1)

文本

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图片包含 图形用户界面

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Firstly, when controller is initialized, it is listening to the port 6633. Then when tree topology is created and connect it to the controller through port 6633, it identifies the links between switches. When try pinging h5 from h1, it firstly finds the ip address of h1 and h5 and find the switch which is directly connected to h1 or h5. Then it starts to generate the flow rules from h1 to h5. Note that 00-00-00-00-00-0x seems to be the dpid of sx. Then for the line which shows installing flow for …, it seems that the controller is generating the rules on the path between two directed connected switches.

2)

文本

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It is obviously that the first ping is much slower than the rest ones. This is because for the first pinging, the controller needs to install flow rules to the switch. For the rest ones, the packet can follow the rules directly without installation.

3）

Before pinging

图片包含 户外, 水, 人们, 一群

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After pinging

图片包含 背景图案

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For initial rules, it is probably used to connected to the controller through the specified port.

Since pinging from h1 to h5 need s1, s2, s3, s5, and s6. Comparing the information before and after pinging, it is obviously that these switches installed two more flow rules which is need when ping. While s4 and s7 are still only containing their initial rules since they are not used in pinging. The difference between the generated rules and the rules defined in part A, the dl\_src and dl\_dst are the source and destination of the packet though the whole route, thus this implies the controller implements a destination-based forwarding.