# Solutions to Modern Application Delivery Challenges

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# A10 Networks

**FastPrivate**

A10 Networks is the 4th fastest growing private company in Silicon Valley

**Best of TechEd**

64-bit AX Series won Best of Microsoft TechEd in the Networking category for innovation & technology leadership

**Inc 500**

A10 Networks ranked No. 46 on the 2010 Inc. 500 with three-year sales growth of 4,927%

**BayAreaNewsGroup**

**Top Workplace**

A10 is a Top 10 Workplace in Silicon Valley

# AX Series Customers

# Application Delivery and Server Load Balancing

Users

Cloud

Data Center

Internet

Scalability

Availability

Security

# Modern Application Delivery Challenges

- Site Always Available
  - Faster Response

**Users**

**Backup Datacenter**

- High Volume Traffic & Unpredictable Spikes
- Disparate Devices & Protocols

**External Network**

Internet

- Application Delivery Controller

**Primary Datacenter**

**ADC**

- Automatic Failover
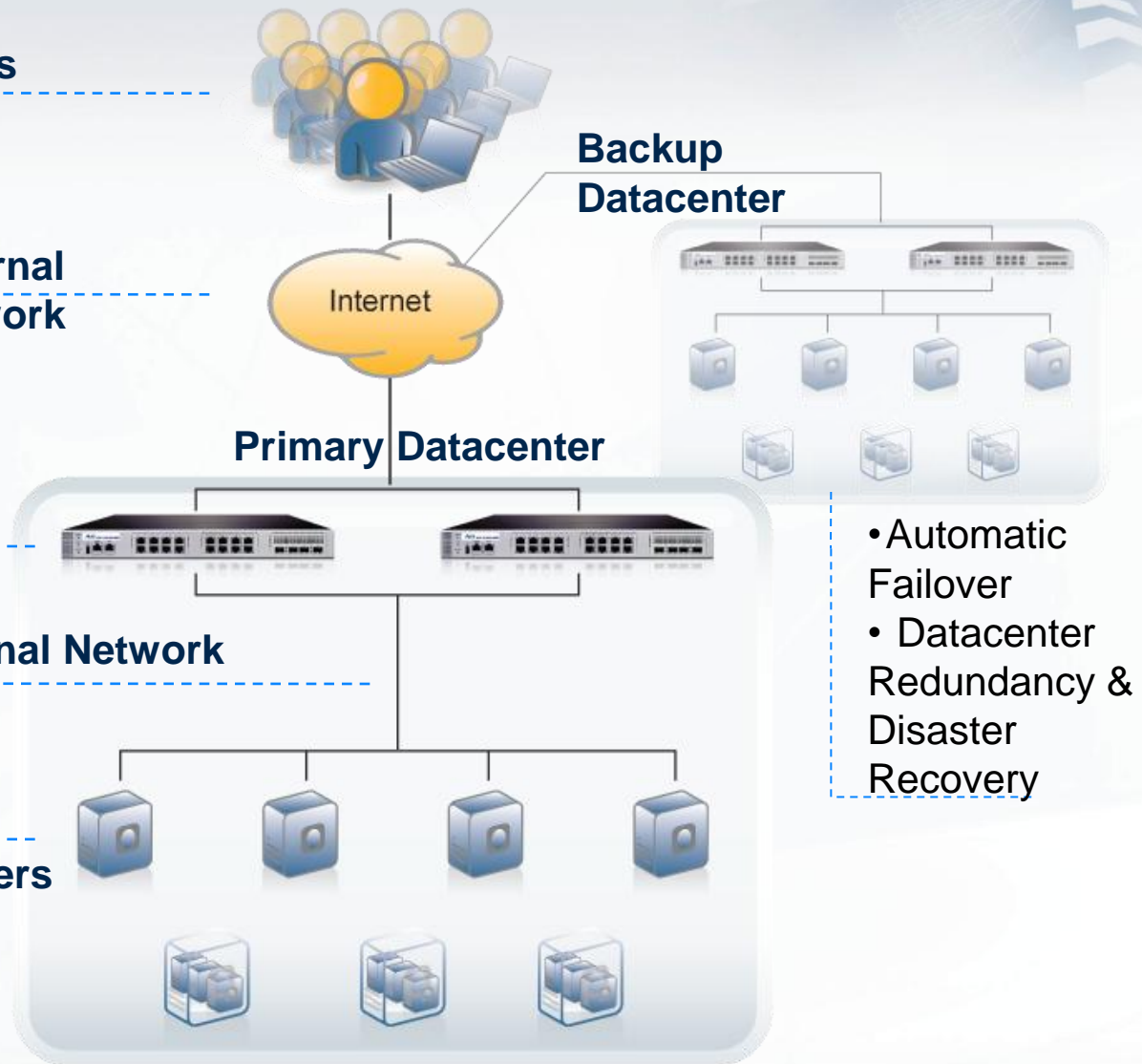- Datacenter Redundancy & Disaster Recovery

- Efficient Distribution
- Reduced Connections
  - Normalized Traffic

**Internal Network**

- CPU & Network Off-load
  - Easier Management
  - Connection Efficiency

**Servers**

# Revolution



"Bliss was it in that dawn to be alive
But to be young was very heaven!"
*Source: William Wordsworth*

# Evolution



"….that there's nothing like millions of years of really frustrating trial and error to give a species moral fiber and, in some cases, backbone."
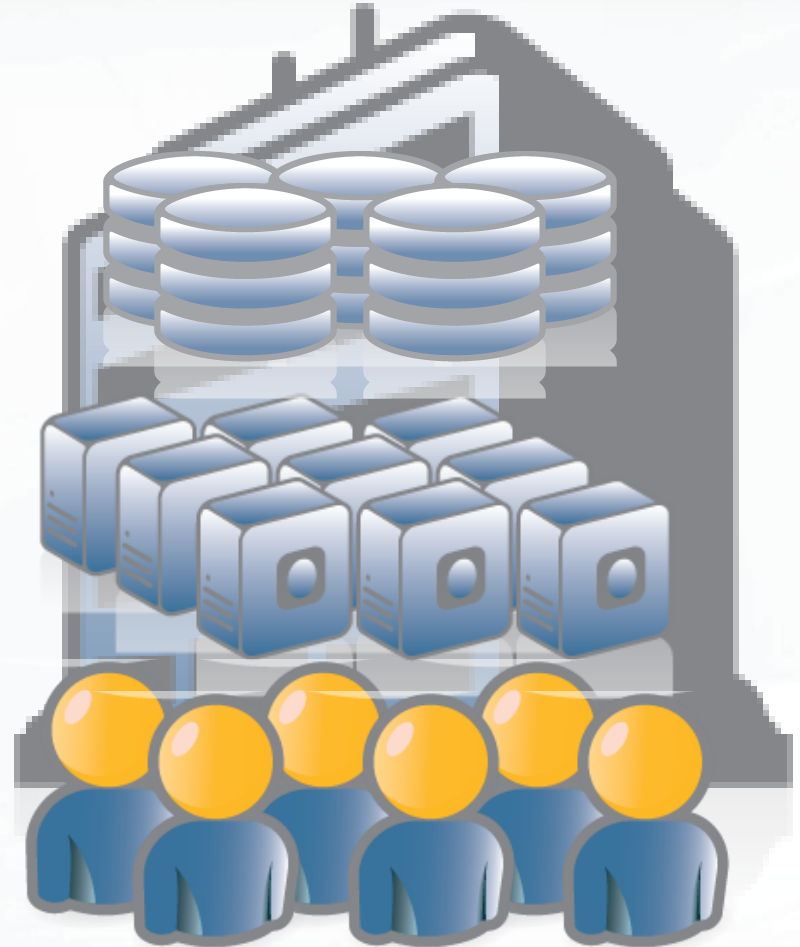*Source: Terry Pratchett*

# Cloud Computing Versus Traditional Infrastructure

- Vast corporate datacenters

- Long deployment cycle for applications

- Static infrastructure

- Armies of IT personnel

**Expensive to run**

# Moving Data Center Applications to the Cloud

**Internet**

> Reduce costs

> Increase service

> Free staff from maintenance

**More business focus**

A10 Networks // *Performance by Design* //

# Cloud Computing

> **Cloud data center**
>   - Pay per use infrastructure
>   - Multi-tenancy
>   - Commodity or appliance hardware
>   - Elasticity

> **As promised?**
>   - Features
>   - Competitive edge



Corporate Data Center

IaaS

SaaS

PaaS

**Virtualization as an enabler**

# Cloud Computing & Virtualization

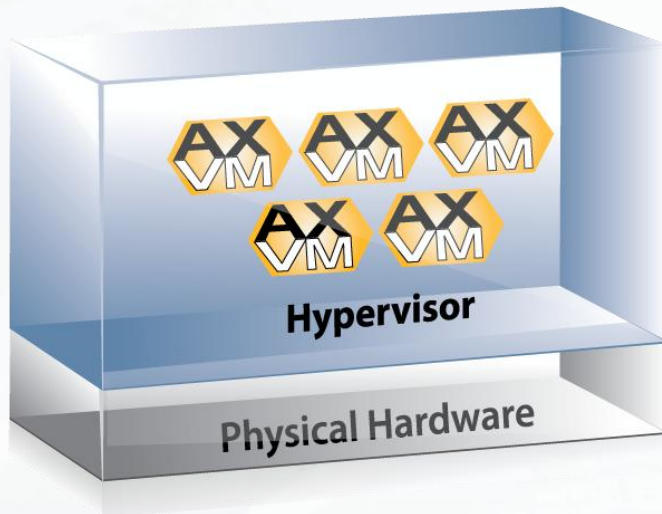*Scale up as traffic increases*

*Scale down as traffic decreases*

# Virtualization: Enabling Elasticity

➤ **Scale down**
- ◆ SoftADC
- ◆ In-box virtualization

➤ **Scale up**
- ◆ Chassis
- ◆ Virtual chassis



Hypervisor

Physical Hardware

aVCS Devices

# Automation and Network Intelligence

➤ **Management**

   ◆ RESTful API

➤ **Traffic scripting**

   ◆ Leverage languages

➤ **Machine movement**
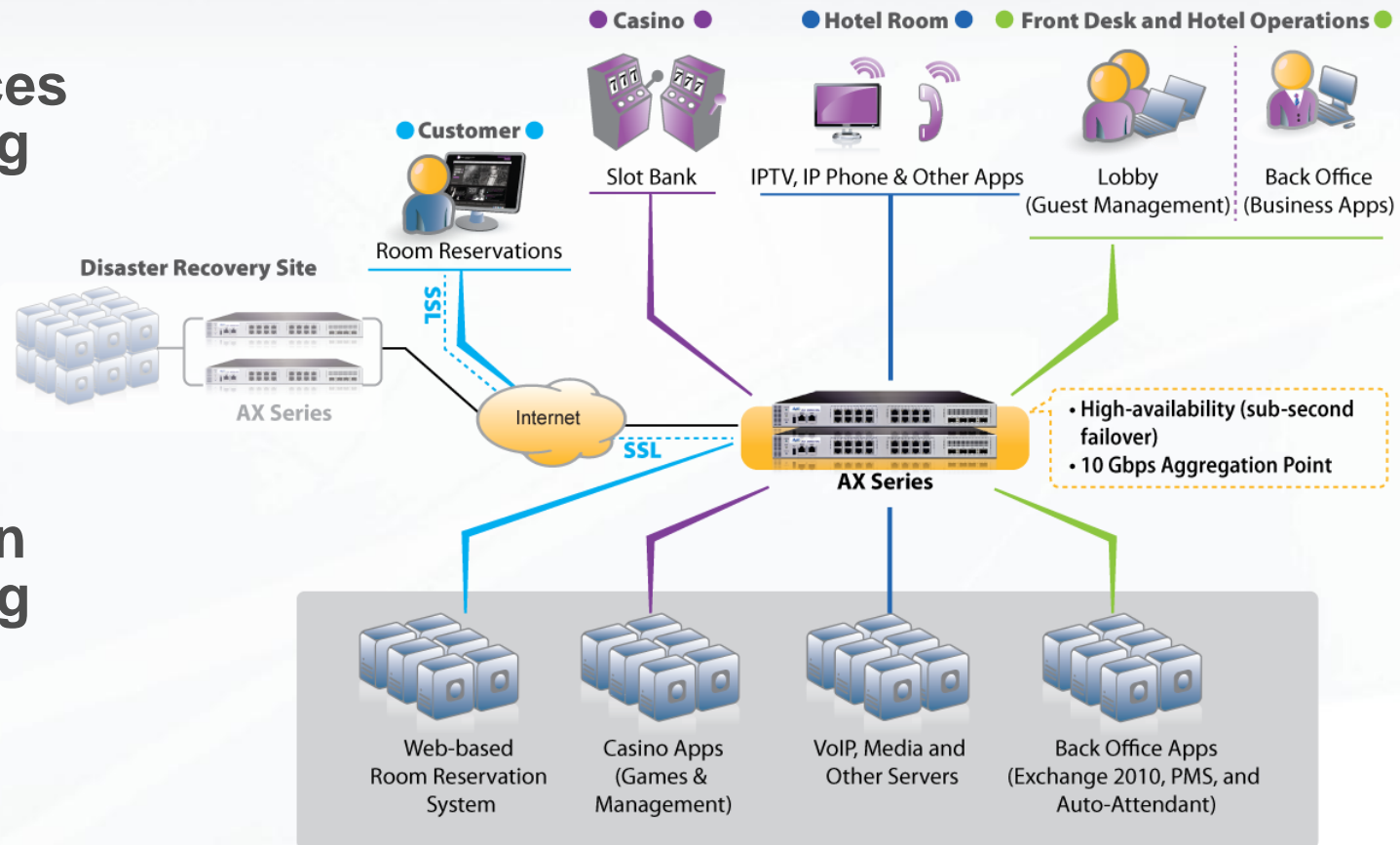
   ◆ Enhanced virtualization

# Community Leverage

- **Leverage scripting**

- **New solutions through input**

- **Conversion to features for optimization**

# Everything Connected

- **New devices connecting**

- **Mobile traffic growth**

- **Internal application networking**

# Evolution

"….that there's nothing like millions of years of really frustrating trial and error to give a species moral fiber and, in some cases, backbone."
*Source: Terry Pratchett*

# IPv6

- **No standard compatability**

- **Different requirements**
  - Home
  - Enterprise
  - Service Provider

- **"IPv4 Legacy Networks"**



LSN
NAT64/DNS64
DS-Lite    6rd
6to4-PMT
SLB-PT

IPv4 Clients

IPv6 Clients

Internet

IPv4 Network

IPv6 Network

No access

IPv4

AX Series

Internet

IPv4 Servers

IPv6 Servers

# Encryption

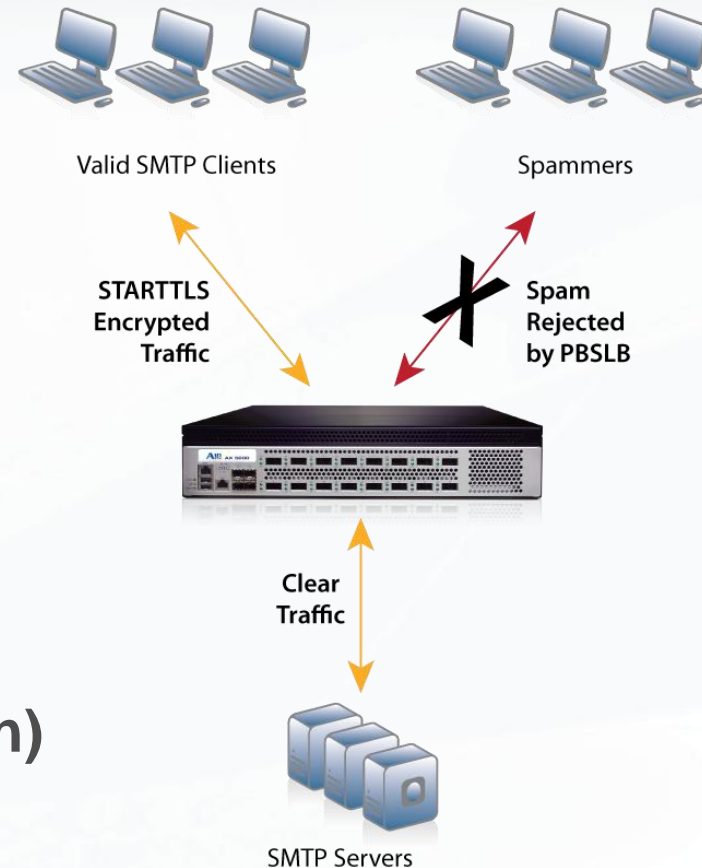➤ **Encryption Everywhere?**

➤ **SSL**
  - ◆ Certificates 2048-bit+
  - ◆ More secure
  - ◆ Computationally expensive

➤ **STARTTLS**
  - ◆ SMTPS for Exchange 2010
  - ◆ Other protocols

➤ **DNSSEC (data authentication)**

Valid SMTP Clients          Spammers

STARTTLS
Encrypted
Traffic                     Spam
                            Rejected
                            by PBSLB

Clear
Traffic

SMTP Servers

# Hard-disk to Solid-state Drive (SSD)

- **Increased performance**

- **Reduced power**

- **Hard-drive errors eliminated**

- **Incrementally reduced costs**

- **SSD standard in ADC products**
  - ◆ **Zero** SSD failures in a year

**SSD Adoption trend is accelerating**

"according to The InfoPro Inc., a New York City research firm. InfoPro's December-January interviews of 55 heads of IT procurement at some of the Fortune 1000's largest storage spenders showed that nearly 39% are currently using or piloting **SSD** technology, but only 47% had actually paid for it."

Source: http://searchstorage.techtarget.com/ Apr 22, 2010 *SSD adoption* on the rise
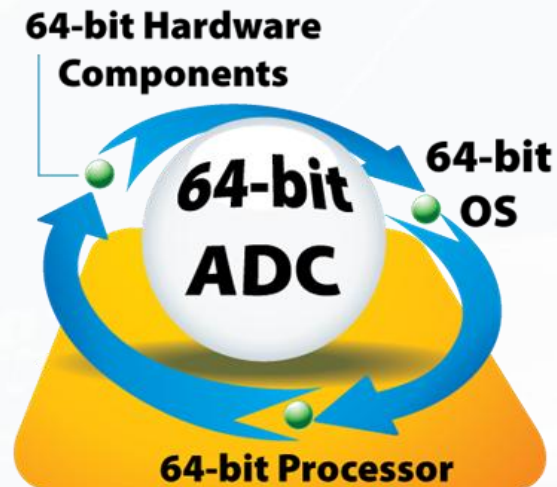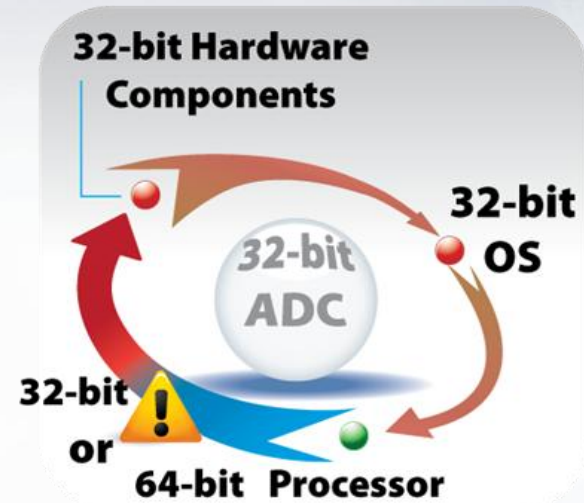
# Performance

- Clients

- Content

- Peak loads and flash crowds

# 64-bit Multi-core Computing

> **Effective use of processors**

> **64-bit processor and software required**

> **Clean slate architectures**

> **Massive scalability**

# Data Center Optimization

- ➤ **Lower density**

- ➤ **Reduced power consumption**
  - ◆ Per data center
  - ◆ Per appliance

- ➤ **Performance Per Watt (PPW)**



One AX 1000 = 4 Gbps Throughput

1 = 4

AX 1000



One AX 5200 = 3m+ L4 CPS

1 = 12

AX 5200

# Advanced Application Delivery

- ➤ **ACOS platform**
  - ◆ Server load balancing
  - ◆ Widest choice of virtualization solutions
  - ◆ IPv6 migration

- ➤ **Flexible deployment**

- ➤ **All-inclusive appliances**

# Thank You