

ASP4

Switching vs. routing

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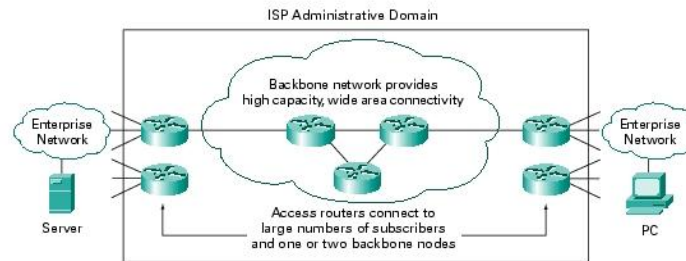
Agenda

- **Motivation**
- Customer-end switching
- Backbone routing
- Flexible switching-routing
- Ongoing and future work



Motivation

- Ossified ISP network architecture



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Customer-end switching

- Simple protocols:
 - xDSL
 - (Carrier)-Ethernet
 - VLAN
 - L2-VPN
- Requirements:
 - high port density
 - limited control plane complexity



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Routing

- Complex protocols:
 - IS-IS, OSPF
 - MPLS, LDP, RSVP-TE
 - L3-VPN
 - BGP
- Requirements:
 - low port density, high traffic aggregation
 - high data plane performance



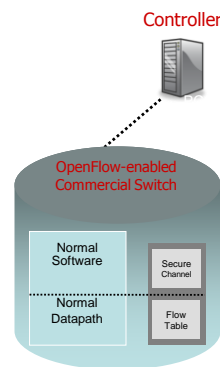
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Flexible switching- routing

- Arbitrary location of switching and routing functionalities
- OpenFlow Switch-Router:
 - Open-source switching and routing functionalities
 - Leverage cheap switch hardware
 - Remote control-plane functionalities through virtualization
 - Actual functionalities running on device depend on requirements and hardware capabilities



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Ongoing and Future Work

- Ongoing:
 - Testing open-source routing software
 - Supporting cheap hardware switch
- Future:
 - Build experimental network based on openflow switch-routers
 - Test scalability and management properties of new ISP architecture based on openflow

