Group 4 - SDN and IP coexistence through BGP

Scenario: Consider the network configuration of figure 1, wherein 4 autonomous systems are connected through an SDN-based network. Each border router runs FRR (https://frrouting.org/), a linux-based protocol suite for IP routing. The SDN-based network is managed by an instance of an ONOS controller.

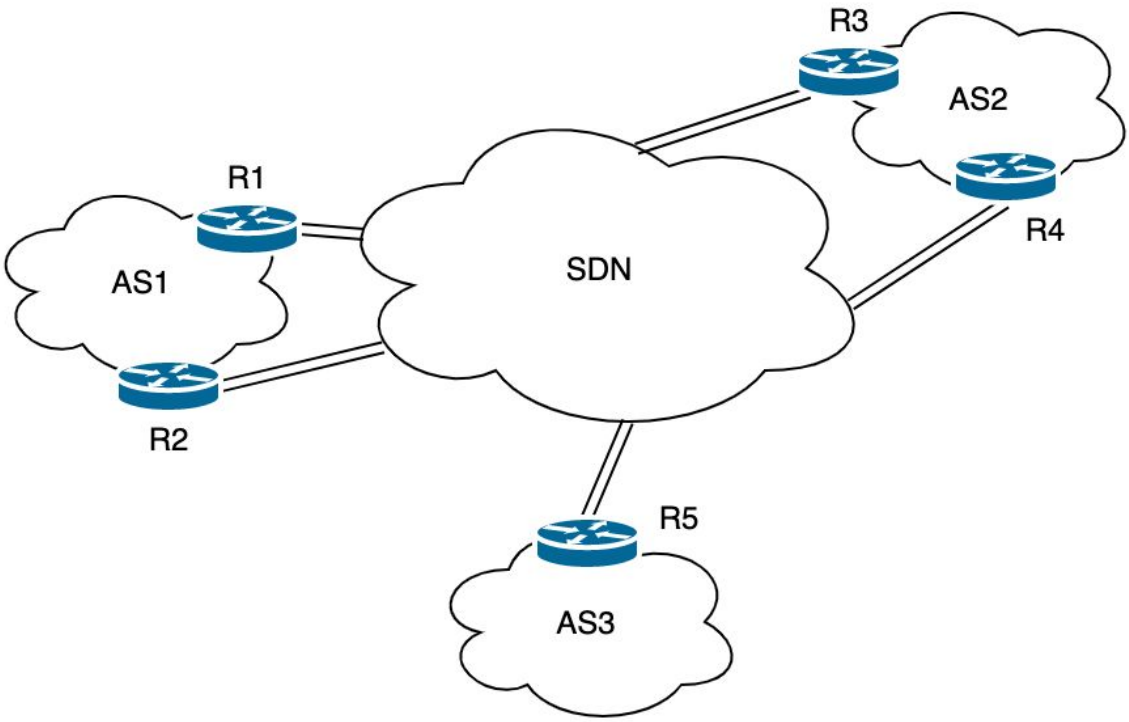

Figure 1 - Network topology

Detailed objectives:

- Create an emulated network using GNS3, based on the topology shown in figure 1, and according to following specifications. SDN switches are Open vSwitches(https://gns3.com/marketplace/appliances/open-vswitch), Border Routers are based on FRR (https://www.gns3.com/marketplace/appliances/frr).
- Connect the SDN switches to an ONOS controller. Enable and configure the SDN-IP module on onos (https://wiki.onosproject.org/display/ONOS/SDN-IP).
- Configure the FRR routers to announce their respective networks and enable communication according to the following rules:
    - AS1 and AS3 will talk through R1-R5
    - AS1 and AS2 will talk through R2-R3
    - AS2 and AS3 will talk through R4-R5
- Detail and explain how the ONOS controller allows the communication through the autonomous systems.