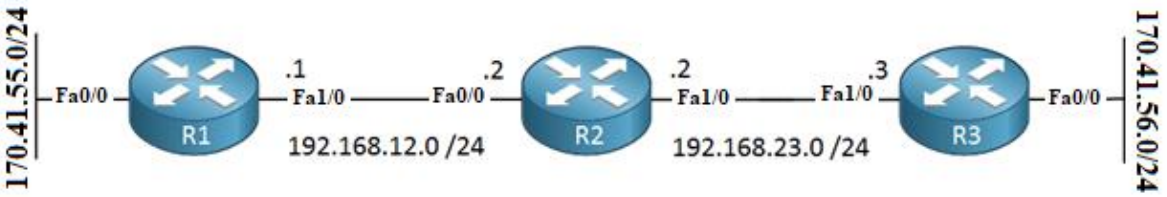
TP01: Weaknesses of Classful Routing Protocols

Consider the following implementation of RIP a routing protocol for a core network. RIP is a classless routing protocol.



a) What is a classless routing protocol? Give an example of a classless routing protocol.
b) The diagram above is an extract of the core/distribution layer for an organisation's network. Configure RIPv1 to ensure communications between the different devices and the connected subnets i.e. 170.41.55.0/24 and 170.41.56.0/24.
c) Verify the routing table of each of the different routers to ensure RIP was properly configured. Do you notice any problem with the routing table?
d) Assume R2 receives a packet to be forwarded to 170.41.55.2? How does the problem from (c) above affect the routing of this packet?
e) How can the problem in (d) above be resolved?
f) What is the memory consumption of the routers running this RIP protocol?

Now to correct the challenges above, we will reconfigure the above network by using OSPF instead of RIPv1.

a) Why is OSPF – a classless routing protocol best suited for this design?
b) Configure OSPF in the above design to ensure communications between the different devices and the connected subnets i.e. 170.41.55.0/24 and 170.41.56.0/24.
c) Verify the routing table of OSPF to ensure it was properly configured.
d) Is the problem that was faced with RIPv1 solved with OSPF?
e) Can you appreciate the convergence time of OSPF compared to RIP?
f) What is the memory consumption of the routers running this OSPF protocol? Compare with that of RIP and comment.

Conclusion: Which routing protocol is best suited for this hierarchical network design? RIP or OSPF? Justify your answer based on the facts above.

TP02: WAN Design Project

ABC Paper Products, Inc. manufactures paper and packaging products, including office paper, newsprint, cartons, and corrugated boxes. They also manufacture wood pulp and chemicals used in the manufacturing of pulp and paper ABC Paper Products (which will be called ABC from now on) has approximately 15 sites in the Cameroon. Headquarters are in Yaounde, Cameroon.

ABC employs around 1500 people and has customers all over the world, with a large customer base in Africa. Klamath is concerned about reduced profit margins caused by fewer sales in Africa in recent years and the scarcity of lumber used to manufacture ABC's products. ABC recently completed a strategic re-engineering project that identified ways to increase profits by improving the efficiency of internal processes and making more use of recycled postconsumer paper in the production of new paper products.

As a result of the re-engineering project, the Conservation Initiative Task Force at ABC plans to roll out an ongoing distance-learning program that will train all employees on ways to conserve raw materials, use recycled materials, and work more efficiently. Executive management considers the new training program vital to the continued success of ABC, and approved funding to equip the training rooms at most sites with digital videoconferencing systems.

a) Discuss the business and technical goals for this organization.

b) Come up with an architecture and explain the logical design for the organization

c) Explain the physical design of the organization