XIA Intra-Domain Routing Design

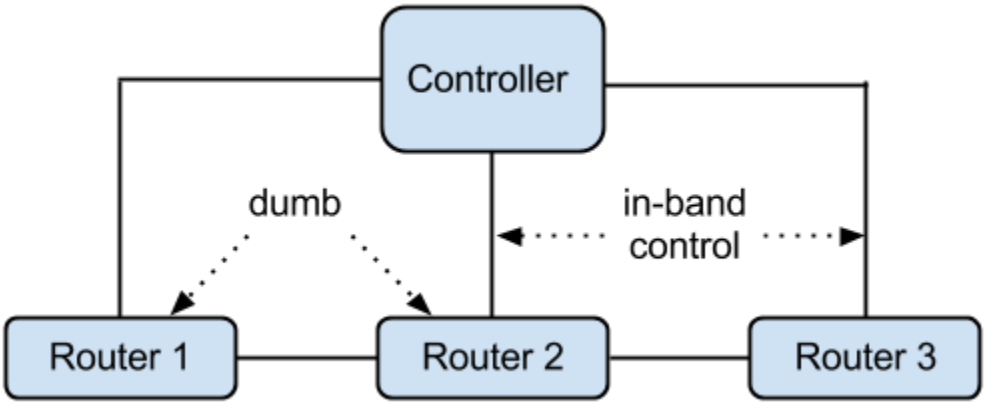

Figure 1: Intra-domain architecture diagram

Git branch: https://github.com/XIA-Project/xia-core/tree/intradomain_routing

Routing Daemon (xrouted)

Files: https://github.com/XIA-Project/xia-core/tree/intradomain_routing/daemons/xrouted

- One process for each router
- Originally used for inter-domain routing; now it will handle both inter- and intra-domain routing
    - For intra-domain routing, end hosts are now included in link-state advertisements
- Routing tables map XIDs to port numbers
- In-band control: how do routers know which control messages to trust?
    - Statically configure a controller XID for each domain beforehand
- Current code doesn't handle dropped peers for inter- nor intra-domain routing

Functions to be added:

- sendLSA()
- processRoutingTable()
- sendExternalPacket()

Controller Daemon (xcontrold)

Files: https://github.com/XIA-Project/xia-core/tree/intradomain_routing/daemons/xcontrold

- Controller has an XID which the routers are configured to recognize so they know who to trust
- Out-of-band vs. in-band control; we are using in-band for now
    - In-band much easier to implement by reusing existing code
    - For in-band control: always flood or are optimizations worth it?

- Controller should be identified by HID or SID? Multiple controllers?

Functions to be implemented:

- processLSA()
- buildRoutingTable()
- sendRoutingTable()
- processExternalPacket()

Current Status

Done:

- Add separate controller daemon that runs alongside router daemons
- Update routing daemons to collect intra-domain link-state information
- Update routing daemons to include end host connections in link-state information
- Update routing daemons to flood link-state information to controller
- Update controller to build routing tables upon received link-state information

In progress:

- Update controller to disseminate routing tables back to routing daemons
- Update routing daemons to use the routing tables sent from the controller
- Update routing daemons to defer to controller when receiving packets from outside the domain
- Update controller daemon to correctly process packets originating from outside the domain
- Lots of code cleanup