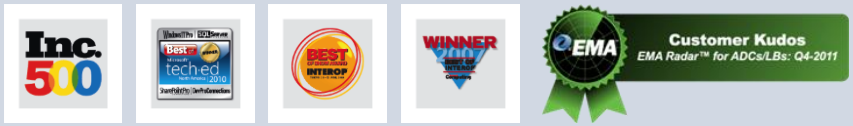
Customer Driven Innovation

IPv6 Deployment for the Enterprise

April 2013



A10 Networks Company Overview

Leader in Application Networking

Optimize the networks of web giants, enterprises and service providers

Profitable with Consistent Revenue Growth

Flagship Product Family

AX Series Platform

Founded in 2004

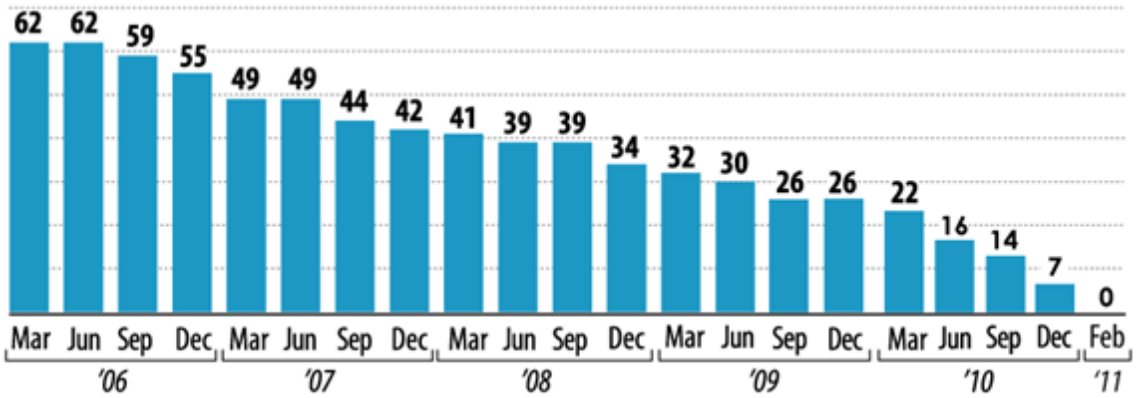
CEO & Founder: Lee Chen – co-founder of Foundry Networks and Centillion

Headquarters in San Jose, California;

500+ employees worldwide

Perceived Reasons for Enterprises to Migrate to IPv6

- **IPv4 Address exhaustion**



Todays Reasons for Enterprises to Migrate to IPv6

- IPv4 address exhaustion

(PLUS)

- Competitive landscape (especially global businesses)
- Increased security
- BYOD
- Performance
- Simpler, less DHCP

IPv6 Migration

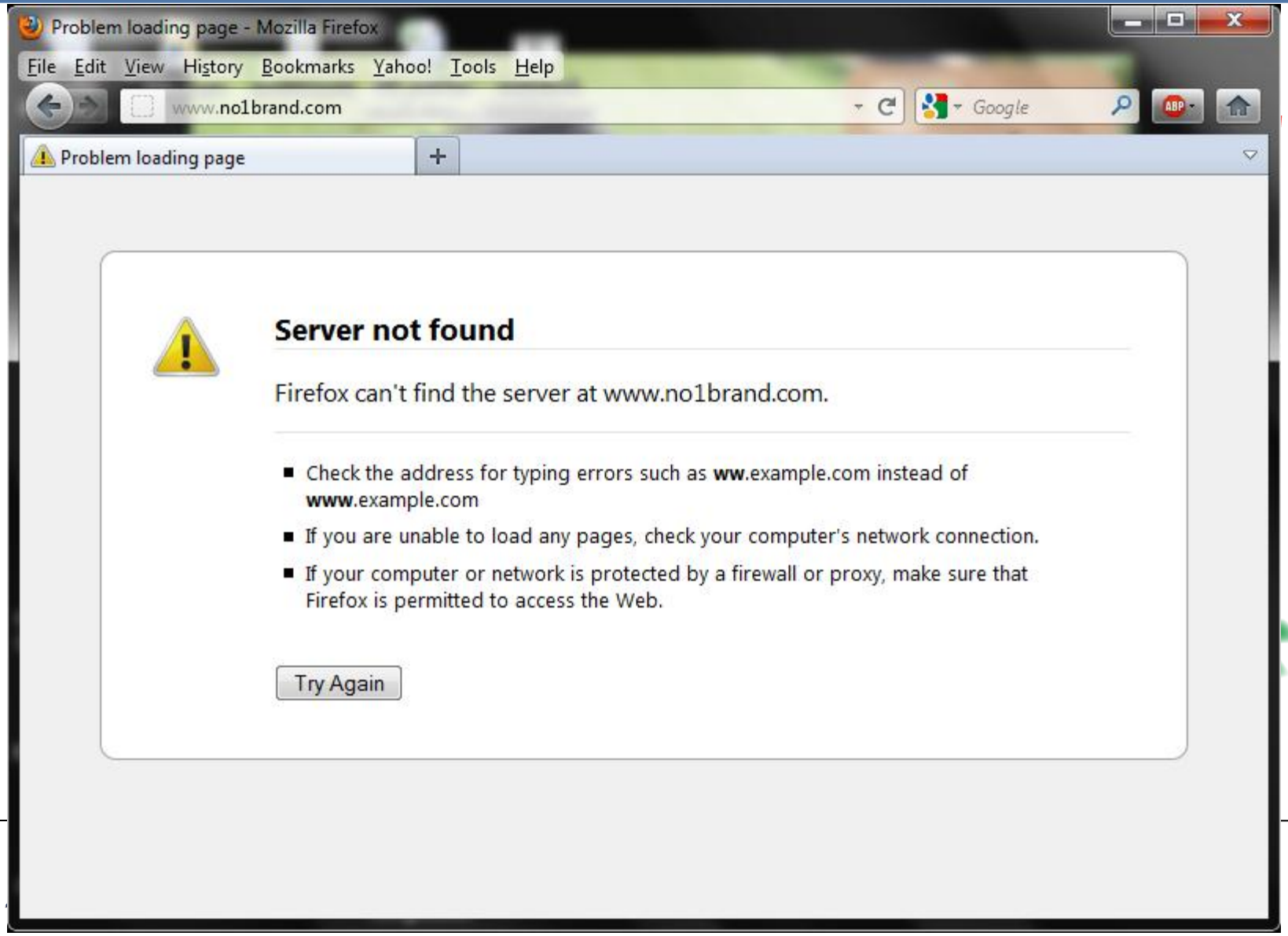
- A10 solves IPv4 exhaustion, allowing uninterrupted business, eliminating costly IT fire drills and protecting brands
- The AX Series provides advanced solutions for IPv6 access and full IPv6 migration
- A10 leads this market with large deployments worldwide

ACOS

IPv6 Critical Events are Creating Urgency

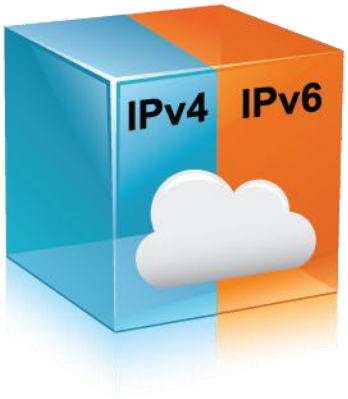
- 2011 Jan - 0.15% of top million web sites available via IPv6
- 2011 Jan - IANA assigns all addresses to RIRs
- 2011 March - Microsoft to acquire Nortel's IPv4 addresses for $7.5-million
- 2011 April - RIR APNIC assigns all addresses
- 2011 June - On World IPv6 Day A10 customer has over 1m+ IPv6 visitors
- 2011 Nov - 0.80% of top million web sites available via IPv6
- 2011 - More adoption than previous years combined
- 2012 June - IPv6 Day no issues reported, again
- 2012 Oct - 4.6% of top million web sites available via IPv6

What's the ROI? Is There a Competitive Advantage?

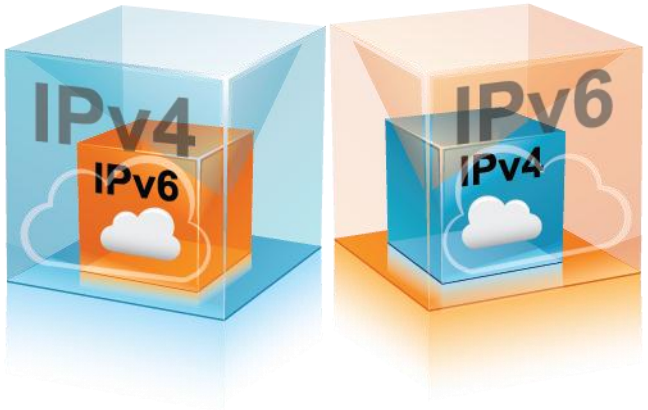


IPv6 Migration Techniques

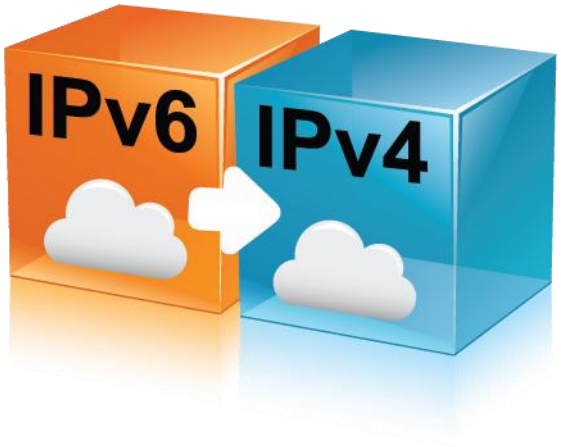
Dual-Stack



Encapsulation

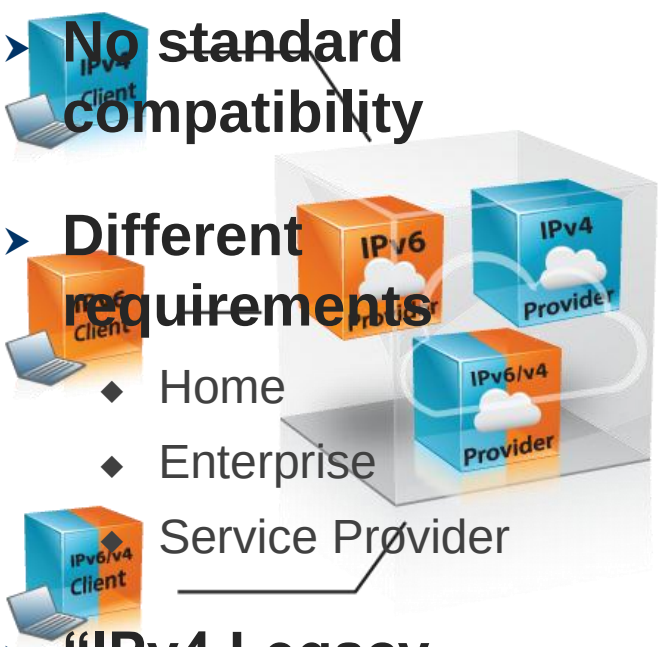


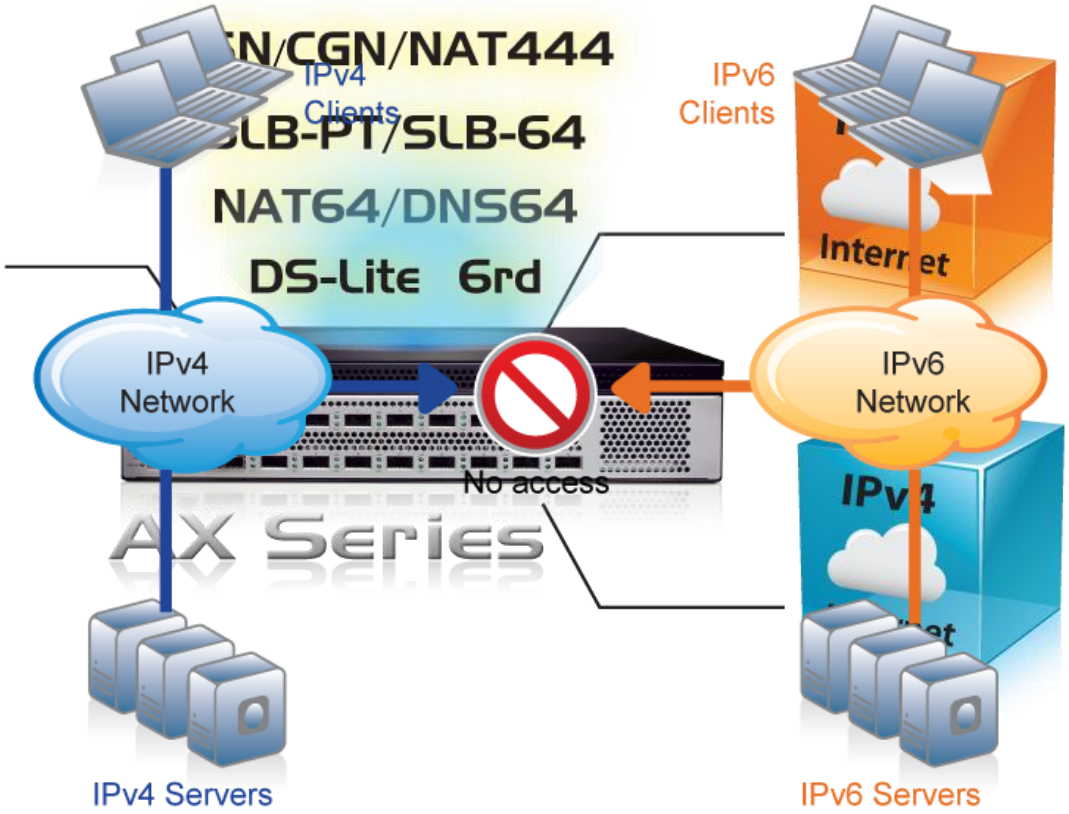
Translation



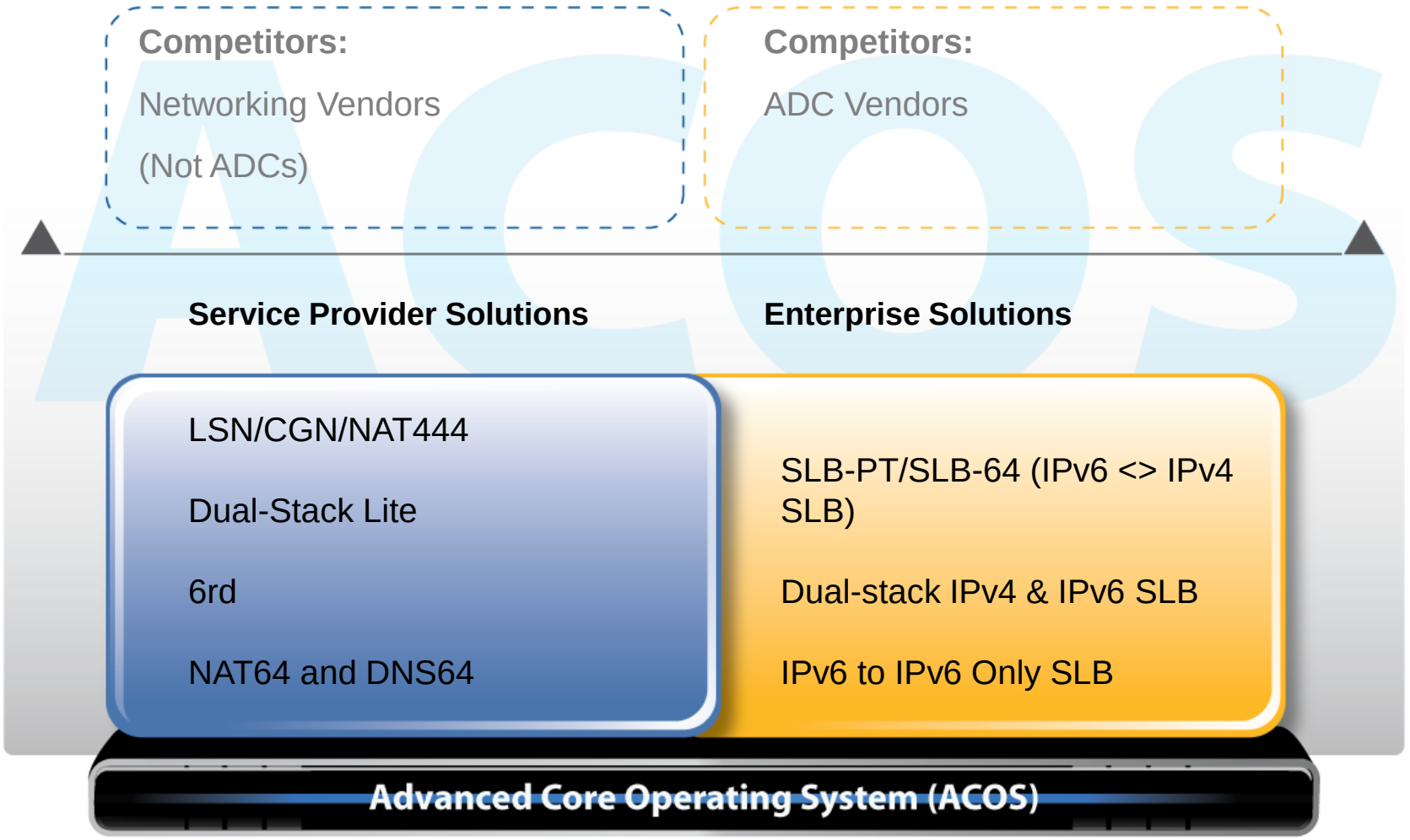
IPv4 Exhaustion and IPv6 Migration Solutions

- No standard compatibility
- Different requirements
  - Home
  - Enterprise
  - Service Prøvider
- "IPv4 Legacy Networks"

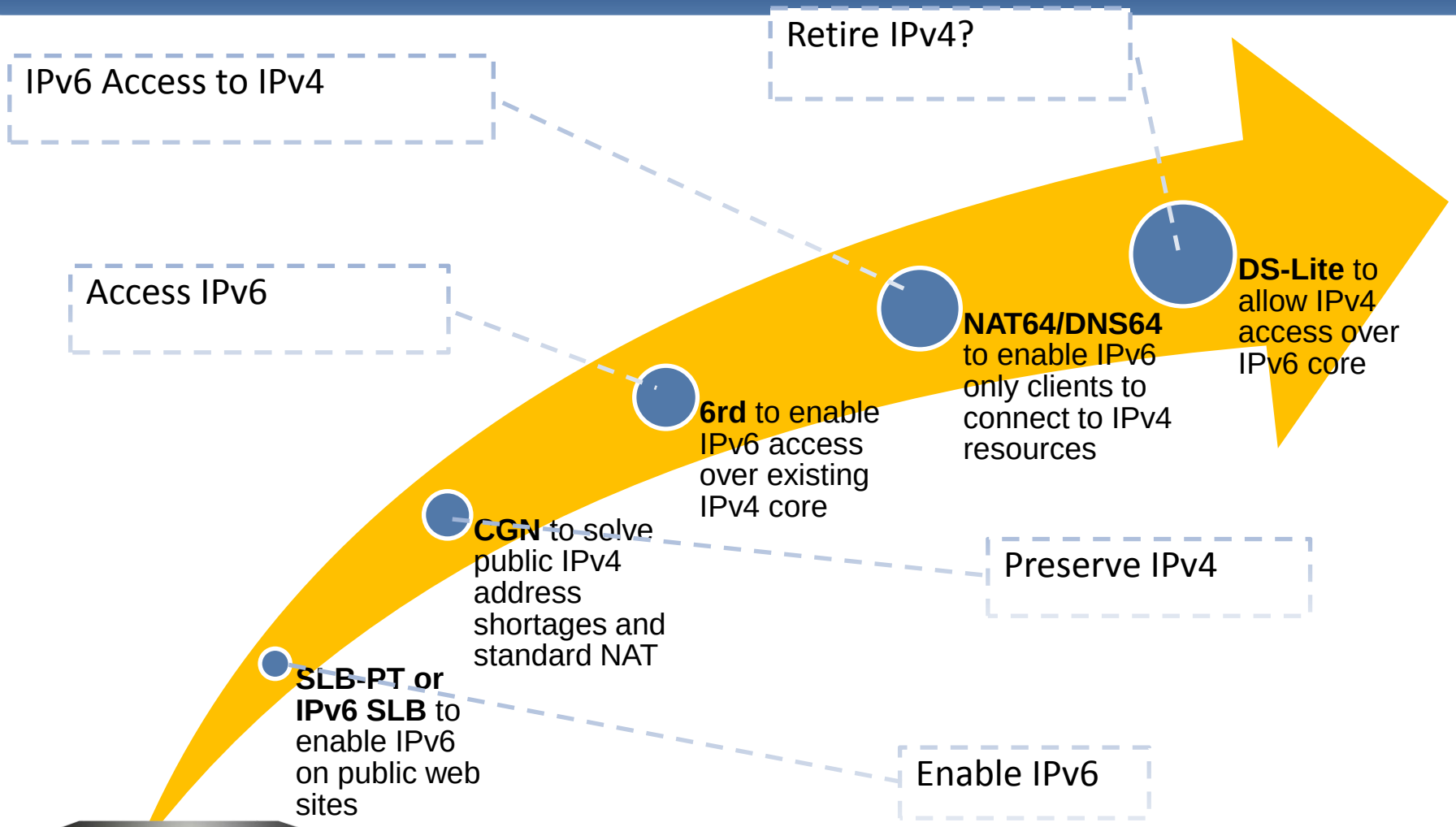




IPv6 Migration Market



What Does Each Technology Do?



Sample Enterprise Use Cases

IPv6 supplier is bought, need to provide access to internal IPv4 applications

IPv4 is the legacy protocol, cost savings require retirement of IPv4 core

Critical new supplier is IPv6 only, internal clients require access immediately

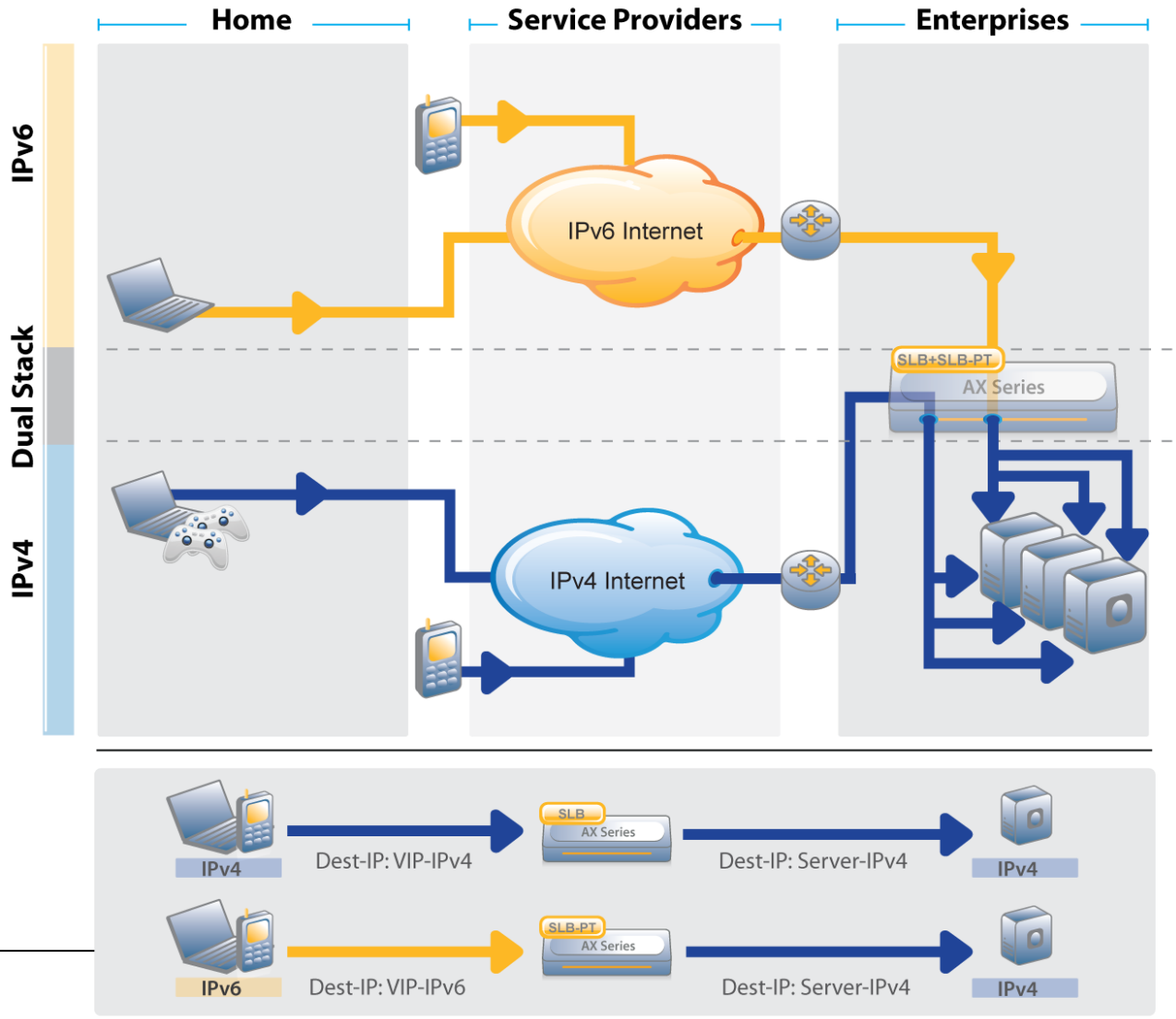
IPv4 services need to remain in tack as migration to IPv6 is implemented

IPv6 web site to protect brand and ensure universal access

SLB-PT → Dual Stack → CGN → NAT64/DNS64 → DS-Lite

Server Load Balancing Protocol Translation (SLB-PT aka SLB-64)

- **Main interest:**
  - Enterprises
  - Content Providers
- **Usage:**
  - Looked into by many Enterprises / Content Providers and already deployed today
- **Goal:**
  - Offer IPv6 services quickly with minimal changes

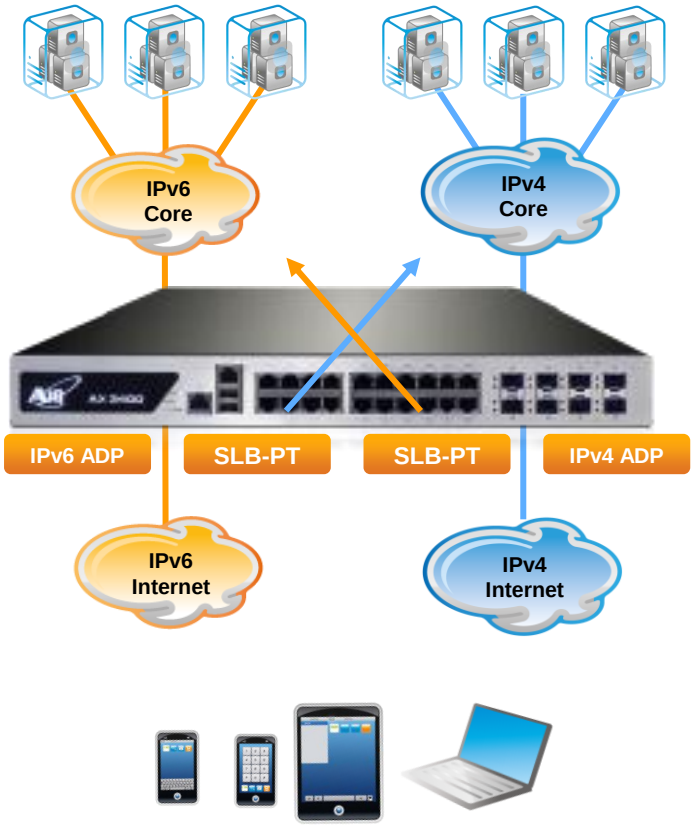


Use Case: New Supplier Integration

- SLB-PT provides IPv6 access to legacy IPv4 services
- GSLB provides business continuity between IPv6 and IPv4 as well as resource sharing
- Addresses competitive Landscape

Dual-Stack

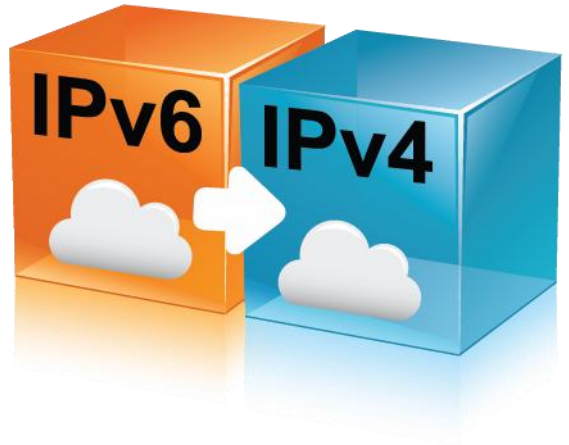
- Simple migration
- ADPs provide isolation between each network
- Independent management
- Hardware DDoS protection



Use Case: IPv6 Dual-Stack Deployment

Major service provider required filling of the final IPv6 connectivity hole

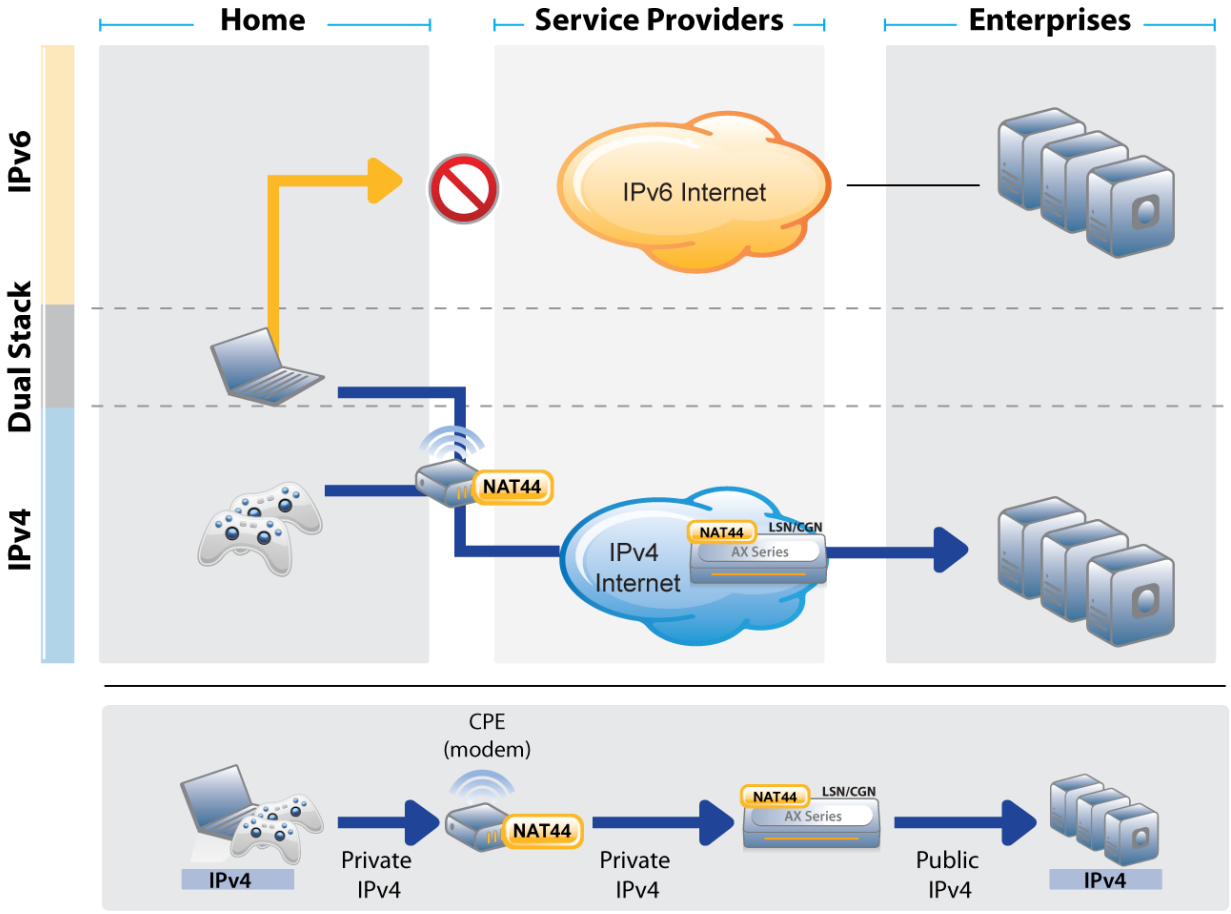
- **Background: IPv6 access for all customers and systems, Nov 2011 saw 15,000th IPv6 connection added, default IPv6 connectivity for customers**
- **Purpose: IPv6 ready to allow IPv6 resources to communicate with Asian partners,**
- **Network: Dual-stack IPv4 and IPv6 connectivity**
- *"By our choice…of A10 load balancers all consumer websites are now accessible via IPv6...in one fell swoop a significant portion of our services over IPv6!"*



Large Scale NAT (LSN, aka CGN/NAT444)

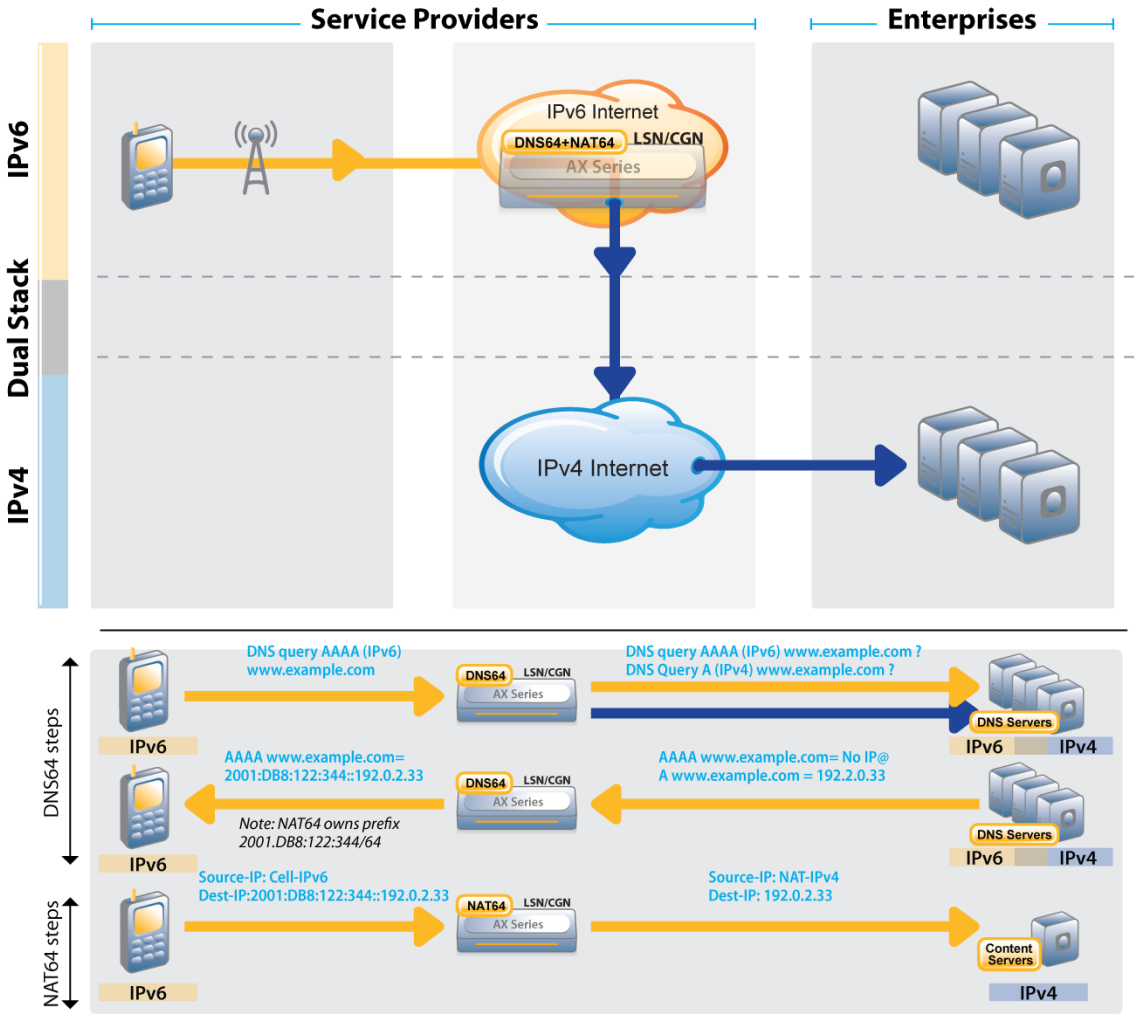
- **Main SP interest:**
  - ISPs
- **Usage:**
  - Looked into/tested by many ISPs
- **Goal:**
  - Resolve IPv4 exhaustion quickly with minimal changes
  - Maximize IPv4 address capacity
  - Provide scalable logging mechanism

Note: LSN is also called "Carrier Grade NAT" (CGN) & NAT444



NAT64/DNS64

- **Main SP interest:**
  - MNOs and ISPs
  - Enterprises
- **Usage:**
  - Looked into by many operators and enterprises, production deployments started
- **Goal:**
  - Provide IPv4 content access to IPv6-only clients
  - “Improves” IPv6, more content returned

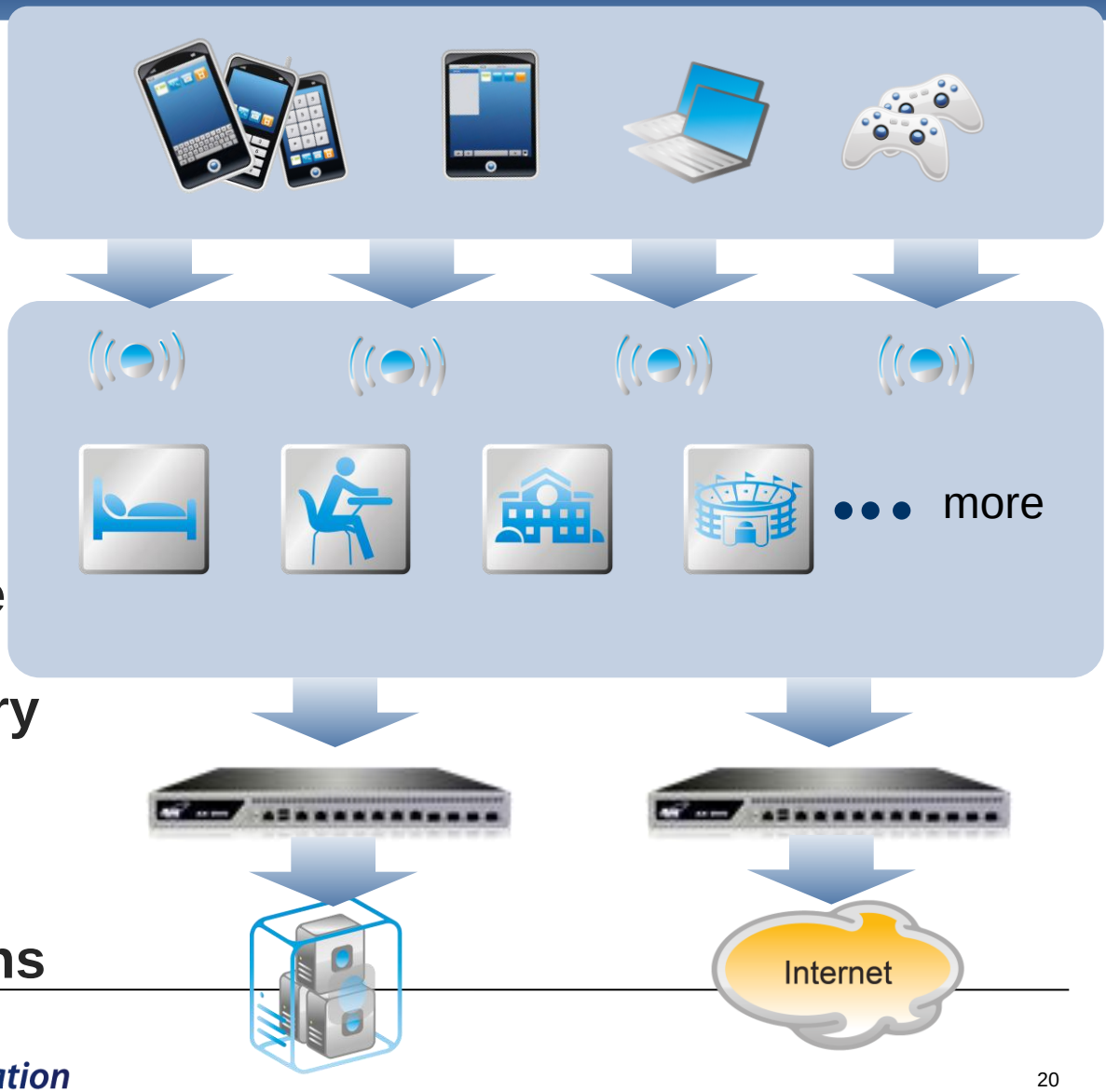


Use Case: Campus Networks

- **Handling the growth of WiFi and Mobile devices used on campus**
- **IPv4 address exhaustion**
- **Migration path for IPv6**
- **High connection rate for “always-on” devices**
- **Unpredictable traffic patterns, Cyber Attacks**
- **Limitations with application servers, e.g. Microsoft Exchange, SharePoint & Lync**
  - Scalability and performance
  - High availability

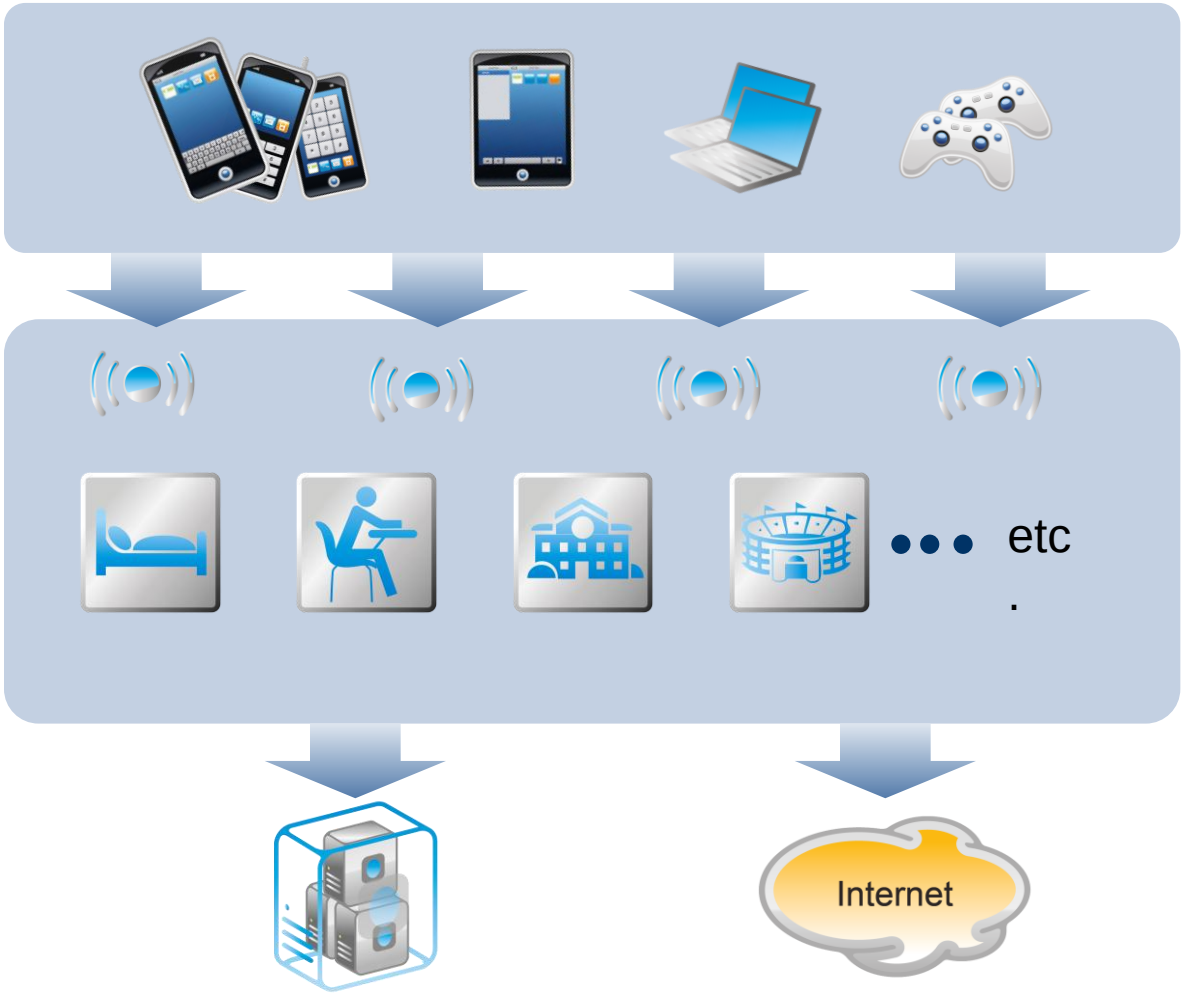
Education CGN: Scaling from 50,000 to 200,000 Devices

- **Devices**
  - Mobility
- **Applications**
  - Facebook, Twitter Skype, Gaming, YouTube
- **Campus Backbone**
- **Application Delivery**
  - ADC and CGN
- **Internal staff and student applications**



Today's Campus Network Challenges

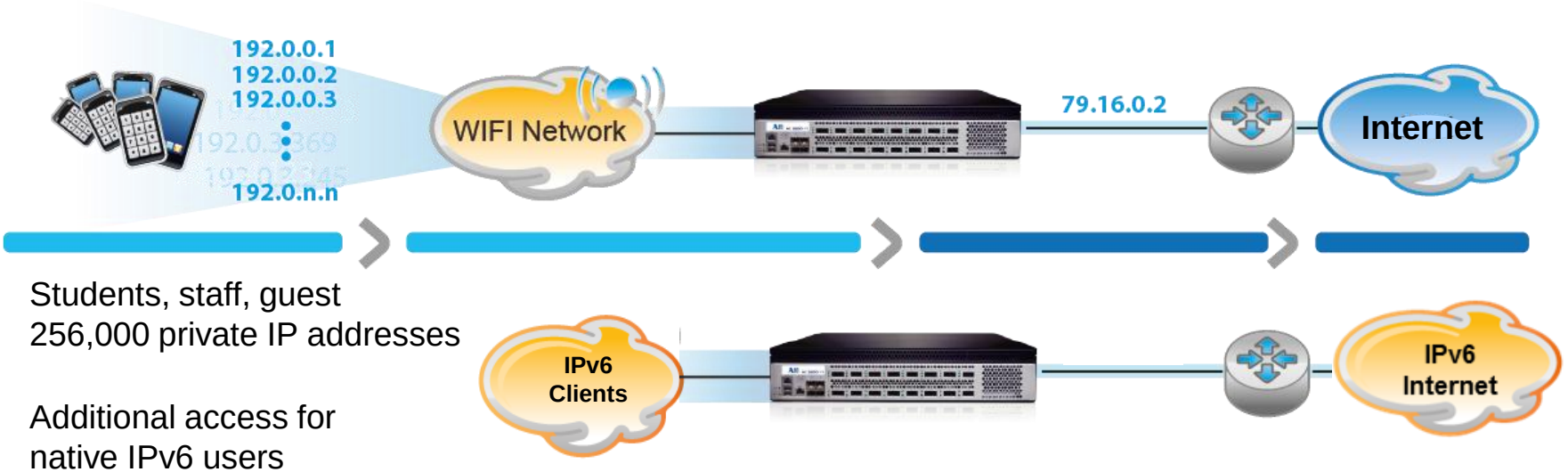
- Requires large number of Public IP addresses
- High connection rate for "always on" mobile devices can overwhelm existing infrastructure
- Unpredictable traffic patterns
- Increase performance of existing applications
- Smooth plan to introduce IPv6 Services



Use Case: CGN with WiFi Network

- **Challenge:** Need to scale IPv4 address infrastructure and provide migration path to IPv6
- **Solution:** 16x device capacity increase

- **The AX Series with CGN**
  - Address consolidation to increase scalability
  - Prevent address exhaustion
  - Uninterrupted connectivity



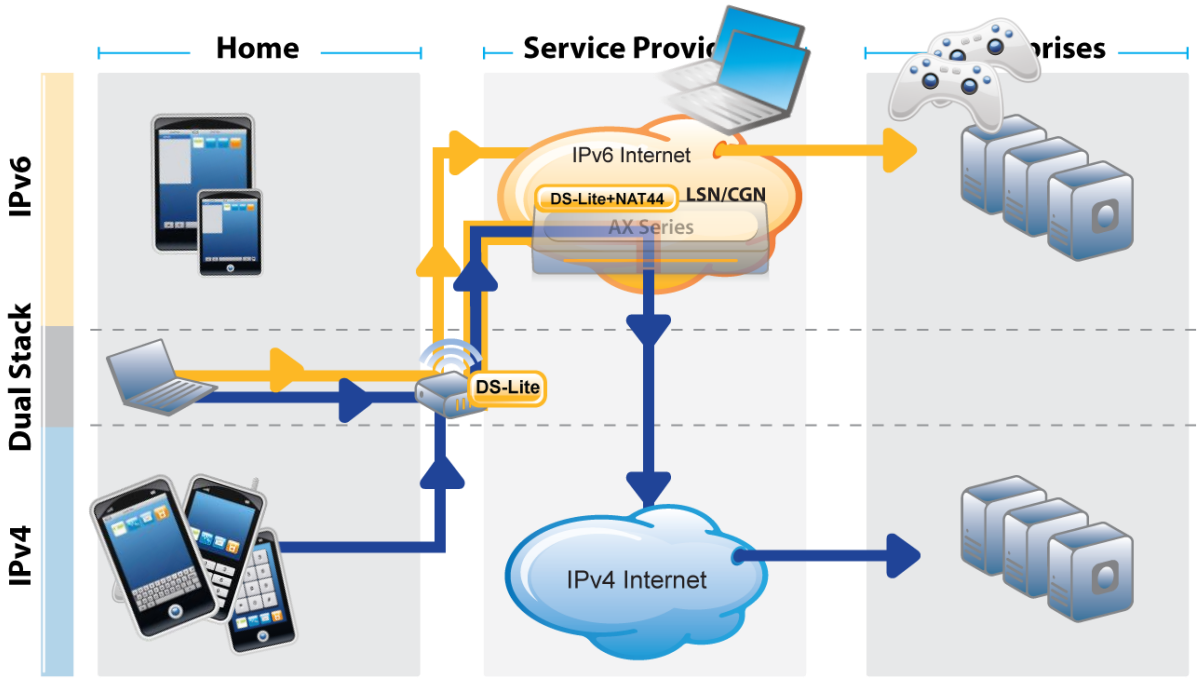
Students, staff, guest
256,000 private IP addresses

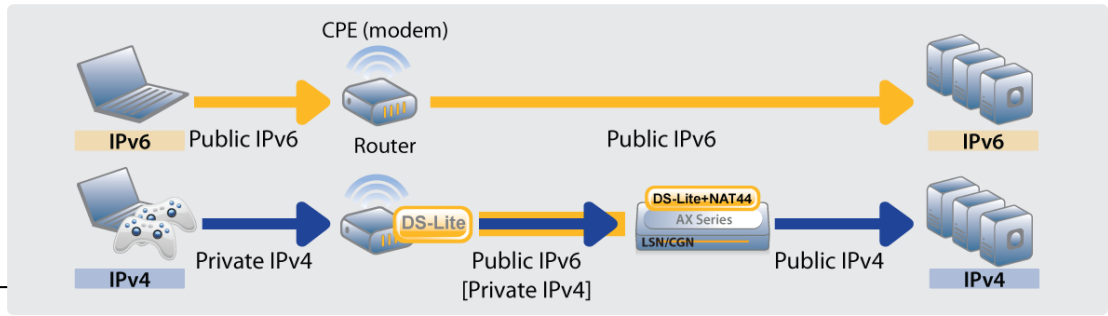
Additional access for
native IPv6 users

DS-Lite (Dual-Stack Lite) + NAT with LSN/CGN

- **Main SP interest:**
  - ISPs
- **Usage:**
  - Currently being evaluated by some ISPs
- **Goal:**
  - Provide IPv4 service access to IPv4 clients and IPv6 service to IPv6 clients without having a dual-stack SP network
  - IPv6 core network

Note: Some ISPs look at combining DS-Lite with DNS64/NAT64





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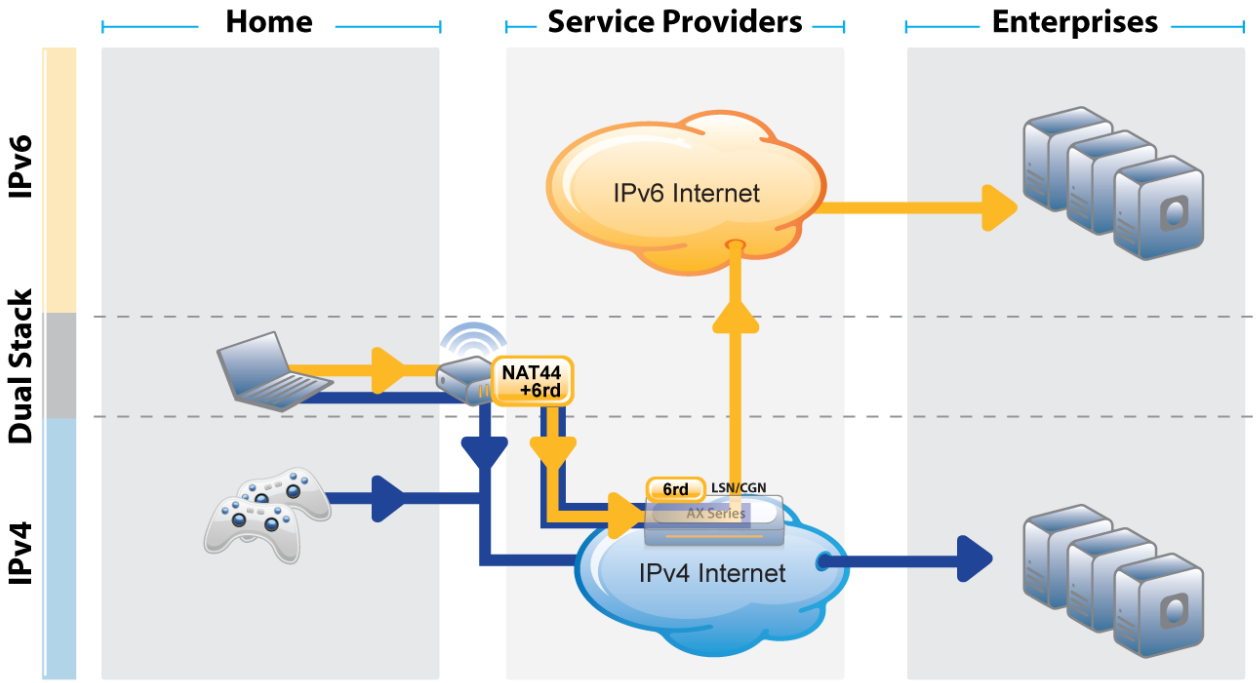
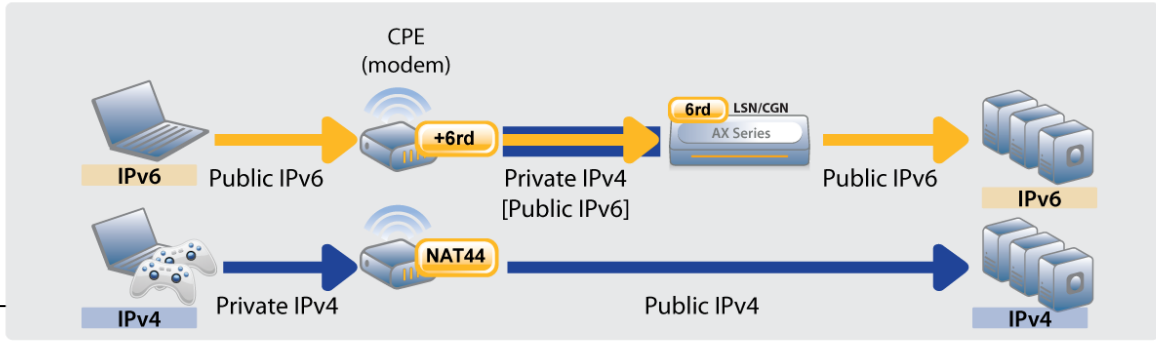
6rd (IPv6 Rapid Deployment)

- **Main SP interest:**
  - ISPs
- **Usage:**
  - Looked into/tested by some ISPs and deployed by a few
- **Goal:**
  - Provide IPv6 service access before core Network IPv6 upgrade
  - IPv4 core network

Note: Some ISPs look at combining 6rd with NAT444 + DNS64/NAT64





Use Case: NTT Plala, Japan

The IPv6 network, model for the future?

- **Project: Hikari-TV, implementation and live in 2008**
- **Purpose: IPTV broadcasting and video on-demand service (and Karaoke!)**
- **Network: Native IPv6-based, fiber-to-the-home network**
- **First large-scale, commercially successful application of IPTV service that runs over a IPv6 network**
- ***"After a comparative test...we selected A10's AX Series..as the high-performance server load balancer platform for 'Hikari-TV'...video distribution" service..."***

NTT Plala

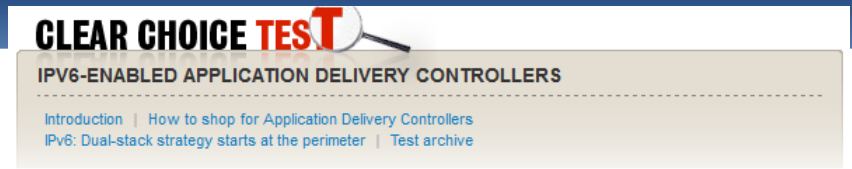
What Should Customers Do Next?

- **Test applications**
- **Evaluate impact on existing infrastructure**
- **Ensure new purchases are IPv6 compatible**
- **Train your staff**
- **Start small – enable your website**
  - Dual-stack, native IPv6 or SLB-PT (or SLB-64)
- **Internal connectivity? Pilot IPv6 in your network**
  - Contact your service provider and investigate NAT64/DNS64
- **Short of IPv4 addresses? What is the exact issue?**
  - Acquire more IPv4 addresses or test CGN/LSN

A10 IPv4-to-IPv6 Migration Advantages

- Industry-leading and mature implementation
- Advanced features and high performance
- Ideal ‘green’ form factor
- Price/performance advantage

Network World Test for IPv6-enabled ADCs



FEATURES COMPARISON

Company	A10 Networks					
Product	AX 2500 Version 2.6.1 and 2.6.6					
Price	$24,995					
6-to-6, 6-to-4 SLB	Yes					
SSL offload	Yes					
NAT64/DNS64	NAT64 and DNS64 — Infoblox					
IPv6 GSLB	Yes					
IPv6 WAF	No					
LSN/DS-Lite/6rd	Yes					
IPv6 routing	Yes					
IPv6 mgmt.	Yes	Yes	No	Yes	Yes	No
Installation	5	4	5	4	3	5
Feature set	5	4	2	4	4	3
Manageability	5	5	4	4	3	5

NETWORKWORLD

- **Real lab test revealed more features**
- **Only vendor to receive top marks**
- **5 out of 5 for Installation, Feature Set and Manageability!**

Source: *Network World,* February 13, 2012
http://www.networkworld.com/reviews/2012/021312-ipv6-application-delivery-controllers-test-255474.html?page=1

Application Delivery and Load Balancing Overview

- Site Always Available
- Faster Response

Users

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

External Network

- Application Delivery Controller

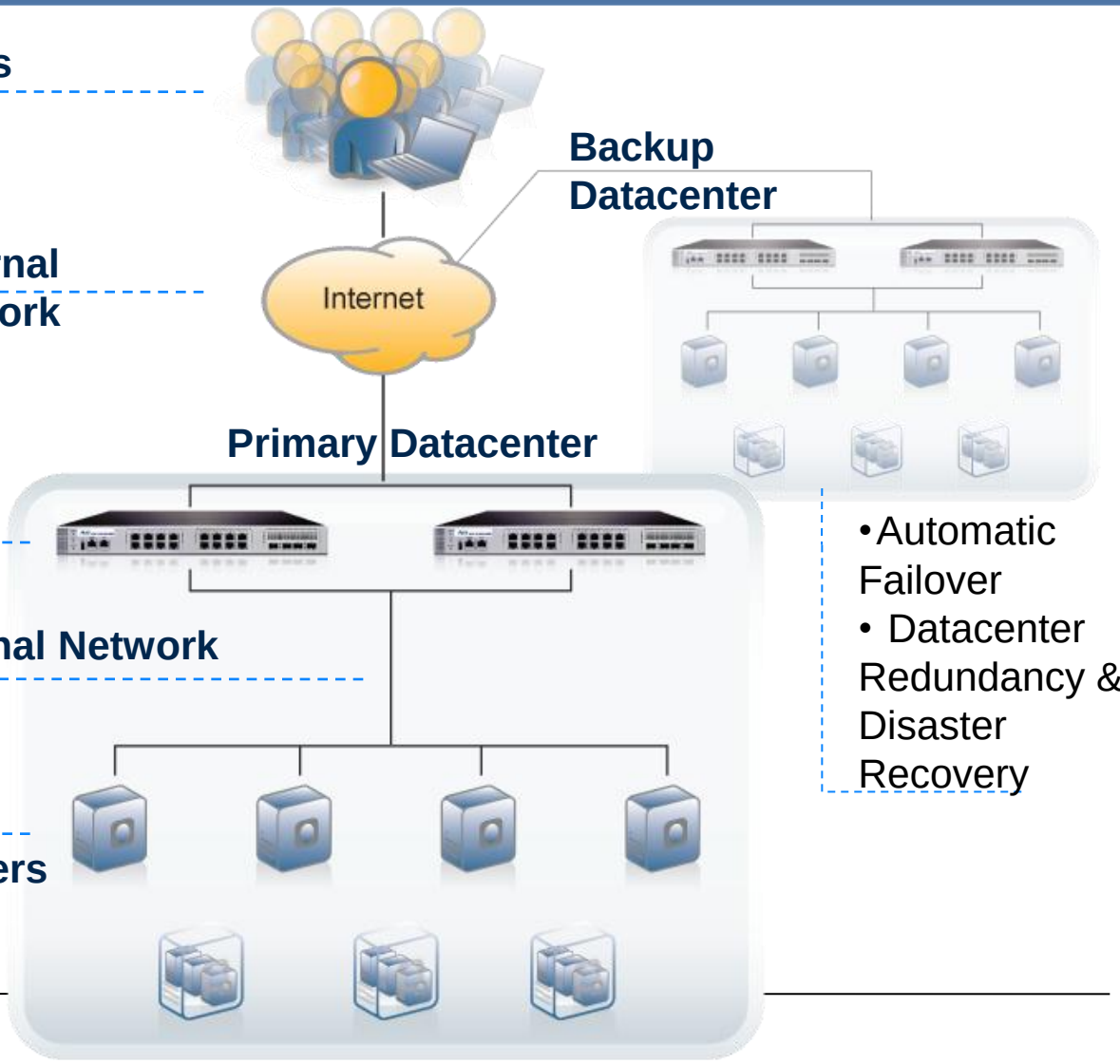
ADC

- Efficient Distribution
- Reduced Connections
- Normalized Traffic

Internal Network

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

Servers



- Automatic Failover
- Datacenter Redundancy & Disaster Recovery

Sample of 2000+ Customers

A10 Customer Driven Innovation

IPv6 Advanced Traffic Management

- **ACOS platform recap**
  - Application Delivery (ADC) and server load balancing
  - IPv6 migration and IPv4 preservation
  - Widest choice of virtualization solutions

- **Recommended Resources**
  - eLearning: A10 Quick Classes - Deploying an IPv6-ready Website for Your Enterprise (#3)
  - White Paper - The End of IPv4? Migration paths to IPv6 ***updated for 2013***
  - Case Study: A10 Networks (SLB-PT)

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Thank You

Any App

Any Cloud

Any Size

www.a10networks.com

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