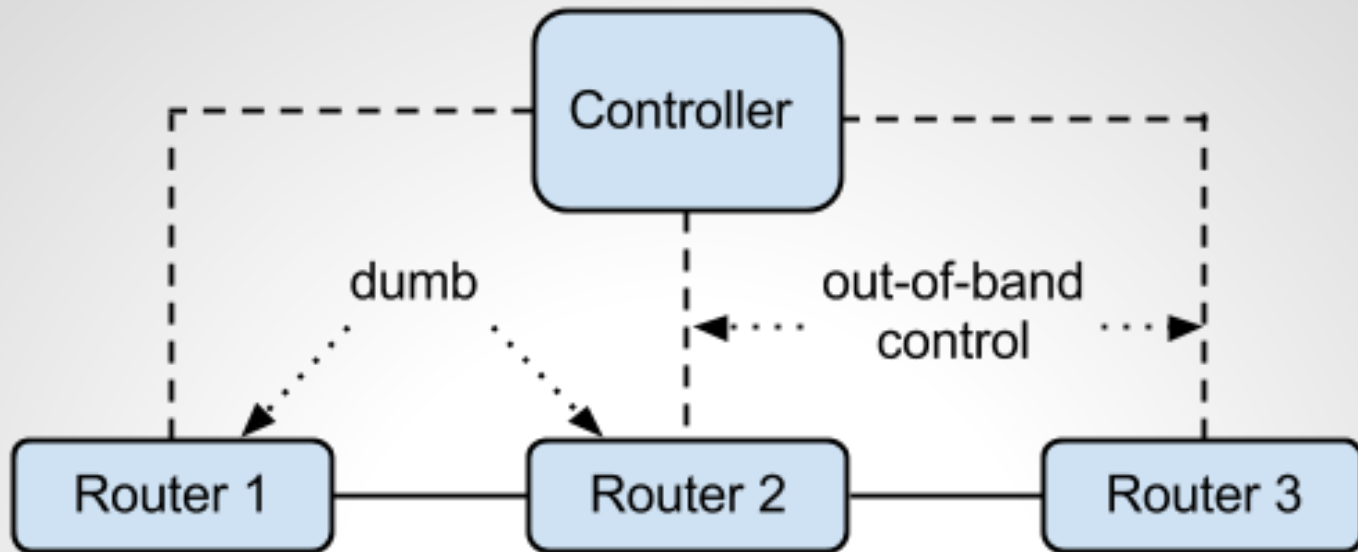# XIA Intra-Domain Routing

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Goal: Add intra-domain routing to XIA prototype

- Need some kind of SDN controller to select between different inter-domain routing protocols (e.g. SCION, BGP)

- Considering different options intra-domain architecture

Option #1

- The SDN controller makes all routing decisions
- Connected out-of-band with all of the routers (e.g., via a separate network)

Advantages:

- Simple control plane architecture.
- Could reuse code from existing OpenFlow implementations (e.g. NOX)

Disadvantages:

- Secondary out-of-band connection control topology;
- Complex to implement in Click
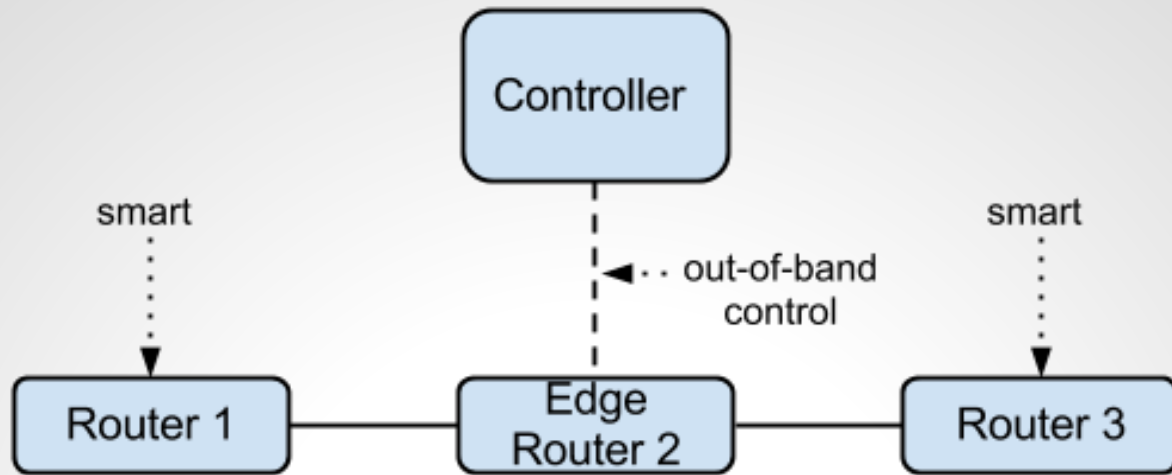
Option #2

- The SDN controller makes only decisions at the inter-/intra-domain interface (e.g., about which inter-domain routing protocol to use)
- Controller uses out-of-band or in-band connection
- Interior routers build their own forwarding tables via regular OSPF/flooding

Advantages:

- Gets us a lot of bang for the buck; C
- Can easily reuse existing inter-domain XIA OSPF implementation

Disadvantages:

- Controller is limited in decision-making capability
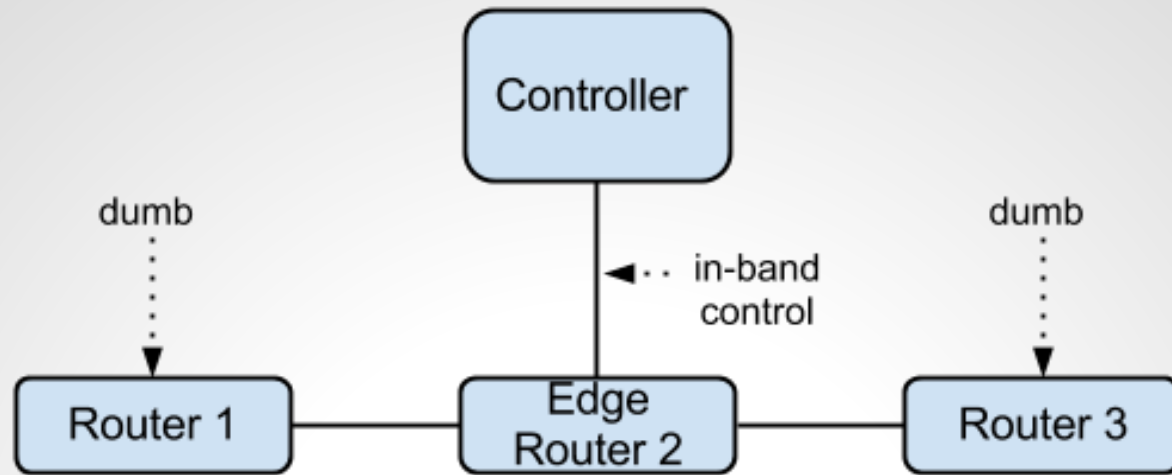
Hybrid option

- The SDN controller makes all routing decisions
- Controller has in-band connection with routers.
- Routers forward link-state to controller
- Controller calculates topology and disseminates forwarding tables

Advantages:

- Can reuse existing OSPF code.

Disadvantages:

- Architecturally 'weird' --- no real reason to include controller in intra-domain routing decisions

Additional Questions

Which of these options will work best with SCION?

Are there other folks who want input into the architecture?

How are client SIDs advertised so that they can be added to forwarding tables?

Where will control lie for constructing SCION paths?