IPv6 Seminar

The Business Case for IPv6

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A Major Transition Is Coming

IPv4 Address Exhaustion Has Happened

2010 | 2011 | 2012

NOVEMBER, 2010

Globalization: 25% of the world's population using 100% of IPv4 addresses

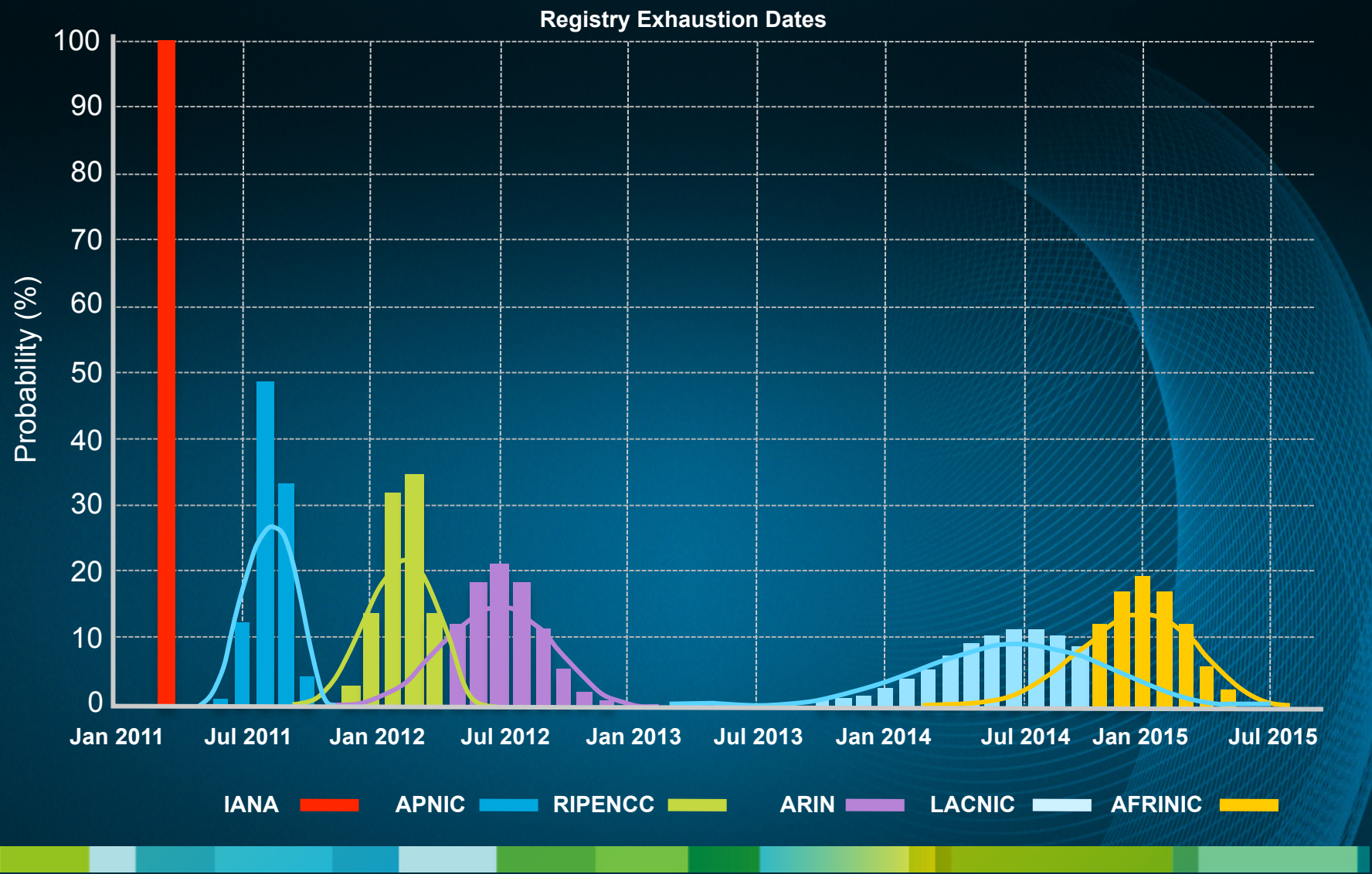
JAN, 2011

Date the last IPv4 addresses was allocated

SEPTEMBER, 2012

Civilian US Government Agencies mandated to provide external IPv6 connectivity

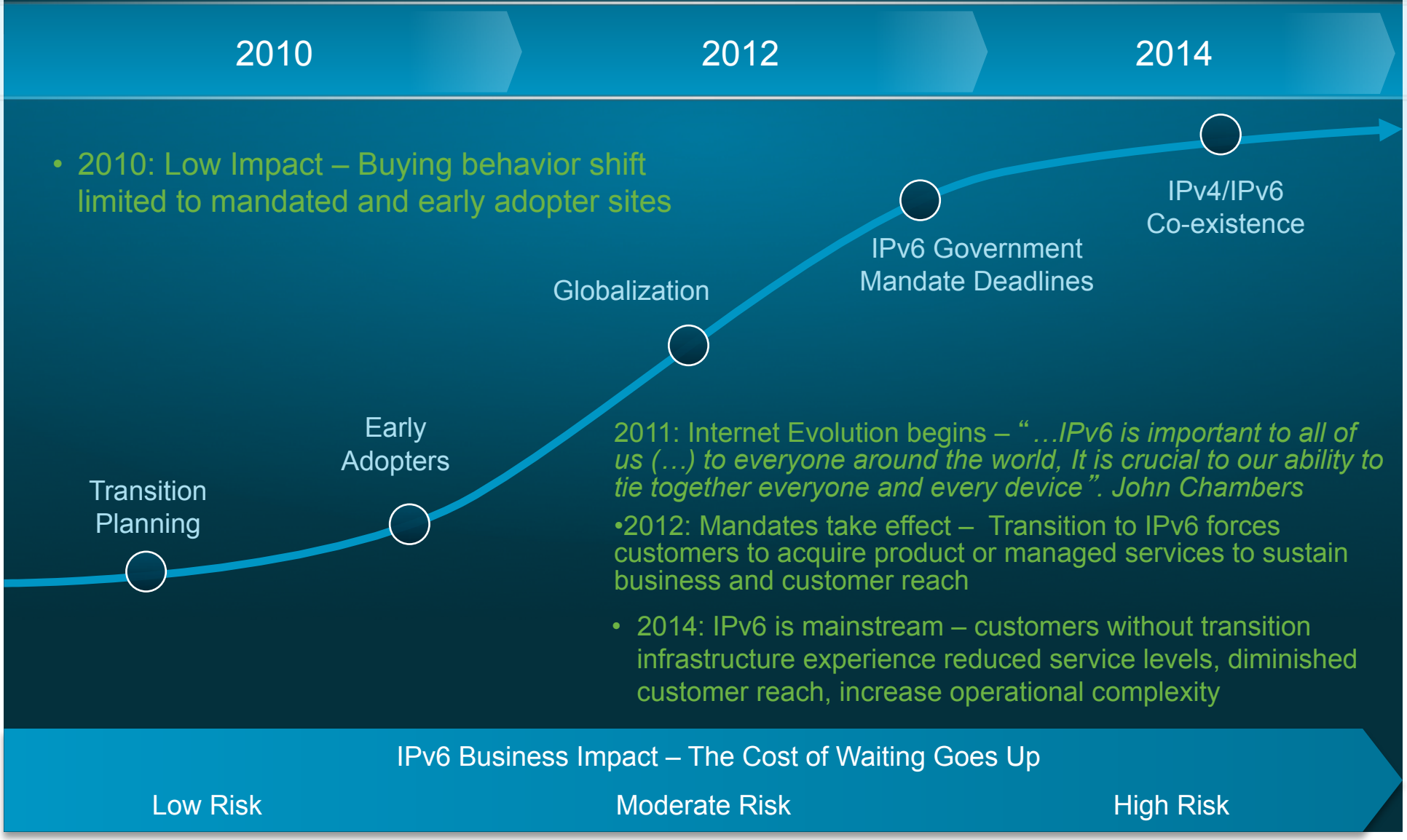
Why We're Here - 2011



Source: Geoff Huston, APNIC

Failure to Act Will Impact Business

IPv6 Estimated Adoption Timeframes



Myth: We'll Never Run Out of IP Addresses

Mobile and the Internet of Things drive growth

In 2013….There Will Be

50 BILLION

Devices Connected to the Network,

up from 35 BILLION in 2010

Source: Forrester, Cisco IBSG

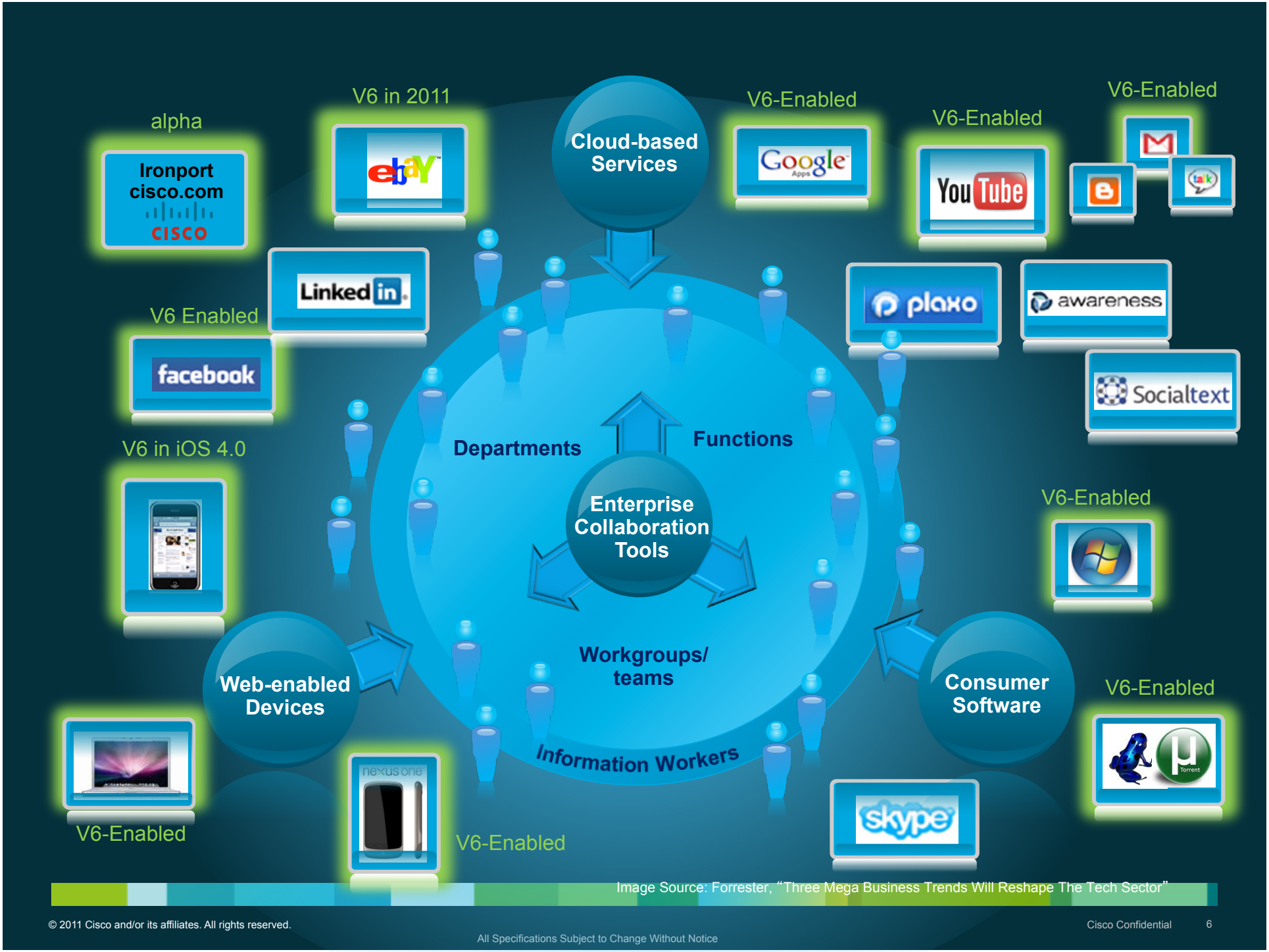


Image Source: Forrester, "Three Mega Business Trends Will Reshape The Tech Sector"

Managing an Orderly IPv6 Transition

IPv6 Is Not a Rip-and-Replace Proposition

Preserve

Preserve the customer's existing investment
- Audit and leverage existing IPv6 capabilities

Prepare

Prepare a migration and deployment plan
- Identify and enable critical IPv6 functional areas

Prosper

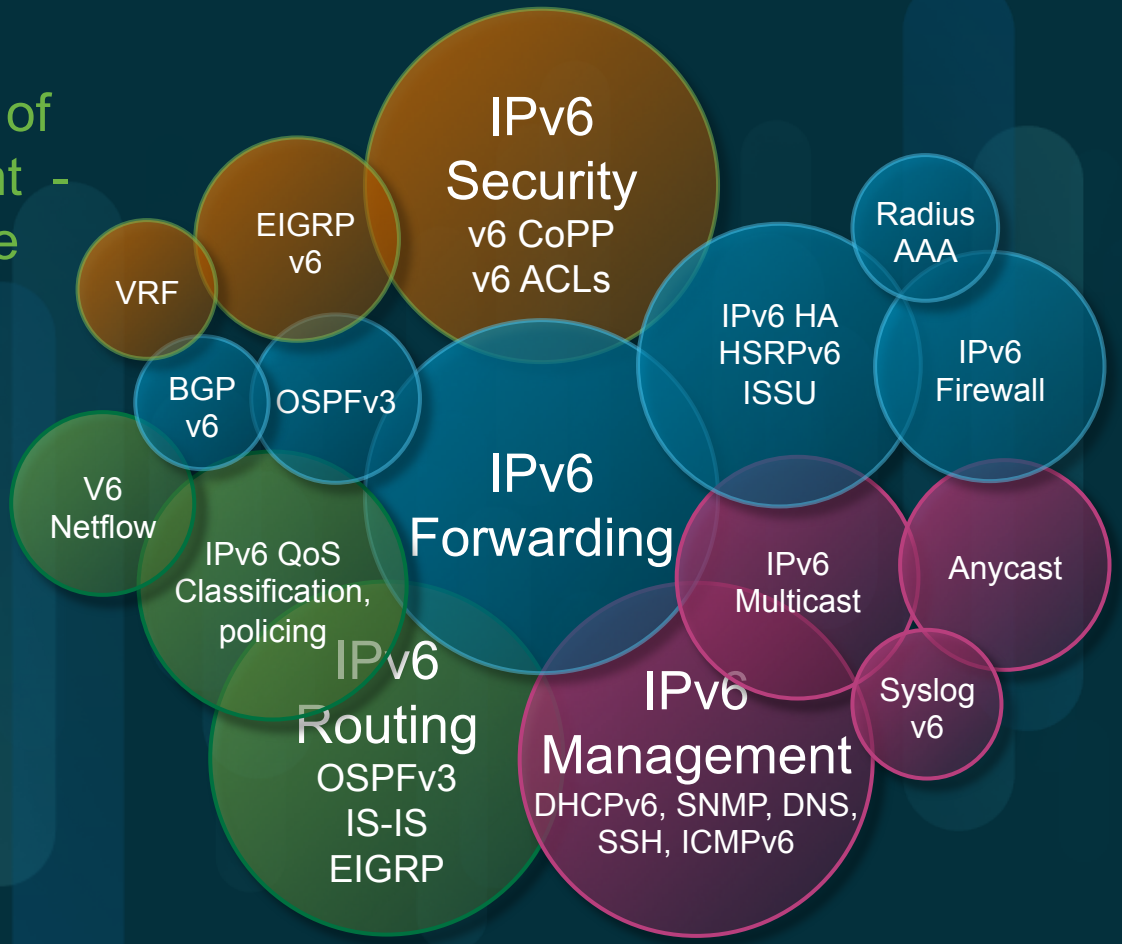
Prosper through the transition to IPv6 Internet
- Enable all systems with dual-stack capabilities
- Grow seamlessly as customers transition to IPv6

IPv6 is the foundation of a lifecycle management discussion

Preserve

Audit the Customer's Existing IPv6 Capabilities

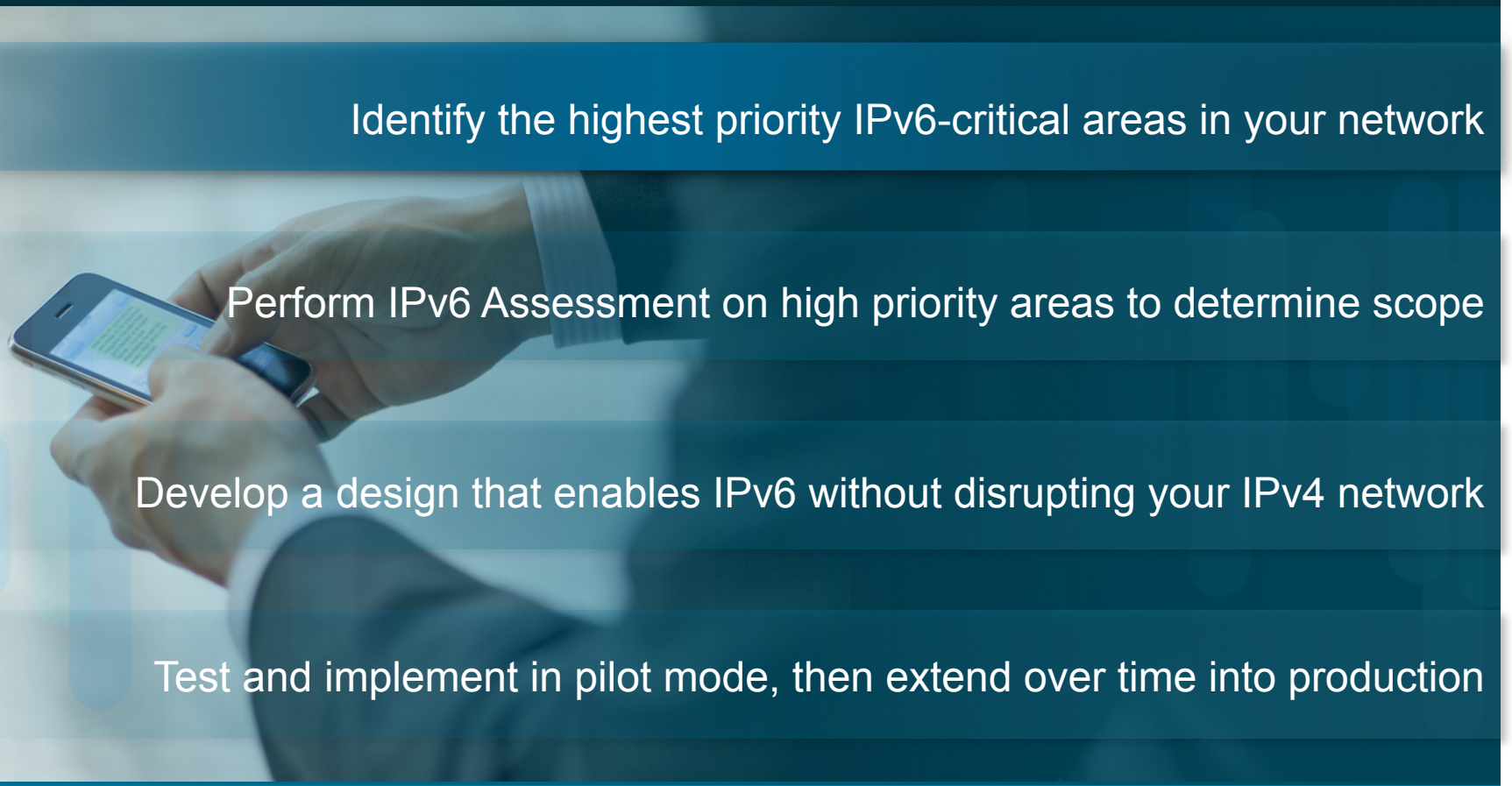
Over a Decade of Cisco Investment - Shipping Since 1996



These capabilities and more are already part of your customer's investment

Prepare

Start with a Phased Plan Aligned with Your Business Strategy



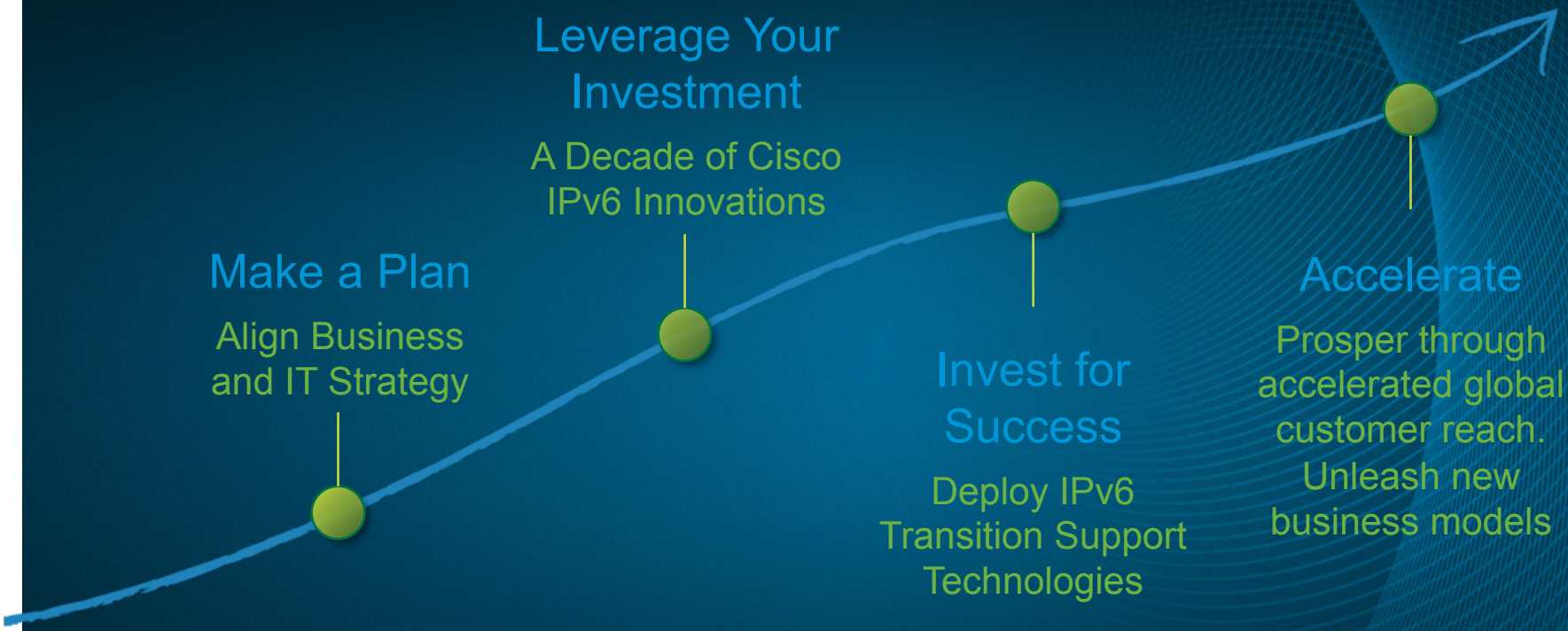
1. Identify the highest priority IPv6-critical areas in your network
2. Perform IPv6 Assessment on high priority areas to determine scope
3. Develop a design that enables IPv6 without disrupting your IPv4 network
4. Test and implement in pilot mode, then extend over time into production

Repeat for the Next IPv6-Critical Area in Your Network

Prosper

Grow Seamlessly as Customers Transition to the IPv6 Internet

A well-structured migration plan provides insurance against unexpected costs as customers, partners, and suppliers move to IPv4 and IPv6 coexistence



Enterprise IPv6 Adoption and Delivery

1 **Sales Certs (USGv6, JITC UCR2008)**

2 **IPv6 Pilot and Basic Infrastructure**

3 **IPv6 Internet Presence (websites, remote users, B2B …)**

4 **IPv6 Islands (Wireless/Consumer devices, Labs …)**

5 **Internal Data Center, Enterprise Apps**

6 **Ubiquitous Dual-Stack**

7 **IPv4 EOL**

"Mandated"
1, 2, 3

Who?

- Government Agencies
- Customers who sell to government agencies

"Motivated"
2 3 4

Who?

- Customers with IPv4 address exhaustion
- Global Enterprises with consumer or business interaction on the public internet
- Customers with user-provided devices on their networks

"Early Adopter"
2 4 3 5 6 7

Who?

- Companies looking for competitive advantage
- Companies using IPv6 to solve business problems
- Early adopters preparing for coexistence

"Mainstream"
2

Who?

- Large US/European Enterprises
- Small-Medium Enterprises

Borderless Network Architecture

Architecture for Agile Delivery of the Borderless Experience

POLICY

MANAGEMENT

APIs

BORDERLESS END-POINT/ USER SERVICES

Securely, Reliably, Seamlessly: AnyConnect

BORDERLESS NETWORK SERVICES

Mobility: Motion | Energy Management: EnergyWise | Security: TrustSec | App Performance: App Velocity | Multimedia Optimization: Medianet

BORDERLESS NETWORK SYSTEMS

Unified Access | Core Fabric | Extended Edge | Extended Cloud

BORDERLESS INFRASTRUCTURE

Wireless | Routing | Switching | Application Networking/ Optimization | Security

SMART PROFESSIONAL AND TECHNICAL SERVICES:
Realize the Value of Borderless Networks Faster

Cisco IPv6 Professional Services

Prioritize Critical Areas of Your Business and Network As You Scale Beyond IPv4 Limitations

Solution Overview

By the end of 2011, Internet traffic will be using the next-generation Internet protocol: IPv6.

IPv6 adoption must be addressed using a phased approach with careful validation and testing to avoid disrupting the IPv4 network or introducing vulnerabilities.

Through a Phased Approach, We Help You to:

1. Identify the highest priority IPv6-critical areas in your network.
2. Assess those areas to determine the scope of your IPv6 design.
3. Develop a design that enables IPv6 to be introduced without disrupting your IPv4 network.
4. Test and implement IPv6 in pilot mode, then extend over time into production deployment.
5. Repeat steps for subsequent areas of your network through ongoing optimization.

Proactively Budget Time, Money, and Resources

BN Enterprise Use Cases

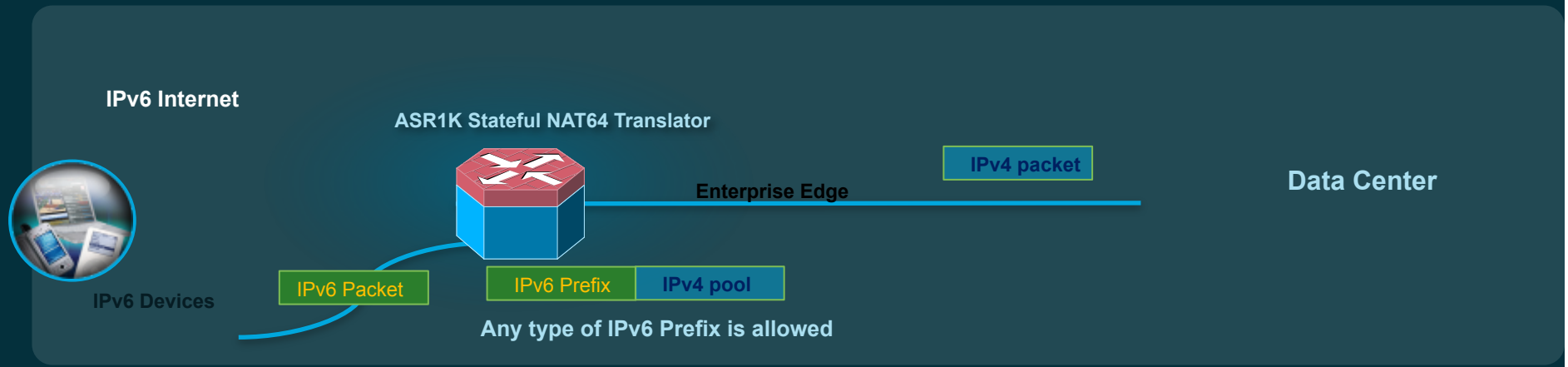
Use Case	IPv6 Technology	Relevant Products
Dual Stack Use Case • Set up devices to run IPv4 and IPv6 in parallel • Link hosts and islands of IPv6 devices together	**IPv6 and IPv4** • IPv6 switching and routing stacks • IPv6 over IPv4 tunneling protocols • First Hop Security	• Catalyst 6K, 4K, 3K, 2K • Nexus 7K, ASA Security Appliance • AnyConnect VPN client • ASR 1000 • ISR G2
IPv6 Internet Presence Use Case • Get started on the IPv6 Internet Edge for Outside – In deployment	**Stateless NAT64** • Allows IPv6 or dual-stack hosts to talk to IPv4 infrastructure (for example, web content)	• Stateful NAT on ASR-1000 NEW

Internet Presence Use Case
(Expected July 2011)

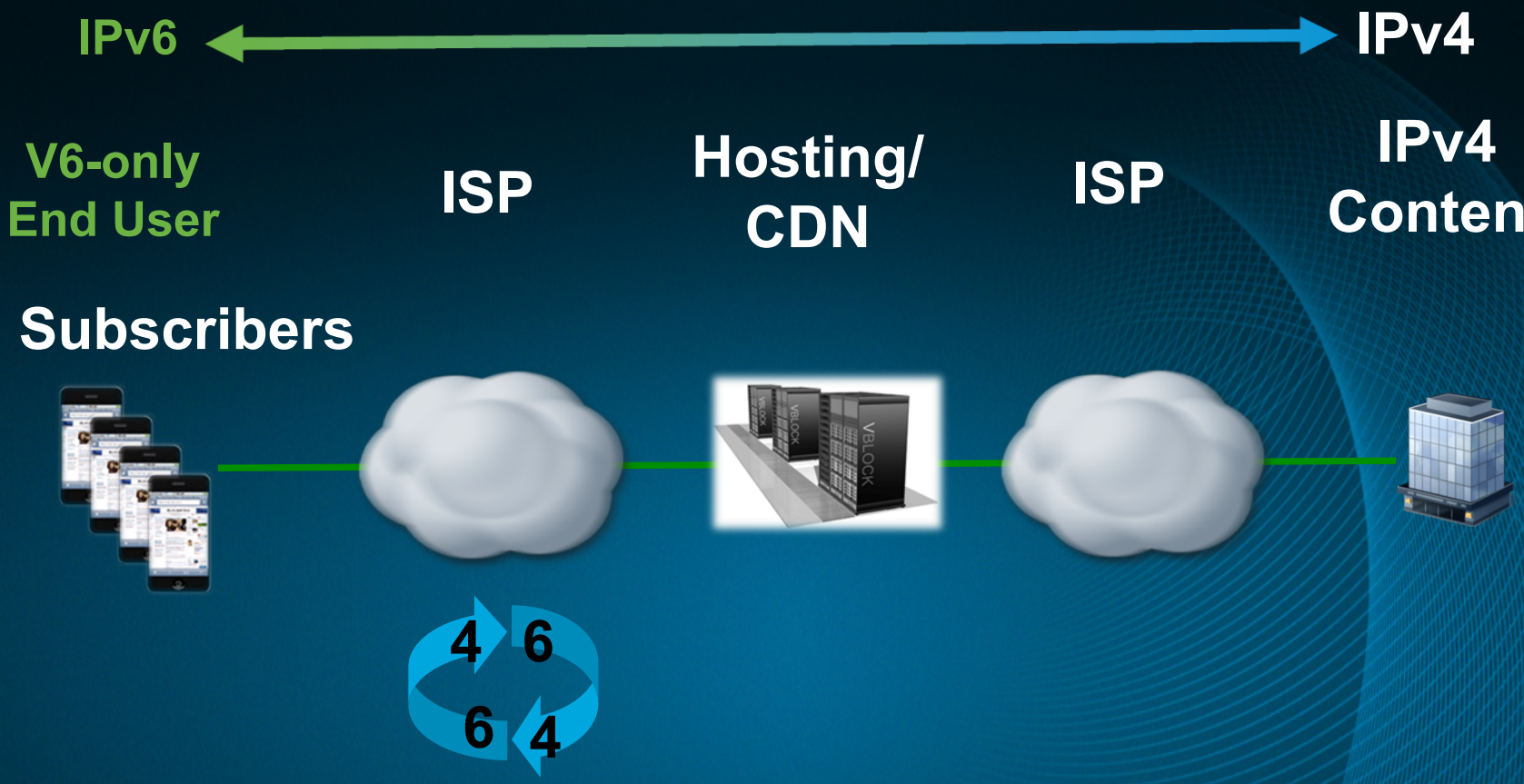
NEW

Solution Characteristics

- Expected Scale: 1.3 Million Stateful NAT Translations with HA enabled
- Expected Performance: 78K Translations per Second with HA enabled, with integrated IP Services
- IPv6 adoption: Allows connectivity between IPv6 internet and IPv4 network
- Position on Internet Edge with Stateful NAT64 functionality or as dedicated translation device



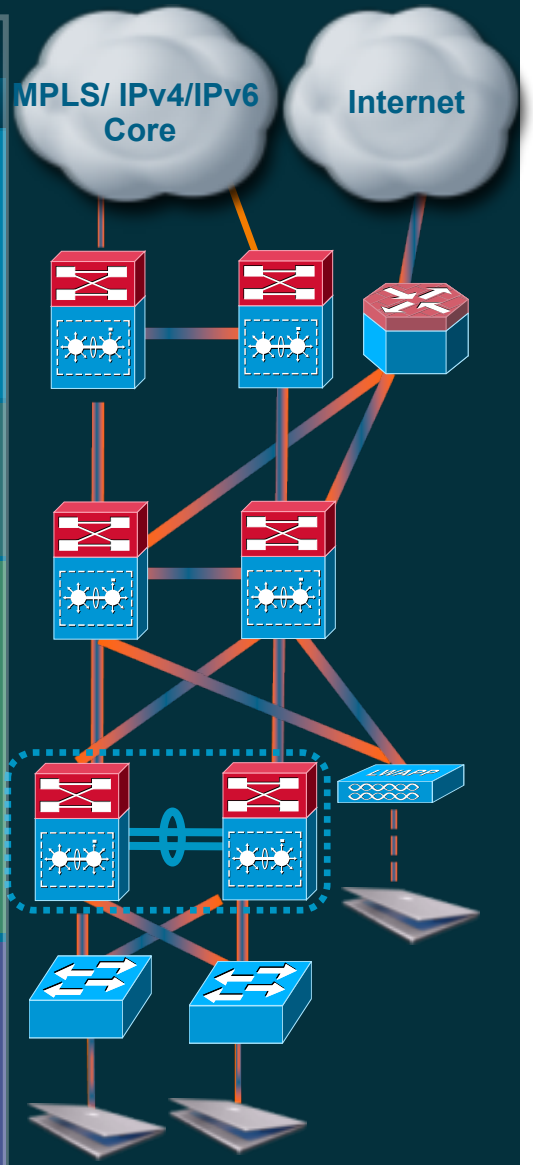
Who Owns the Translation?



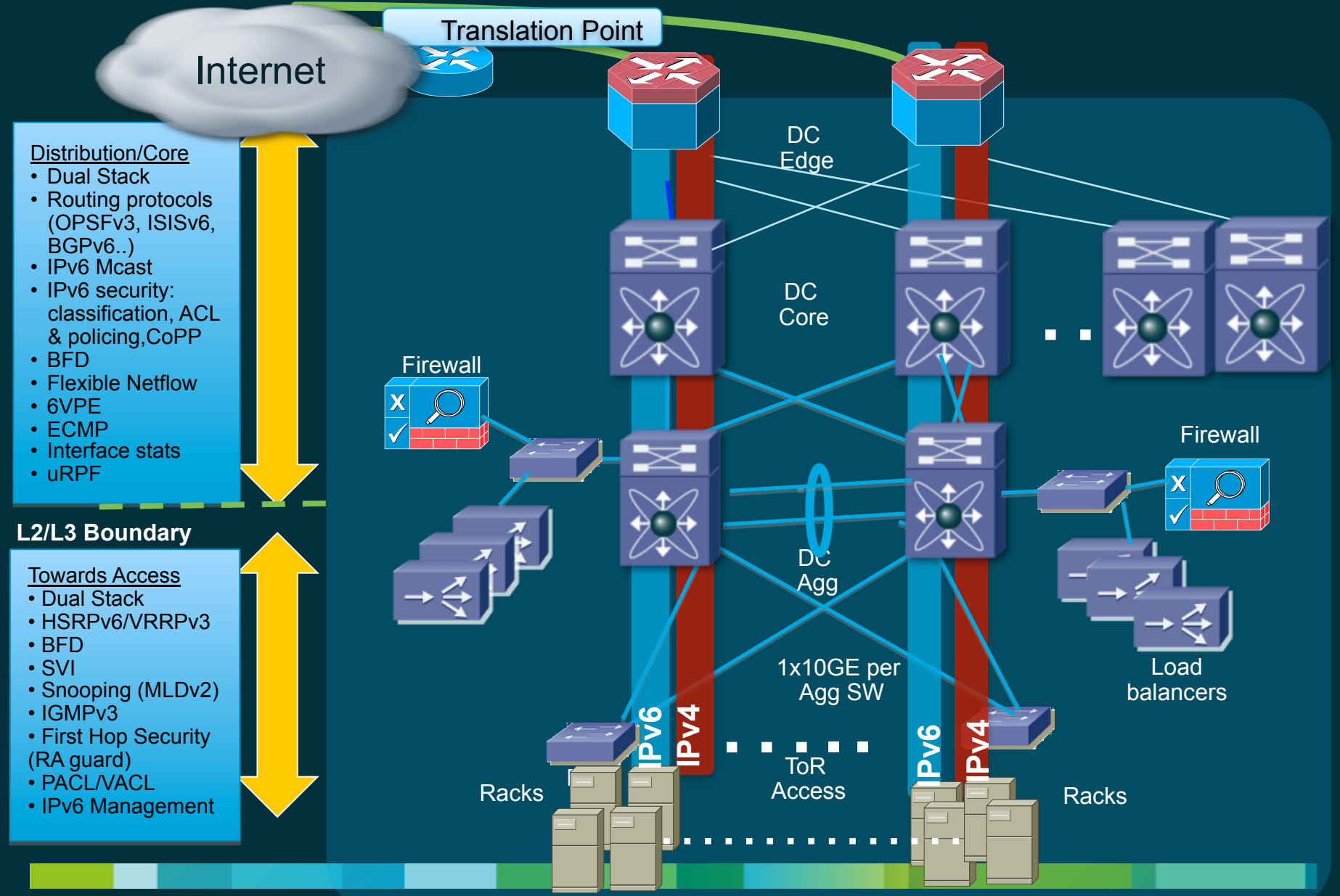
Considerations:
Experience, Scale, Cost, Operations, Technology…

Borderless Networks IPv6 Network Architecture

	Optimized IPv6 Delivery	Security	Transition Technologies
Edge	• EIGRPv6, OSPFv3, BGPv6 • PBR	• IPv6 IPsec • IPv6 Firewall Security • IPv6 IDS	• Dual Stack IPv4/IPv6 • V6 over v4 tunnels: 6vPE/ 6PE, L3VPNoMGRE, DMVPNv6, Static tunnels • 6 to 4 translation
Core	• EIGRPv6, OSPFv3, IS-IS • IPv6 support for VSS • ECMP, OSPFv3 GR	• IPv6 CoPP	• Dual Stack IPv4/IPv6 • 6to4 tunneling • ISATAP
Distribution	• IPv6 PIM-SSM, MLDv2, Embedded RP • IPv6 QoS • DHCPv6 Relay Agent • HSRPv6/GLBPv6 • IPv6 support for VSS	• IPv6 ACL • IPv6 ACL Atomic Commit/ Dry Run • uRPF • IPv6 Ingress Netflow • IPv6 Flexible Netflow	• Dual Stack IPv4/IPv6 • 6vPE/6PE • 6to4 tunneling • ISATAP tunnels
Access	• Stateless Auto configuration • **IPv6 management:** SNMP, Syslog, SSH, NTPv4, Tacacs+ • IPv6 interface stats	• IGMPv3/MLDv2 Snooping • IPv6 First Hop Security • IPv6 PACL/RA Guard	• Dual Stack IPv4/IPv6 • ISATAP and static Tunnels



IPv6 Data Center Network Architecture



June 8 2011 – 00h00-23h59 (UTC)
24-hr IPv6 “Test Flight”
IPv6 access on website’s “front door”
(DNS AAAA Record on www.company.com)
Note: This is not about turning off IPv4!

Coordinated by: Internet Society

http://isoc.org/wp/worldipv6day

http://isoc.org/wp/worldipv6day/participants

http://supportforums.cisco.com/community/netpro/network-infrastructure/ipv6-transition

World IPv6 Day: Jumping In Together

Key Takeaways

- Start now and position for growth
- Next Steps:
  - Assess, Plan, Design Trial, Train, Roll out
- Map out opportunities to be IPv6 ready in planned technology refresh cycles
  - Reference certification requirements
- Enable your network evolution to IPv6 with the Cisco Borderless Network Architecture

http://www.cisco.com/go/ipv6

Thank you.