

POLITECNICO DI TORINO

PROTOCOLLI E ARCHITETTURE DI ROUTING

# Capture and analysis of BGP packets

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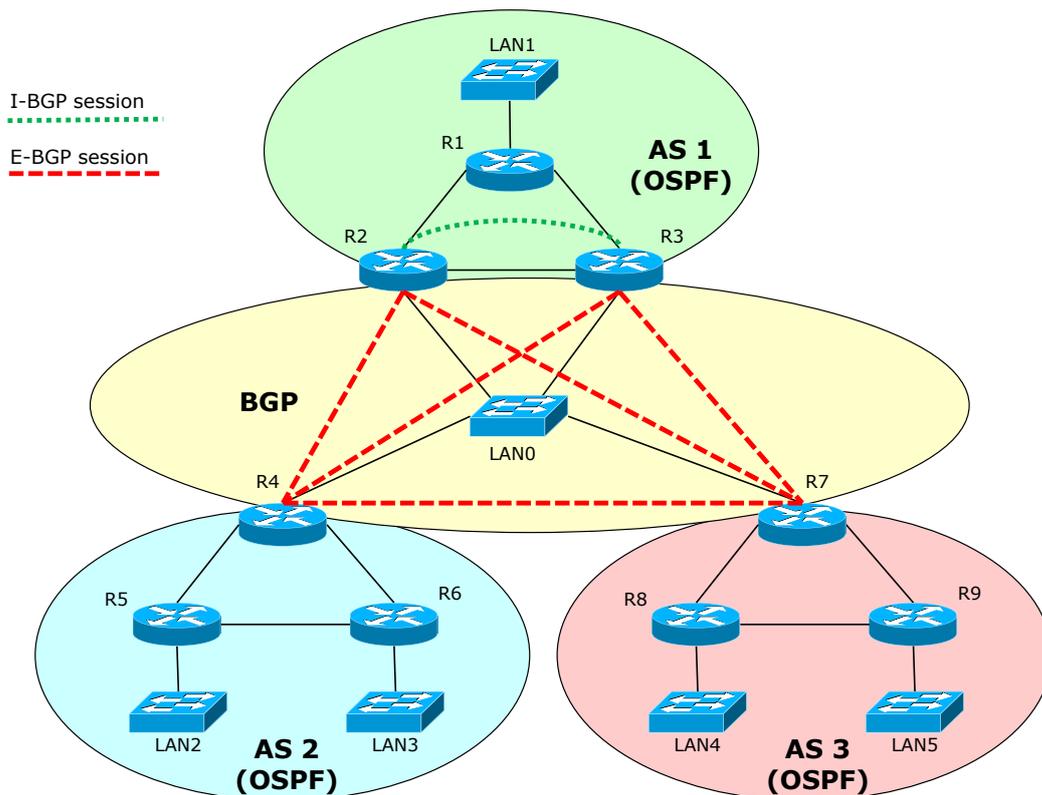
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## Introduction

Given the router network pictured below, configure the devices with IPv4 addressing rules, using the **192.168.8.0/21** address block.

Configure the network as made up of four routing domains: three peripheral autonomous systems, each one configured as **single-area OSPF** domain, and an interconnection network (the central region) using **BGP**. Set up all the routing components (i.e., OSPF, BGP and the proper redistribution rules among those domains) so that all routes are properly redistributed, then verify that routes are correctly propagated and that all the destinations can be reached (e.g., using PING sessions).

**Note:** since many routing domains are present in the network, please select a router in **each** of those domain and verify that the selected router can reach all the destinations present in the network.



## Lab questions

1. Provide an image of the **addressing plan** used in the network, including the addresses of all the router interfaces and IP networks. List also the *loopback* addresses, if any, assigned to the routers. Please reserve properly sized address ranges for each LAN.
2. Analyze the BGP messages sent by the BGP routers when the network is in steady state.
3. Simulate a failure on the link that connects R2 to the LAN0 and analyze the packets sent among the BGP routers (both *I-BGP* and *E-BGP* messages) during the transient.
4. Restore R2 connectivity and capture again the BGP packets among the routers.  
Report the packets captured in both sessions, with a brief description of their contents.

5. Print the routing table of one of the BGP routers, by using:  
`# show ip route`  
with a brief description of each record.
6. Suppose that the network was configured without the I-BGP peering between routers R2 and R3. Would the network behaviour be different? How and why?