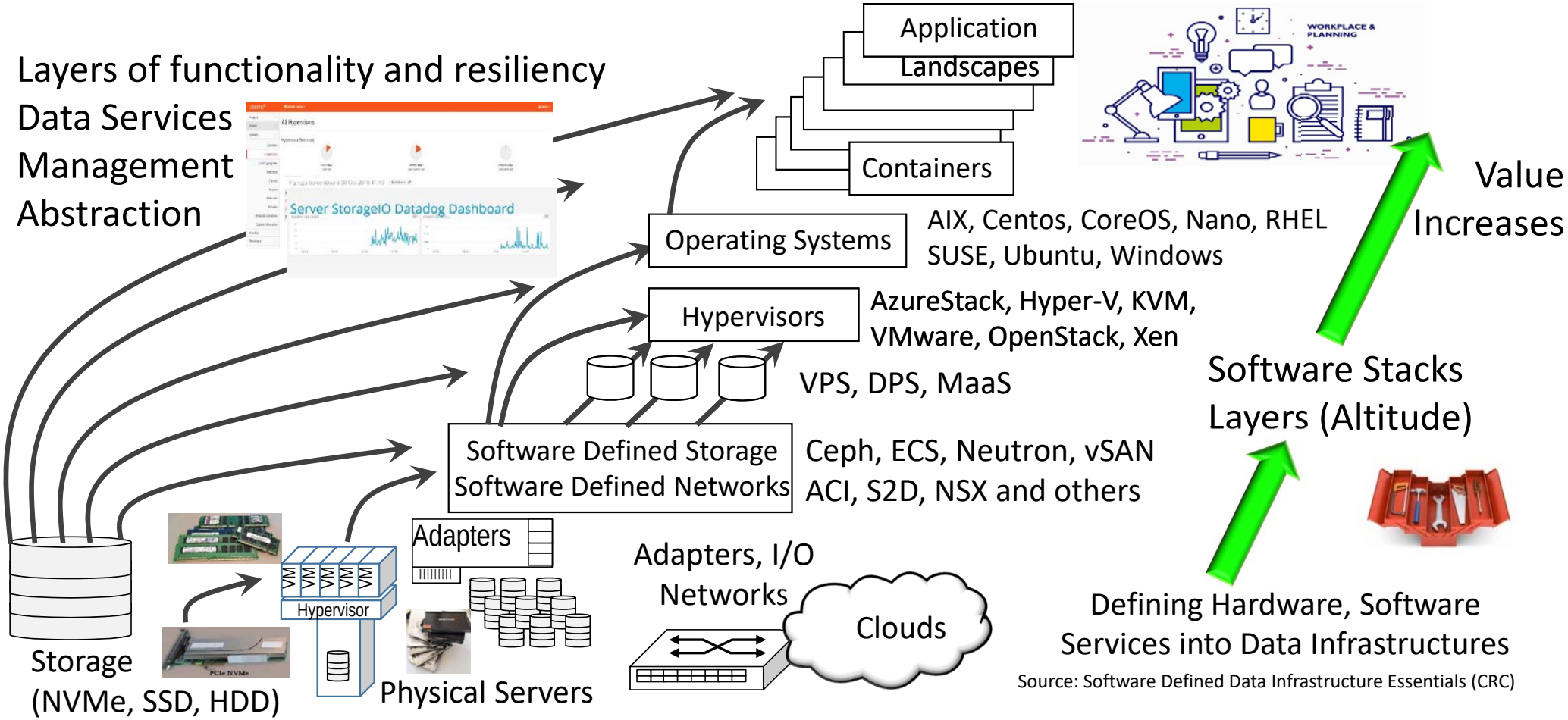
Industry Trends: Software Defined Storage and Data Infrastructures

Protect, Preserve, Secure and Serve Information (Applications and Data)



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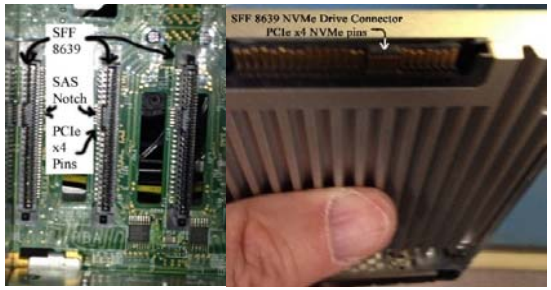
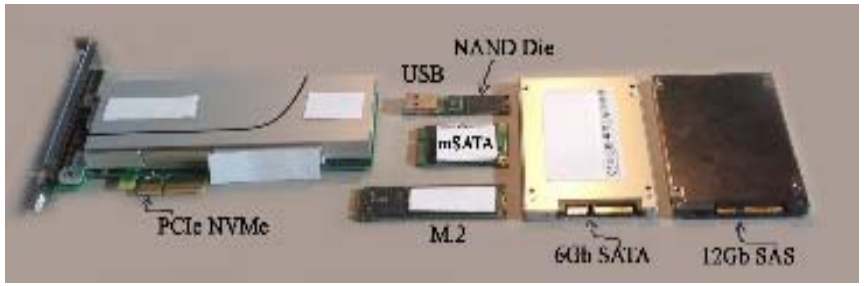
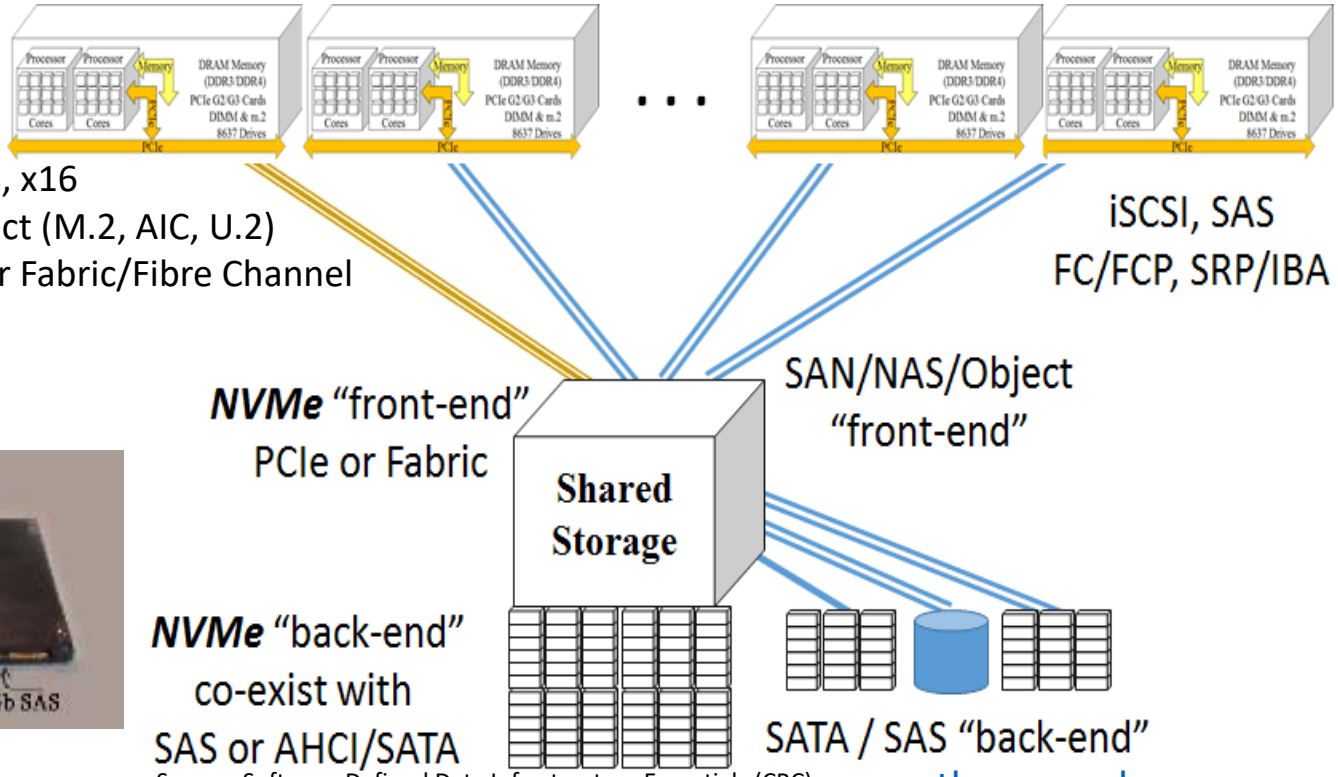
Industry Trends: Data Infrastructures – Server Storage I/O NVMe

NVM = Media (e.g. SSD, Flash, SCM) while NVMe is the Access







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www.thenvmeplace.com
www.thessdplace.com

http://storageioblog.com/answer-nvme-questions/

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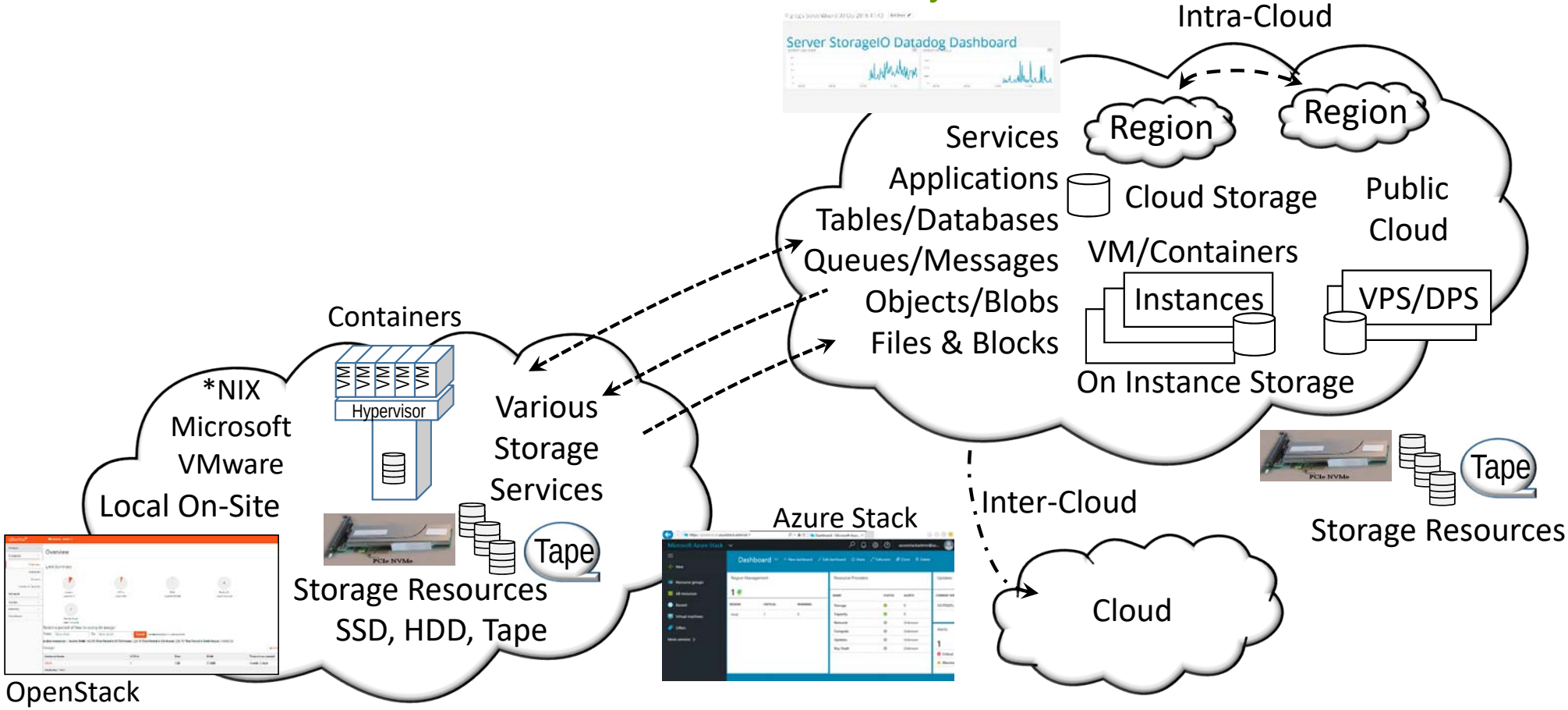
Industry Trends – Software Defined Data Infrastructures

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



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Tools In My Data Infrastructure Toolbox

Hardware, Software, Devices, Scripts and More

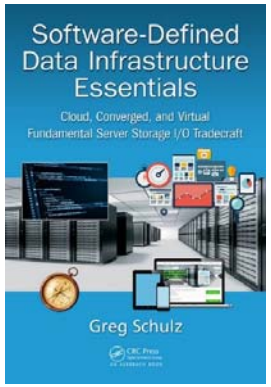
Benchmark and workload simulation

- General I/O (block, some file) — Diskspd, fio, vdbench (and various harnesses for block and file) plus iorate, iometer, iozone
- HPC style parallel file (e.g. Lustre) — IOR among others
- S3 Object (e.g. Not Lustre or HCP) — Cosbench among others
- Databases (SQL/NoSQL) — Benchmark Factor (BF), Hammer, SLOB, sysbench, YCSB and others

Others Login VSI, Moss (Sharepoint), Jet (Exchange), VDMark, HCIbench

www.objectstoragecenter.com
www.thenvmeplace.com
www.thessdplace.com
www.storageio.com/sds
http://storageioblog.com/server-and-storage-io-benchmarking-resources/

Refer to SDDI Essentials Glossary for more examples



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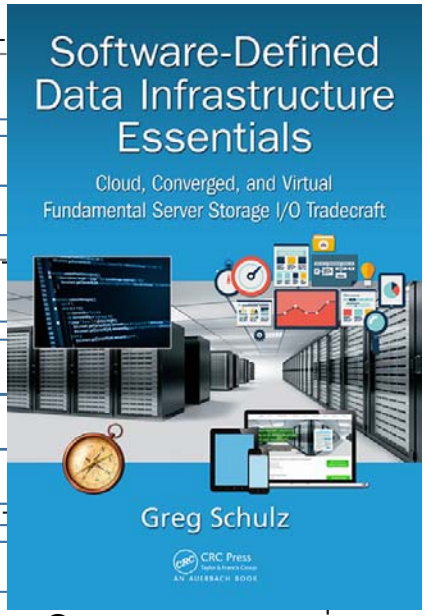
Software Defined Data Infrastructure Essentials Book

What's In and How The Book is Organized



Part 1 – Server Storage I/O and Data Infrastructures, the Big Picture

- Chapter 1 – Server Storage I/O and Data Infrastructure Fundamentals
- Chapter 2 – Applications, Data and IT Environments

Part 4 – Putting Data Infrastructures Together – Protect, Preserve & Serve

- Chapter 13 – Managing and Data Infrastructure Decision Making
- Chapter 14 – Data Infrastructure Deployment Considerations
- Chapter 15 – Tradecraft Futures, Wrap-up and Summary

- Chapter 3 – Bits, Bytes, Blobs and Software Defined Building Blocks

Part 2 – Server Storage I/O Deep Dive

- Chapter 4 Servers Cloud and Virtual
- Chapter 5 Server I/O Networking
- Chapter 6 Server and Storage Networking
- Chapter 7 Storage Device Components

Part 3 – Data Services and Storage Systems

- Chapter 8 Data Services Part I
- Chapter 9 Availability Services Part II
- Chapter 10 Protection Services Part III
- Chapter 11 Capacity Services Part IV
- Chapter 12 Storage Systems Solutions

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Appendices, Glossary, Index

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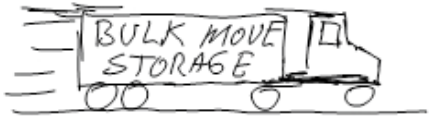
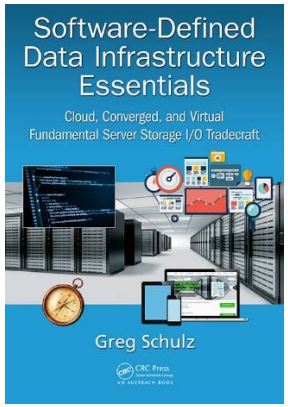
Closing comments, for now…

Everything is not the same, use right tool, technology technique for task at hand



Expand your Data Infrastructure Tradecraft Experiences

- Everything is not the same, why treat everything the same?
  - ✓ Avoid flying blind, have awareness into adjacent technologies
  - ✓ Understand context of topics, terms, technologies, techniques
- Software Defined emphasis should be on "Defined"
  - ✓ How "things" defined, composed, crafted, programmed for an outcome
  - ✓ HW needs SW, SW needs HW, serverless and clouds needs HW & SW
- What you can do today:
  - ✓ Learn lessons of past to prevent future mistakes



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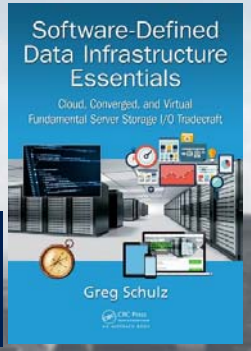

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