Exploring the Software Defined Data Center

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Agenda

- The Changing Role of IT
- What is Service Delivery?
- What is Software Defined?
- Is Software Defined Just “Marketechture”?
- The Characteristics of Software Defined Storage
- Towards an SDDC – Software Defined Data Center
- Summary
The Changing Role of IT

 Builders & Operators transitioning to “Brokers of Services”

- Security
- Compute
- Networking
- Storage

How can I provide the benefits of virtualized compute throughout the whole stack?
Service Delivery is what it’s about

- IT role in Information-driven world is Service Delivery
  - IT role as Brokers of Services, not Builders of Infrastructure
- The SDDC concept is a means to an end, not the end
  - Cloud is the delivery model
  - IT agility and cost containment in infrastructure management is the driving force here.
- The concept of SDx enables these benefits by
  - Disaggregating software from hardware
  - Replacing proprietary systems with proprietary software and generic hardware
What is software defined?

- Not new - we’ve been replacing hardware with software for a long time
  - Early example is the travel alarm clock
  - Elimination (or reduction) of physical buttons and controls on all kinds of products
  - Forced to click through menu trees to get to the function you want to activate

- Allows consolidation of multiple devices
  - Another example – smart phone
  - Everything it does is software defined – except for the few buttons around the edges
  - Entire screen becomes a dynamic control
  - Software turns it into multiple devices – phone, voice recorder, MP3 player - and a computer
Marketecture - or the real thing?

📍 Software Defined is Overused
- a term that’s been hijacked by lazy marketers
- generating web hits encourages people to use the terms that get the most attention, even when they’re not particularly appropriate
- Nowhere is this more apparent than with SDS

📍 Software-Defined is Real – and powerful
- It’s technology that enables a host of developments
- Scale out, clustered arch
- Commodity hardware movement
From Enabled to Defined

- **Software Enabled**
  - Enabled
  - But not virtualized

- **Software Managed**
  - Semi virtualized
  - Single Pane of Glass management

- **Software Defined**
  - Fully virtualized
  - Hardware
  - Software
  - Services
  - Management
Software Defined Storage

- **Software enabled, managed or defined, …**
  - Software at the heart of most storage system functionality – and essentially all the features
  - Storage volumes are software defined
  - Virtualization is a great example of software defined concept

- **Storage controllers are essentially purpose-built servers**
  - Server virtualization enables proprietary hardware components to be run as VMs
  - Makes it easier to create clustered, scale-out storage architectures
Software Defined Storage

- **Virtualized Storage Services**
  - Provision based on service levels & templates

- **Multi-Vendor Hardware**
  - Deploy on platform of choice

- **Application self-service**
  - Deliver application storage without admin intervention

- **Responsiveness for IT teams**
  - Provision based on priority and service level
  - Automate via policy-based security and delegation

- **Flexibility for purchase decision makers**
  - Deploy on platform of choice
  - Extend capabilities of existing assets

- **Autonomy for app owners**
  - Instantly deploy new applications and services
  - Dynamically respond to shifts in demand
Requirements for Virtualized Storage Services

- Provision based on Service Levels (SLA)
- Policy-based storage
  - Gold, Silver, Bronze concepts
- Object-based QoS
- Multi-tenant
- SAN and NAS
- Storage capacity efficiency
  - Dedupe, compress, thin provision
- System and data center mobility
- Integrated data protection
What is a Software-Defined Data Center?

- **SDDC**
  - An emerging architecture and set of technologies that build upon existing cloud and virtualization models
  - Enables resources to be defined in software, provisioned based on policy, and deployable on any hardware
  - Increase IT agility and operational efficiency while speeding delivery of services to application owners

- **Resources are:**
  - Defined in software
  - Provisioned based on policies and service levels
  - Deployed on a variety of hardware
Who’s really doing SDDC?

- To get at the SDDC concept, we need to look at hyperscalers
  - Hyperscalers – large, web-based social media and cloud enterprises
- Enormous amounts of data and enormous numbers of transactions
  - Scalability
  - Flexibility
  - Cost containment
- In-house infrastructures to meet these requirements using software defined concepts
  - Scale-out topologies for incremental growth and largest total capacity
  - Software-based, clustered architectures to support maximum flexibility
  - Commodity hardware to keep the whole thing affordable
Who else wants SDDC?

- Everyone!
  - SDDC makes sense - on the whiteboard
  - Commodity hardware
  - Scalable, flexible architectures

- Hyper-scale dream is difficult to deploy
  - Companies geared towards IT operation, not design and development

- Can this technology ‘trickle down’ to traditional IT organizations?
  - Technology transfer occurs in defense, space, etc.
Options for Deploying SDDC

- **Open Source**
  - Used by hyper-scalers
  - Requires development mindset
  - Can result in ‘science project’

- **Hyperconverged Infrastructures**
  - SDDC in a box
  - Hyperconverged Appliances have had some enterprise success

- **Open Storage Platform**
  - Separate hardware and software components
  - Roll you own cloud infrastructure
SDDC is a replacement

- Nobody has the magic wand; can’t turn traditional infrastructure into SD
- The move to a SDDC will have to occur in increments
  - Projects like VDI, BigData analytics
  - Departmental computing
  - Infrastructure refresh in smaller environments
- Private clouds offer a way to obtain critical mass in this evolution to SDDC
In Summary

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After This Webcast

- This webcast and a copy of the slides will be on the SNIA Cloud Storage website and available on-demand
  - [http://www.snia.org/forum/csi/knowledge/webcasts](http://www.snia.org/forum/csi/knowledge/webcasts)

- A Q&A from this webcast, including answers to questions we couldn't get to today, will be on the SNIACloud blog


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