ACME_32_a2_report

Group number: 32
Students:

- Lilit Hasan: 1958055
- Matteo Piermartini: 1802597
- Aurora Polifemo: 1802485

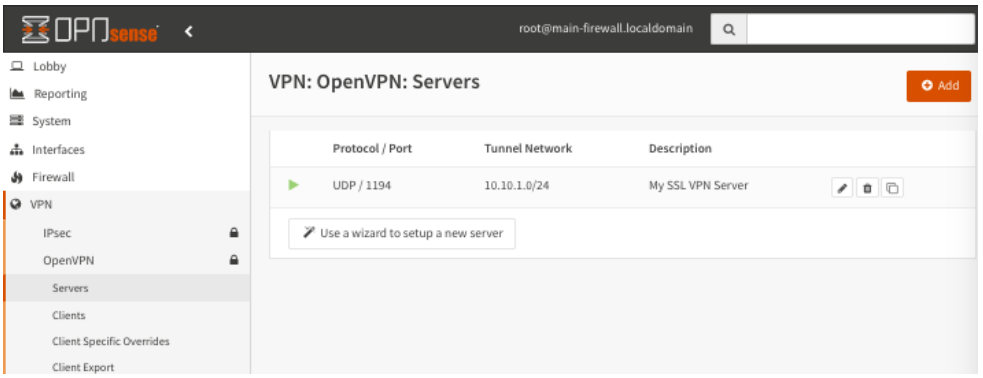
Initial Brainstorming

We decided to use OpenVPN to set-up the different VPN servers on the network. We use OpenVPN because it is easier to use and it gives the security features we're looking for. In the first case we just need to create the tunnel between the two routers, while in the second case we need to create some users that will be our road warriors, and we need to make the Proxy Server act as a VPN.

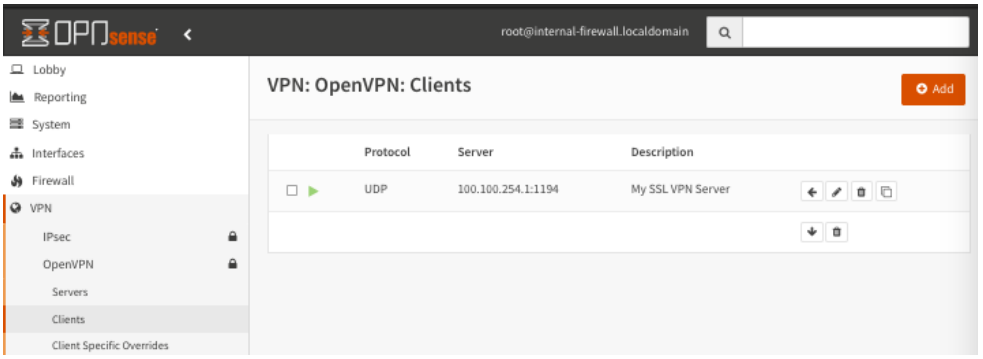
1. Set-up of the VPN for the Main-Internal tunnel

The tunnel between the two routers was set in this way:

1. In the Main Router (100.100.6.1) we set up an OpenVPN connection as a VPN Server using the UDP port 1194, where 10.10.1.0/24 is the tunnel network we use for the connection.

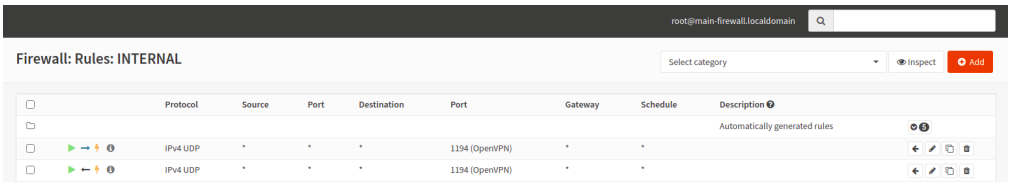


2. In the Internal Router (100.100.1.1) we configured the OpenVPN connection as a VPN Client, using the UDP port 1194 here as well.



3. In both these connections we used the same key that was generated automatically and that was being transcribed at the inside of the two configurations.
4. We needed to configure the firewall to allow the traffic of the VPN:

   In the Main Router, on Firewall>Rules>INTERNAL we have to add some rules in order to allow the traffic for UDP packets on port 1194.



5. Then we had to modify the routes in System>Routes>Configuration:

   In the Main Router, in order to reach the networks that are in the Internal Router, we set the route so to use the gateway of the VPN:

Network	Gateway	Description
100.100.2.0/24	OPT3_GW - 10.10.0.2	Clients network
100.100.1.0/24	OPT3_GW - 10.10.0.2	Servers network

   In the Internal Router we set the flow of the traffic using 0.0.0.0/0 as IP, so that everything goes through the gateway of the VPN:

Network	Gateway	Description
0.0.0.0/0	OPT2_VPNV4 - 10.10.0.1	Internet

2. Set-up of the Road Warriors

We configured the Road Warriors in this way:

1. Through a script in a GitHub repository it was possible to download and configure directly OpenVPN in the proxy → *raw.githubusercontent.com/Angristan/openvpn-install/master/openvpn-install.sh*
2. By running the script we were asked to insert the IP of the proxy (100.100.6.3), the protocol to use (UDP), the port (1194) and the DNS.
3. After the installation we were asked to add an user, our users are Becca, Huck and Jim. We used a password for each account.

Username	Full name	Groups
Becca	Becca	
Huck	Huck	
Jim	Jim	

4. After the configuration of each account we saved the configuration file in the proxy. We needed to download each of the configurations (Becca.ovpn, Huck.ovpn, Jim.ovpn).
5. For making the connections work at the VPN on Proxmox and on the Road Warrior simultaneously it's necessary to set the ip_forwarding flag on 1 on the hosts in which we run the configurations.

3. Test of the configuration

We checked the configuration of the tunnel between the two firewall work, going under VPN>OpenVPN>Connection Status on both routers and seeing that the status of the connection was "up":

Client Instance Statistics

Name	Remote Host	Virtual Addr	Connected Since	Bytes Sent	Bytes Received	Status
Site-to-site UDP	100.100.254.1	10.10.0.2	2021-06-28 17:24:27	32.04 MB	17.13 MB	up

Peer to Peer Server Instance Statistics

Name	Remote Host	Virtual Addr	Connected Since	Bytes Sent	Bytes Received	Status
Site-to-site UDP:1194	100.100.254.2	10.10.0.1	2021-06-28 17:13:35	17.54 MB	32.75 MB	up

To check the Road Warrior configuration, we ping the dc (100.100.1.2) from our hosts, and see if the traffic flows going through the VPN tunnel we set.

4. Final remarks

We have some problems with the Road Warriors. Based on the way we set the connection between them, it should work, but after different tries it doesn't.