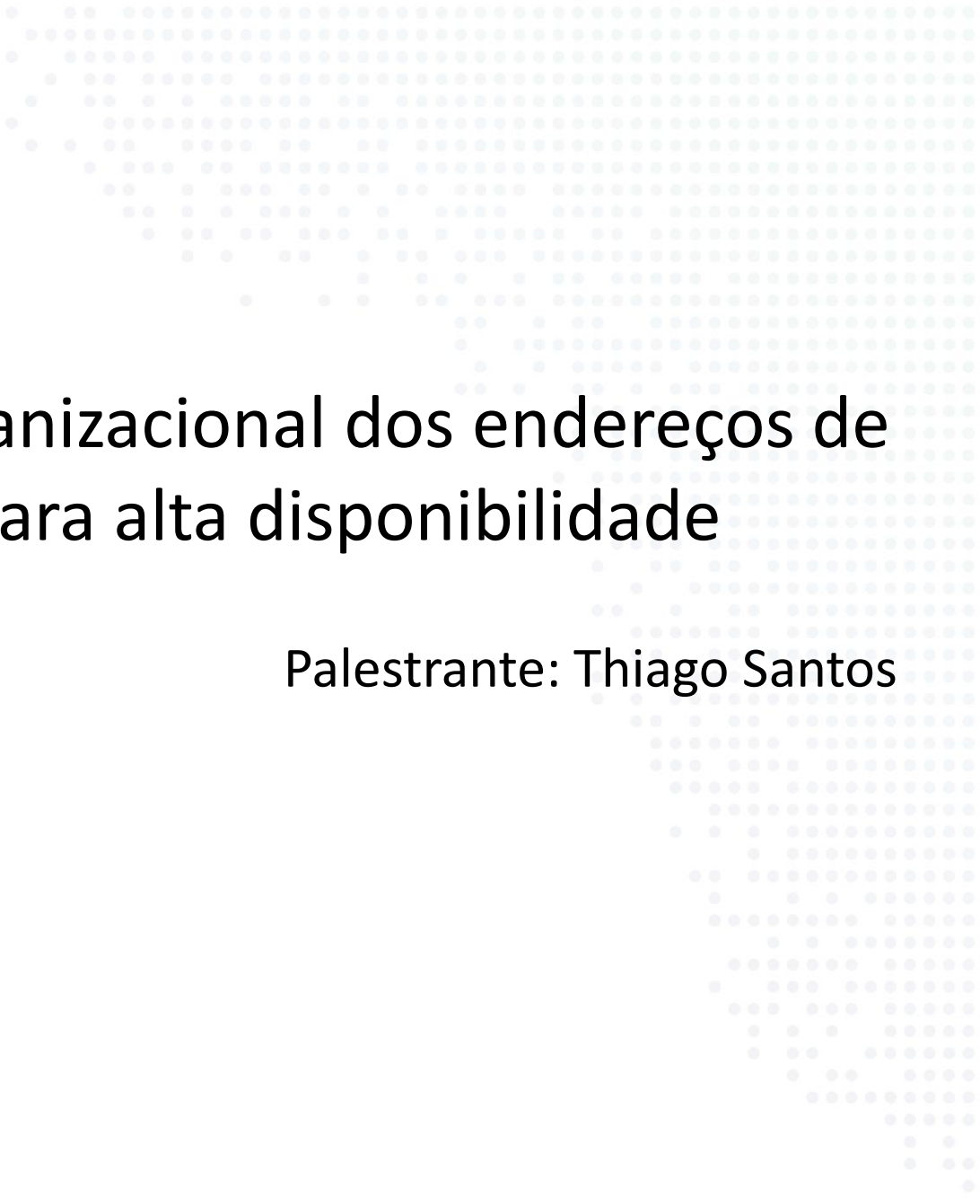




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# Reestruturação organizacional dos endereços de rede interna para alta disponibilidade

Palestrante: Thiago Santos

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# Introdução

- Graduando em Engenharia Elétrica com ênfase em Telecomunicações;
- 4 anos de experiência no mercado de telecomunicações;
- Experiência em redes HFC;
- Serviços de numeração ASN;
- Conhecimento regulatório para provedores.

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Porque descentralizar sua rede e levar o PPPoE mais próximo do cliente?



# Objetivos

- Planejamento estratégico para implantação;
- Configurações básicas para alta disponibilidade;
- Casos de sucesso reais;
- Benefícios pós organização da rede.

# Passo 1: PLANEJAMENTO



# PLANEJAMENTO ESTRATÉGICO (POR ERB)

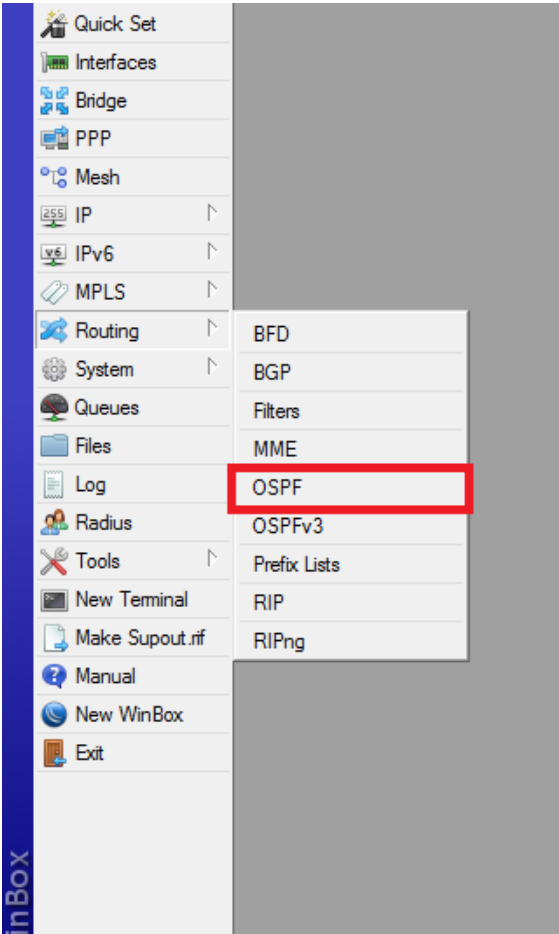


# Passo 2: CONFIGURAÇÃO



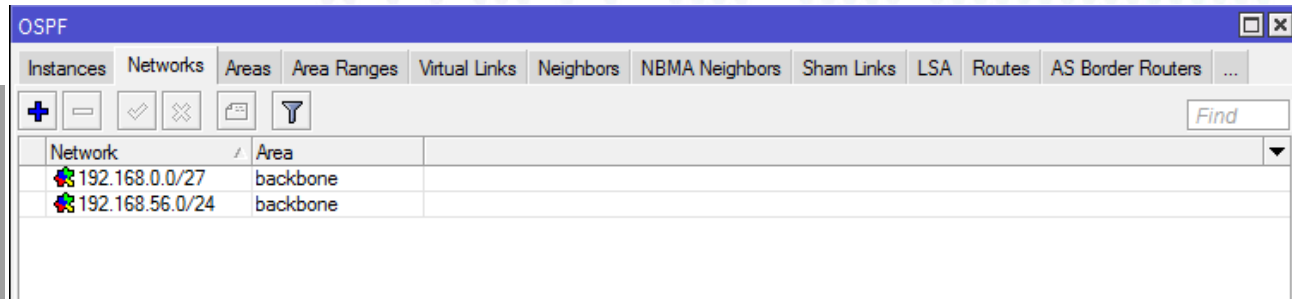


# OSPF



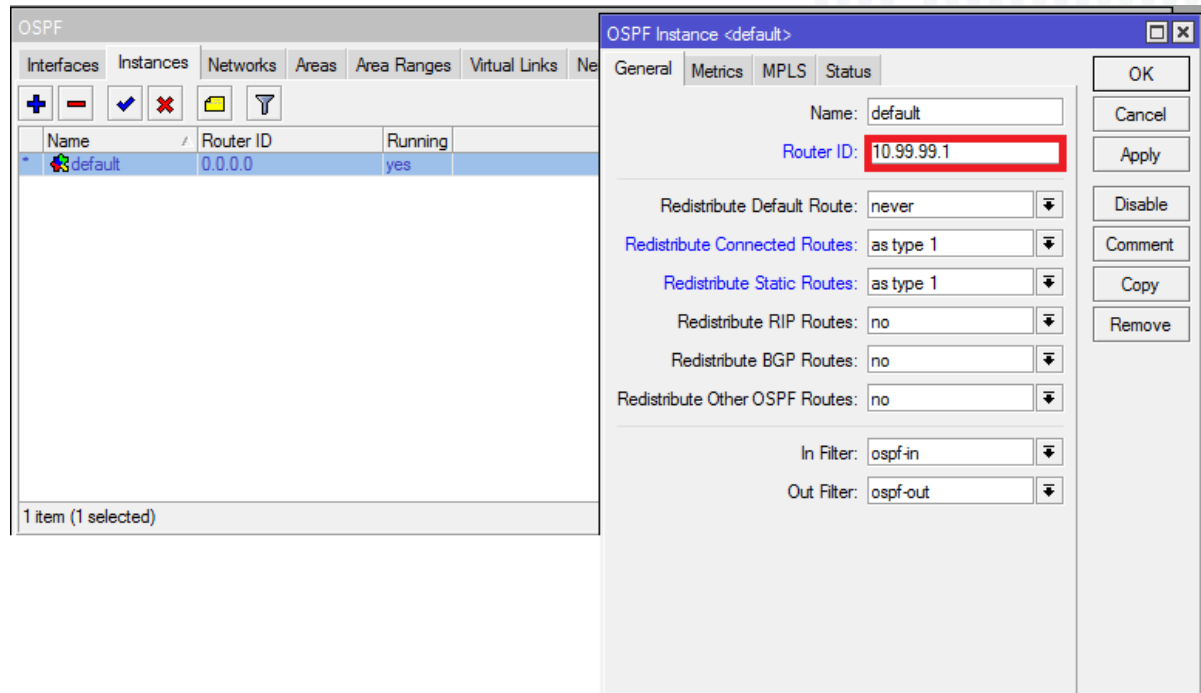
The sidebar menu on the left shows various system and network management options. The 'Routing' category is expanded, and 'OSPF' is highlighted with a red box. Other options in the 'Routing' category include BFD, BGP, Filters, MME, OSPFv3, Prefix Lists, RIP, and RIPng.

- Quick Set
- Interfaces
- Bridge
- PPP
- Mesh
- IP
- IPv6
- MPLS
- Routing
  - BFD
  - BGP
  - Filters
  - MME
  - OSPF**
  - OSPFv3
  - Prefix Lists
  - RIP
  - RIPng
- System
- Queues
- Files
- Log
- Radius
- Tools
- New Terminal
- Make Supout.tif
- Manual
- New WinBox
- Exit



The 'OSPF' window shows the 'Networks' tab. It contains a table with two entries:

Network	Area
192.168.0.0/27	backbone
192.168.56.0/24	backbone

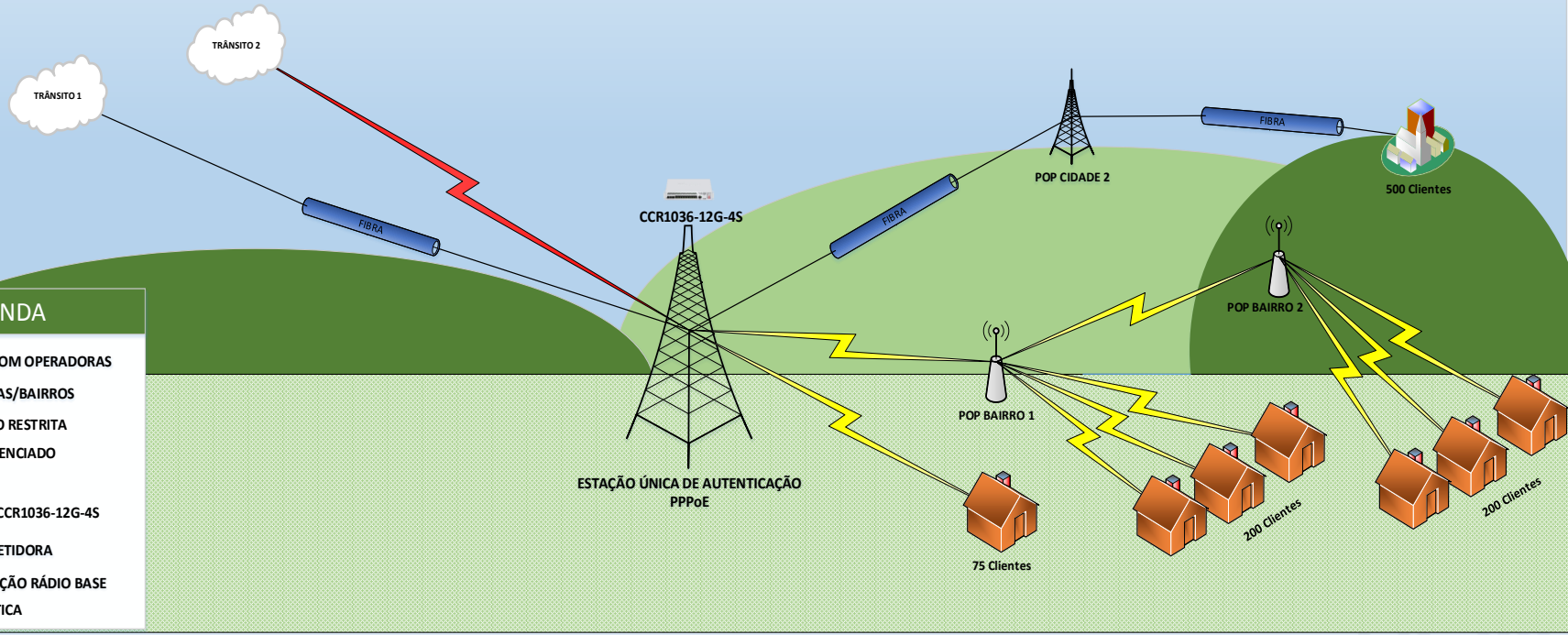


The 'OSPF Instance <default>' dialog box is open, showing the 'General' tab. The 'Router ID' field is highlighted with a red box and contains the value '10.99.99.1'. Other fields include Name (default), Redistribute Default Route (never), Redistribute Connected Routes (as type 1), Redistribute Static Routes (as type 1), Redistribute RIP Routes (no), Redistribute BGP Routes (no), Redistribute Other OSPF Routes (no), In Filter (ospf-in), and Out Filter (ospf-out).

Name	Router ID	Running
default	0.0.0.0	yes

# Passo 3: CASOS REAIS





### LEGENDA

-  TRÁNSITO COM OPERADORAS
-  RESIDÊNCIAS/BAIROS
-  RADIAÇÃO RESTRITA
-  RÁDIO LICENCIADO
-  CIDADE
-  MIKROTIK CCR1036-12G-4S
-  POP / REPETIDORA
-  ERB - ESTAÇÃO RÁDIO BASE
-  FIBRA ÓPTICA

RouterOS WinBox

Safe Mode

Quick Set

Interfaces

Bridge

PPP

Mesh

IP

IPv6

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

LCD

Make Supout.rif

Manual

Exit

PPP

Interface PPPoE Servers Secrets Profiles Active Connections L2TP Secrets

Name	Service	Caller ID	Encoding	Address	Uptime
R marineis_pereira	pppoe	00:27:22:1E...	MPPE1...		00:29:19
R marinete_conceicao	pppoe	44:D9:E7:B0...	MPPE1...		2d 06:08:...
R marisa_sylvestre	pppoe	24:A4:3C:4A...	MPPE1...		2d 06:17:...
R marisia_barbosa	pppoe	00:27:22:3A...	MPPE1...		09:51:29
R mariza_rodrigues	pppoe	E8:DE:27:7...			1d 00:02:...
R marizete_dahora	pppoe	44:D9:E7:C4...	MPPE1...		2d 06:18:...
R marizete_jesus	pppoe	00:27:22:20...			00:23:07
R marizeth_araujo	pppoe	44:D9:E7:24...	MPPE1...		2d 06:17:...
R marlene_fontes	pppoe	44:D9:E7:24...	MPPE1...		09:03:51
R marlene_ribeiro	pppoe	44:D9:E7:B0...	MPPE1...		1d 11:03:...
R marlon_goulart	pppoe	24:A4:3C:D4...	MPPE1...		1d 01:30:...
R marlos_matos	pppoe	04:18:D6:84...	MPPE1...		22:58:59
R marta_castro	pppoe	04:18:D6:84...	MPPE1...		2d 06:17:...
R marta_moura.fibra	pppoe	C8:3A:35:47...			03:39:21
R maruzia_santos	pppoe	24:A4:3C:4A...	MPPE1...		1d 23:59:...
R mary_ferreira	pppoe	DC:9F:DB:3...	MPPE1...		2d 06:17:...
R mauricio_amanai	pppoe	04:18:D6:84...	MPPE1...		02:52:40
R mauricio_barbosa	pppoe	00:27:22:78...	MPPE1...		1d 09:13:...
L mauricio_batista	pppoe	DC:9F:DB:6...	MPPE1...		2d 06:18:...
R mauricio_carvalho	pppoe	44:D9:E7:C0...			2d 06:18:...
R mauricio_gusmao	pppoe	44:D9:E7:28...	MPPE1...		2d 06:19:...
R mauricio_silva	pppoe	44:D9:E7:D...	MPPE1...		2d 06:18:...
R mauricio_zanellato	pppoe	44:D9:E7:C4...	MPPE1...		00:04:57
R maximiliano_oliveira	pppoe	DC:9F:DB:6...	MPPE1...		00:39:48
R mayara_nascimento	pppoe	04:18:D6:64...	MPPE1...		04:48:44
R meiry_oliveira	pppoe	04:18:D6:84...	MPPE1...		00:04:56
R mercedes_espronceda	pppoe	24:A4:3C:D4...	MPPE1...		2d 06:19:...
R michael_dahora	pppoe	04:18:D6:84...	MPPE1...		2d 06:18:...
R michel_cunha	pppoe	04:18:D6:84...	MPPE1...		1d 02:58:...
R michel_oliveira	pppoe	44:D9:E7:4A...	MPPE1...		1d 23:14:...
R michel_ultramari	pppoe	44:D9:E7:28...	MPPE1...		1d 23:14:...
R michel_santos	pppoe	04:18:D6:84...	MPPE1...		01:32:24
R michele_proenca	pppoe	04:18:D6:A6...	MPPE1...		2d 06:18:...
R michele_santos	pppoe	DC:9F:DB:1...			2d 06:17:...
R michele_souza.fibra	pppoe	C8:3A:35:31...			03:39:20
R michele_teixeira	pppoe	24:A4:3C:E0...	MPPE1...		2d 02:10:...
R michelle_rodrigues	pppoe	00:27:22:B4...	MPPE1...		1d 06:12:...
R milana_almeida	pppoe	00:15:6D:5C...	MPPE1...		04:49:12

1467 items

RouterOS WinBox

Quick Set

CAPsMAN

Interfaces

Wireless

Bridge

PPP

Mesh

IP

MPLS

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

LCD

Partition

Make Supout.rif

Manual

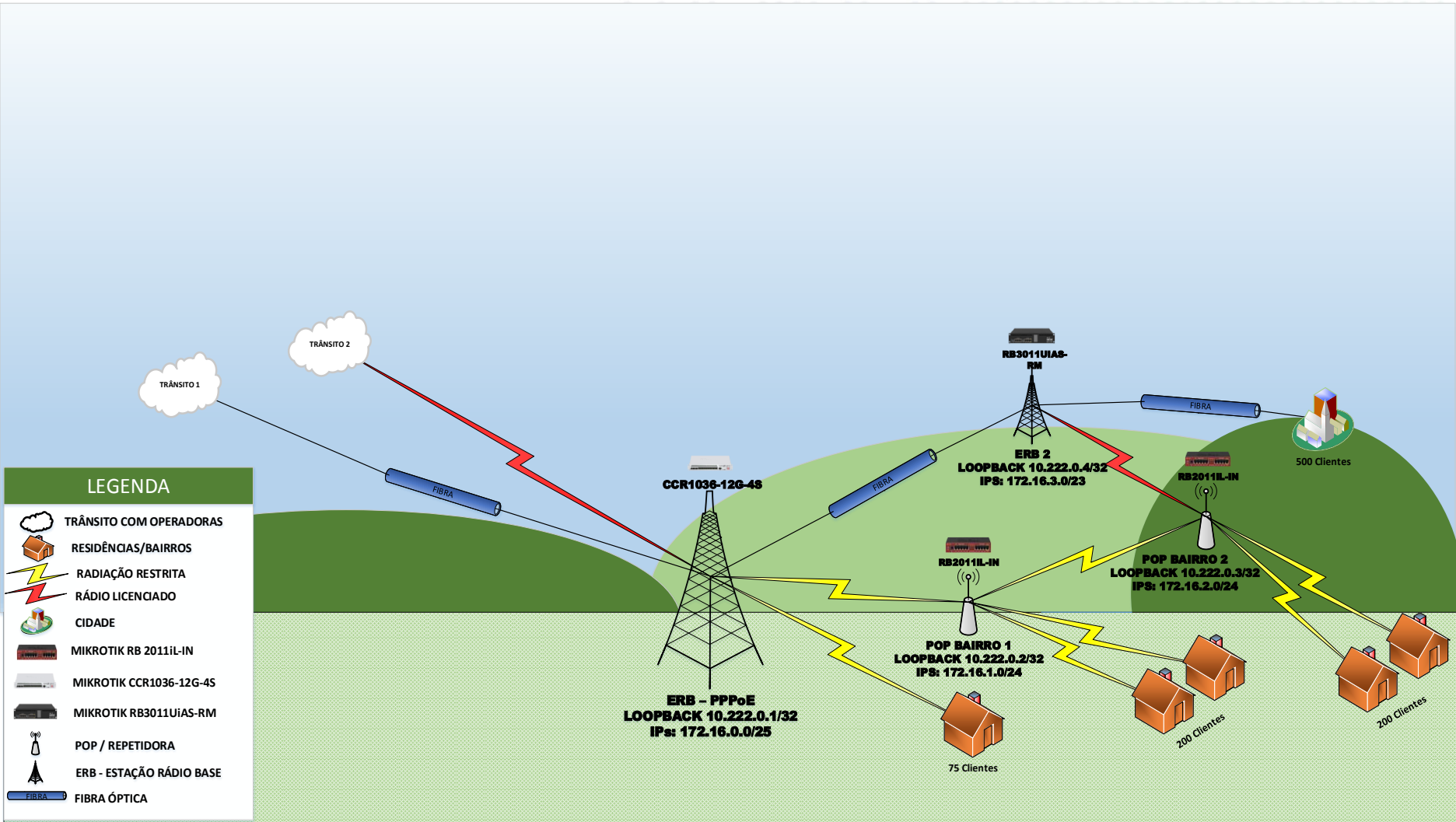
Exit

PPP

Interface PPPoE Servers Secrets Profiles Active Connections L2TP Secrets

Name	Service	Caller ID	Encoding	Address	Uptime
R 07brindes	pppoe	04:18:D6:4A:ED:56			03:57:07
R 0125	pppoe	24:A4:3C:E4:D7:68			01:38:19
R 0709	pppoe	04:18:D6:48:5E:81			08:33:07
R 1002	pppoe	00:27:22:38:56:47			06:19:40
R 1234	pppoe	90:2B:34:FB:F6:08			05:38:14
R 1719	pppoe	DC:9F:DB:EE:C1:9A			06:39:37
R 1721	pppoe	04:18:D6:3E:5E:E9			06:39:47
R 1981fe	pppoe	04:18:D6:5C:BD:02			11:56:32
R 2000	pppoe	24:A4:3C:E8:43:87			08:32:54
R 2367	pppoe	DC:9F:DB:46:81:3F			08:33:14
R 3444	pppoe	04:18:D6:60:CE:BF			06:39:42
R 4774	pppoe	C8:3A:35:54:75:E0			05:27:16
R 9497	pppoe	DC:9F:DB:F4:98:53			01:30:18
R 040607	pppoe	DC:9F:DB:32:1B:1B			08:33:35
R 81106	pppoe	24:A4:3C:00:1D:35			08:33:11
R 131106	pppoe	24:A4:3C:60:E3:FF			04:39:47
R 161094	pppoe	24:A4:3C:E8:3F:1B			00:30:14
R 161823	pppoe	04:18:D6:48:5A:C8			08:33:46
R 177407	pppoe	C8:3A:35:52:30:A8			4d 09:45:16
R 250873	pppoe	94:0C:6D:FD:DA:F1			05:38:40
R 13071952	pppoe	DC:9F:DB:7A:CD:15			04:35:33
R 18021988	pppoe	00:30:67:D0:56:C8			08:32:29
R 23071995	pppoe	10:FE:ED:97:50:E9			4d 05:52:42
R 97139796	pppoe	04:18:D6:48:5A:DB			08:33:41
R 97844249	pppoe	A0:F3:C1:93:07:01			07:15:11
R 99593131	pppoe	04:18:D6:84:61:D7			11:47:25
R 998584878	pppoe	04:18:D6:4C:7F:45			08:33:34
R 999458170	pppoe	C8:3A:35:32:9E:80			03:27:38
R 1010102014yamin	pppoe	44:D9:E7:C0:55:A5			08:33:51
R Amara12015	pppoe	C8:3A:35:09:62:10			05:10:03
R Buziosana	pppoe	90:F6:52:64:F0:FD			07:20:47
R Ebelvino	pppoe	44:D9:E7:C0:52:FD			07:22:50
R Kitararuma	pppoe	04:18:D6:3E:28:75			11:47:39
R Lucas71	pppoe	00:1A:3F:22:4F:84			06:19:58
R TRE	pppoe	10:7E:E5:C3:1A:ED			2d 15:25:07
R abelardo	pppoe	DC:9F:DB:F4:94:D2			05:53:38

5913 items



Interface	PPPoE Servers	Secrets	Profiles	Active Connections
<input type="checkbox"/> <input type="checkbox"/>				
Name	Service	Caller ID	Encoding	Address
R rfn	pppoe	04:18:D6:C8...		
R alei	pppoe	DC:9F:DB:F...		
R farias	pppoe	24:A4:3C:E6...		
R joice	pppoe	24:A4:3C:F4...		
R rosane	pppoe	DC:9F:DB:3...		
R edgar	pppoe	44:D9:E7:B2...		
R jav	pppoe	24:A4:3C:36...		
R anderso...	pppoe	04:18:D6:5C...		
R runu	pppoe	44:D9:E7:8...		
R wesley	pppoe	04:18:D6:48...		
R gepa	pppoe	44:D9:E7:5C...		
R jpr	pppoe	24:A4:3C:0C...		
R elh	pppoe	04:18:D6:3A...		
R hilton	pppoe	44:D9:E7:44...		
R tasma	pppoe	44:D9:E7:A...		
R sl	pppoe	04:18:D6:60...		
R alcedir	pppoe	44:D9:E7:44...		
R hrkc	pppoe	04:18:D6:00...		
R ric	pppoe	00:27:22:D0...		
R alfeus	pppoe	04:18:D6:C8...		
R sca	pppoe	24:A4:3C:36...		
R ferreirat...	pppoe	44:D9:E7:A...		
R ozcika	pppoe	DC:9F:DB:7...		
R siloz	pppoe	44:D9:E7:0C...		
R gui	pppoe	DC:9F:DB:2...		
134 items				

Interface	PPPoE Servers	Secrets	Profiles	Active Connections	L2TP Secrets
<input type="checkbox"/> <input type="checkbox"/>					
Name	Service	Caller ID	Encoding	Address	
R nt	pppoe	24:A4:3C:32:06:12			
R amaldo	pppoe	04:18:D6:48:A6:50			
R maprei	pppoe	44:D9:E7:BE:CA:0D			
R icp	pppoe	44:D9:E7:54:FD:D9			
R gmaia1	pppoe	44:D9:E7:5C:1C:60			
R jam	pppoe	44:D9:E7:24:A7:D6			
R veri	pppoe	DC:9F:DB:E6:0C:9E			
R thes	pppoe	44:D9:E7:54:FE:09			
R evete	pppoe	44:D9:E7:2C:8C:85			
R sedinei	pppoe	44:D9:E7:0E:DB:8B			
R cssl	pppoe	DC:9F:DB:26:34:4F			
R rafap3	pppoe	04:18:D6:9A:06:12			
R caso	pppoe	44:D9:E7:BC:CE:0E			
R fafda	pppoe	44:D9:E7:42:DC:CC			
R enio	pppoe	24:A4:3C:0A:92:C1			
R mma	pppoe	24:A4:3C:36:02:A1			
R marianekoene	pppoe	DC:9F:DB:5C:90:3A			
R roster	pppoe	24:A4:3C:BE:E7:FF			
R simonemoreira	pppoe	44:D9:E7:BE:33:5F			
R anrs	pppoe	24:A4:3C:6C:6F:4A			
R estanislau	pppoe	04:18:D6:60:54:B4			
R cena	pppoe	44:D9:E7:AE:9F:26			
R gal	pppoe	44:D9:E7:70:FF:16			
R waldete	pppoe	DC:9F:DB:5C:8E:97			
R fgodeski	pppoe	24:A4:3C:E6:B4:A6			
214 items					

# Benefícios

- Melhor aproveitamento dos recursos de numeração;
- Aumento do desempenho da rede;
- Possibilidade de trabalhar com a rede em anel;
- Facilidade de manutenção e também de expansão da rede.

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Perguntas?





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# Obrigado!

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