

Автор:

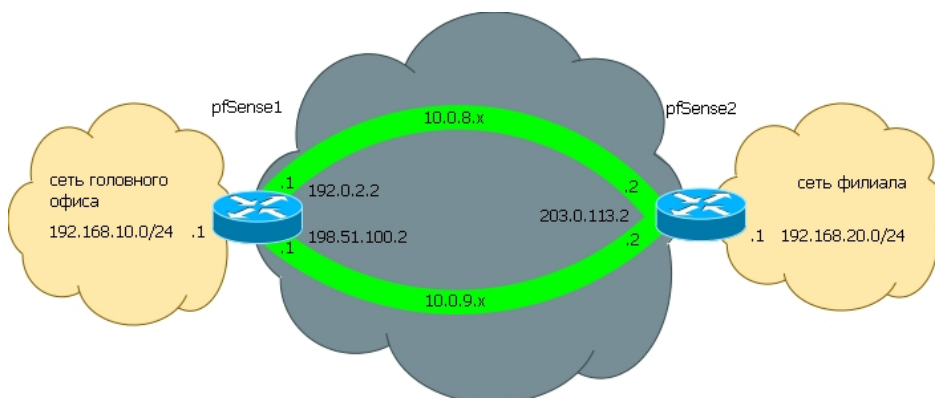
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OSPF

Вот. Возвращаясь к предыдущему посту, можно ли сделать связь между офисами без всех этих Remote Networks и route? А как же!

Более того, можно еще и обеспечить резервирование канала, и поможет нам в этом OSPF.

OSPF - это когда, коротко говоря, есть граф, вершинами которого являются маршрутизаторы, а ребрами - линки между ними. OSPF, глядя на граф, может найти оптимальный маршрут между двумя маршрутизаторами. При этом он учитывает то, какие-то линки могут быть упавшими. Остальное - в документации.



Есть psSense1 головного офиса, у которого 2 канала в интернет: WAN1 - 192.0.2.2 и WAN2 - 198.51.100.2. Есть филиал с единственным каналом в интернет: WAN - 203.0.113.2.

В головном офисе настроено 2 экземпляра сервера OpenVPN:

OVPNS1 на WAN1:1194, Tunnel Network 10.0.8.0/24

OVPNS2 на WAN2:1195, Tunnel Network 10.0.9.0/24

В филиале настроено 2 клиента OpenVPN:

OVPNS1 на 192.0.2.2:1194, Tunnel Network 10.0.8.0/24

OVPNS2 на 198.51.100.2:1195, Tunnel Network 10.0.9.0/24

Ни в головном офисе, ни в филиале на серверах и клиентах не прописаны ни Remote Network, ни какие-либо route.

Филиал хочет при падении одного из каналов в головном офисе автоматически переключаться на другой, компы офиса и филиала должны видеть друг-друга.

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Ставим и в офисе и в филиале (System -> Packages, вкладка Available Packages) пакет Quagga OSPF. В первую очередь необходимо настроить интерфейсы, на которых будет работать OSPF (Services -> Quagga OSPFd, вкладка Interface Settings) "+" добавляем интерфейсы.

В головном офисе:

первый интерфейс - OVPNS1:

The screenshot shows the 'Services: Quagga OSPFd: Edit' configuration page in the PfSense web interface. The top navigation bar includes 'System', 'Interfaces', 'Firewall', 'Services', 'VPN', 'Status', 'Diagnostics', and 'Help'. The main content area has three tabs: 'Global Settings', 'Interface Settings', and 'Status'. The 'Interface Settings' tab is active, showing the following configuration for the OVPNS1 interface:

- Interface:** OpenVPN server: OVPNS1 (dropdown menu)
- Metric:** 10 (text input)
- Area:** 1.1.1.1 (text input)
- Description:** (empty text input)
- Interface is Passive:** (checkbox)
- Enable MD5 password for this Quagga OSPFd interface (default no):** (checkbox)
- Password:** (empty text input)
- Router Priority:** (empty text input)
- Hello Interval:** (empty text input)
- Retransmit Interval:** (empty text input)
- Dead Timer:** (empty text input)

At the bottom of the configuration area, there are 'Save' and 'Cancel' buttons.

второй интерфейс - OVPNS2:

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System Interfaces Firewall Services VPN Status Diagnostics Help

Services: Quagga OSPFd: Edit

Global Settings **Interface Settings** Status

Interface
Enter the desired participating interface here.

Metric
Metric (cost) for this OSPF interface (leave blank for default).

Area
The area for this interface (leave blank for default).

Description

Interface is Passive
Prevent transmission and reception of OSPF packets on this interface. The specified interface will be announced as a stub network.

Enable MD5 password for this Quagga OSPFd interface (default no)
Enables the use of an MD5 password on this instance

Password
Password for this OSPF interface.

Router Priority
Router priority when participating in elections for DR (Default 1) Valid range is 0-255. 0 will cause the router to not participate in election.

Hello Interval
Hello Interval this OSPF interface in seconds (Default 10).

Retransmit Interval
Retransmit Interval this OSPF interface in seconds (Default 5).

Dead Timer
Dead Timer for this OSPF interface in seconds (Default 40).

~~И основные параметры OSPF (вкладка Global Settings):~~

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Services: Quagga OSPFd

Global Settings Interface Settings Status

Master Password
Password to access the Zebra and OSPF management daemons. Required.

Logging
If set to yes, Logs will be written via syslog.

Log Adjacency Changes
If set to yes, adjacency changes will be written via syslog.

Router ID
Specify the Router ID. RID is the highest logical (loopback) IP address configured on a router. For more information on router identifiers see [wikipedia](#).

Area
OSPFd area for this instance of OSPF. For more information on Areas see [wikipedia](#).

Disable FIB updates (Routing table)
Disables the updating of the host routing table(turns into stub router).

Redistribute connected subnets
Enables the redistribution of connected networks (Default no)

Redistribute default route
Enables the redistribution of a default route to this device (Default no)

Redistribute static
Enables the redistribution of static routes (only works if you are using quagga static routes)

Redistribute Kernel
Enables the redistribution of kernel routing table (this is required if using pfSense static routes)

SPF Hold Time
Set the SPF holdtime in MILLIseconds. The minimum time between two consecutive shortest path first calculations. The default value is 5 seconds; the valid range is 1-5 seconds.

SPF Delay
Set SPF delay in MILLIseconds. The delay between receiving an update to the link state database and starting the shortest path first calculation. The default value is 1; valid range is 1-10 seconds.

RFC 1583 compatible
If set to yes, decisions regarding AS-external routes are evaluated according to RFC 1583. The default is no.

These rules take precedence over any redistribute options specified above.

Disable Redistribution	Subnet to Route	Area ID
<input checked="" type="checkbox"/>	<input type="text" value="192.0.2.0/30"/>	<input type="text" value="1.1.1.1"/>
<input checked="" type="checkbox"/>	<input type="text" value="198.51.100.0/30"/>	<input type="text" value="1.1.1.1"/>
<input checked="" type="checkbox"/>	<input type="text" value="10.0.8.0/30"/>	<input type="text" value="1.1.1.1"/>
<input checked="" type="checkbox"/>	<input type="text" value="10.0.9.0/30"/>	<input type="text" value="1.1.1.1"/>

Save

Веб-интерфейс - OVPNG1:

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System Interfaces Firewall Services VPN Status Diagnostics Help

Services: Quagga OSPFd: Edit

Global Settings Interface Settings Status

Interface OpenVPN client: OVPNC1
Enter the desired participating interface here.

Metric 10
Metric (cost) for this OSPF interface (leave blank for default).

Area 1.1.1.1
The area for this interface (leave blank for default).

Description

Interface is Passive
Prevent transmission and reception of OSPF packets on this interface. The specified interface will be announced as a stub network.

Enable MD5 password for this Quagga OSPFd interface (default no)
Enables the use of an MD5 password to on this instance

Password
Password for this OSPF interface.

Router Priority
Router priority when participating in elections for DR (Default 1) Valid range is 0-255. 0 will cause the router to not participate in election.

Hello Interval
Hello Interval this OSPF interface in seconds (Default 10).

Retransmit Interval
Retransmit Interval this OSPF interface in seconds (Default 5).

Dead Timer
Dead Timer for this OSPF interface in seconds (Default 40).

Save Cancel

System Interfaces Firewall Services VPN Status Diagnostics Help

Services: Quagga OSPFd: Edit

Global Settings Interface Settings Status

Interface OpenVPN client: OVPNC1
Enter the desired participating interface here.

Metric 20
Metric (cost) for this OSPF interface (leave blank for default).

Area 1.1.1.1
The area for this interface (leave blank for default).

Description

Interface is Passive
Prevent transmission and reception of OSPF packets on this interface. The specified interface will be announced as a stub network.

Enable MD5 password for this Quagga OSPFd interface (default no)
Enables the use of an MD5 password to on this instance

Password
Password for this OSPF interface.

Router Priority
Router priority when participating in elections for DR (Default 1) Valid range is 0-255. 0 will cause the router to not participate in election.

Hello Interval
Hello Interval this OSPF interface in seconds (Default 10).

Retransmit Interval
Retransmit Interval this OSPF interface in seconds (Default 5).

Dead Timer
Dead Timer for this OSPF interface in seconds (Default 40).

Save Cancel

И основные параметры:

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Services: Quagga OSPFd

Global Settings | **Interface Settings** | **Status**

Master Password
Password to access the Zebra and OSPF management daemons. Required.

Logging
If set to yes, Logs will be written via syslog.

Log Adjacency Changes
If set to yes, adjacency changes will be written via syslog.

Router ID
Specify the Router ID. RID is the highest logical (loopback) IP address configured on a router. For more information on router identifiers see [wikipedia](#).

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Disables the updating of the host routing table(turns into stub router).

Redistribute connected subnets
Enables the redistribution of connected networks (Default no)

Redistribute default route
Enables the redistribution of a default route to this device (Default no)

Redistribute static
Enables the redistribution of static routes (only works if you are using quagga static routes)

Redistribute Kernel
Enables the redistribution of kernel routing table (this is required if using pfsense static routes)

SPF Hold Time
Set the SPF holdtime in MILLIseconds. The minimum time between two consecutive shortest path first calculations. The default value is 5 seconds; the valid range is 1-5 seconds.

SPF Delay
Set SPF delay in MILLIseconds. The delay between receiving an update to the link state database and starting the shortest path first calculation. The default value is 1; valid range is 1-10 seconds.

RFC 1583 compatible
If set to yes, decisions regarding AS-external routes are evaluated according to RFC 1583. The default is no.

These rules take precedence over any redistribute options specified above.

Disable Redistribution	Subnet to Route	Area ID
<input checked="" type="checkbox"/>	<input type="text" value="203.0.113.0/30"/>	<input type="text" value="1.1.1.1"/>
<input checked="" type="checkbox"/>	<input type="text" value="10.0.9.0/24"/>	<input type="text" value="1.1.1.1"/>
<input checked="" type="checkbox"/>	<input type="text" value="10.0.8.0/30"/>	<input type="text" value="1.1.1.1"/>

Quagga OSPF Neighbors

Neighbor ID	Pri	State	Dead Time	Address	Interface	RxmtL	RqstL	DBsmL
198.51.100.2	1	Full/DROther	38.200s	10.0.8.1	ovpnc1:10.0.8.2	0	0	0
198.51.100.2	1	Full/DROther	38.200s	10.0.9.1	ovpnc2:10.0.9.2	0	0	0

Quagga OSPF Routes

```

===== OSPF network routing table =====
N 10.0.8.1/32 [10] area: 1.1.1.1
    directly attached to ovpnc1
N 10.0.9.1/32 [20] area: 1.1.1.1
    directly attached to ovpnc2

===== OSPF router routing table =====
R 198.51.100.2 [10] area: 1.1.1.1, ASBR
    via 10.0.8.1, ovpnc1

===== OSPF external routing table =====
N E2 192.168.10.0/24 [10/20] tag: 0
    via 10.0.8.1, ovpnc1

```

Видим, что филиал теперь знает путь в локалку головного офиса:

