Group 3 – Flow reservation in Data Centers (2 people)

Scenario: consider an SDN-based network using a leaf-and-spine topology like the one in Figure 1. The hosts connected at the edge of the network communicate by transmitting large files one to the other. Design and implement a system that

1. Exposes a RESTful interface allowing hosts to subscribe for a new host-to-host flow, specifying the expected flow load (in Gigabytes).
2. Guarantees that each physical link is reserved for **at most one** host-to-host flow.

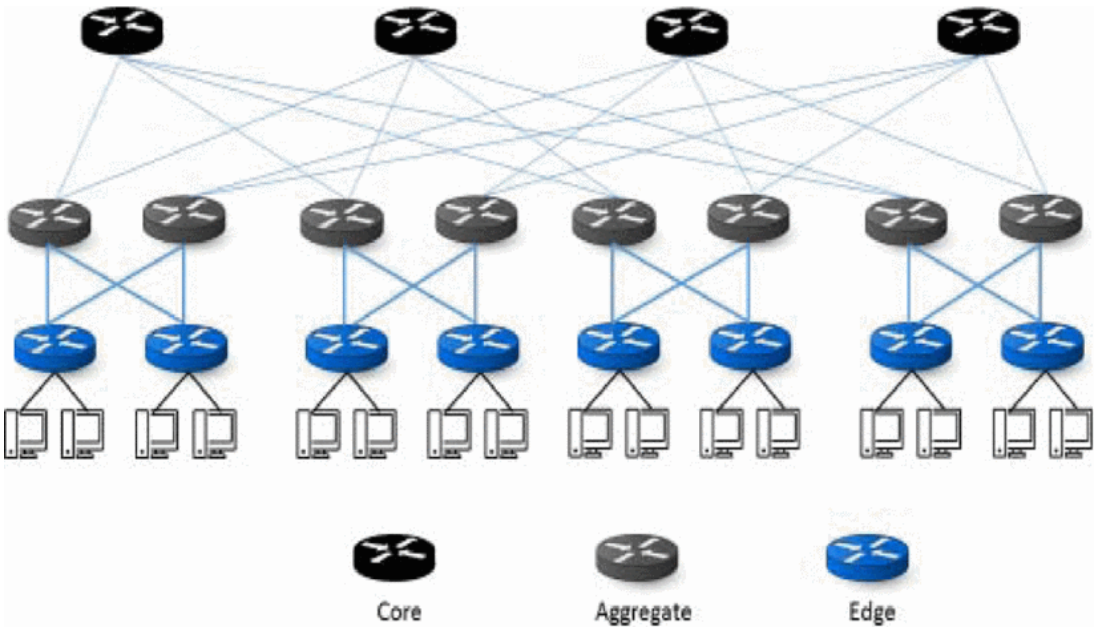

Figure 1

Detailed objectives:

1. Implement a Floodlight module exposing a RESTful interface allowing hosts to request a subscription for a new flow with an expected data load (GiB). If no paths are available, the request is denied.
2. Implement a service that 1) keeps track of the current state of the network and reserves a path to each subscribed flow. 2) Proactively installs flow rules on the switches that are part of a subscribed flow path.
3. Flows must be maintained until the amount of transmitted data reaches the data load set by the user, then they can be automatically deallocated (the sooner, the better).
4. Test and demonstrate the overall system using mininet and Floodlight.