**باسمه تعالی**



شبکه های کامپیوتری 2

دانشکده مهندسی برق و کامپیوتر

فروردین 1403

استاد:

دکتر هاشمی

سپهر عبادی

9933243

**P21. Consider the SDN OpenFlow network shown in Figure 4.30. Suppose**

**that the desired forwarding behavior for datagrams arriving at s2 is as**

**follows:**

**• any datagrams arriving on input port 1 from hosts h5 or h6 that are destined**

**to hosts h1 or h2 should be forwarded over output port 2;**

**• any datagrams arriving on input port 2 from hosts h1 or h2 that are destined**

**to hosts h5 or h6 should be forwarded over output port 1;**

**• any arriving datagrams on input ports 1 or 2 and destined to hosts h3 or h4**

**should be delivered to the host specified;**

**• hosts h3 and h4 should be able to send datagrams to each other.**

**Specify the flow table entries in s2 that implement this forwarding behavior.**

|  |  |
| --- | --- |
| **S1 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.2.\*.\*; IP Dst = 10.1.0.1 | Forward (2) |
| IP Src = 10.2.\*.\*; IP Dst = 10.1.0.2 | Forward (3) |
| IP Src = 10.2.\*.\*; IP Dst = 10.3.\*.\* | Forward (1) |

|  |  |
| --- | --- |
| **S3 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.2.\*.\*; IP Dst = 10.3.0.6 | Forward (1) |
| IP Src = 10.2.\*.\*; IP Dst = 10.3.0.5 | Forward (2) |
| IP Src = 10.2.\*.\*; IP Dst = 10.1.\*.\* | Forward (3) |

**P22. Consider again the SDN OpenFlow network shown in Figure 4.30. Suppose**

**that the desired forwarding behavior for datagrams arriving from hosts h3 or**

**h4 at s2 is as follows:**

**• any datagrams arriving from host h3 and destined for h1, h2, h5 or h6**

**should be forwarded in a clockwise direction in the network;**

**• any datagrams arriving from host h4 and destined for h1, h2, h5**

**or h6 should be forwarded in a counter-clockwise direction in the**

**network.**

**Specify the flow table entries in s2 that implement this forwarding behavior.**

|  |  |
| --- | --- |
| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.3 | Forward (3) |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.4 | Forward (4) |
| IP Src = 10.3.0.6; IP Dst = 10.2.0.3 | Forward (3) |
| IP Src = 10.3.0.6; IP Dst = 10.2.0.4 | Forward (4) |

|  |  |
| --- | --- |
| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.3; port = TCP | Forward (3) |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.4; port = TCP | Forward (4) |

|  |  |
| --- | --- |
| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src =.\*.\*.\*.\*; IP Dst = 10.2.0.3 | Forward (3) |

|  |  |
| --- | --- |
| **S2 Flow Table** | |
| **Match** | **Action** |
| IP Src = 10.1.0.1; IP Dst = 10.2.0.3; port = UDP | Forward (3) |

**P23. Consider again the scenario from P21 above. Give the flow tables entries at**

**packet switches s1 and s3, such that any arriving datagrams with a source**

**address of h3 or h4 are routed to the destination hosts specified in the destination**

**address field in the IP datagram. (*Hint:* Your forwarding table rules**

**should include the cases that an arriving datagram is destined for a directly**

**attached host or should be forwarded to a neighboring router for eventual**

**host delivery there.)**

**P24. Consider again the SDN OpenFlow network shown in Figure 4.30. Suppose**

**we want switch s2 to function as a firewall. Specify the flow table in s2 that**

**implements the following firewall behaviors (specify a different flow table**

**for each of the four firewalling behaviors below) for delivery of datagrams destined to h3 and h4. You do not need to specify the forwarding behavior in**

**s2 that forwards traffic to other routers.**

**• Only traffic arriving from hosts h1 and h6 should be delivered to hosts h3**

**or h4 (i.e., that arriving traffic from hosts h2 and h5 is blocked).**

**• Only TCP traffic is allowed to be delivered to hosts h3 or h4 (i.e., that**

**UDP traffic is blocked).**

**• Only traffic destined to h3 is to be delivered (i.e., all traffic to h4 is**

**blocked).**

**• Only UDP traffic from h1 and destined to h3 is to be delivered. All other**

**traffic is blocked.**