Utilities in Transition – Migration to the Cloud

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Agenda

• AdvizeX Introduction
• Cloud Drivers
• Cloud Defined
• The Software Defined Data Center
  ▪ Network Virtualization
  ▪ Network Security
  ▪ Hyperconvergence
• Benefits of the Cloud
• Deciding Factors Moving to the Cloud
We are local. We are global.

- Over 39 years in business with a 5-year CAGR of ~20% revenue growth
- Thousands of customers from across all industries
- Over 2,500 software and hardware engineers
- A Global 200 Best Company
- Over 1,000 IT hardware and software certifications
- A 98% customer retention rate in 2014
AdvizeX and Rolta. Two Leaders, One Vision.

2014 Highlights
Actual Growth 24%
New Customers 206
New Employees 72

Infrastructure
Plan, Build, Manage
• Infrastructure
• Cloud and Virtualization
• Mobility and Security

Applications
Plan, Build, Manage
• Applications
• Data
• Managed Services
A Passion for Technology
A Commitment to Excellence

- A top partner to VMware, EMC, HP, Oracle, and SAP
- A recognized industry leader
Cloud Drivers
It’s a liquid world
Every industry is being transformed
The Driving Forces Behind the Liquid World
Harnessing Mobile and Cloud Is Challenging

- SLOW TECHNOLOGY ADOPTION RATES
- SERVICE OUTAGES
- SLOW RESPONSES
- HIGH USER EXPECTATIONS
- INTEGRATION PROBLEMS
- PRIVACY ISSUES
- DECLINING BUDGET
- PROLIFERATION OF DEVICES
- CLOUD SILOS
- Fragmented Data Center
- DIFFERENT APPLICATIONS
- AGING INFRASTRUCTURE
- SHORTAGE OF RIGHT SKILLS
- LIMITED RESOURCES
Cloud Defined
What is the “Cloud”

The “Cloud” is a group of concepts around the idea that information is fluid.

- Mobile devices change the way information is accessed
- Data can now easily be multi-homed
- IT Groups supply resources, not services
- Software Management > Hardware Management
The Software Defined Data Center
The Holy Grail Model

Google / Facebook / Amazon Data Centers

- Custom Application
  - Software / Hardware Abstraction
- Custom Platform
  - Software / Hardware Abstraction
- Any x86
- Any Storage
- Any IP network
Let Business Needs Define Your Datacenter

**Software Defined Data Center (SDDC)**
- **Any Application**
- **SDDC Platform**
  - Data Center Virtualization
- **Any x86**
- **Any Storage**
- **Any IP network**

**Google / Facebook / Amazon Data Centers**
- **Custom Application**
  - Software / Hardware Abstraction
- **Any x86**
- **Any Storage**
- **Any IP network**

**Hardware Defined Data Center (HDDC)**
- **Any Application**
- **HDDC Platform**
- **Integrated x86**
- **Integrated Storage**
- **Vendor Specific Network**

Diagram showing the compatibility of applications, x86, storage, and IP network for SDDC, customized Google/Amazon data centers, and HDDC platforms.
SDDC Within, Between and Across Data Centers

**Software Defined Data Center (SDDC)**
- Any Application
- Any x86
- Any Storage
- Any IP network

**Inter- Data Center**
- Any Application
- Any x86
- Any Storage
- Any IP network

**Hybrid- Data Center**
- Any Application
- Any x86
- Any Storage
- Any IP network

SDDC Platform
Data Center Virtualization
Any Device

Any Application

Cloud Management

HYBRID CLOUD

PRIVATE
YOUR DATA CENTER

MANAGED
vCLOUD AIR NETWORK

PUBLIC
vCLOUD AIR

SOFTWARE-DEFINED DATA CENTER
virtualized compute, network, storage

Build-Your-Own
Converged Infrastructure
Hyper-Converged Infrastructure

Business Mobility: Applications | Devices | Content
Network Virtualization
Network Capacity
Compute Capacity
Data Center Virtualization Layer
A “Network Hypervisor”
The Operational Model of a VM for the Networking
Network Security
Problem: Network Security

- Perimeter-centric network security has proven insufficient, and micro-segmentation is operationally infeasible

Little or no lateral controls inside perimeter

Insufficient

Operationally Infeasible
There is a BIG difference…

Physical Firewalls
- Traditional Firewall Rule Mgt & Operations
- Physical Firewalls (2 ~ 100 Gbps)

Virtual Firewalls
- Traditional Firewall Rule Mgt & Operations
- Virtual Firewalls (1 ~ 3 Gbps)

Distributed Firewalls
- Automated Policy Mgt & Operations
- Distributed Enforcement
- Kernel-based Performance
- Distributed Scale-out Capacity (20 Gbps/host)
Automated Security in a SDDC
Data Center Micro-Segmentation
Hyperconvergence
Hyperconvergence

Storage, Compute, and Networking resources converged into a single node. Software controls the separate functions.

- Based on Commodity Hardware
- Storage, Compute and Networking grow in tandem
- Flexible Growth Model, Grow to Meet Demand
High Level Hardware Specifications

<table>
<thead>
<tr>
<th>Hardware Specifications Per Node X 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
</tr>
<tr>
<td>• Dual Intel E5 processors</td>
</tr>
<tr>
<td>• (12 cores, 2.1Ghz)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
</tr>
<tr>
<td>• 192 GB RAM</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
</tr>
<tr>
<td>• 400 GB Intel SSD</td>
</tr>
<tr>
<td>• 3 x 1.2TB raw capacity</td>
</tr>
<tr>
<td><strong>Network</strong></td>
</tr>
<tr>
<td>• 2 x 10 Gigabit Ethernet NIC port</td>
</tr>
<tr>
<td>• 1 Management port</td>
</tr>
</tbody>
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Benefits of the Cloud

The key here is **Flexibility**

- Infrastructure spend decreases
  - Pay as you grow model
- Reliability, Accessibility much higher
  - Disaster Recovery, can be located anywhere
- Economies of Scale, Achieve more with less
  - Become an architect, create vision for the Organization
Should I Move to the Cloud?

Deciding Factors

- Applications and Workflow
  - How do your applications interact?
- Security Regulations
  - NERC-CIP
  - Industry and Agency Regulations
- Speed to Market
  - PaaS or Containers
- Hardware Refresh Cycle
  - Are you at the end of hardware life?
- Staffing
  - How large is your staff?
  - What skills do they have?
Thank You