To do:

- processLSA (xrouted/xcontrold) - check LSA seq num to filter those already seen
    - Right now, LSAs keep looping within the system
    - Use map to keep track of seq num for every other router
- Routing table propagation faces the same issue as LSAs, since a router only checks ctl seq num if it is the intended recipient
    - Use map to keep track of seq num for every other router
- Implement OSPF on AD level
    - AD-level LSA exchange.
        - Fix missing AD routing info at controllers
            - Added XIARouter to controller to enable modification of forwarding table.
        - Keep track of neighboring ADs
            - Extract neighboring AD information from incoming LSAs instead of keeping (AD,HID) data for boundary routers of neighboring ADs
        - Need controller SID (SID_XCONTROL) to send DAG to controller of neighboring ADs
            - Bind SID to socket (xcontrold)
            - Install SID route entries in all routers
    - AD routing calculation
        - Modify NodeStateEntry and NeighborEntry to hold flexible XID types instead of 1 AD + 1 HID
        - Interdomain: Dijkstra with AD as source
        - Intradomain: Dijkstra with each router as source
    - AD routing dissemination
        - Merge AD reachability info into router tables
- When to recalculate route tables
    - Currently recalculates after every 4 LSAs received
    - Change to: after first LSA received, collect LSAs over next t seconds, then recalculate tables
- (optional) Remove registered hosts that leave network
    - Periodic heartbeat messages
- (optional) Move ControlMessage parsing within the class itself
- (optional) Improve route table propagation
    - Disseminate routing tables by sending directly to router instead of flooding using broadcast
        - Flooding means each router's table goes through every link in the network traversed twice (broadcast indiscriminately sends the table back out the incoming port). Since routing tables may be large, this leads to excessive bandwidth usage, since these tables may be large.
        - Has to be done incrementally, with first hop from controller, then second hop, etc, since routers may not have routing tables at the start
    - Maybe controller can keep track of what entries are present in which routers, and send updates instead of entire routing table

- (optional) How to flood on internal-facing interfaces
    - Security issue but does not affect operational correctness
- (optional) Refactoring
    - Abstract out common code between xcontrold and xrouted
    - Abstract out hard-coded constants
    - Adjusting syslog levels

Questions:

- What is significance of dualRouter?
- Coding guidelines?