



## ORION IPV6

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## IPv6 - Agenda

- Why IPv6
- IPv6 Allocation Policy
- IPv6 assignment in ORION
- Deployment Scenario
- Deployment of IPv6 in ORION
- IPv6 Peering
- IPv6 Multihoming
- Reference



## Why IPv6

- Expanded addressing
  - 128 bit addresses.
- IP Address Allocation History
  - 1981 - IPv4 protocol published
  - 1985 ~ 1/16 of total space
  - 1990 ~ 1/8 of total space
  - 1995 ~ 1/3 of total space
  - 2000 ~ 1/2 of total space
  - 2002.5 ~ 2/3 of total space





## IPv6 assignment in ORION

- ORION have /40 from CA\*net4
  - 2001:0401:8000::/40
- Policies for assignments
  - /48 in the general case
  - /64 when it is known that one and only one subnet is needed by design
  - /128 when it is absolutely known that one and only one device is connecting.
- Assignment of multiple /48s to a single end site
  - When a single end site requires an additional /48 address block, it must justify the request.

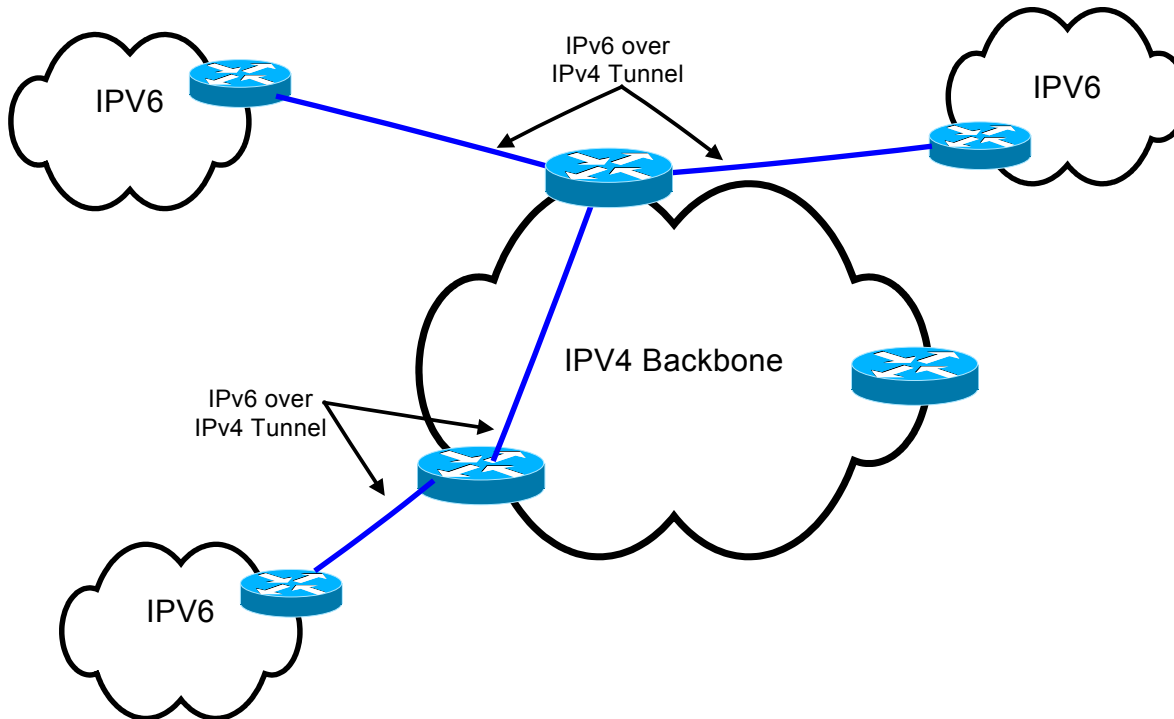


## Deployment Scenario

- IPv6 over IPv4 Tunnels
- Native dual stack separate IPv4-IPv6
- IPv6 Provider Edge Router (6PE) over MPLS

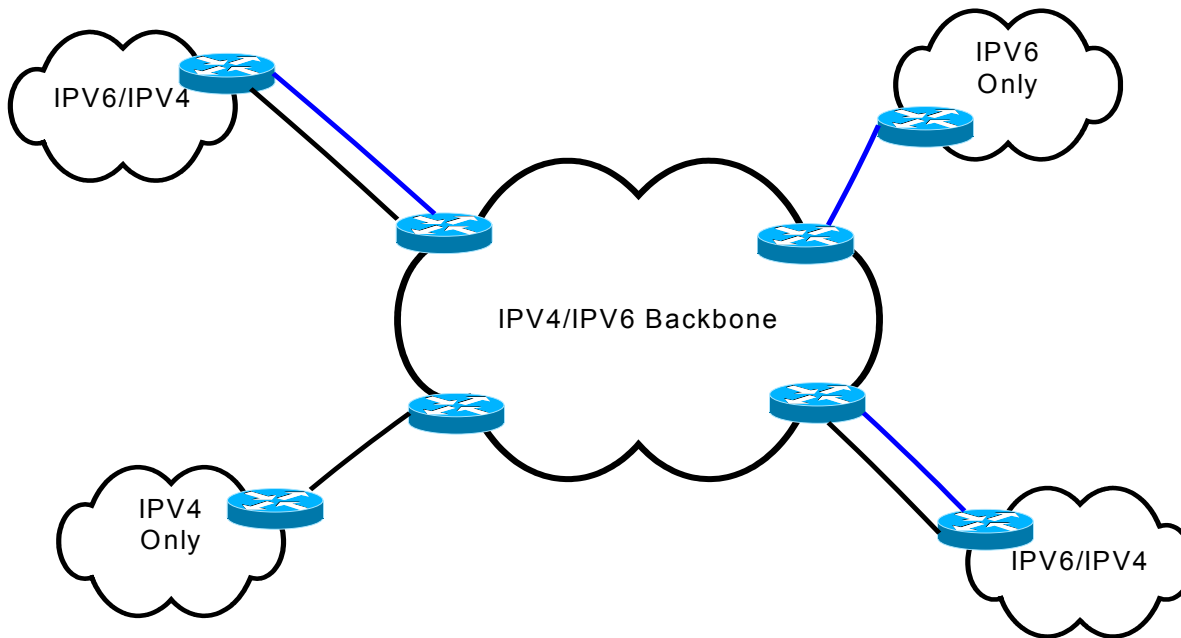


# IPv6 over IPv4 Tunnels



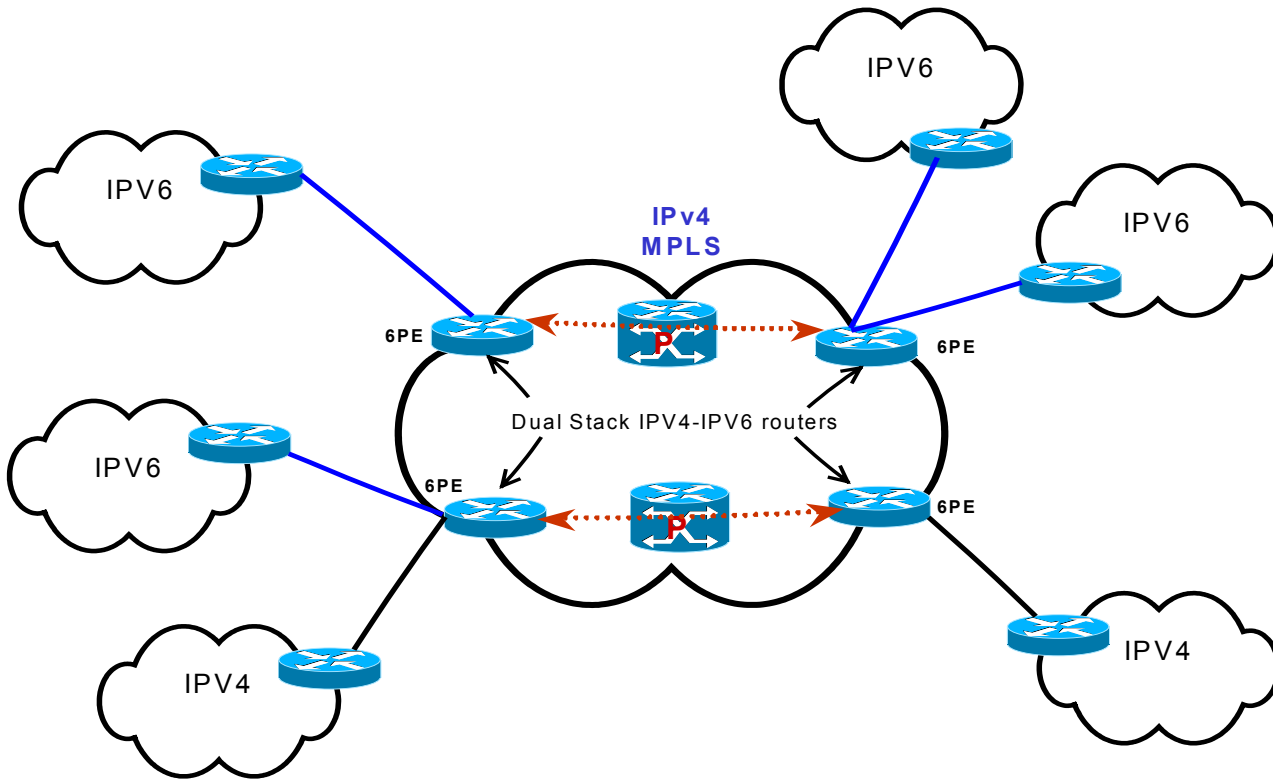


# Native Dual Stack IPv4-IPv6 Backbone





# IPv6 Provider Edge Router (6PE) over MPLS





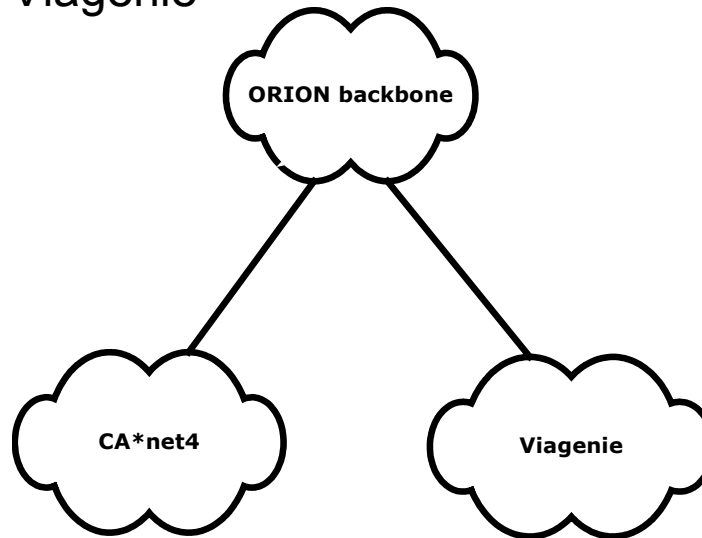
## Deployment of IPv6 in ORION

- Native Dual Stack IPv4-IPv6 Backbone
- Internal Configuration
  - Interface Configure with IPv4 & IPv6
  - External Gateway Protocol: BGP+
  - Internal Gateway Protocol: ISIS
- Configuration with Members
  - Static or BGP+
  - IPv4 routing policy will apply on IPV6



## IPv6 Peering

- ORION will peer with:
  - CA\*net4
  - Viagenie





## IPv6 Multihoming

- Still not finalized yet
- Several groups are working on this issue
- One new Internet draft propose /48 should accept by peers

<http://www.ietf.org/internet-drafts/draft-kurtis-multihoming-longprefix-00.txt>



## Reference

- <http://www.6bone.net>
- <http://www.6ren.net/>
- <http://www.6tap.net/>
- <http://www.apan.net/groups/ipv6/>
- <http://www.ripe.net/ripe/wg/ipv6/>
- <http://www.terena.nl/tech/task-forces/tf-ngn/>
- <http://www-lor.int-evry.fr/~pascal/RFC/S.ipv6.html>