Universidade de Aveiro

Mini-Projeto
Objective 1

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Fundamentos de Redes

Departamento de Eletrónica, Telecomunicações e Informática

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Conteúdo

EngVLAN -> vlan 2
AdminVLAN -> vlan 3
MarkVLAN -> vlan 4
VcVLAN -> vlan 5

Capítulo 1

Planeamento IPv4

Consideramos os routers f1 e f2 como gw para as vlans

1.1 IPv4 public network 200.150.140.0/25

- Dmz -> 64 -> 200.150.140.0/26

  gw -> 200.150.140.62

  Explicação: 32 (endereços públicos necessários) + 2 (broadcast da rede + identificador de rede) + 1 (gw - gateways) = 36 -> 64

- DataCenter -> 16 -> 200.150.140.64/28

  gw -> 200.150.140.78

  Explicação: 10 (endereços públicos necessários) + 2 (broadcast da rede + identificador de rede) + 1 (gw - gateways) = 13 -> 16

- Router 1 -> 5 -> 200.150.140.120, 200.150.140.121, 200.150.140.122, 200.150.140.123, 200.150.140.124

- Engineering VLAN -> 16 -> 200.150.140.96/28

  gw -> 200.150.140.109 e 200.150.140.110

  Explicação: 5 (endereços públicos necessários) + 2 (broadcast da rede + identificador de rede) + 2 (gw - gateways) = 9 -> 16

- Administration VLAN-> 8 -> 200.150.140.112/29

  gw -> 200.150.140.117 e 200.150.140.118

  Explicação: 2 (endereços públicos necessários) + 2 (broadcast da rede + identificador de rede) + 2 (gw - gateways) = 6 -> 8

- Video Conference VLAN -> 16 -> 200.150.140.80/28

  gw -> 200.150.140.93 e 200.150.140.94

  Explicação: 7 (endereços públicos necessários) + 2 (broadcast da rede + identificador de rede) + 2 (gw - gateways) = 11 -> 16

- FREE subnets -> 200.150.140.125, 200.150.140.126, 200.150.140.127

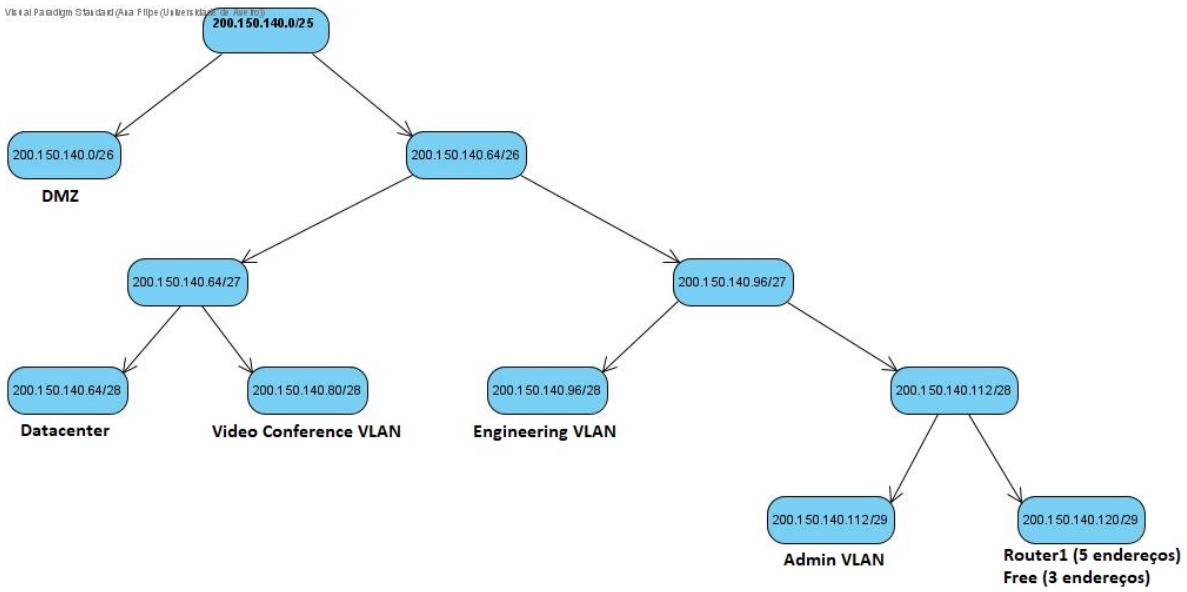

Figure 1.1: *IPv4 Public Network*

1.2 IPv4 private network 10.100.0.0/16

Optamos por definir /24 para todas as vlans e lans:

- Dmz -> 10.100.1.0/24
  gw -> 10.100.1.254
- DataCenter -> 10.100.2.0/24
  gw -> 10.100.2.254
- Engineering VLAN -> 10.100.3.0/24
  gw -> 10.100.3.253 e 10.100.3.254
- Administration VLAN -> 10.100.4.0/24
  gw -> 10.100.4.253 e 10.100.4.254
- Video Conference VLAN -> 10.100.5.0/24
  gw -> 10.100.5.253 e 10.100.5.254
- Marketing VLAN -> 10.100.6.0/24
  gw -> 10.100.6.253 e 10.100.6.254

1.3 9 p2p connections

- f2 <-> c1 -> 10.100.7.0/30 (4 endereços privados)
  f2 -> 10.100.7.1
  c1 -> 10.100.7.2
- f2 <-> c2 -> 10.100.7.4/30
  f2 -> 10.100.7.5
  c2 -> 10.100.7.6
- f1 <-> c1 -> 10.100.7.8/30
  f1 -> 10.100.7.9
  c1 -> 10.100.7.10
- f1 <-> c2 -> 10.100.7.12/30
  f1 -> 10.100.7.13
  c2 -> 10.100.7.14
- r1 <-> c1 -> 10.100.7.16/30
  r1 -> 10.100.7.18
  c1 -> 10.100.7.17

- r1 <-> c2 -> 10.100.7.20/30
  - r1 -> 10.100.7.21
  - c2 -> 10.100.7.22
- ra <-> c1 -> 10.100.7.24/30
  - ra -> 10.100.7.25
  - c1 -> 10.100.7.26
- ra <-> c2 -> 10.100.7.28/30
  - ra -> 10.100.7.30
  - c2 -> 10.100.7.29
- c1 <-> c2 -> 10.100.7.32/30
  - c1 -> 10.100.7.33
  - c2 -> 10.100.7.34
- FREE subnets -> 10.100.7.36/30 <-> 10.100.7.252/30 + 10.100.8.0/24 <-> 10.100.255.0/24

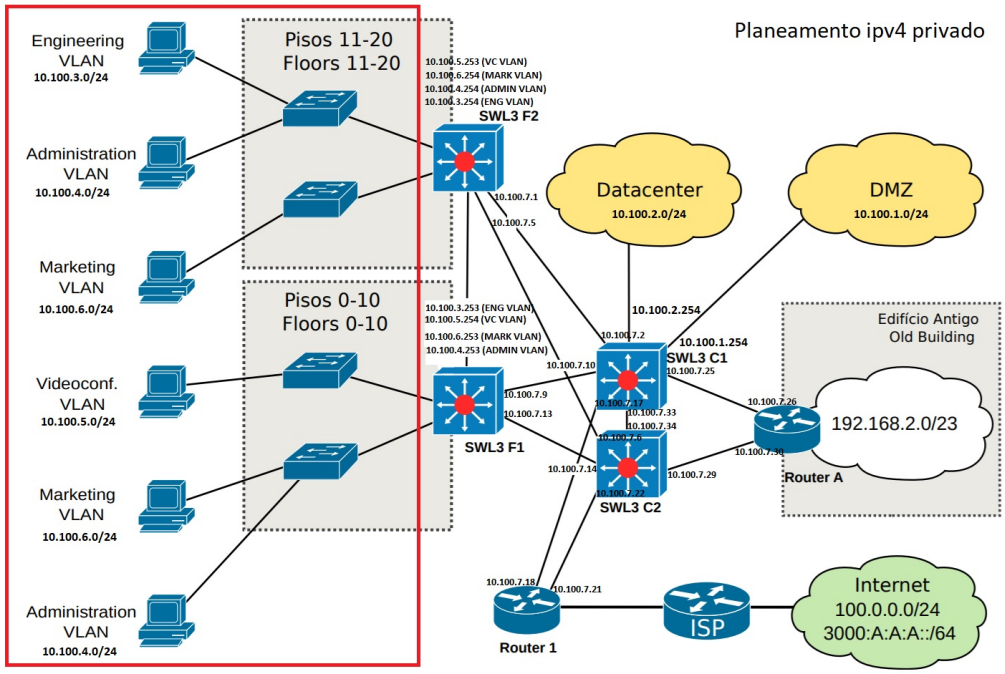

Figure 1.2: *Planeamento IPv4 Privado*

Capítulo 2

Planeamento IPv6

2.1 IPv6 global network 2100:0:0:3200::/60

Optamos por definir /120 para todas vlans e lans:

- DMZ -> 2100:0:0:3200:0:0:0:0000/120
  gw -> 2100:0:0:3200:0:0:0:00FF
- Data Center -> 2100:0:0:3200:0:0:0:0100/120
  gw -> 2100:0:0:3200:0:0:0:01FF
- Engineering VLAN -> 2100:0:0:3200:0:0:0:0200/120
  gw -> 2100:0:0:3200:0:0:0:02FE e 2100:0:0:3200:0:0:0:02FF
- Administration VLAN -> 2100:0:0:3200:0:0:0:0300/120
  gw -> 2100:0:0:3200:0:0:0:03FE e 2100:0:0:3200:0:0:0:03FF
- Video Conference VLAN -> 2100:0:0:3200:0:0:0:0400/120
  gw -> 2100:0:0:3200:0:0:0:04FE e 2100:0:0:3200:0:0:0:04FF
- Marketing VLAN -> 2100:0:0:3200:0:0:0:0500/120
  gw -> 2100:0:0:3200:0:0:0:05FE e 2100:0:0:3200:0:0:0:05FF

2.2 9 p2p connections

- f2 <-> c1 -> 2100:0:0:3202:0:0:0:0000/126
  f2 -> 2100:0:0:3202:0:0:0:0001
  c1 -> 2100:0:0:3202:0:0:0:0002
- f2 <-> c2 -> 2100:0:0:3202:0:0:0:0004/126
  f2 -> 2100:0:0:3202:0:0:0:0005
  c2 -> 2100:0:0:3202:0:0:0:0006

- f1 <-> c1 -> 2100:0:0:3202:0:0:0:0008/126
  f1 -> 2100:0:0:3202:0:0:0:0009
  c1 -> 2100:0:0:3202:0:0:0:000a
- f1 <-> c2 -> 2100:0:0:3202:0:0:0:000c/126
  f1 -> 2100:0:0:3202:0:0:0:000d
  c2 -> 2100:0:0:3202:0:0:0:000e
- r1 <-> c1 -> 2100:0:0:3202:0:0:0:0010/126
  r1 -> 2100:0:0:3202:0:0:0:0012
  c1 -> 2100:0:0:3202:0:0:0:0011
- r1 <-> c2 -> 2100:0:0:3202:0:0:0:0014/126
  r1 -> 2100:0:0:3202:0:0:0:0015
  c2 -> 2100:0:0:3202:0:0:0:0016
- ra <-> c1 -> 2100:0:0:3202:0:0:0:0018/126
  ra -> 2100:0:0:3202:0:0:0:001a
  c1 -> 2100:0:0:3202:0:0:0:0019
- ra <-> c2 -> 2100:0:0:3202:0:0:0:001c/126
  ra -> 2100:0:0:3202:0:0:0:001e
  c2 -> 2100:0:0:3202:0:0:0:001d
- c1 <-> c2 -> 2100:0:0:3202:0:0:0:0020/126
  c1 -> 2100:0:0:3202:0:0:0:0021
  c2 -> 2100:0:0:3202:0:0:0:0022
- FREE subnets ->
  2100:0:0:3200:0:0:0:0600/120 <-> 2100:0:0:3200:ffff:ffff:ffff:ff00/120
  2100:0:0:3201::/60
  2100:0:0:3202:0:0:0:0024/126 <-> 2100:0:0:3202:ffff:ffff:ffff:ff24/126
  2100:0:0:3203::/60 <-> 2100:0:0:320f::/60

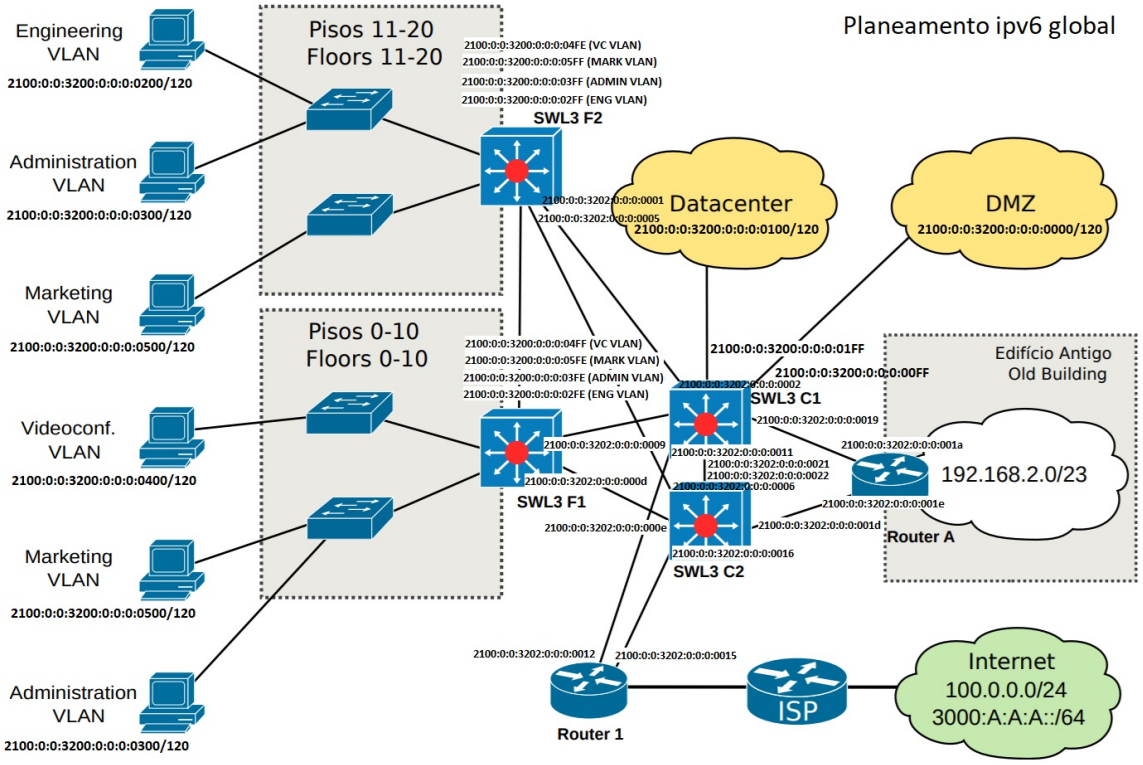

Figure 2.1: *Planeamento IPv6 global*