MPLS

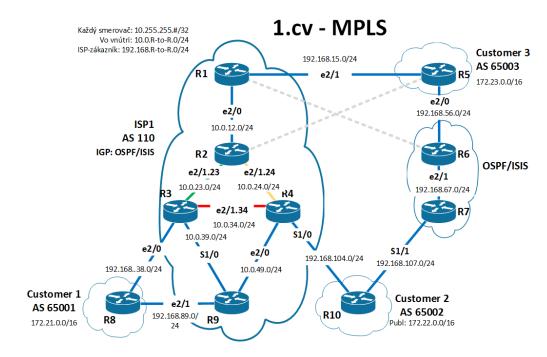
Andrej Šišila, Marián Vachalík

Obsah

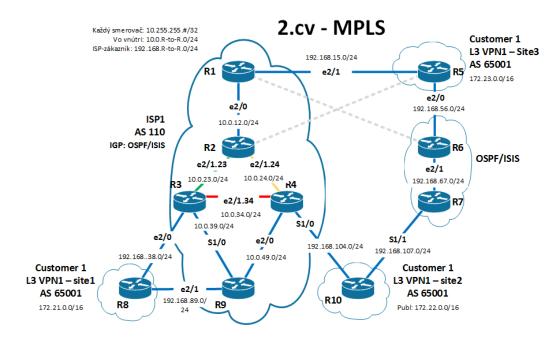
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1.1 Topológia

Budeme konfigurovať smerovacie protokoly MPLS a IS-IS na topológií, ktorá je znázornená na obrázku 1. Vrámci autonómnych systémov sme konfigurovali smerovacie protokoly IS-IS a BGP (iBGP). Medzi autonómnymi systémami sme konfigurovali len BGP (eBGP). IP adresácia je uvedená v tabuľke 1 a dopĺňa grafické znázornenie topológie na obrázku 1. Sieť medzi smerovačmi R1 a R5 nemá mať masku "/48" ale "/30".



Obr. 1: Topológia MPLS



Obr. 2: Topológia MPLS + L3 VPN

Tabuľka 1: IP adresácia

Smerovač	Rozhranie	IP adresacia	Maska
	Fa0/0	200.110.255.249	255.255.255.252
	Fa0/1	64.34.255.253	255.255.255.252
R1	S1/0	200.33.255.253	255.255.255.252
	Lo0	10.255.255.1	255.255.255.0
	Lo100	64.34.1.1	255.255.255.128
	Fa0/0	200.110.255.250	255.255.255.252
	Fa0/1.23	10.110.23.2	255.255.255.0
70.0	Fa0/1.24	10.110.24.2	255.255.255.0
R2	S1/0	200.110.255.253	255.255.255.252
	Lo0	10.255.255.2	255.255.255.0
	Lo100	200.110.0.2	255.255.255.128
	Fa0/0	200.110.255.241	255.255.255.252
	Fa0/1.23	10.110.23.3	255.255.255.0
R3	Fa0/1.34	10.110.34.3	255.255.255.0
	Lo0	10.255.255.3	255.255.255.0
	Lo100	200.110.0.133	255.255.255.128
	Fa0/0	200.110.255.237	255.255.255.252
	Fa0/1.24	10.110.24.4	255.255.255.0
D4	Fa0/1.34	10.110.34.4	255.255.255.0
R4	S1/0	200.110.255.245	255.255.255.252
	Lo0	10.255.255.4	255.255.255.0
	Lo100	200.110.1.4	255.255.255.128
	Fa0/0	200.33.255.249	255.255.255.252
	Fa0/1	10.100.15.2	255.255.255.252
R5	S1/0	200.110.255.254	255.255.255.252
	Lo0	10.255.255.5	255.255.255.0
	Lo100	128.45.5.5	255.255.255.128
	Fa0/0	200.33.255.250	255.255.255.252
	Fa0/1	10.110.67.6	255.255.255.0
R6	S1/0	200.33.255.254	255.255.255.252
	Lo0	10.255.255.6	255.255.255.0
	Lo100	200.33.6.6	255.255.255.128
	Fa0/1	10.110.67.7	255.255.255.0
R7	S1/1	200.33.255.245	255.255.255.252
	Lo0	10.255.255.7	255.255.255.0
	Lo100	200.33.7.7	255.255.255.128
	Fa0/0	200.110.255.242	255.255.255.252
R8	Fa0/1	10.110.89.8	255.255.255.0
	Lo0	10.255.255.8	255.255.255.0
	Lo100	200.110.12.8	255.255.255.128
	Fa0/0	200.110.255.238	255.255.255.252
R9	Fa0/1	10.110.89.9	255.255.255.0
	Lo0	10.255.255.9	255.255.255.0
	Lo100	200.110.13.9	255.255.255.128
	S1/0	200.110.255.246	255.255.255.252
R10	S1/1	200.33.255.246	255.255.255.252
	Lo0	10.255.255.10	255.255.255.0
	Lo100	2235255.255.10	255.255.255.128

Overenie
Vn
1.2.2 MPLS
Popis
Konfigurácia
Komgaracia
Overenie
1.2.3 LDP alebo RSVP
Popis
Konfigurácia
Overenie
1.2.4 Router Reflector
Popis
•

1.2 Úlohy

1.2.1

Popis

Konfigurácia

IS-IS

Konfigurácia

Overenie

1.2.5 Multiprotocol BGP

Popis

Konfigurácia

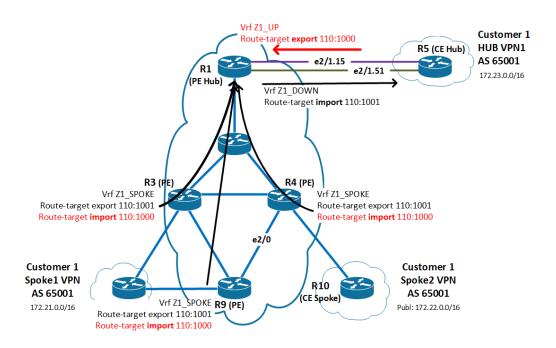
Overenie

1.2.6 Hub & Spoke VPN

Popis

3.cv - Hub and Spoke VPN Každý smerovač: 10.255.255.#/32 Vo vnútri: 10.0.R-to-R.0/24 ISP-zákazník: 192.168.R-to-R.0/24 **Customer 1 HUB VPN1** 192.168.15.0/24 — **e2/1.15** — R5 (CE Hub) AS 65001 25 R1 e2/1.51 172.23.0.0/16 192.168.51.0/24 (PE Hub) e2/0 192.168.56.0/24 10.0.12.0/24 ISP1 **AS 110** R2 (P) IGP: OSPF/ISIS R6 OSPF/ISIS e2/1.23 e2/1.24 e2/1 10.0.24.0/24 10.0.23.0/24 192.168.67.0/24 R4 (PE) R3 (PE) e2/1.34 10.0.34.0/24 \$1/0 10.0.39.0/24 e2/0 e2/0 S1/1 **S1/0** 192.168.104.0/24 192.168.107.0/24 192.168..38.0/24 10.0.49.0/24 Customer 1 Customer 1 Spoke1 VPN Spoke2 VPN R10 e2/1 AS 65001 AS 65001 192.168.89.0/ R9 (PE) 172.21.0.0/16 R8 Publ: 172.22.0.0/16 (CE Spoke)

Obr. 3: Topológia MPLS Hub & Spoke



Obr. 4: Topológia MPLS Hub & Spoke s Route Target

Konfigurácia

Overenie

1.2.7 AS Override

Popis

Konfigurácia

Overenie

1.2.8 MPLS/VPLS

Popis

Konfigurácia

Overenie