

MUM  
Russia

# VRRP в RouterOS: Делаем отказоустойчивый роутер

voxlink



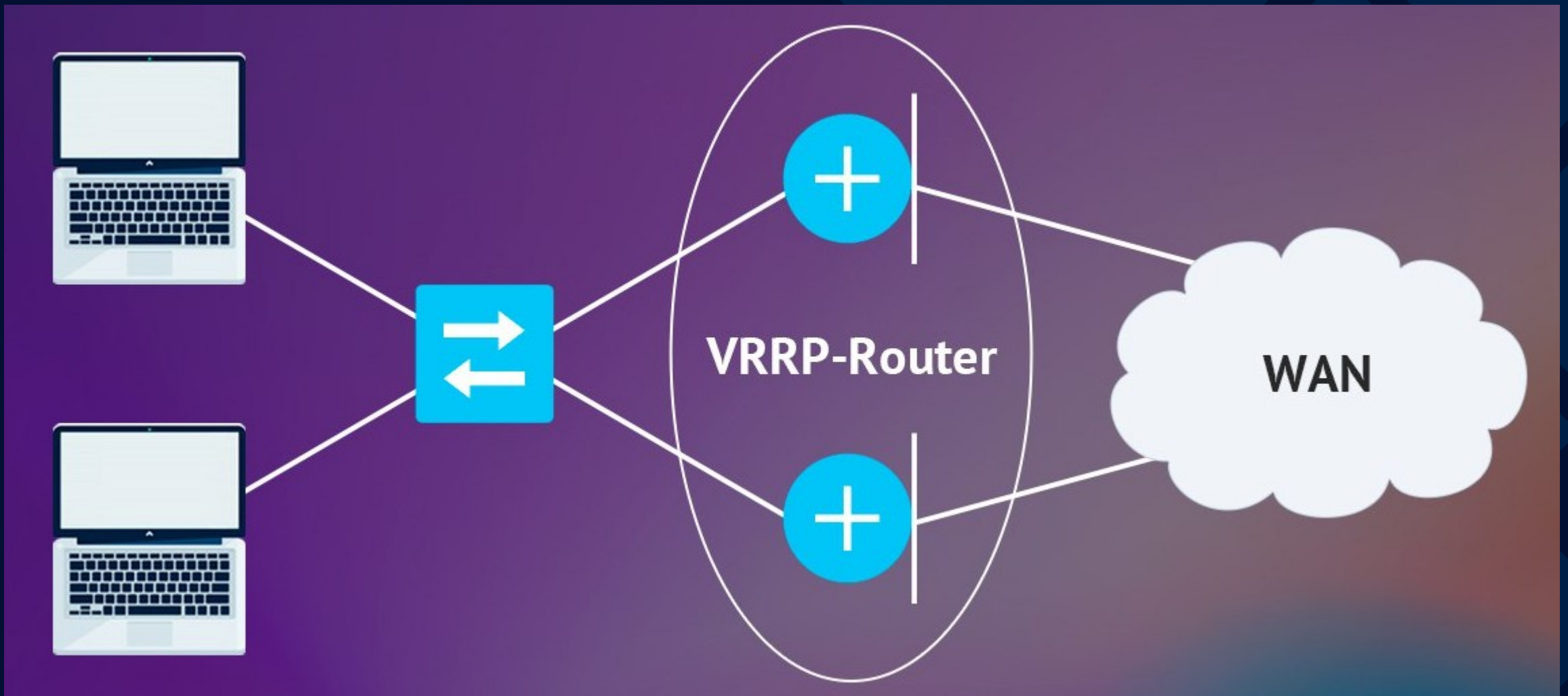
mikrotik

# Об Авторе

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  - Сетевой инженер
  - Яндекс
  - 
  - Telegram @smithy1208
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- С сетями с 2008 года
  - 12 лет в провайдере, а потом в Яндекс
  - Строил сети и в аутсорсе, там и настиг меня MikroTik
  - Когда то был MTCRE

# Схема VRRP



# VRRP

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- **VRRP protocol 112** — VRRPv2 RFC 3768 and VRRPv3 RFC 5798
- **VR and VRID** — виртуальный роутер а его ID
- **Virtual MAC** — стандартный MAC prefix для VRRP пакетов и VRID number (hex), например, для VRID=10, virtMAC=00:00:5E:00:01:0A
- **Priority** — 0...255. 0 — самый низкий
- **States:** INIT, BACKUP, MASTER
- **Preemption\_Mode** — режим вытеснения (master будет возвращать себе роль)
- <https://help.mikrotik.com/docs/display/ROS/VRRP>

# О чем поговорим

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1. Отказоустойчивый шлюз с VRRP.
2. Простой случай.
3. Синхронизация connection tracking.
4. VRRP over VLAN. Classic + group-master
5. VLAN over VRRP. Рассмотрим плюсы и минусы.
6. VRRP v3 на link-local адресах (используем ipv6).
7. "Простой" способ синхронизации настроек.
8. Способ обойтись только mikrotik.

# Настройка vrrp R1

```
/interface vrrp add interface=ether2 name=vrrp1  
preemption-mode=no
```

```
/ip address add address=10.0.0.1/24 interface=ether2  
network=10.0.0.0
```

```
/ip address add address=10.0.0.254 interface=vrrp1  
network=10.0.0.254
```

The screenshot displays the MikroTik WinBox interface for configuring VRRP. The 'Interface List' window at the top shows the current state of interfaces: ether1 (ISP), ether2 (LAN), and vrrp1 (VRRP). The 'Address List' window below it shows the IP addresses assigned to ether2 (10.0.0.1/24) and vrrp1 (10.0.0.254). The 'Interface <vrrp1>' configuration window is open, showing the VRRP settings for interface ether2. The configuration includes a VRID of 1, a priority of 100, a group master of none, an interval of 1.00 seconds, and preemption mode disabled. The authentication is set to none, and the version is 3. The V3 protocol is set to IPv4. The status bar at the bottom indicates the interface is enabled and running as a slave.

Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)
ISP						
R ether1	Ethernet	1500		40.8 kbps	8.5 kbps	8
LAN						
R ether2	Ethernet	1500		488 bps	0 bps	1
RM vrrp1	VRRP	1500		368 bps	0 bps	1

Address	Network	Interface
10.0.0.1/24	10.0.0.0	ether2
10.0.0.254	10.0.0.254	vrrp1
192.168.13.20...	192.168.13.192	ether1

Interface <vrrp1> Configuration:

- Interface: ether2
- VRID: 1
- Priority: 100
- Group Master: none
- Interval: 1.00 s
- ☐ Preemption Mode
- Authentication: none (selected), simple, ah
- Password:
- Version: 3
- V3 Protocol: IPv4

Status: enabled, running, slave, passthrough, master



# Настройка vrrp R2

```
/interface vrrp add interface=ether2 name=vrrp1  
preemption-mode=no priority=50
```

```
/ip address add address=10.0.0.2/24 interface=ether2  
network=10.0.0.0
```

```
/ip address add address=10.0.0.254 interface=vrrp1  
network=10.0.0.254
```

The screenshot displays the MikroTik WinBox interface with three windows open:

- Interface List:** Shows a table of interfaces. The 'vrrp1' interface is highlighted in blue, with a tooltip indicating it is a backup.
- Address List:** Shows a table of IP addresses. The address '10.0.0.254' is highlighted in red, associated with the 'vrrp1' interface.
- Interface <vrrp1> Configuration:** Shows the VRRP configuration for the 'vrrp1' interface. The 'Interface' is set to 'ether2', 'VRID' is 1, 'Priority' is 50, and 'Preemption Mode' is checked. The 'Authentication' section shows 'simple' authentication with a password field. The 'Version' is set to 3 and 'V3 Protocol' is set to IPv4.

Interface	Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)
R	ether1	Ethernet	1500		40.5 kbps	15.0 kbps	8
R	ether2	Ethernet	1500		0 bps	480 bps	0
B	vrrp1	VRRP	1500		0 bps	0 bps	0

Address	Network	Interface
10.0.0.2/24	10.0.0.0	ether2
10.0.0.254	10.0.0.254	vrrp1
192.168.13.20...	192.168.13.192	ether1

General	VRRP	Conn. Tracking	Scripts	Status	Traffic
Interface: ether2					
VRID: 1					
Priority: 50					
Group Master: none					
Interval: 1.00 s					
<input type="checkbox"/> Preemption Mode					
Authentication: none simple <b>ah</b>					
Password:					
Version: 3					
V3 Protocol: IPv4					

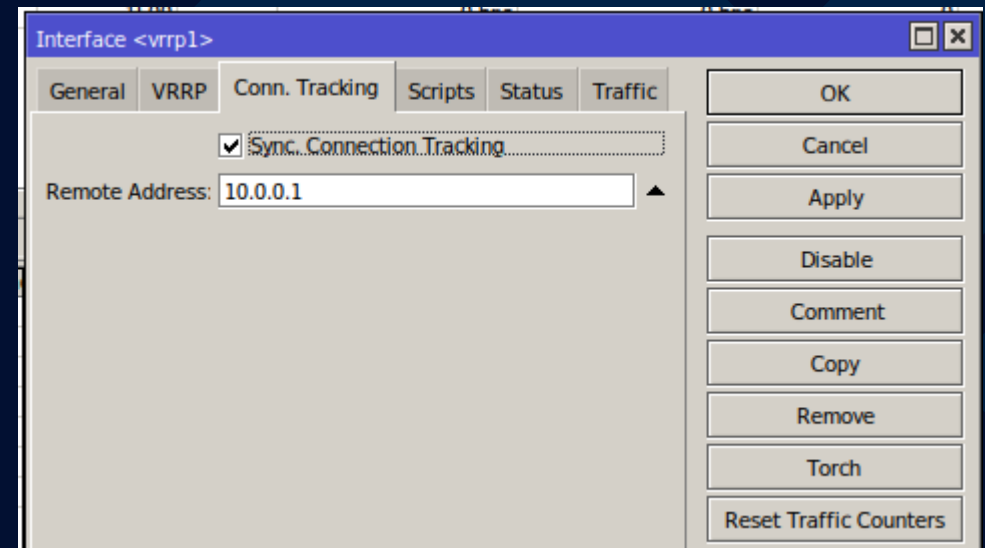
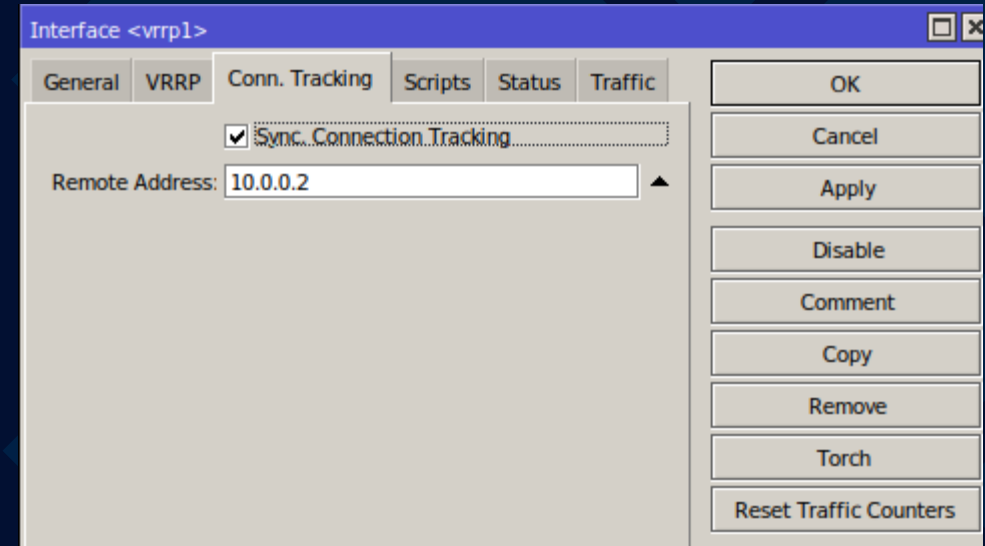
# Sync connection tracking

# CHR1

```
/ip firewall connection tracking set enabled=yes  
/interface vrrp set find [name=vrrp1] \  
sync-connection-tracking=yes remote-address=10.0.0.2
```

# CHR2

```
/ip firewall connection tracking set enabled=yes  
/interface vrrp set find [name=vrrp1] \  
sync-connection-tracking=yes remote-address=10.0.0.1
```





# Conn. Tracking at BACKUP R2

Interface List

Interface Interface List Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VXLAN VRRP VETH MACsec Bonding LTE

+ - ✓ ✗ 📁 🔍 Detect Internet Find

	Name	Type	Actual MTU	L2 MTU	Tx	Rx	Tx Packet (p/s)
::: ISP							
R	ether1	Ethernet	1500		75.9 kbps	16.8 kbps	13
::: LAN							
R	ether2	Ethernet	1500		1600 bps	8.5 kbps	3
R	vlan10	VLAN	1500		0 bps	0 bps	0
B	vrrp10	VRRP	1500		0 bps	0 bps	0
R	vlan20	VLAN	1500		1120 bps	0 bps	2
B	vrrp20	VRRP	1500		0 bps	0 bps	0
R	vlan30	VLAN	1500		0 bps	0 bps	0
B	vrrp30	VRRP	1500		0 bps	0 bps	0
R	vlan40	VLAN	1500		0 bps	0 bps	0
B	vrrp40	VRRP	1500		0 bps	0 bps	0
B	vrrp1	VRRP	1500		0 bps	0 bps	0

11 items (1 selected)

Firewall

Filter Rules NAT Mangle Raw Service Ports Connections Address Lists Layer7 Protocols

- 🔍 Tracking Find

Src. Address in 10.0.20.200 + - Filter

	Src. Address	Dst. Address	Protocol	Connecti...	Timeout	TCP State	Orig./Repl. Rate	Orig./Repl. B
SCs	10.0.20.200	5.255.255.242	1 (icmp)		00:00:09		0 bps/896 bps	560 B/12.3 KiB
SCs	10.0.20.200	77.88.55.242	1 (icmp)		00:00:09		0 bps/896 bps	504 B/12.1 KiB

## VRRP over VLAN. Classic + group-master

```
/interface vrrp set find [name=vrrp1] \  
group-authority=self
```

Создать vlan10, vlan20, vlan30, vlan40 и добавить на них ip адреса:

```
:for i from=10 to=40 step=10 do={\  
  /int vlan add interface=ether2 name="vlan$i" vlan-id=$i; \  
  /ip add add interface="vlan$i" address="10.0.$i.1/24" }
```

Создать vrrp10, vrrp20, vrrp30, vrrp40 и добавить на них ip адреса:

```
:for i from=10 to=40 step=10 do={\  
  /int vrrp add interface="vlan$i" name="vrrp$i" \  
  preemption-mode=no group-authority=vrrp1; \  
  /ip add add interface="vrrp$i" address="10.0.$i.254/32"}
```

The screenshot displays two windows from the Mikrotik WinBox interface. The top window, titled 'Interface List', shows a table of network interfaces. The bottom window, titled 'Route List', shows a table of configured routes.

	Name	Type	Actual MTU	L2 MTU	Tx	Rx
::: ISP						
R	ether1	Ethernet	1500			70.1 kbps
::: LAN						
R	ether2	Ethernet	1500			1040 bps
R	vlan10	VLAN	1500			0 bps
B	vrrp10	VRRP	1500			0 bps
R	vlan20	VLAN	1500			0 bps
B	vrrp20	VRRP	1500			0 bps
R	vlan30	VLAN	1500			0 bps
B	vrrp30	VRRP	1500			0 bps
R	vlan40	VLAN	1500			0 bps
B	vrrp40	VRRP	1500			0 bps
B	vrrp1	VRRP	1500			0 bps

	Dst. Address	Gateway	Distance	P
DAd	0.0.0.0/0	192.168.13.222		1
DAC	10.0.0.0/24	ether2		0
DAC	10.0.10.0/24	vlan10		0
DAC	10.0.20.0/24	vlan20		0
DAC	10.0.30.0/24	vlan30		0
DAC	10.0.40.0/24	vlan40		0
DAC	192.168.13.19...	ether1		0

# VRRP over VLAN. Classic + group-master

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VXLAN	VRRP	VET
Name	Type	Actual MTU	L2 MTU	Tx	Rx				
::: ISP									
R ether1	Ethernet	1500		58.6 kbps					
::: LAN									
R ether2	Ethernet	1500		1040 bps					
R vlan10	VLAN	1500		0 bps					
RM vrrp10	VRRP	1500		0 bps					
R vlan20	VLAN	1500		0 bps					
RM vrrp20	VRRP	1500		0 bps					
R vlan30	VLAN	1500		0 bps					
RM vrrp30	VRRP	1500		0 bps					
R vlan40	VLAN	1500		0 bps					
RM vrrp40	VRRP	1500		0 bps					
RM vrrp1	VRRP								

11 items (1 selected)

Address	Network	Interface
10.0.0.1/24	10.0.0.0	ether2
10.0.0.254	10.0.0.254	vrrp1
10.0.10.1/24	10.0.10.0	vlan10
10.0.10.254	10.0.10.254	vrrp10
10.0.20.1/24	10.0.20.0	vlan20
10.0.20.254	10.0.20.254	vrrp20
10.0.30.1/24	10.0.30.0	vlan30
10.0.30.254	10.0.30.254	vrrp30
10.0.40.1/24	10.0.40.0	vlan40
10.0.40.254	10.0.40.254	vrrp40
192.168.13.20...	192.168.13.192	ether1

Route List

Dst. Address	Gateway
0.0.0.0/0	192.168.13.222
10.0.0.0/24	ether2
10.0.0.254/32	vrrp1
10.0.10.0/24	vlan10
10.0.10.254/32	vrrp10
10.0.20.0/24	vlan20
10.0.20.254/32	vrrp20
10.0.30.0/24	vlan30
10.0.30.254/32	vrrp30
10.0.40.0/24	vlan40
10.0.40.254/32	vrrp40
192.168.13.19...	ether1

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VXLAN	VRRP	VET
Name	Type	Actual MTU	L2 MTU	Tx	Rx				
::: ISP									
R ether1	Ethernet	1500		58.1 kbps					
::: LAN									
R ether2	Ethernet	1500		560 bps					
R vlan10	VLAN	1500		0 bps					
B vrrp10	VRRP	1500		0 bps					
R vlan20	VLAN	1500		0 bps					
B vrrp20	VRRP	1500		0 bps					
R vlan30	VLAN	1500		0 bps					
B vrrp30	VRRP	1500		0 bps					
R vlan40	VLAN	1500		0 bps					
B vrrp40	VRRP	1500		0 bps					
B vrrp1	VRRP								

11 items (1 selected)

Address	Network	Interface
10.0.0.1/24	10.0.0.0	ether2
10.0.0.254	10.0.0.254	vrrp1
10.0.10.1/24	10.0.10.0	vlan10
10.0.10.254	10.0.10.254	vrrp10
10.0.20.1/24	10.0.20.0	vlan20
10.0.20.254	10.0.20.254	vrrp20
10.0.30.1/24	10.0.30.0	vlan30
10.0.30.254	10.0.30.254	vrrp30
10.0.40.1/24	10.0.40.0	vlan40
10.0.40.254	10.0.40.254	vrrp40
192.168.13.20...	192.168.13.192	ether1

Route List

Dst. Address	Gateway
0.0.0.0/0	192.168.13.222
10.0.0.0/24	ether2
10.0.10.0/24	vlan10
10.0.20.0/24	vlan20
10.0.30.0/24	vlan30
10.0.40.0/24	vlan40
192.168.13.19...	ether1






















Создать `vlan10`, `vlan20`, `vlan30`, `vlan40` на `vrrp1` и добавить на них `ip` адреса:

```
:for i from=10 to=40 step=10 do={\
```

```
/int vlan add interface=vrrp1 name="vlan$i" vlan-id=$i; \
```

```
/ip add add interface="vlan$i" address="10.0.$i.254/24" }
```

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VXLAN	VRRP
      Detect Internet								
	Name	Type	Actual MTU	L2 MTU	Tx	Rx		
::: ISP								
R	 ether1	Ethernet	1500		83.9 kbps			
::: LAN								
R	 ether2	Ethernet	1500		1040 bps			
RM	 vrrp1	VRRP	1500		368 bps			
R	 vlan10	VLAN	1500		0 bps			
R	 vlan20	VLAN	1500		0 bps			
R	 vlan30	VLAN	1500		0 bps			
R	 vlan40	VLAN	1500		0 bps			
								
7 items (1 selected)								
	Address	Network	Interface					
	 10.0.0.1/24	10.0.0.0	ether2					
	 10.0.0.254	10.0.0.254	vrrp1					
	 10.0.10.254/24	10.0.10.0	vlan10					
	 10.0.20.254/24	10.0.20.0	vlan20					
	 10.0.30.254/24	10.0.30.0	vlan30					
	 10.0.40.254/24	10.0.40.0	vlan40					
D	 192.168.13.2...	192.168.13.192	ether1					
					18.3 MiB of 89.2 MiB used			

# VLAN over VRRP. BACKUP problem

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VXLAN	VRRP
+	-	✓	✗	📁	🔍	Detect Internet		
Name	Type	Actual MTU	L2 MTU	Tx	Rx			
::: ISP								
R	ether1	Ethernet	1500		91.2 kbps			
::: LAN								
R	ether2	Ethernet	1500		4.2 kbps			
RM	vrrp1	VRRP	1500		368 bps			
R	vlan10	VLAN	1500		0 bps			
R	vlan20	VLAN	1500		0 bps			
R	vlan30	VLAN	1500		0 bps			
R	vlan40	VLAN	1500		0 bps			

7 items (1 selected)

Address	Network	Interface
10.0.0.1/24	10.0.0.0	ether2
10.0.0.254	10.0.0.254	vrrp1
10.0.10.254/24	10.0.10.0	vlan10
10.0.20.254/24	10.0.20.0	vlan20
10.0.30.254/24	10.0.30.0	vlan30
10.0.40.254/24	10.0.40.0	vlan40
192.168.13.2...	192.168.13.192	ether1

Route List

	Dst. Address	Gateway
DAd	0.0.0.0/0	192.168.13.222
DAC	10.0.0.0/24	ether2
DAC	10.0.0.254/32	vrrp1
DAC	10.0.10.0/24	vlan10
DAC	10.0.20.0/24	vlan20
DAC	10.0.30.0/24	vlan30
DAC	10.0.40.0/24	vlan40
DAC	192.168.13.1...	ether1

Interface List

Interface	Interface List	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VXLAN	VRRP
+	-	✓	✗	📁	🔍	Detect Internet		
Name	Type	Actual MTU	L2 MTU	Tx	Rx			
::: ISP								
R	ether1	Ethernet	1500		67.5 kbps			
::: LAN								
R	ether2	Ethernet	1500		1032 bps			
B	vrrp1	VRRP	1500		0 bps			
	vlan10	VLAN	1500		0 bps			
	vlan20	VLAN	1500		0 bps			
	vlan30	VLAN	1500		0 bps			
	vlan40	VLAN	1500		0 bps			

Address List

Address	Network
10.0.0.2/24	10.0.0.0
10.0.0.254	10.0.0.254
10.0.10.2/24	10.0.10.0
10.0.20.2/24	10.0.20.0
10.0.30.2/24	10.0.30.0
10.0.40.2/24	10.0.40.0
192.168.13.20...	192.168.13.192

Route List

	Dst. Address	Gateway
DAd	0.0.0.0/0	192.168.13.222
DAC	10.0.0.0/24	ether2
DAC	192.168.13.19...	ether1

Нет маршрутов в vlans!

# VRRP v3 на link-local адресах (используем ipv6)

```
/interface/vrrp \  
set [find] v3-protocol=ipv6
```

The screenshot displays the Mikrotik WinBox interface with three windows open:

- Interface List:** Shows a list of interfaces. Under the 'LAN' section, VRRP groups are configured for ether2, vlan10, vlan20, vlan30, vlan40, and vrrp1.
- Interface <vrrp1>:** Shows the configuration for the VRRP group on interface ether2. The VRRP version is set to 3, and the V3 Protocol is set to IPv6.
- Address List:** Shows a list of IPv4 addresses assigned to interfaces. The 'Find' button is visible.
- IPv6 Address List:** Shows a list of IPv6 addresses assigned to interfaces. The 'Find' button is visible.

Interface	Name	Type
ISP	ether1	Ethernet
LAN	ether2	Ethernet
R	vlan10	VLAN
RM	vrrp10	VRRP
R	vlan20	VLAN
RM	vrrp20	VRRP
R	vlan30	VLAN
RM	vrrp30	VRRP
R	vlan40	VLAN
RM	vrrp40	VRRP
RM	vrrp1	VRRP

Field	Value
Interface	ether2
VRID	10
Priority	100
Group Master	self
Interval	1.00 s
Preemption Mode	<input type="checkbox"/>
Authentication	none
Password	
Version	3
V3 Protocol	IPv6

Address	Network	Interface
10.0.0.254/24	10.0.0.0	vrrp1
10.0.10.254/24	10.0.10.0	vrrp10
10.0.20.254/24	10.0.20.0	vrrp20
10.0.30.254/24	10.0.30.0	vrrp30
10.0.40.254/24	10.0.40.0	vrrp40
192.168.13.20...	192.168.13.192	ether1

Address	From Pool	Interface	Advertise
2001:db8::1/64		vrrp1	yes
2001:db8:0:10::1/64		vrrp10	yes
2001:db8:0:20::1/64		vrrp20	yes
2001:db8:0:30::1/64		vrrp30	yes
2001:db8:0:40::1/64		vrrp40	yes
fe80::200:5eff:fe00:201/...		vrrp10	no
fe80::200:5eff:fe00:201/...		vrrp20	no
fe80::200:5eff:fe00:201/...		vrrp30	no
fe80::200:5eff:fe00:201/...		vrrp40	no
fe80::200:5eff:fe00:20a/...		vrrp1	no
fe80::a00:27ff:fe2c:2aa0.		ether1	no
fe80::a00:27ff:fe34:ae1...		ether2	no
fe80::a00:27ff:fe34:ae1...		vlan40	no
fe80::a00:27ff:fe34:ae1...		vlan30	no
fe80::a00:27ff:fe34:ae1...		vlan10	no
fe80::a00:27ff:fe34:ae1...		vlan20	no

# Добавим адреса и маршруты для управления R1

- R1 ipv4

```
/ip address add address=10.0.0.1/24 \  
interface=ether2
```

```
/ip address set [find interface=vrrp1] \  
address=10.0.0.254
```

```
/ip route add distance=254 \  

```

```
dst-address=10.0.0.0/18 \  
gateway=10.0.0.2
```

- R1 ipv6

```
/ipv6 address add \  
address=2001:db8::c1 advertise=no \  
interface=ether2
```

```
/ipv6 route add distance=254 \  

```

```
dst-address=2001:db8::/56 \  
gateway=2001:db8::c2
```



# Добавим адреса и маршруты для управления R2

- R2 ipv4

```
/ip address add address=10.0.0.2/24 \  
interface=ether2
```

```
/ip address set [find interface=vrrp1] \  
address=10.0.0.254
```

```
/ip route add distance=254 \  

```

```
dst-address=10.0.0.0/18 \  
gateway=10.0.0.1
```

- R2 ipv6

```
/ipv6 address add \  
address=2001:db8::c2 advertise=no \  
interface=ether2
```

```
/ipv6 route add distance=254 \  

```

```
dst-address=2001:db8::/56 \  
gateway=2001:db8::c1
```

@08:00:27:FD:62:35 (chr2) - WinBox (64bit) v7.10.1 on CHR (x86\_64)

Uptime:

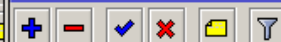
#### IPv6 Route List



Find

	Dst. Address	Gateway	Distance
AS	2001:db8::/56	2001:db8::c1	2
DAC	2001:db8::/64	ether2	
DAC	fe80::/64%ether1	ether1	
DAC	fe80::/64%ether2	ether2	
DAC	fe80::/64%vlan10	vlan10	
DAC	fe80::/64%vlan20	vlan20	
DAC	fe80::/64%vlan30	vlan30	
DAC	fe80::/64%vlan40	vlan40	

#### Route List



Find

	Dst. Address	Gateway	Distance	Prefer.
DAd	0.0.0.0/0	192.168.13.222	1	
AS	10.0.0.0/18	10.0.0.1	254	
DAC	10.0.0.0/24	ether2	0	
DAC	192.168.13.19...	ether1	0	

@08:00:27:F0:FC:9D (vm-client) - WinBox (64bit) v7.10.1 on CHR (x86\_64)

Uptime:

Terminal <1>

[admin@vm-client] > /ping 10.0.0.2 count=4

SEQ	HOST	SIZE	TTL	TIME	STATUS
0	10.0.0.2	56	64	1ms66us	
1	10.0.0.2	56	64	1ms356us	
2	10.0.0.2	56	64	1ms462us	
3	10.0.0.2	56	64	1ms523us	
sent=4 received=4 packet-loss=0% min-rtt=1ms66us avg-rtt=1ms351us max-rtt=1ms523us					

[admin@vm-client] > /ping 2001:db8::c2 count=4

SEQ	HOST	SIZE	TTL	TIME	STATUS
0	2001:db8::c2	56	64	1ms20us	echo reply
1	2001:db8::c2	56	64	1ms269us	echo reply
2	2001:db8::c2	56	64	1ms491us	echo reply
3	2001:db8::c2	56	64	1ms424us	echo reply
sent=4 received=4 packet-loss=0% min-rtt=1ms20us avg-rtt=1ms301us max-rtt=1ms491us					

# На ВАСКУР теперь есть обратный маршрут

# "Простой" способ синхронизации настроек



ansible

netmiko

netbox

scrapli

mupsbox

racktables

nautoBOT



# Способ обойти только микротик

[https://github.com/elmaxid/vrrp\\_with\\_sync\\_mikrotik](https://github.com/elmaxid/vrrp_with_sync_mikrotik)

by Maximiliano Dobladez

Code

Blame

18 lines (18 loc) · 702 Bytes

```
1  # Master Script > Add to scheduler
2  :log info "INICIO DE BACKUP";
3  :log info "Guardando queues";
4  #
5  /queue simple export file="queue";
6  :delay 5s;
7  :log info "Listo.!!";
8  #
9  :log info "Limpiando reglas Router Slave";
10 /tool fetch address=192.168.168.10 user=ftp password=ftp123 src-path=clean.queue mode=ftp upload=yes dst-path=clean.auto.rsc ;
11 :delay 5s;
12 :log info "Listo.!!";
13 #
14 :log info "Actualizando Router Slave";
15 /tool fetch address=192.168.168.10 user=ftp password=ftp123 src-path=queue.rsc mode=ftp upload=yes dst-path=queue.auto.rsc ;
16 :delay 5s;
17 /tool fetch address=192.168.168.10 user=ftp password=ftp123 src-path=final.queue mode=ftp upload=yes dst-path=final.auto.rsc ;
18 :log info "Actualizado!!";
```

# Спасибо за внимание!

Буду рад ответить на все ваши вопросы  
сейчас или свяжитесь со мной в будущем:

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