Lab 4 Demo Questions

Part 1. Explain your code. (30%)

Preparation:

Please show your code with an editor.

Questions:

1. How does your application receive the JSON file information? (7.5%)
   Explain how you implement hostconfig listener in your application
2. How does your application install Group and Meter? (7.5%)
   Use GroupDescription, GroupService, MeterRequest, MeterService to install Group and Meter
   Get GROUP_ID and METER_ID to install flow rules
3. How does your application use intents to install flow rules? (7.5%)
   Packet-in IPv4 packet -> get destination MacAddress
   Use the Connect Points and destination MacAddress to submit intents
4. If s1-s2 link is up and s1-s4 link is down, can h1 ping h2? Why is that? (7.5%)
   Yes, ONOS will recalculate the path for the intent, then IntentService will install new rules on switches.

Part 2. Answer questions (30%)

1. Please explain the difference between FlowObjectiveService, FlowRuleService and IntentService when using them to install flow rules. (10%)
   FlowRuleService: 需要對 pipline 有所了解才可使用，需在 FlowRule 提供 table ID
   FlowObjectiveService: 提供 pipline independent 的方式設定 flow rule，需要對 Topology 有所了解
   IntentService: 提供 Topology independent 的方式設定 flow rules, 需要知道 Source 和 Destination 的 ConnectPoint 或 HostId
2. What are the four types of group? What are the differences between them? (10%)
   Indirect: 執行 1 個此 group 中特定的 bucket，讓多個 flow entries 或 groups 指向一個常用的 GroupId
   All: 執行所有 group 中的 buckets，會在 multicast 或 broadcast forwarding

時使用

Select: 根據 switch-computed selection algorithm 來執行 group 中的 1 個 bucket，在需要 load balance 時使用

Fast Failover: 執行第一個 live bucket，如果沒有 live bucket，則 drop packets。讓 switch 可以在沒有 controller 的幫助下改變 forwarding

3. How does meter select meter band? (10%)
   Meter Measured Rate > Band Rate, 且 Band rate 為最大者

Part 3. Modify your code. (40%)

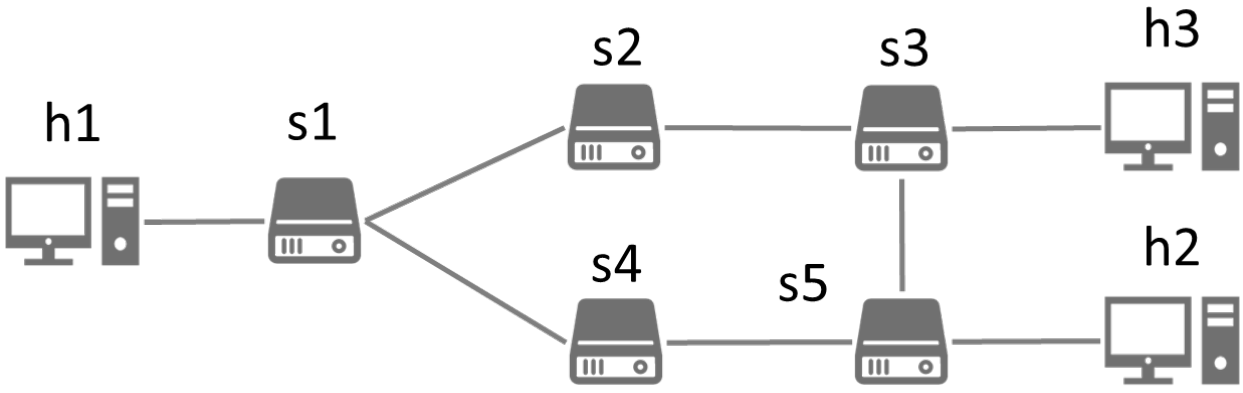
Preparation:

(1) Make a copy of your application

(2) Change the artifact ID in pox.xml to “no-packet-in”

Modification:

1. Add a host h3 (10%)
   - Mac: 00:00:00:00:00:03
   - IP: 10.6.1.3/24
   - Gateway: 10.6.1.254
2. Add a link between h3 and s3
3. Modify “hostconfig.json” to provide **ConnectPoint**, **MacAddress**, and **IpAddress** of all hosts
4. Modify your application to provide intents between h3 and h1, h3 and h2 without packet-in any IPv4 packet. (30%)
   Hint: You can create an intent as soon as you acquire 2 connect points.



Appendix: Useful commands

Check intents: (reference)

```
(bash)$ onos localhost intents [options]
```

Remove specified intents: (reference)

```
(bash)$ onos localhost remove-intent [options] <app-id> <intent-id>
```