



# IPv6 Transition Strategies

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# Agenda

Drivers and Operational Advantages

Strategic Approach to IPv6 transformation

Transition Strategies

HP IPv6 Consulting Portfolio



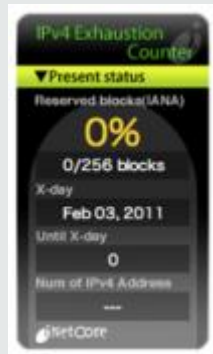
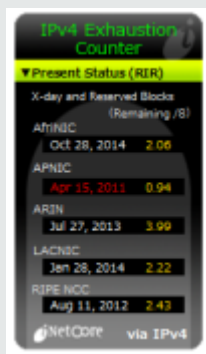
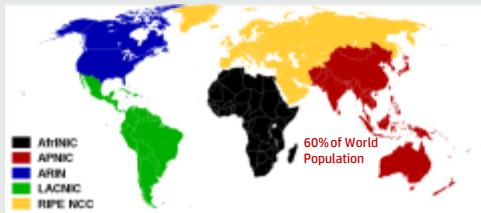
# Why IPv6? Why now?

## The new Internet

### Internet is running on “empty”

- Explosion of users, devices, connected appliances and applications
- Virtualization and cloud computing
- IPv6 is already on a network close to you

### IPv6 enables you to flip the ratio from operations to innovation



# Today's Reality

Quality of Experience is evermore critical

**Mitigation techniques (like NAT) to handle the address pool depletion are now inherent as a dominant business model**

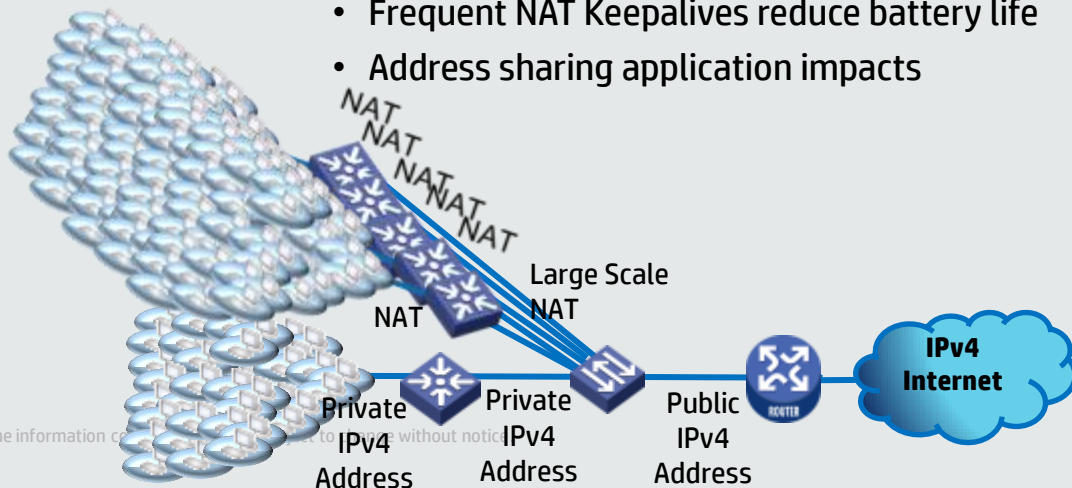
- Complexity pushed onto Applications and Content providers



Jason Fesler Yahoo! feb. 2012

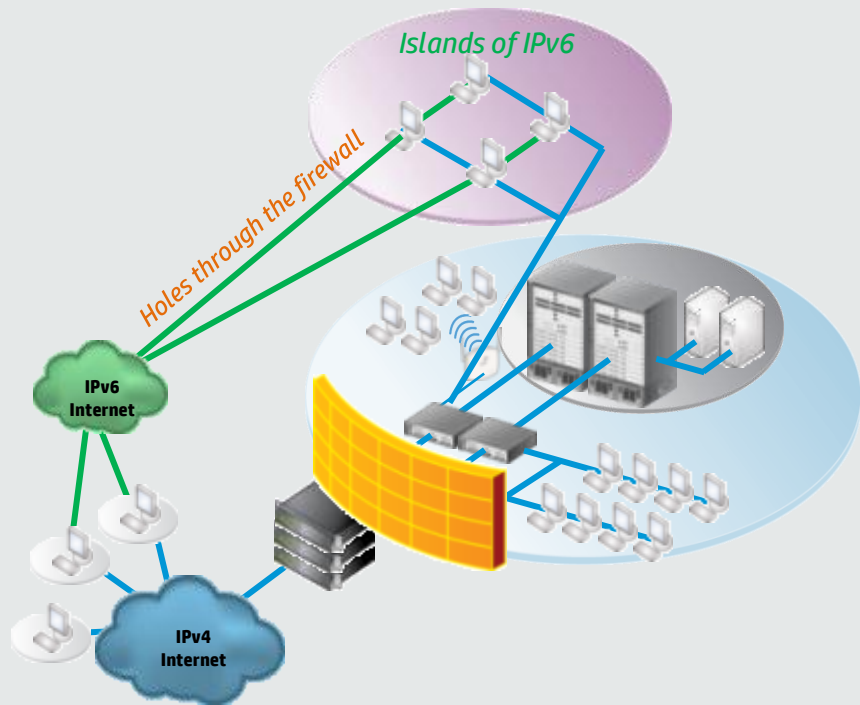
## Address sharing issues

- Amplification of security issues/ policing/ penalty boxes
- Traceability of network usage and abuse (for law enforcement)
- Geo-location and Geo-proximity services
- Frequent NAT Keepalives reduce battery life
- Address sharing application impacts



# Today's Reality

Security is evermore critical



## Security Operational Challenges

- Complexity due deployment of IPv4 mitigation techniques
- IPv6 is already present on your network
- Very often unmonitored
- IPv6 deployed along IPv4 increases the size of the attack vector

# Not just about the Network

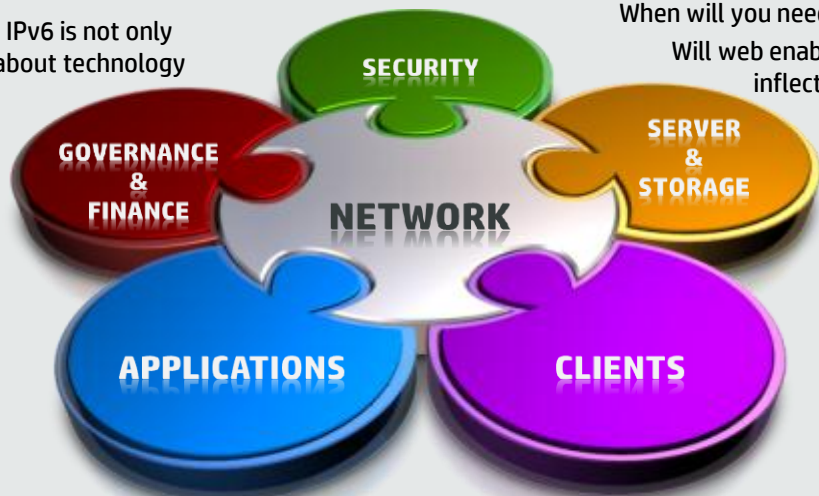
IPv6 has implications across the entire IT environment

## Establish a Task Force

IPv6 traffic is already in your network  
now and uncontrolled

IPv6 is not only  
about technology

When will you need IPv6 inside the DC?  
Will web enablement be your  
inflection point?



Are your applications IP dependent?

Many clients default and prefer IPv6 now



## Much more than just a larger addressing space



- Robust, Effective, Efficient. Unlimited Address space.
- Extensibility. Enhanced Mobility.
- Optimized for next generation networks.
- End to End Services and applications.
- Free manpower from ordinary tasks
- Enable Service Automation.
- Better Support for QoS.
- Policy driven operations.
- Free manpower from ordinary tasks.
- Rapid deployment.

# Strategy to achieve Transformational Benefits

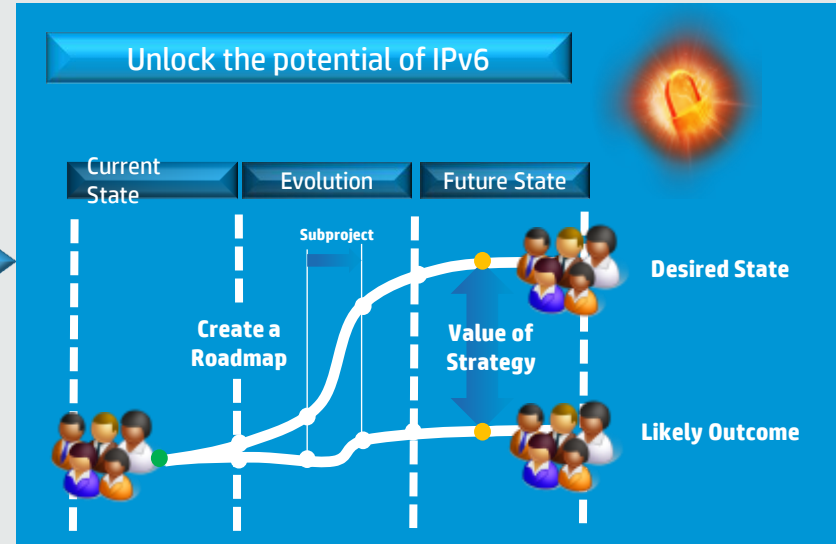
How will you get there?

## Facts

- IPv6 is inevitable, what is your inflection point?
- You control how and what role you want to play
- If your business is reliant on the internet, IPv6 is a necessity.
- Late start rapid deployments of IPv6 increases risk and cost
- Ignoring IPv6 introduces security risks

## Pain Points

- Content consumption is breaking down on IPv4
- Instant Connectedness is not possible with IPv4





# IPv6 Transformation Journey

Joint Business & IT Task Force ensures a smooth path toward IPv6

Often overlooked

Customer Requirements

Applications

Business Model

Security

Business Goals

Infrastructure

Business Process

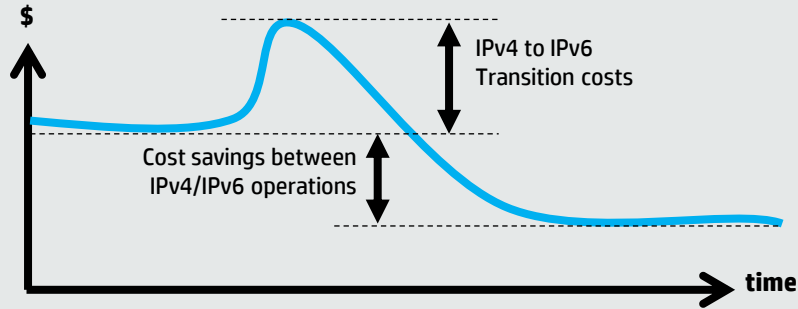
Network

Value Proposition

**Yesterday's thinking won't solve today's opportunities**

- Determine how IPv6 affects all business units
- Find ways IPv6 can help achieve your business and IT goals
- Analyze risks
- Remember Transforming IP dependent applications is time consuming task

# Financial Impact



**Predictability**



Planning and preparation costs



Investments for HW and SW



Operational Savings

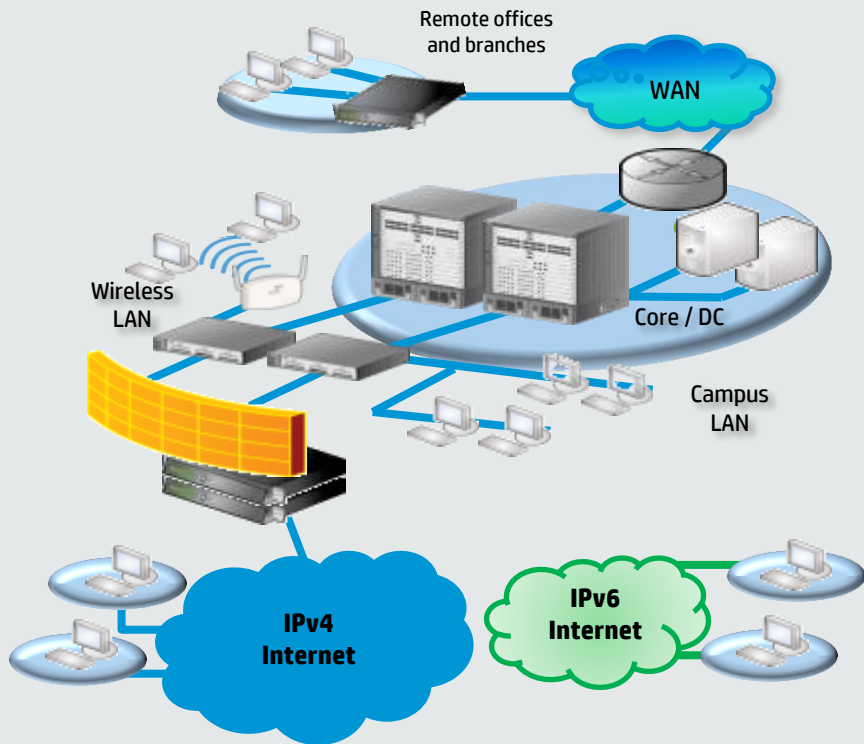


Cost Avoidance



Future Wins

# Transition Strategy



## Three main categories

### Dual Stack

- Provides complete support for IPv4 and IPv6 protocols

### Tunneling

- Encapsulates IPv6 packets in IPv4 headers (and in later IPv4 packets in IPv6 headers)
- Requires dual-stack devices at either end of the connection

### Translation

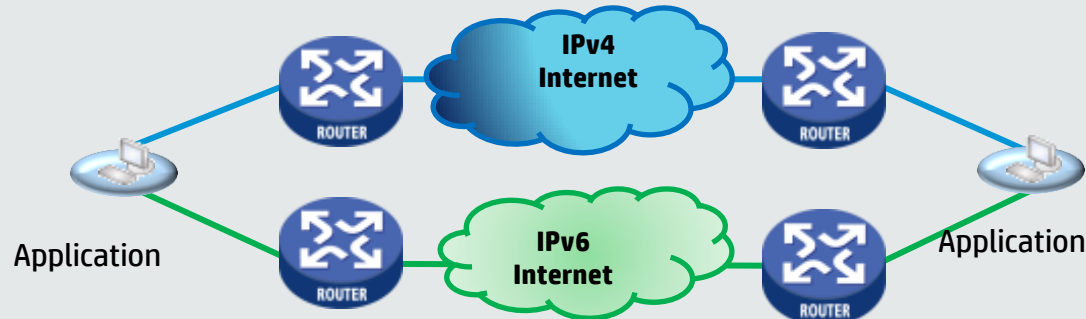
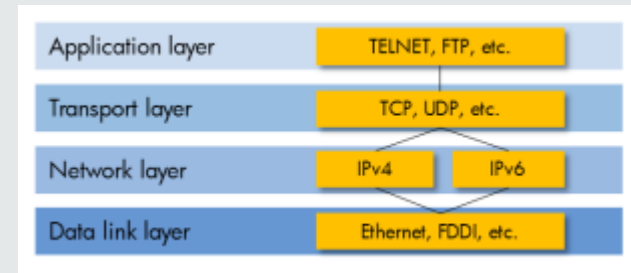
- Translates IPv6 addresses and into IPv4 addresses

# Dual Stack Transition Strategy

Simple and widely used. Recommended Strategy

## Use IPv4 or IPv6

- IPv4 and IPv6 protocol stacks implemented on the same device.
- + Most simple and recommended approach, network is the same. Applications can select which network protocol to be used
- – IPv4-only cannot communicate with IPv6-only, need to maintain 2 routing tables, need to maintain 2 firewall rule sets, requires additional memory and power, ...



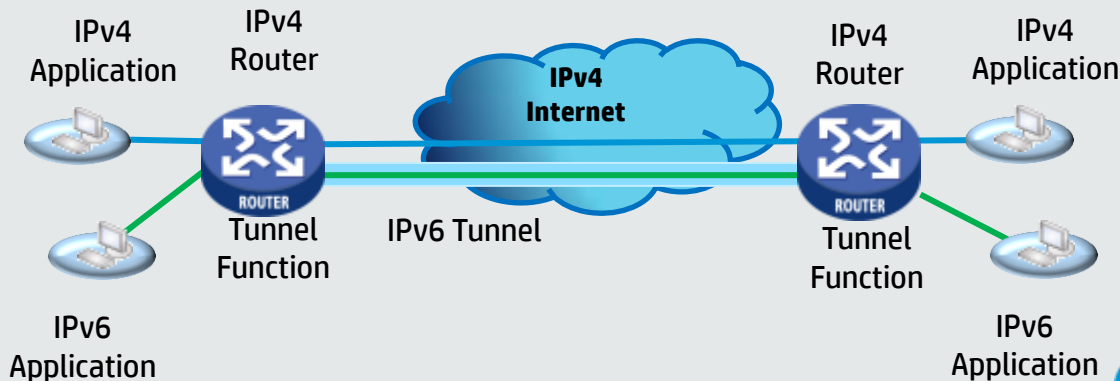
- \* IPv4 and IPv6 Networks can share a single link
- \* IPv4 and IPv6 can be enabled on the same router

# IPv6 Tunneling

Simple and widely used

**One transport protocol is encapsulated as the payload of the other (6-in-4 or 4-in-6)**

- + Connect Islands of IPv6 or IPv4 (compatible nodes across incompatible networks) recommended for site-to-site
- – Security issues with tunneled protocols through FW (FW can't inspect payload) reduced performance, complicated network management + troubleshooting
- Can be manual or automatic

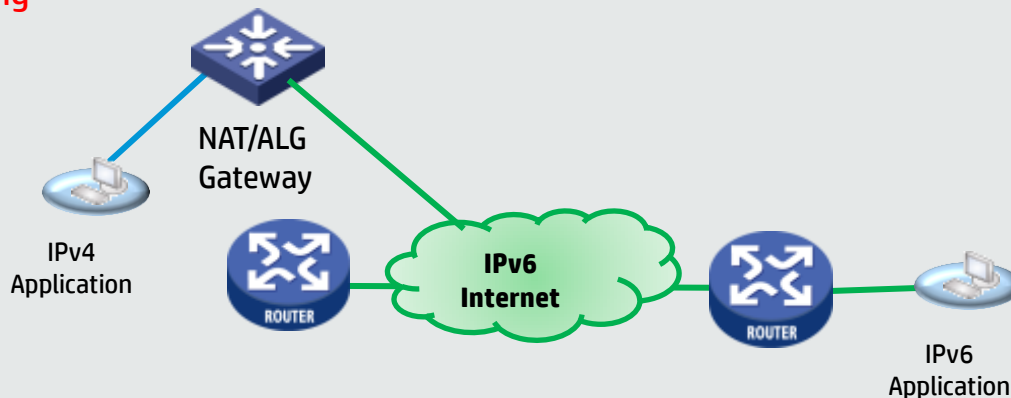


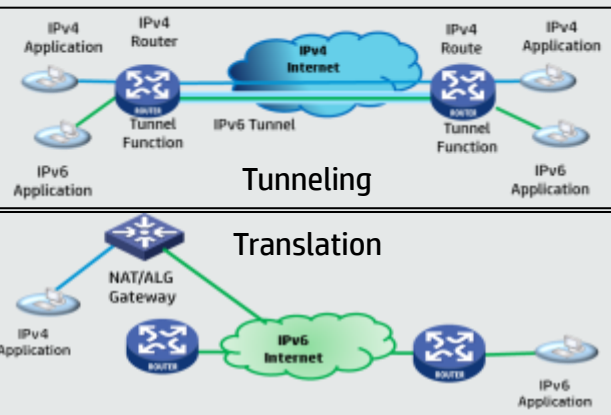
# IPv6 Translation

If you must!

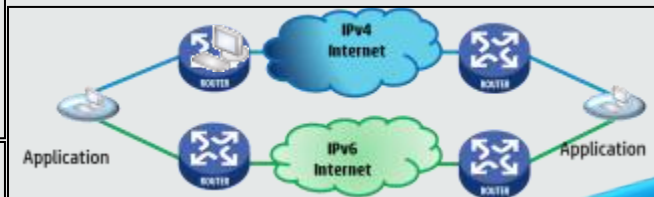
## Between IPv4 and IPv6 (NAT64/DNS64)

- Translates IPv6 names & addresses into IPv4 names & addresses (and vice versa).
- + Enables IPv6-only host to communicate with IPv4-only hosts (and vice versa),  
No modification to IPv4 or IPv6 end nodes, only at boundary routers
- – Application incompatibilities (e.g. VoIP), need for ALG, and has all NAT drawbacks  
Increased complexity in network topology, Reduced Performance (dep. on HW),  
complicated troubleshooting





## Dual-Stack



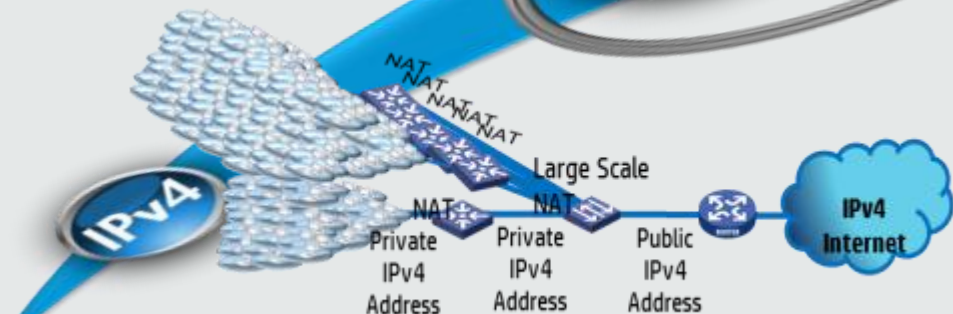
Unlock the potential of IPv6

Any Device

Any Time

Any Where

# Transformation Timeline



# HP has already delivered IPv6



## HP supports IPv6 across all its product lines today

- Integrity Servers, ProLiant Servers, Business Critical Servers, Storages, Personal Workstation, Printers, HP Networking (3Com, H3C, ProCurve and TippingPoint IPS) and HP Software
- We have the ability to bring solutions and expertise to every corner of the IPv6 conversation
- IPv6 standards committees
- Network & IT Consulting expertise

[www.hp.com/network/ipv6](http://www.hp.com/network/ipv6)  
[www.hp.com/services/ipv6](http://www.hp.com/services/ipv6)



# IPv6 @ HP the Enterprise

## Business Drivers

- Inevitability of IPv6.
- Business Continuity issue
- External
  - hp.com e-commerce reachability via IPv6
- Internal
  - Unified communication

## Architectural Principle

- Stepwise deployment
- Ensure application and network services support IPv6
- Allow no IPv4 disruption
- Standardize on Dual-stack
- Managed environment
  - Use DHCPv6 where you can in favor of SLAAC
- Run IPv6 on HP products

## Status

- Started deployment in 2001
- Today (Mar 2012)
  - 300+ IPv6 subnets available
  - 120 IPv6 R&D labs deployed
    - Labs interconnected with Tunnels.
  - Core Dual-stack.
  - Each existing subnet are being migrated to native IPv6 WAN.



# HP IPv6 Consulting Portfolio

IPv6 Transformation Experience Workshop

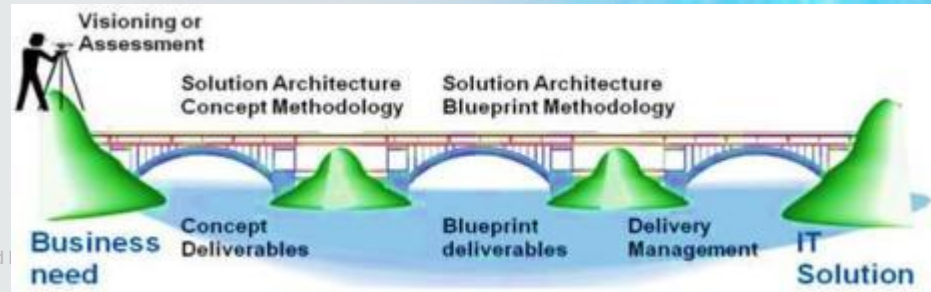
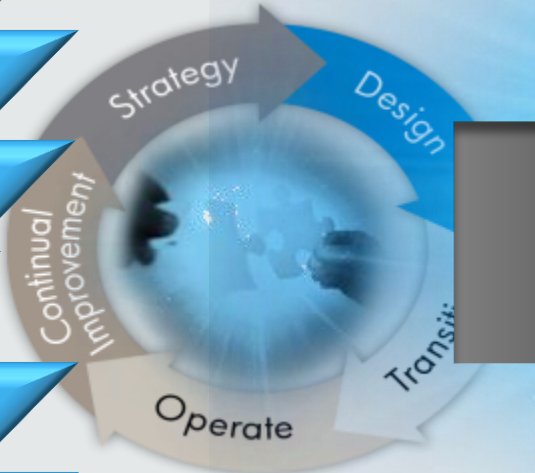
IPv6 Readiness Assessments

IPv6 Architecture and Design

IPv6 Web Start Service

IPv6 Transition Consulting

IPv6 Integration & Deployment



# Tools to Help

Learn about [IPv6 Services](#) from HP Technology Services

Download the brochure [Capitalize on the next-generation Internet](#)

Download the white paper [Prepare today for tomorrow's IPv6 world](#)

Engage your HP account team

Learn about [networking career certifications](#) from HP ExpertONE



# Thank you

