Project 4

Consider a network system composed of several IP routers.

Each router is part of an Autonomous System (AS) and is connected to one or more routers, belonging either to the same or to a different AS. Every router executes the BGP protocol and interact with the other routers according to routing policies detailed below.

Each router can be also connected to one or more local networks, which provide network access to end hosts. IP addresses of end-hosts have to be configured statically.

TASK 1

Design and implement a network-automation system, automating the following task:
- device provisioning: automatic creation of startup-config files for every router in the network, allowing a network administrator specifying the following parameters:
    - IP address of all interfaces;
    - AS number;
    - BGP neighbors;

TASK 2

Using containerlab and arista switches, deploy and configure the network described in Figure 1, according to the following guidelines:
- configure DHCP servers for each local network;
- configure each router to announce all its local networks through BGP;
- configure both AS54020 and AS54030 as transit for AS 55010
- configure AS55010 to use RX as preferred exit point towards Internet.
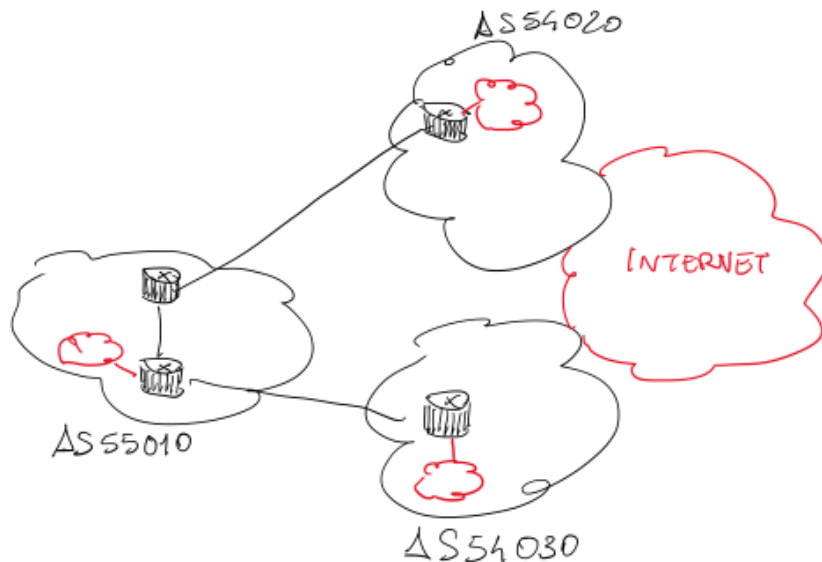

Figure 4 - Network deployment

TASK 3

Using arista eAPI, design a software system which gathers and displays for each router, its BGP peering and routing information.