

# **STI MEI/MIEBIOM**

**2022/2023**

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## **Practical class #3**

- VPN using OpenVPN

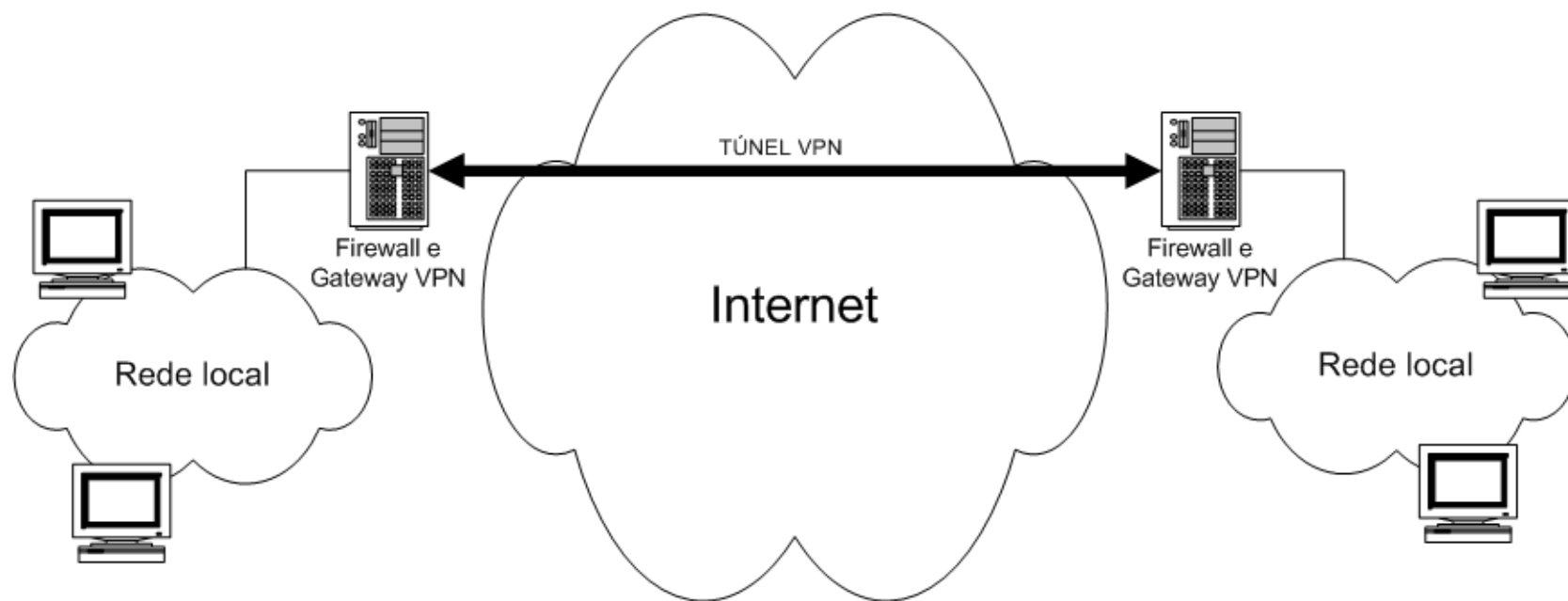
# OpenVPN

- VPN using SSL/TLS
- UDP or TCP
- TAP (Network Tap) or TUN (Network Tunnel) virtual network devices
- Supports common VPN usage scenarios
- Various client authentication methods (e.g. passwords, private keys, smart cards, certificates)



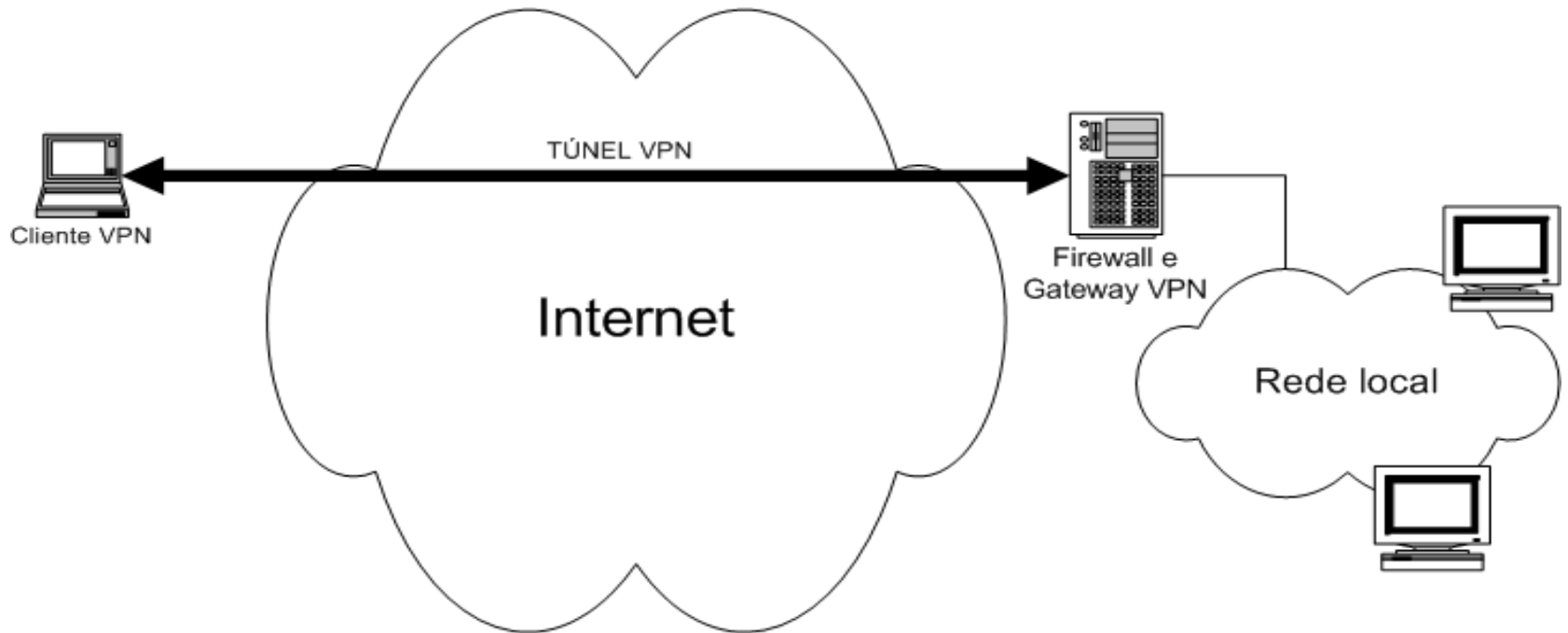
# OpenVPN (Usage Scenarios)

- Gateway-to-gateway (VPN) tunnel



# OpenVPN (Usage Scenarios)

- Road warrior (user remote access)



# OpenVPN (Installation)

```
yum install openssl openssl-devel lzo lzo-devel pam-devel
```

```
cd /usr/local/src/
```

```
tar xvf openvpn-2.4.4.tar.gz
```

```
cd openvpn-2.4.4
```

```
./configure
```

```
make install
```

```
cp distro/rpm/openvpn.init.d.rhel /etc/rc.d/init.d/openvpn
```

```
chkconfig --add openvpn
```

```
mkdir /etc/openvpn
```

```
cp sample/sample-config-files/server.conf /etc/openvpn/
```

# OpenVPN (Configuration)

## # Example server configuration

```
local 193.136.212.70
port 1194
proto udp
dev tun
ca ca.crt
cert gw-vpn.crt
key gw-vpn.key
dh dh1024.pem
server 10.70.0.0 255.255.255.0
push "route 193.136.212.64 255.255.255.192"
push "route 10.50.0.0 255.255.255.0"
push "dhcp-option DNS 193.136.212.65"
push "dhcp-option DNS 193.136.212.66"
comp-lzo
```

# OpenVPN (Configuration)

## **# Example client configuration**

client

dev tun

proto udp

remote gw-vpn.dei.uc.pt 1194

user nobody

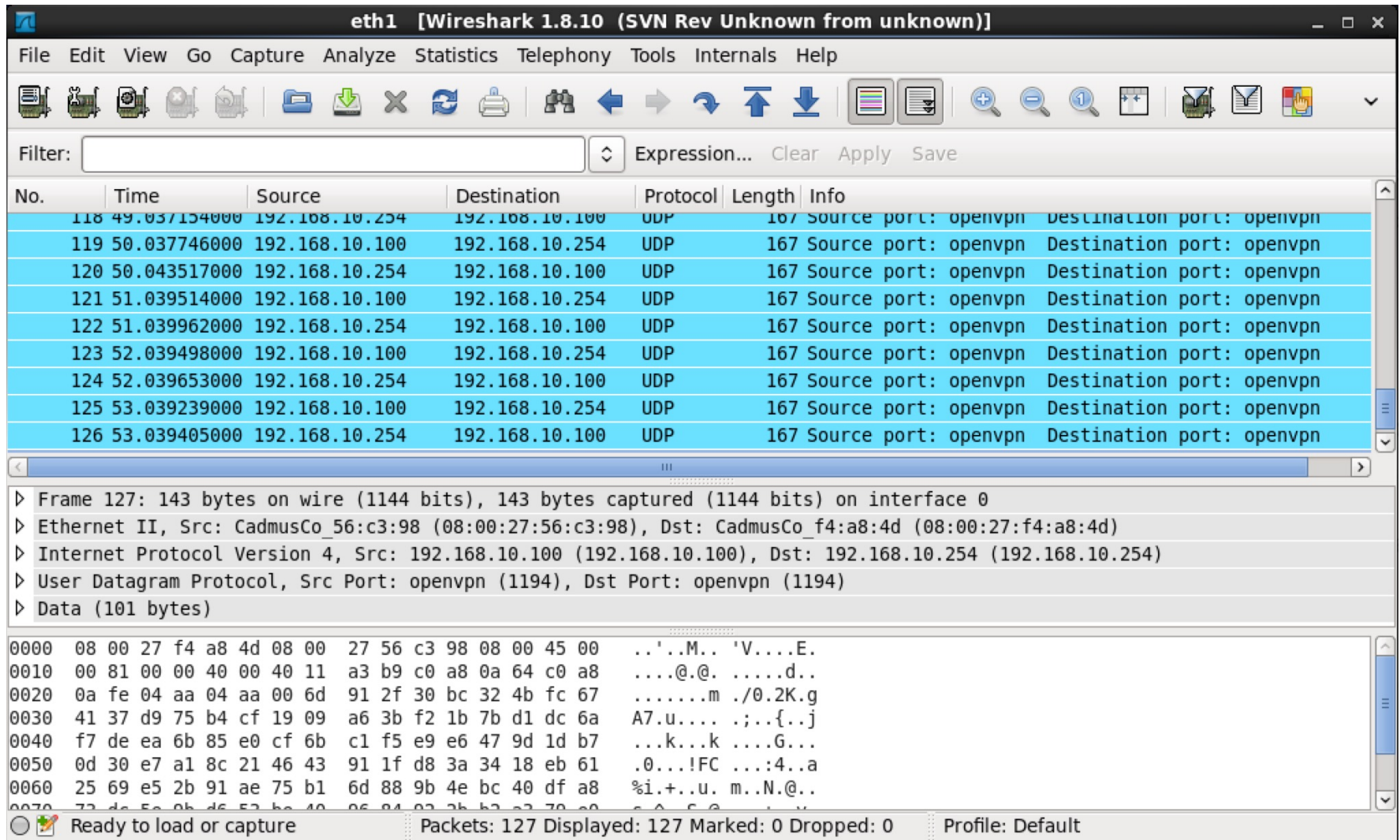
group nobody

ca ca.crt

cert cliente\_vpn.crt

key cliente\_vpn.key

# OpenVPN (interfaces tun, ethernet)



eth1 [Wireshark 1.8.10 (SVN Rev Unknown from unknown)]

File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
118	49.037154000	192.168.10.254	192.168.10.100	UDP	167	Source port: openvpn Destination port: openvpn
119	50.037746000	192.168.10.100	192.168.10.254	UDP	167	Source port: openvpn Destination port: openvpn
120	50.043517000	192.168.10.254	192.168.10.100	UDP	167	Source port: openvpn Destination port: openvpn
121	51.039514000	192.168.10.100	192.168.10.254	UDP	167	Source port: openvpn Destination port: openvpn
122	51.039962000	192.168.10.254	192.168.10.100	UDP	167	Source port: openvpn Destination port: openvpn
123	52.039498000	192.168.10.100	192.168.10.254	UDP	167	Source port: openvpn Destination port: openvpn
124	52.039653000	192.168.10.254	192.168.10.100	UDP	167	Source port: openvpn Destination port: openvpn
125	53.039239000	192.168.10.100	192.168.10.254	UDP	167	Source port: openvpn Destination port: openvpn
126	53.039405000	192.168.10.254	192.168.10.100	UDP	167	Source port: openvpn Destination port: openvpn

Frame 127: 143 bytes on wire (1144 bits), 143 bytes captured (1144 bits) on interface 0

Ethernet II, Src: CadmusCo\_56:c3:98 (08:00:27:56:c3:98), Dst: CadmusCo\_f4:a8:4d (08:00:27:f4:a8:4d)

Internet Protocol Version 4, Src: 192.168.10.100 (192.168.10.100), Dst: 192.168.10.254 (192.168.10.254)

User Datagram Protocol, Src Port: openvpn (1194), Dst Port: openvpn (1194)

Data (101 bytes)

```
0000 08 00 27 f4 a8 4d 08 00 27 56 c3 98 08 00 45 00  ..'.M.. 'V....E.
0010 00 81 00 00 40 00 40 11 a3 b9 c0 a8 0a 64 c0 a8  ....@.@. ....d..
0020 0a fe 04 aa 04 aa 00 6d 91 2f 30 bc 32 4b fc 67  ....m ./0.2K.g
0030 41 37 d9 75 b4 cf 19 09 a6 3b f2 1b 7b d1 dc 6a  A7.u.... ;;{..j
0040 f7 de ea 6b 85 e0 cf 6b c1 f5 e9 e6 47 9d 1d b7  ...k...k ....G...
0050 0d 30 e7 a1 8c 21 46 43 91 1f d8 3a 34 18 eb 61  .0...!FC ...:4..a
0060 25 69 e5 2b 91 ae 75 b1 6d 88 9b 4e bc 40 df a8  %i+..u. m..N.@..
0070 72 de 5a 0b d6 52 b8 40 06 04 02 2b b2 02 70 00  c A C A .....
```

Ready to load or capture Packets: 127 Displayed: 127 Marked: 0 Dropped: 0 Profile: Default