Bringing HyperScale Computing to the Enterprise

The need for Enterprises to overhaul their IT systems
MSys: Corporate Overview

Established In: 2007
Self-funded, profitable
Over 350 employees
Global Presence

Product Engineering Services
- Product Engineering / Development
- Test Engineering
- Rapid Prototyping
- Maintenance & Support
- UI Engineering

Technology
- Cloud Computing
- Storage
- Big Data
- Analytics
- DevOps
- Infrastructure Tech

Storage Services
- Filesystem Development
- Kernel Development
- Backup & DR
- Cloud Storage
- Storage QA
- Storage Certifications

Advantages
- End-to-end Storage Expertise
- 75% revenue from storage companies
- Dedicated team with focused skills
About Me:

• VP Engineering – Msys Technologies
• Co-founder – Clogeny Technologies (acquired by Msys)
• Built cutting edge products in Storage, Cloud and Big data space including:
  • Cloud Mobility platform
  • Cloud Backup Solution
  • Recommendation Engines
Agenda

• Understand the changes taking place in the Enterprise – Application and Data
• Need to re-think approach to Infrastructure
• Understand what is Hyperscale
• Different Approaches in Hardware
• Different Approaches in Software
• The Full Picture
Next-gen Application and Data

- Web-Scale IT
- Real-time Data streams
- Near real-time recommendations
- Massive amounts of data
- Cost effective solutions

Next-gen Application and Data

- **Web-Scale IT**
- **Real-time Data streams**
- **Near real-time recommendations**
- **Massive amounts of data**
- **Cost effective solutions**

Next-gen Application and Data

- **Web-Scale IT**
  - Available as-a-Service
  - Scale on demand
  - Always on operation
  - Automated Provisioning
  - Agility, Flexibility

Next-gen Application and Data

- Web-Scale IT
- **Real-time Data streams**
- Near real-time recommendations
- Massive amounts of data
- Cost effective solutions

Next-gen Application and Data

• Real-time Data streams
  – customers
  – partners
  – supply chains
  – applications
  – universe of things

Next-gen Application and Data

- Web-Scale IT
- Real-time Data streams
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- Massive amounts of data
- Cost effective solutions

Next-gen Application and Data

• Near real-time recommendations
  – real-time transactional and analytical systems

Next-gen Application and Data

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Next-gen Application and Data

• Massive amounts of data
  – structured, unstructured
  – archive
  – readily available for analytics, compliance, outages

Next-gen Application and Data

• Web-Scale IT
• Real-time Data streams
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• Massive amounts of data
• Cost effective solutions

Next-gen Application and Data

• Cost effective solutions
  – cost-effect performance
  – Minimize cost of Human resources
  – Minimize costs of infrastructure

Current Constrains - Storage

- Multiple Storage Array Platforms and Arrays
- Slow Access Speed and throughput of Disk Drives
- Difficulty of migrating current management of data on DAS and SAN to more flexible topologies
- Difficulty in managing the volume, growth and complexity of unstructured data
- A fragmented and often fragile Data backup process

Ref: http://wikibon.org/w/images/f/f3/Softwareledstorage.png
How are exa-bytes of data going to be:
  – backed up?
  – restored?
  – accessed?
How did “they” do it?
Microservices

Containers
Internet Scale Applications

Internet of things
Supply Chains
Security
Click streams
Real Time streams of data

Real-time Analytics and Batch processing

Spark
STORM
• Flash Storage and Solid State Drives
- Flash Storage and Solid State Drives
- All Flash or Hybrid Flash Arrays
- Flash Storage and Solid State Drives
- All Flash or Hybrid Flash Arrays
- Software Defined Software
- Flash Storage and Solid State Drives
- All Flash or Hybrid Flash Arrays
- Software Defined Software
- Hyper converged Infrastructure
- Flash Storage and Solid State Drives
- All Flash or Hybrid Flash Arrays
- Software Defined Software
- Hyper converged Infrastructure
- IT-as-a- Service
SSDs
HDDs

Hypervisor

VM

Controller VM/Software

Servers

Hyper-converged / Software defined

All Flash/Hybrid arrays

Scalable Exascale Distributed Object Storage

Erasure Coding
RAIN Architecture
High Performance
- Object Storage
- No RAID – but RAIN!
- Erasure Coding
What about the Software to use?
SSDs

HDDs

Hypervisor

VM

Controller VM/Software

Servers

Hyper-converged / Software defined

All Flash/Hybrid arrays

Scalable Exascale Distributed Object Storage

Erasure Coding
RAIN Architecture
High Performance
Distributed Storage – Ceph, Gluster, Lustre, HDFS

Scalable Exascale Distributed Object Storage

Hyper-converged / Software defined

All Flash/Hybrid arrays

Erasure Coding
RAIN Architecture
High Performance

Servers

Controller VM/Software

DataDirect Networks
Cleversafe

Nutanix

vmware EVO RAIL

nimble storage

Tinta

Pure Storage

SDDs

HDDs

SDDs

HDDs

SDDs

HDDs
- Distributed Parallel Filesystems
- Non of complexities of RAID
- Replication, Zero Downtime and Self-healing
- Commodity hardware with lowest cost
- Apache Mesos - Operating system for the Datacenter
- Apache Zookeeper – Distributed Co-ordination Service
- Consul, Eureka – Service Discovery
• Tachyon – Reliable data sharing at memory-speed across clusters
• Burst Buffers - Latency reduction, greater bandwidth and high IOPS performance
Thank You!

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