

Communication Architectures Project (*Recurso*)

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Objective: Perform the technical design, configure and test a distributed datacenter network.

Description:

- The company Data4All LLC is a company that provides virtual and bare metal server hosting solutions.
- The company has 4 different datacenter clusters at different geographic locations (Aveiro, Porto, Lisboa, and Coimbra).
- The 4 different datacenter clusters are interconnected by a proprietary network and devices (depicted below).
- The company is an Internet Autonomous System with number 43100, with peering BGP relations with other AS, in Lisboa and Porto, that provide interconnection with the Internet core.
- The company has the IPv4 network 10.0.0.0/23 for use in the interconnection infrastructure.
- The company has 3 major clients:
 - Client Z, with servers in Z1 (10.0.1.0/24), Z2 (10.0.2.0/24) and Z3 (10.0.3.0/24).
 - Client Y, with servers in Y1 and Y2 (VLAN 20: 10.1.1.0/24, VLAN 30: 10.1.2.0/24).
 - Client X, with servers in X1, X2 and X3 (10.2.0.0/22).
- None of the clients require Internet connection.
- Client Z, requested a MPLS Layer 3 VPN to interconnect its servers.
- Client Y, requested a Layer 2 point-to-point overlay network between its server locations, with 5 Mbps of guaranteed bandwidth between its sites. The client has at least two different VLAN (20 and 30).
- Client X, requested a Layer 2 VPN between its server locations.
- The company requires a router monitoring system with SNMP to periodically measure the devices load.
- The company provides to its clients a conditional DNS service. Client X, requested a web service routing service based on conditional DNS for the domain clientX.com.

Notes: VyOS devices only support MPLS VPN on the latest versions of the OS (1.4 rolling, late 2022), this mechanism should be deployed with Cisco C7200 devices. Cisco C7200 devices do not support VXLAN or BGP EVPN, these mechanisms must be deployed with VyOS devices.

