COMANDOS PRACTICA FINAL - SDN

(1 - Levanto el escenario)
sudo vnx -f /usr/share/vnx/examples/practica_final.xml -v --create

(2 - En Vyos_1)
configure
set service dhcp-server shared-network-name LAN authoritative enable
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 default-router '10.0.1.1'
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 dns-server '10.0.1.1'
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 domain-name 'host-network'
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 lease '86400'
set service dhcp-server disabled 'false'
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 start 10.0.1.10 stop '10.0.1.254'
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 static-mapping DHCP-H1 ip-address 10.0.1.7
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 static-mapping DHCP-H1 mac-address 00:00:00:00:01:01
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 static-mapping DHCP-H2 ip-address 10.0.1.8
set service dhcp-server shared-network-name LAN subnet 10.0.1.0/24 static-mapping DHCP-H2 mac-address 00:00:00:00:02:01
set interfaces ethernet eth1 ipv6 router-advert managed-flag 'true'
set interfaces ethernet eth1 ipv6 router-advert send-advert true
set interfaces ethernet eth1 ipv6 router-advert prefix 2001:db8::/64
set service dhcpv6-server shared-network-name LAN6 subnet 2001:db8::/64 address-range prefix 2001:db8::/64
set service dhcpv6-server shared-network-name LAN6 subnet 2001:db8::/64 address-range start 2001:db8::10 stop 2001:db8::200
set firewall group network-group NETWORK-HOSTS network 10.0.1.0/24
set firewall group network-group NETWORK-H1 network 10.0.1.7/32
set firewall group network-group NETWORK-H2 network 10.0.1.8/32
set firewall name HACIA-HOSTS default-action drop
set firewall name HACIA-HOSTS rule 10 action accept
set firewall name HACIA-HOSTS rule 10 state established enable
set firewall name HACIA-HOSTS rule 10 state related enable
set firewall name HACIA-HOSTS rule 20 action accept
set firewall name HACIA-HOSTS rule 20 destination port 80
set firewall name HACIA-HOSTS rule 20 protocol tcp
set firewall name HACIA-HOSTS rule 20 destination group network-group NETWORK-H1
set firewall name HACIA-HOSTS rule 20 description Acceso_HTTP_a_H1
set firewall name HACIA-HOSTS rule 30 action accept
set firewall name HACIA-HOSTS rule 30 destination port 433
set firewall name HACIA-HOSTS rule 30 protocol tcp
set firewall name HACIA-HOSTS rule 30 description Acceso_HTTPS_a_H1
set firewall name HACIA-HOSTS rule 30 destination group network-group NETWORK-H1
set firewall name HACIA-HOSTS rule 40 action accept
set firewall name HACIA-HOSTS rule 40 destination port 22
set firewall name HACIA-HOSTS rule 40 protocol tcp
set firewall name HACIA-HOSTS rule 40 destination group network-group NETWORK-H2
set firewall name HACIA-HOSTS rule 40 description Acceso_SSH_a_H2
set firewall ipv6-name HACIA-HOSTS-v6 default-action drop
set firewall ipv6-name HACIA-HOSTS-v6 rule 10 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 10 state established enable
set firewall ipv6-name HACIA-HOSTS-v6 rule 10 state related enable
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 destination port 80
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 destination address 2001:db8:0:0:200:ff:fe00:101/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 description Acceso_HTTP_a_H1-v6
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 destination port 433
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 description Acceso_HTTPS_a_H1-v6

set firewall ipv6-name HACIA-HOSTS-v6 rule 30 destination address 2001:db8:0:0:200:ff:fe00:101/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 destination port 22
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 destination address 2001:db8:0:0:200:ff:fe00:201/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 description Acceso_SSH_a_H2-v6
set firewall name HACIA-FUERA default-action accept
set interfaces ethernet eth2 firewall in name HACIA-HOSTS
set interfaces ethernet eth2 firewall in ipv6-name HACIA-HOSTS-v6
set interfaces ethernet eth1 firewall local name HACIA-FUERA
set nat source rule 100 outbound-interface eth2
set nat source rule 100 source address 10.0.1.0/24
set nat source rule 100 translation address masquerade
commit
save

(3 - En Vyos_2)
configure
set service dhcp-server shared-network-name LAN authoritative enable
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 default-router 10.4.1.1
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 dns-server 10.4.1.1
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 domain-name host-network
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 lease '86400'
set service dhcp-server disabled 'false'
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 start 10.4.1.10 stop 10.4.1.254
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 static-mapping DHCP-H3 ip-address 10.4.1.7
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 static-mapping DHCP-H3 mac-address 00:00:00:00:0C:01
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 static-mapping DHCP-H4 ip-address 10.4.1.8
set service dhcp-server shared-network-name LAN subnet 10.4.1.0/24 static-mapping DHCP-H4 mac-address 00:00:00:00:0D:01
set interfaces ethernet eth1 ipv6 router-advert managed-flag 'true'
set interfaces ethernet eth1 ipv6 router-advert send-advert true
set interfaces ethernet eth1 ipv6 router-advert prefix 2001:db8:0:4::/64
set service dhcpv6-server shared-network-name LAN6 subnet 2001:db8:0:4::/64 address-range prefix 2001:db8:0:4::/64
set service dhcpv6-server shared-network-name LAN6 subnet 2001:db8:0:4::/64 address-range start 2001:db8:0:4::10 stop 2001:db8:0:4::200
set firewall group network-group NETWORK-HOSTS network 10.4.1.0/24
set firewall group network-group NETWORK-H3 network 10.4.1.7/32
set firewall group network-group NETWORK-H4 network 10.4.1.8/32
set firewall name HACIA-HOSTS default-action drop
set firewall name HACIA-HOSTS rule 10 action accept
set firewall name HACIA-HOSTS rule 10 state established enable
set firewall name HACIA-HOSTS rule 10 state related enable
set firewall name HACIA-HOSTS rule 20 action accept
set firewall name HACIA-HOSTS rule 20 destination port 80
set firewall name HACIA-HOSTS rule 20 protocol tcp
set firewall name HACIA-HOSTS rule 20 destination group network-group NETWORK-H3
set firewall name HACIA-HOSTS rule 20 description Acceso_HTTP_a_H3
set firewall name HACIA-HOSTS rule 30 action accept
set firewall name HACIA-HOSTS rule 30 destination port 433
set firewall name HACIA-HOSTS rule 30 protocol tcp
set firewall name HACIA-HOSTS rule 30 description Acceso_HTTPS_a_H3
set firewall name HACIA-HOSTS rule 30 destination group network-group NETWORK-H3
set firewall name HACIA-HOSTS rule 40 action accept
set firewall name HACIA-HOSTS rule 40 destination port 22
set firewall name HACIA-HOSTS rule 40 protocol tcp
set firewall name HACIA-HOSTS rule 40 destination group network-group NETWORK-H4
set firewall name HACIA-HOSTS rule 40 description Acceso_SSH_a_H4
set firewall ipv6-name HACIA-HOSTS-v6 default-action drop
set firewall ipv6-name HACIA-HOSTS-v6 rule 10 action accept

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set firewall ipv6-name HACIA-HOSTS-v6 rule 10 state established enable
set firewall ipv6-name HACIA-HOSTS-v6 rule 10 state related enable
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 destination port 80
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 destination address 2001:db8:0:4:200:ff:fe00:c01/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 20 description Acceso_HTTP_a_H3-v6
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 destination port 433
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 description Acceso_HTTPS_a_H3-v6
set firewall ipv6-name HACIA-HOSTS-v6 rule 30 destination address 2001:db8:0:4:200:ff:fe00:c01/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 action accept
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 destination port 22
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 protocol tcp
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 destination address 2001:db8:0:4:200:ff:fe00:d01/128
set firewall ipv6-name HACIA-HOSTS-v6 rule 40 description Acceso_SSH_a_H4-v6
set firewall name HACIA-FUERA default-action accept
set interfaces ethernet eth2 firewall in name HACIA-HOSTS
set interfaces ethernet eth2 firewall in ipv6-name HACIA-HOSTS-v6
set interfaces ethernet eth1 firewall local name HACIA-FUERA
set nat source rule 100 outbound-interface eth2
set nat source rule 100 source address 10.4.1.0/24
set nat source rule 100 translation address masquerade
commit
save
```

(4 - En la raiz)

sudo ovs-vsctl set Bridge Net9 protocols=OpenFlow13
sudo ovs-vsctl set Bridge Net7 protocols=OpenFlow13
sudo ovs-vsctl set-manager ptcp:6632
sed '/OFPFlowMod(/,/)/s/)/, table_id=1)/' ryu/ryu/app/simple_switch_13.py >
ryu/ryu/app/qos_simple_switch_13.py
cd ryu/; python ./setup.py install

ryu-manager ~/flowmanager/flowmanager.py ryu.app.rest_topology ryu.app.ws_topology
ryu.app.gui_topology.gui_topology ryu.app.ofctl_rest ryu.app.rest_qos ryu.app.qos_simple_switch_13
ryu.app.rest_conf_switch

ryu-manager --observe-links ryu.app.rest_topology ryu.app.ws_topology
ryu.app.gui_topology.gui_topology ryu.app.ofctl_rest ryu.app.rest_qos ryu.app.qos_simple_switch_13
ryu.app.rest_conf_switch

(5 - QoS en nueva terminal)

curl -X PUT -d '"tcp:127.0.0.1:6632"'
http://localhost:8080/v1.0/conf/switches/0000000000000900/ovsdb_addr
curl -X POST -d '{"port_name": "net8-net9-1", "type": "linux-htb", "queues": [{"max_rate": "5000000"},
{"max_rate": "4000000"}]}' http://localhost:8080/qos/queue/0000000000000900

curl -X PUT -d '"tcp:127.0.0.1:6632"'
http://localhost:8080/v1.0/conf/switches/0000000000000700/ovsdb_addr
curl -X POST -d '{"port_name": "net8-net7-1", "type": "linux-htb", "queues": [{"max_rate": "10000000"},
{"max_rate": "4000000"}]}' http://localhost:8080/qos/queue/0000000000000700

curl -X POST -d '{"match": {"nw_src": "10.0.1.7", "nw_proto": "TCP"}, "actions":{"queue": "0"}}'
http://localhost:8080/qos/rules/0000000000000900
curl -X POST -d '{"match": {"nw_src": "10.0.1.8", "nw_proto": "TCP"}, "actions":{"queue": "1"}}'
http://localhost:8080/qos/rules/0000000000000900
curl -X POST -d '{"match": {"nw_dst": "10.0.1.7", "nw_proto": "TCP"}, "actions":{"queue": "0"}}'
http://localhost:8080/qos/rules/0000000000000700
curl -X POST -d '{"match": {"nw_dst": "10.0.1.8", "nw_proto": "TCP"}, "actions":{"queue": "1"}}'
http://localhost:8080/qos/rules/0000000000000700