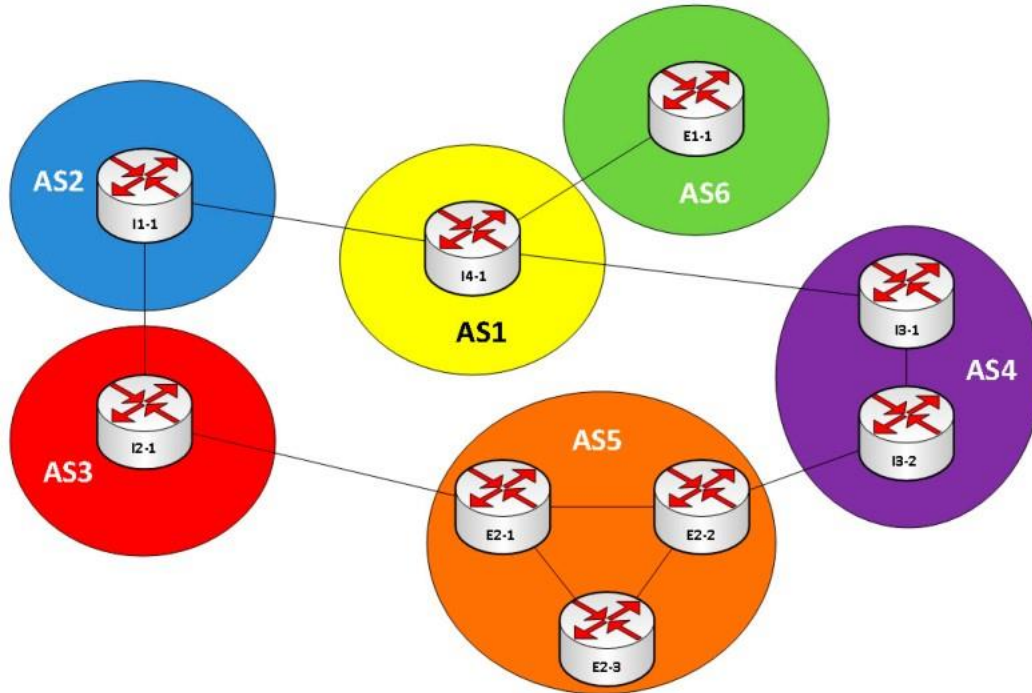# BGP

Lab aims

Helping students develop considerable skills of designing, building, and maintaining corporate networks that use BGP for external connections and IGPs for exchange of routing information within the autonomous system. The network is built using GNS3 emulator.

Network scheme

Description

- Look at the scheme above and try suggesting an IP address plan for it and appoint IP addresses to the interfaces that are used for connection between routers. Use loopback interfaces for emulation of local networks.
- Build the scheme using GNS3.
- (optional) While working in groups, make AS6 on another PC or notebook and use 'cloud' object for connection between them.
- Configure an IGP within AS5. Make sure that it recognizes all networks within the autonomous system.
- Configure all internal and external BGP connections.
- Use Wireshark to observe the process of BGP adjacency.
- Provide redistribution of the routing information about the connected networks as well as, when applicable, the information about the internal routing protocols to BGP.
- Think through the process of connection and configuration of IGP within AS5 in such a way so that only E2-1 and E2-2 routers take part in BGP.
- Analyze the way how routers in AS5 see prefixes from AS6.
- Change the route to AS6 in a way so that it runs through another service provider. Use weight attribute. Puzzle out how and where weight should be configured.

- Cancel the alterations from the previous item and do the same thing using Local Preference attribute.
- Cancel the alterations from the previous item. Perform filtering of routers received from one of the devices nearby.
- Cancel the filtration. Reconfigure the network in a way so that only a summarized route is sent to BGP for the whole network of the autonomous system.
- Create two physical channels between AS3 and AS5. Use MED to specify which of the channels is used.
- Configure the traffic filtration on AS5 routers in a way so that the transit traffic is not transmitted through the autonomous system.
- Send a prefix towards one of the service providers (AS3 or AS4) of one of your internal networks using prepend.
- (optional) Configure the transfer of a certain prefix from AS5 to AS4 adding Community attribute to it. Configure the behaviour of AS4 routers in such a way so that this routing information is not transferred beyond AS4 and so that the traffic filtration (black hole) is performed towards the address (of the network) at the network edge.