Network Design

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IPv6 Addressing

Infrastructure

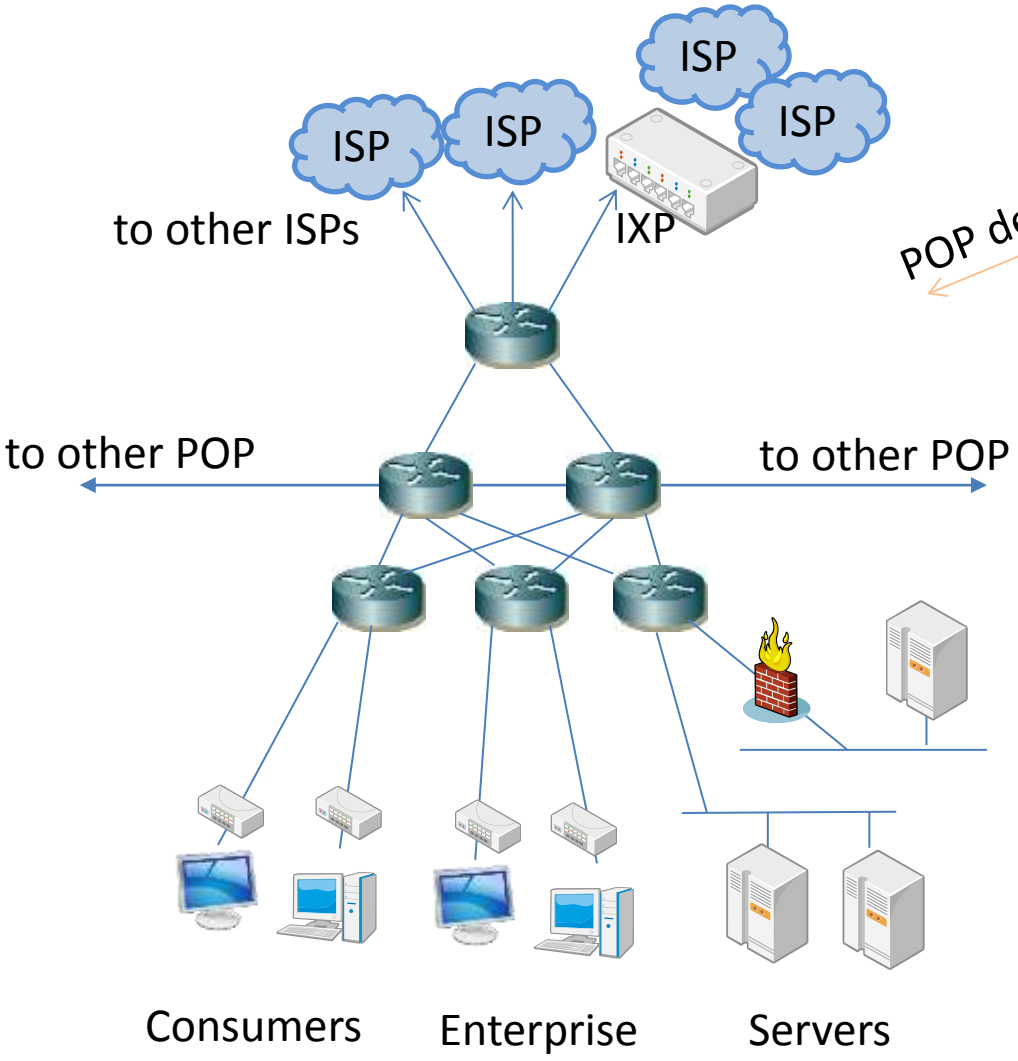
- Inter-router links
  - internal network
  - point-to-point for enterprise
  - peering links
- Loopbacks
- Server Segment

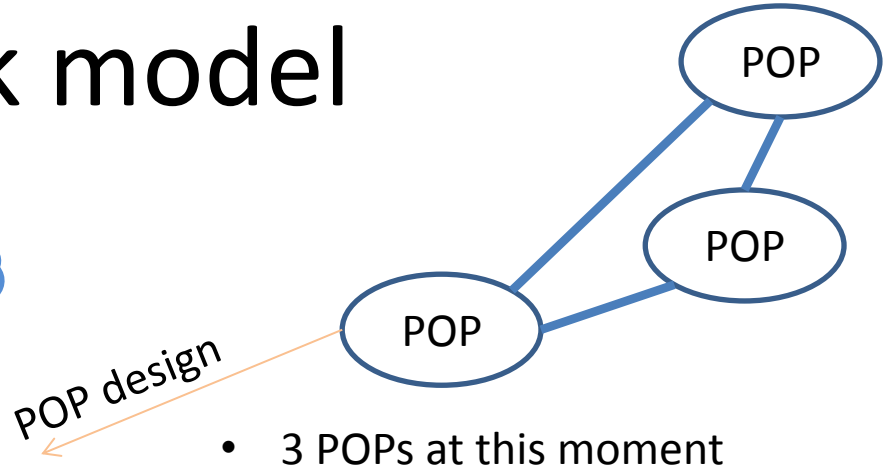
Services

- Broadband
- Enterprise

- You got 2001:db8::/32 and need to plan your IPv6 addressing
  - prefix size for services
  - reservation for each purpose
  - future plan

Network model





- 3 POPs at this moment

Infra / POP

- 1 IXP connection
- 10 direct peers with other ISP
- 6 Server Segments
  - public servers
  - half of them have a firewall for filtering and logging purpose

Users / POP

- 5000 broadband Users
- 100 Enterprise Users

Your Plan

Exercise 1: loop detection

- received a heads-up that there are routing loops in your network.
- How will you find them?

Exercise 2: traffic to Enterprise infra

- Huge amount of traffic flows to one of enterprise customers
  - incoming: several peers
  - src ipv6: any, dst ipv6: customer's prefix
  - packet: UDP and fragmented IPv6
  - observing: congestion at the customer link, high cpu load of customer aggregation router, packet losses on other enterprise customers that are connected to the same router
- What’s your reaction?

Exercise 3: BGP flapping

- Suddenly several eBPG peers start to flap
  - observing: Those eBGP sessions are continuously reset, others stay up
- What's your reaction?

Exercise 4: traffic to peer

- a little higher than usual volume of traffic flows to a peer
  - incoming: enterprise and consumer users
  - src ipv6: any, dst ipv6: peer's network
  - packet: UDP and fragmented IPv6
  - The peer asked for help to investigate the traffic
  - obserbing: no congestion in your network
- What's your reaction?