



# IPv6 Deployment Experience & Challenges

CITC Task force 16<sup>th</sup> Meeting

Nov 2014

# AGENDA

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- Mobily IPv6 Readiness
- Mobily IPv6 Deployment Experience
- IPv6 Deployment Challenges



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# Mobily IPv6 Readiness



# Mobily IPv6 Readiness

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## Apr 2009

- ❖ Mobily has acquired 2x /32 IPv6 prefixes from RIPE

## May 2011

- ❖ Hosted Middle East Network Operators Group Meeting in Al-Khobar

## Jun 2011

- ❖ Participated in World IPv6 Day

## Feb 2012

- ❖ Deployed IPv6 Caching Solution
- ❖ Deployed IPv6 Filtering Solution as per CITC compliance
- ❖ Deployed Dual-Stack in Mobily Global Network (MGN)

## May 2012

- ❖ Established IPv6 EBGP sessions with international transit providers (HE, TATA, Level 3) and major contents providers (Google, Yahoo, Facebook)



# Mobily IPv6 Readiness (Cont.)

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## June 2012

- ❖ Participated in World IPv6 Launch (6 June, 2012)
- ❖ Provided IPv6 Internet Service to Yesser Project

## Apr 2014

- ❖ Implement 6PE over IPv4 MPLS Network for IPv6 Internet connectivity with demonstration

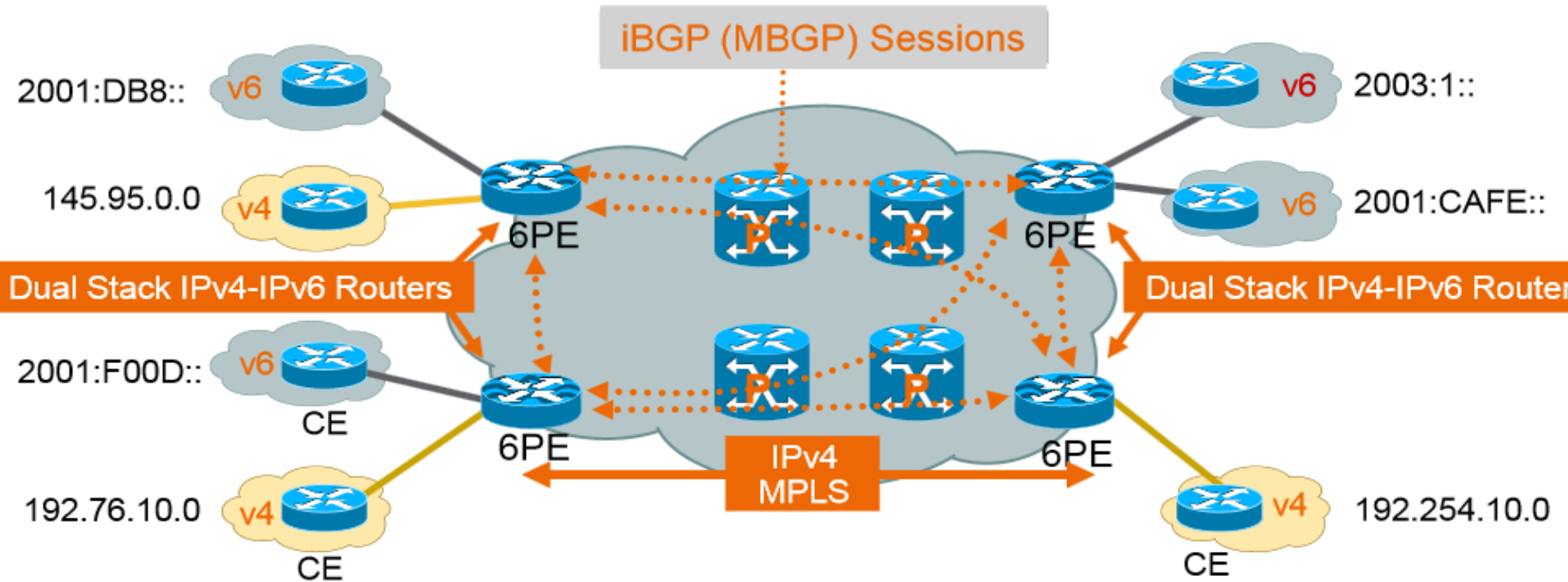


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# Mobily IPv6 Deployment Experience



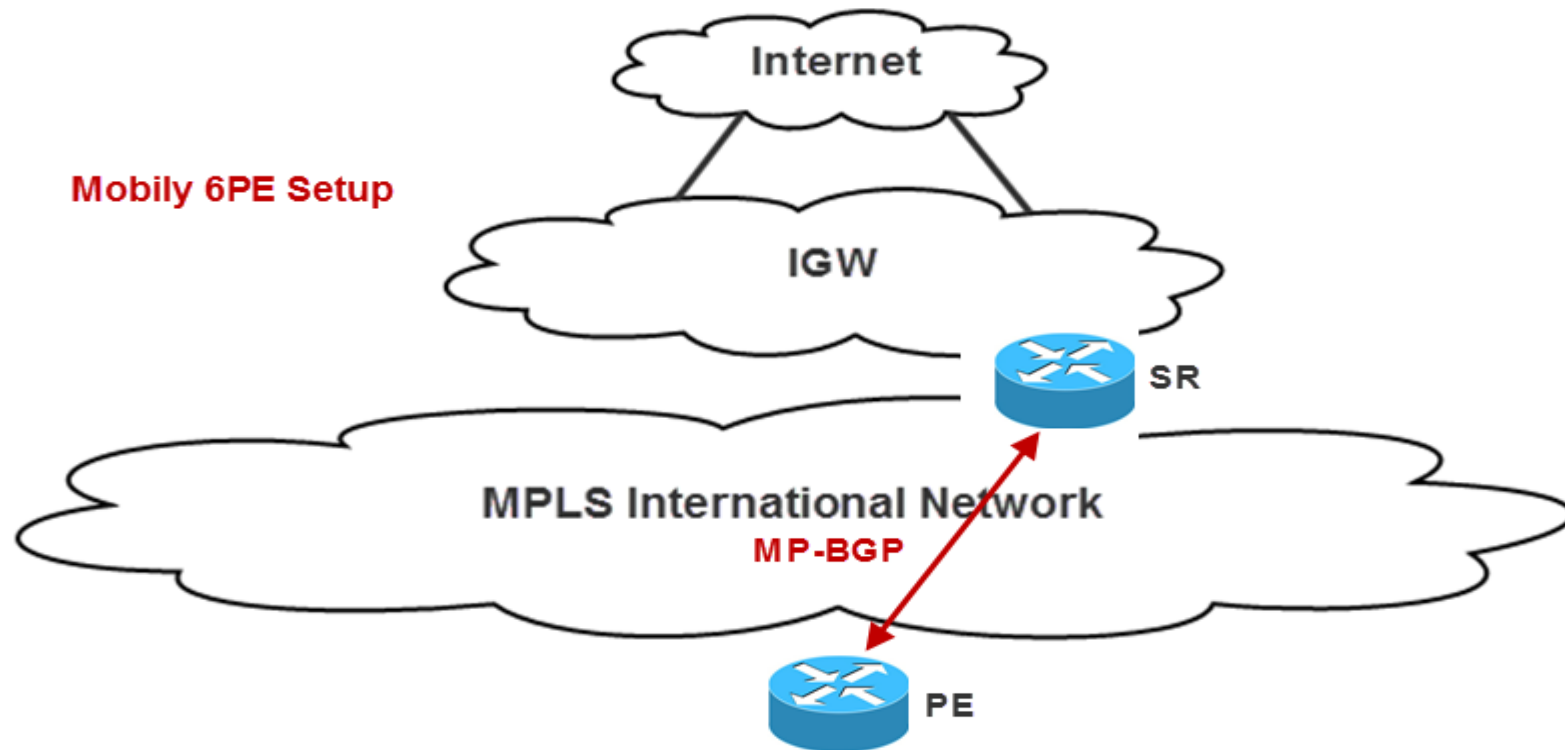
# IPv6 Provider Edge (6PE) over MPLS



- IPv6 global connectivity over an IPv4 MPLS Core.
- Transitioning mechanism for providing unicast IP
- IPv6 reachability exchanged among 6PEs via iBGP (MBGP)
- IPv6 packets transported from 6PE to 6PE inside MPLS



# 6PE with IGW Services



- Most of the PBR/FBF are working on native IPv4/IPv6, NOT LABELED PACKETS !!
- Short term and Long term solutions to get IPv6 traffic served by IGW services; i.e Filtering.





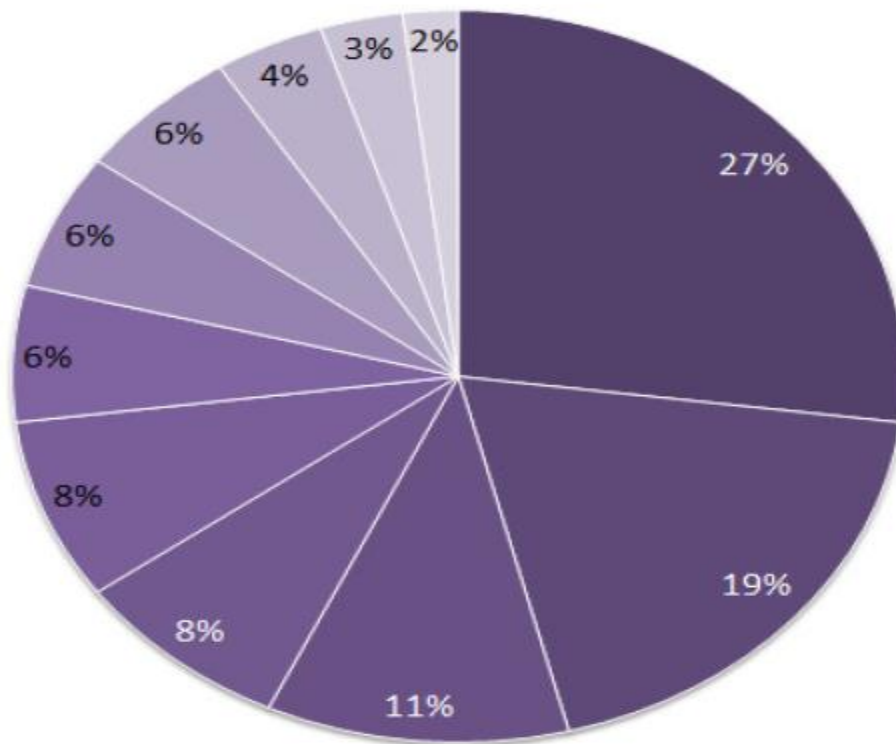
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# IPv6 Deployment Challenges



# Lack of Business Cases

## IPv6 Industry Survey Results conducted by BT at July 2, 2014



- Inability to demonstrate a strong business case
- Complexity of infrastructure upgrade
- Cost of equipment upgrade including non PC devices
- Perception that the only benefit is larger address space
- Conversion of existing applications or middleware
- Network services support for IPv4 and IPv6
- We have overcome all hurdles!
- Lack of ample security products
- Training of staff
- Network management support of IPv4-IPv6 devices
- Address translation or tunneling implementations



# Security Consideration

“IPv6 can be deployed just as securely as IPv4, although it should be expected that vulnerabilities within the protocol, as well as with implementation errors, will lead to an initial increase in IPv6-based vulnerabilities,” the guidelines say

Likely security challenges of IPv6 deployment include:

- The possibility that attackers might have more expertise with IPv6 than an organization in the early stages of deployment.
- Difficulty in detecting and managing unknown or unauthorized IPv6 assets on existing IPv4 production networks
- The added complexity of operating parallel IPv4 and IPv6 networks
- A lack of IPv6 maturity in security products
- The proliferation of IPv6 and IPv4 tunnels can complicate defenses



# CGNAT (NAT44)

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- NAT44 offers a way for service providers to extend their reserves of IPv4 addresses for a long time to come
- Has some drawbacks. For example, with multiple subscribers sharing a single public IPv4 address, there is likely to be an impact on any systems that assume an IPv4 address uniquely identifies an Internet subscriber
- The technique should not be relied on as an alternative to pushing ahead with IPv6 deployment. The same box could be used for NAT64 (along with DNS64) as an IPv6 transition mechanism
- Protecting the existing investment, doesn't mean postpone IPv6 deployment



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# Q & A





# Thank You