IPv6 Enablement for Enterprises

Waliur Rahman
Managing Principal, Global Solutions
April, 2011

PROPRIETARY STATEMENT

This document and any attached materials are the sole property of Verizon and are not to be used by you other than to evaluate Verizon's service.

This document and any attached materials are not to be disseminated, distributed, or otherwise conveyed throughout your organization to employees without a need for this information or to any third parties without the express written permission of Verizon.

What We'll Cover

Enterprise Drivers for IPv6

Migration Complexities

Verizon IPv6 Transition Solutions

Enterprise Drivers for IPv6

Basic Demand Drivers

- More network appliances but lack of IPv4 addresses to support
- Mandates for U.S. Government Agencies
- Control OpEx for network and IT
- Elimination of complex NAT networks
- Strong intrinsic security
- Better support for mobility applications
- Greater flexibility and simplicity
- Business process improvements

verizon

Enterprise Drivers for IPv6

New Opportunities to Improve Business Performance

- **New business opportunities**
- **More addresses for objects – enhanced automation and productivity**
- **Machine-to-Machine (M2M) telematics**
- **IPv6 connection to anything**

verizon

Migration Complexities
Deployment Considerations

- **Compatibility issues between IPv4 and IPv6**
- **Vendor interoperability issues with IPv6**
- **Potential security issues**
- **Network management considerations**
- **Existing hardware may not handle IPv6 traffic efficiently**
- **Router memory and CPU limitations may preclude IPv6 deployment**
- **Technology refresh cycles can be exploited to deploy IPv6 capabilities**
- **Global public routing practices continue to evolve**

verizon

Migration Complexities

Identify Dependencies on IPv4

- **DNS – Inserting AAAA records in DNS for resources without IPv6 connectivity**
- **Operational support systems/operations and maintenance systems**
- **Performance measurement and reporting**
- **Fault management tools and trouble ticketing systems**
- **IPv4/IPv6 address management tools**
- **Staff training – call centers, store fronts, IT, NOC, etc.**
- **Firewalls, IDSs, IGP protocol Security**
- **Deployment of automated IPv6 address management systems**

verizon

Migration Complexities
Suggested Risk Mitigation Strategies

- **Security organizations need to be early adopters**
- **Increase the level of security controls during initial IPv6 deployment**
- **Monitor for false router advertisements in the corporate network, use authentication**
- **Filtering considerations and strategies must be developed**
- **Enforce multicast scope limits at appropriate network and sub-network boundaries**

verizon

Verizon IPv6 Transition Methodologies

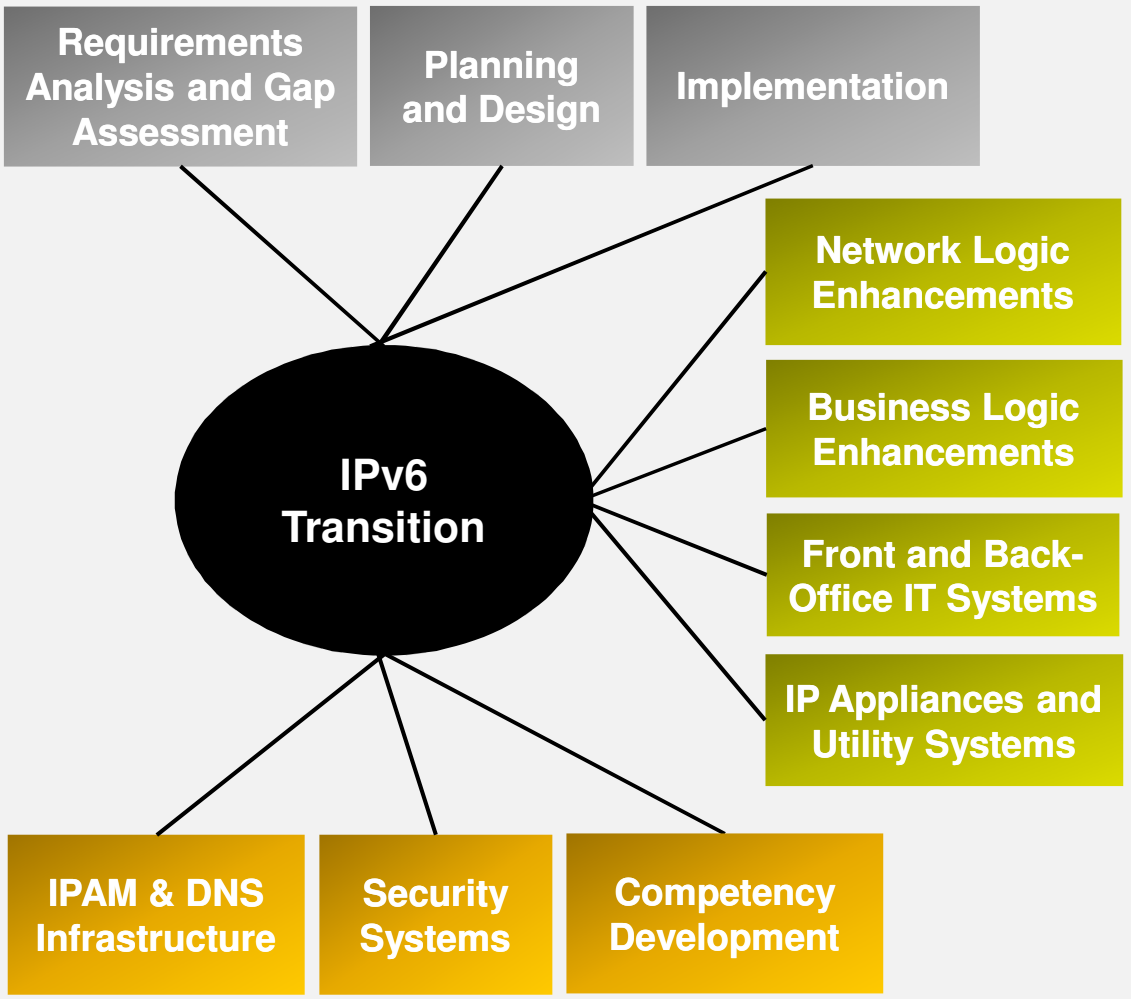
IPv6 Transition Planning Considerations

IPv6 transition is a process, not an event

Time phased, iterative endeavor, involving:

- **Requirements and gap assessment**
- **Systematic planning and design**
- **Methodological implementation**

Safeguard business continuity during the transition process



Verizon IPv6 Transition Methodologies

A Proven Approach, Built on Core Principles

Phases

- **Verizon's IPv6 migration strategy consists of multiple phases:**
  - IPv6 Preliminary Assessment
  - IPv6 Impact Assessment & Compliance Gap Analysis
  - IPv6 Transition Planning
  - IPv6 Transition Implementation
- **All four phases key to planning and implementing a successful migration**
- **Main focus is to assist with migration from IPv4 networks to dual-stack IPv4/IPv6 infrastructure**

A smooth transition to IPv6 requires clearly set expectations, sound planning, and an established approach

verizon

Verizon IPv6 Transition Methodologies, (cont'd)

Preliminary Assessment

- **Educational services on IPv6 transition**
  - Presentations covering industry trends
  - Case studies including lessons learned and caveats
- **Situational analysis and requirements elicitation**
  - Review of overall market-specific business context and drivers for IPv6
  - Preliminary assessment of existing network infrastructure: architecture, deployed components and systems
  - Preliminary assessment of business logic systems, applications, and services
  - Review of IT and network operations management
  - Review of security management
- **Development of strategic IPv6 roadmaps**

A strategic, intelligent approach to IPv6 transition should be designed to maintain performance and avoid potential challenges

verizon

Verizon IPv6 Transition Methodologies, (cont'd)

Impact Assessment and Compliance Gap Analysis

- **Detailed assessment of network capabilities and systems**
  - Hardware, software, associated management tools
- **Identification of business and technical drivers for IPv6 transition**
- **Detailed assessments and compliance analysis**
  - Site survey, network logic, business logic, security management and compliance, evolution plans
- **Education and competency development**
  - Benefits, industry directions, standards, compliance, vendor roadmaps
- **Training, reports on IPv6 readiness findings, detailed transition roadmaps**

An in-depth understanding of your networks, systems, and processes is necessary – and their associated requirements and risks

verizon

Verizon IPv6 Transition Methodologies, (cont'd)

IPv6 Transition Planning

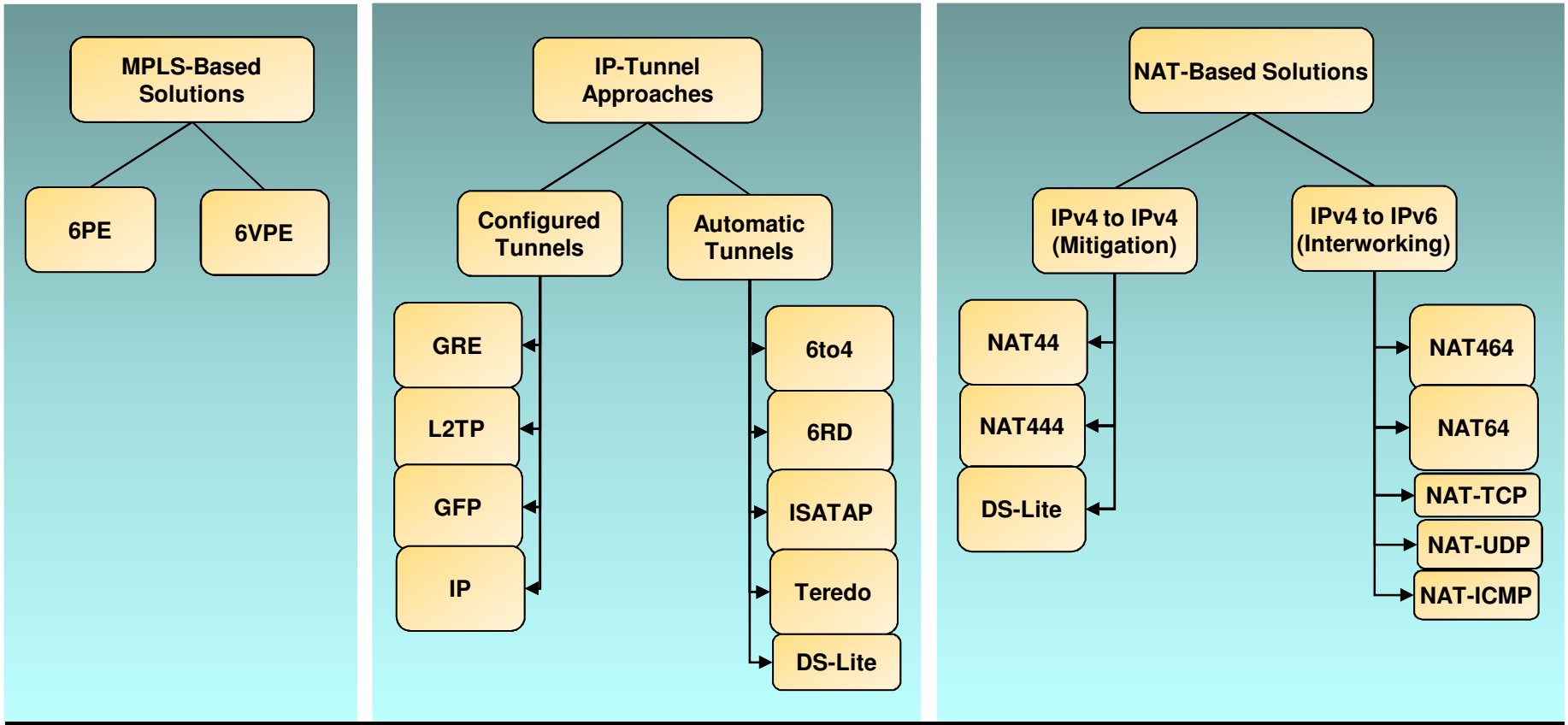
- **A comprehensive, enterprise-wide migration strategy that will:**
  - Provide vertical-specific industry analysis and best practices
  - Identify technologies and develop a target compliant architecture
  - Develop a POC lab simulation environment prior to migration
  - Define IP addressing framework, automated tools, management processes
  - Develop detailed project management plan
  - Develop detailed pre and post-migration test plans and success criteria
  - Recommend migration paths for non compliant network devices
  - Develop the detailed implementation plan and related documents
  - Provide education, coaching, and training

Realize immediate benefits of IPv6 by leveraging a proven transition strategy

verizon

Verizon IPv6 Transition Methodologies

IPv4 to IPv6 Transition Technology Considerations



These approaches are not mutually exclusive and can be deployed concurrently

Verizon IPv6 Transition Methodologies, (cont'd)

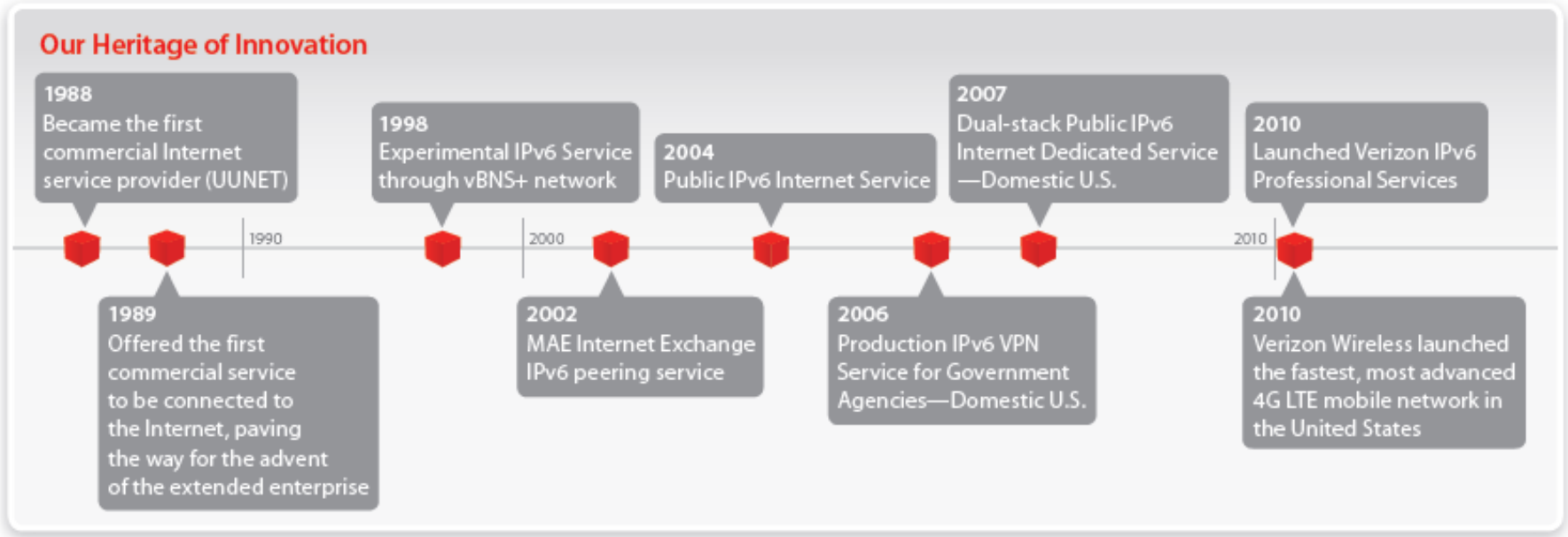
IPv6 Transition Implementation

- **Physical and logical implementations of the developed IPv6 transition plan**
- **Detailed project management of every aspect of implementation and management**
  - Physical installations
  - Device configurations (network core, edge, LAN devices, servers, OS, etc)
  - Execute pre and post-test plans
  - Documentation
    - » Design and configurations, procedures
  - Fine-tune network, server HW/OS

IPv6 implementation should help enterprises leverage new technology and networking capabilities and drive flexibility and performance

verizon

Verizon Has Been There.
Our IPv6 Experience



Questions?