Configuring an OpenVPN Server for iOS & Android OS Clients

6310-DX, 6330-MX, and 6350-SR

Configuring an OpenVPN Server for iOS & Android OS Clients

Goal

Difficulty: Medium

Configuring a simple (username/password authentication only) OpenVPN server instance on an OpenVPN-enabled Accelerated device. Examples of client connection from an Apple iOS device is included. The steps to connect a Android OS device client to the server are similar.

This enables a *road-warrior* set up to allow roaming devices (iOS/Android OS devices) to connect into a device serving an OpenVPN TUN-style tunnel connection. For example on how to configure and connect an OpenVPN client on another Accelerated device, visit the article Configuring an OpenVPN Client on an Accelerated Device.

Relevant Files

The files used to create this article are attached below.

- ca.crt
- server.crt
- server.key
- dh2048.pem
- root_default_tun.ovpn

Setup

This article assumes you have basic understanding of server-authentication, certificates, keys, and the fundamentals of OpenVPN. It also assumes the appropriate private and public certificate (*.crt), key (.*key), and Diffie-Hellman (dh2048.pem) files, as well as the OpenVPN configuration file (*.ovpn) are correctly generated. For more details on generating these files, visit https://www.digitalocean.com/community/tutorials/how-to-set-up-an-openvpn-server-on-ubuntu-16-04

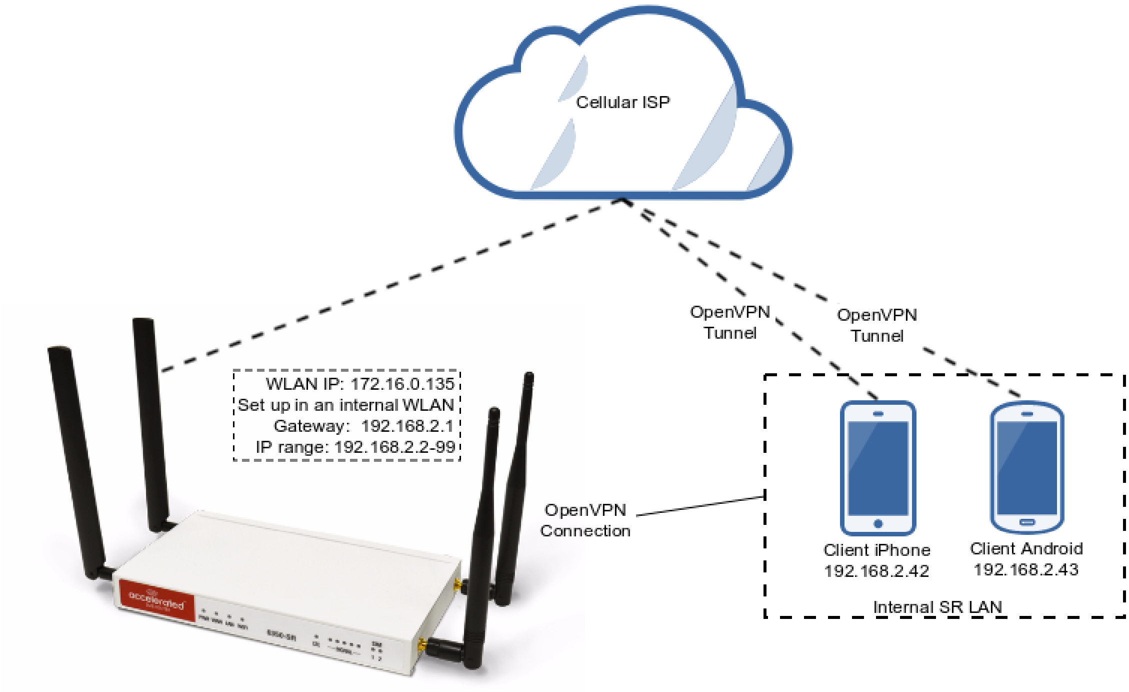
The client devices (iOS/Android OS devices) require the OpenVPN Connect app from their respective app libraries:

- App Store: https://itunes.apple.com/au/app/openvpn-connect/id590379981?mt=8
- Google Play: https://play.google.com/store/apps/details?id=net.openvpn.openvpn&hl=en

The *.ovpn file will need to be imported into the devices for OpenVPN Connect to use.

Sample

The sample configuration below shows an example network with an iOS device connected via the TUN-style tunnel. References to the Android OS are made.



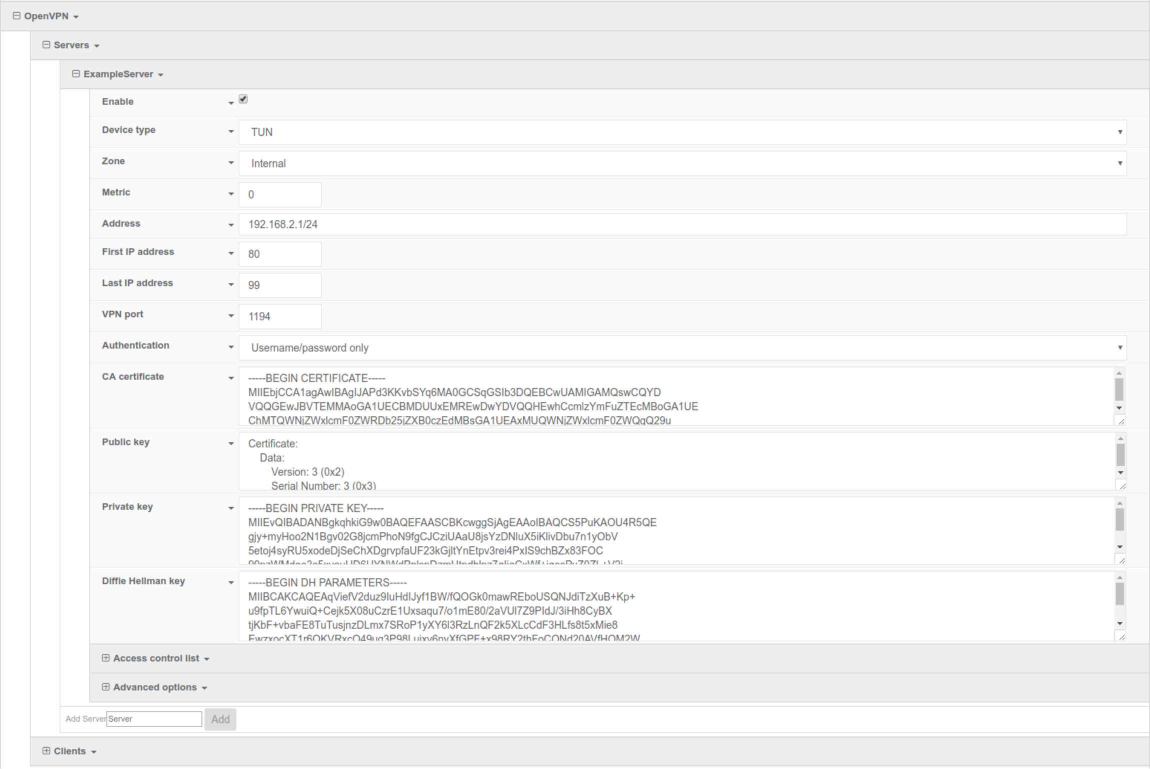
Sample Configuration

Open the configuration page and set the following configurations.

OpenVPN Section Configuration

1. In the ***VPN > OpenVPN > Servers*** section, specify a name for the new "OpenVPN" server (e.g. *ExampleServer*) and click ***Add***.
2. Ensure ***Enable*** is selected.
3. Ensure the ***Device type*** pull-down menu is selected to be *TUN*. This is necessary as iOS and Android OS only supports TUN-style OpenVPN tunnels.

4. Ensure the *Zone* pull-down menu is selected to be *Internal, as the clients are treated as a LAN devices.*
5. Set ***Address*** to *192.168.2.1/24*, this must be a valid gateway in the network of the IP address range.
6. Specify the ***First IP address*** and the ***Last IP address*** of the address range if different from the default values.
7. From the ***Authentication*** pull-down menu, select option *Username/password only*.
8. Insert the contents of the generated CA certificate (usually in ca.crt file), Public key (e.g. server.crt), Private key (e.g. server.key), and the Diffie Hellman key (usually in dh2048.pem) in their respective fields. The contents will be hidden when the configuration is saved.



Enable ☑

Device type: TUN

Zone: Internal

Metric: 0

Address: 192.168.2.1/24

First IP address: 80

Last IP address: 99

VPN port: 1194

Authentication: Username/password only

CA certificate:

```
-----BEGIN CERTIFICATE-----
MIIEbjCCA1agAwIBAgIJAPd3KKvbSYq6MA0GCSqGSIb3DQEBCwUAMIGAMQswCQYD
VQQGEwJBVTEMMAoGA1UECBMDUUxEMREwDwYDVQQHEwhCcmlzYmFuZTEcMBoGA1UE
ChMTQWNjZWxlcmF0ZWRDb25jZXB0czEdMBsGA1UEAxMUQWNjZWxlcmF0ZWQgQ29u
```

Public key:

```
Certificate:
    Data:
        Version: 3 (0x2)
        Serial Number: 3 (0x3)
```

Private key:

```
-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEFAASCBKcwggSjAgEAAoIBAQCS5PuKAOU4R5QE
gjy+myHoo2N1Bgv02G8jcmPhoN9fgCJCziUAaU8jsYzDNluX5iKlivDbu7n1yObV
5etoj4syRU5xodeDjSeChXDgrvpfaUF23kGjltYnEtpv3rei4PxIS9chBZx83FOC
```

Diffie Hellman key:

```
-----BEGIN DH PARAMETERS-----
MIIBCAKCAQEAqViefV2duz9luHdlJyf1BW/fQOGk0mawREboUSQNJdiTzXuB+Kp+
u9fpTL6YwuiQ+Cejk5X08uCzrE1Uxsaqu7/o1mE80/2aVUl7Z9PldJ/3iHh8CyBX
tjKbF+vbaFE8TuTusjnzDLmx7SRoP1yXY6l3RzLnQF2k5XLcCdF3HLfs8t5xMie8
```

Add Server: Server

Full files used in this example are attached in the Relevant Files section above.

Authentication Section Configuration

The following configurations add a new user/group to handle OpenVPN access:

1. In the ***Authentication*** > ***Groups*** section, specify a name for the OpenVPN group (e.g. *egGroup*).
2. Select ***OpenVPN access.***
3. Expand ***OpenVPN*** tab, using the pull-down menu next to ***Tunnel***, select appropriate OpenVPN instance, e.g. ***Server: ExampleServer.***
4. In the ***Authentication*** > ***Users*** section, specify a name for a new OpenVPN user (e.g. *egUser*).
5. In the new ***egUser*** user section, ensure ***Enable*** is checked, and specify a password for this user (e.g. *egPassword*).
6. In the ***egUser*** > ***Groups*** section, click ***Add*** and from the pull-down, select the OpenVPN group you wish to affiliate with this user (e.g. *egGroup*).
7. Press ***Save*** at the bottom of the configuration page to save changes.

The OpenVPN server should now be operational. The next step is to connect a roaming device to the server by loading a *.ovpn file in OpenVPN Connect. Below is an example *root_default_tun.ovpn* file (attached):

```
client
dev tun
proto udp
remote 172.16.0.135 1194
resolv-retry infinite
nobind
persist-key
persist-tun
remote-cert-tls server
cipher AES-256-CBC
verb 3
auth-user-pass
<ca>
-----BEGIN CERTIFICATE-----
MIIEbjCCA1agAwIBAgIJAPd3KKvbSYq6MA0GCSqGSIb3DQEBCwUAMIGAMQswCQYD
VQQGEwJBVTEMMAoGA1UECBMDUUxEMREwDwYDVQQHEwhCcmlzYmFuZTEcMBoGA1UE
ChMTQWNjZWxlcmF0ZWRDb25jZXB0czEdMBsGA1UEAxMUQWNjZWxlcmF0ZWQgQ29u
Y2VwdHMxEzARBgNVBCkTCnRlc3RzZXJ2ZXIwHhcNMTcxMTAxMDE1MzQxWhcNMjcx
MDMwMDE1MzQxWjCBgDELMAkGA1UEBhMCQVUxDDAKBgNVBAgTA1FMRDERMA8GA1UE
BxMIQnJpc2JhbmUxHDAaBgNVBAoTE0FjY2VsZXJhdGVkQ29uY2VwdHMxHTAbBgNV
BAMTFEFjY2VsZXJhdGVkIENvbmNlcHRzMRMwEQYDVQQpEwp0ZXN0c2VydmVyMIIB
IjANBgkqhkiG9w0BAQEFAAOCAQ8AMIIBCgKCAQEAyVTfVOJNPTTPYDFC0GtGnpky
q9rQthQ/CX+u9wUpsJ8yBenmENqi5Yq3L/DWJXwTmXd4z2PaQFjszHQlDDwoN9pW
W/aPt4ZkC/6ms9Ny3WbEM/XQwgri2LRXra3qpGmjGtUIgCpl2nC8nFtvfqsca8u8
1qAZZtuT3YXAM5FYpsLKEc4TZfgquyJW4I1JwNTIIobVq7Oiqvs8JbpMAFtmBxVv
NYU9LJsAFzwvO1OZkfoXefqz9/uxKK/MzTCNvu7Z64z6Q52EQVJciHYHE2jEMKdy
yyvpFJYii6Hocu3ocHpvGa6ki3Cw/ObeenbqLKTCK8zsIL99JJYXaUKyFq4zsQID
AQABo4HoMIHlMB0GA1UdDgQWBBQIeJbSenktJDlHp6a9lHIbzagE4zCBtQYDVR0j
BIGtMIGqgBQIeJbSenktJDlHp6a9lHIbzagE46GBhqSBgzCBgDELMAkGA1UEBhMC
QVUxDDAKBgNVBAgTA1FMRDERMA8GA1UEBxMIQnJpc2JhbmUxHDAaBgNVBAoTE0Fj
Y2VsZXJhdGVkQ29uY2VwdHMxHTAbBgNVBAMTFEFjY2VsZXJhdGVkIENvbmNlcHRz
MRMwEQYDVQQpEwp0ZXN0c2VydmVyggkA93coq9tJirowDAYDVR0TBAUwAwEB/zAN
BgkqhkiG9w0BAQsFAAOCAQEACjuztAUUOhpw4GUVKDMbw8IrMAVXkDEAxdwpfL+X
bT6mQc9sbZAFCXWxh9q425F5Xll9+TKOjrulZdHzaoominFclsoqwdpu0I+K4I3e
Qap0B+Ns7DGmcwu68I1LsQq6hJAaM03DvEGPFSbbZi/60zJRgQdVWjtGhAbW46by
6litNY64j0vN/UW41IfMjvRXeg8Zgyb7gICRTWUAvaV9CXlhHK0GWzCKCrIl225x
zfvsmuPERPYKFopPhfqV+xE/62Q/TcAcuJgaGfMipY3IXkRhqikj5pZS3g4gAVjZ
Z65upCz8o5CEngtwOQ/fSPUxo73ycpkLPxJF/QwXUJA/kw==
-----END CERTIFICATE-----
</ca>
```

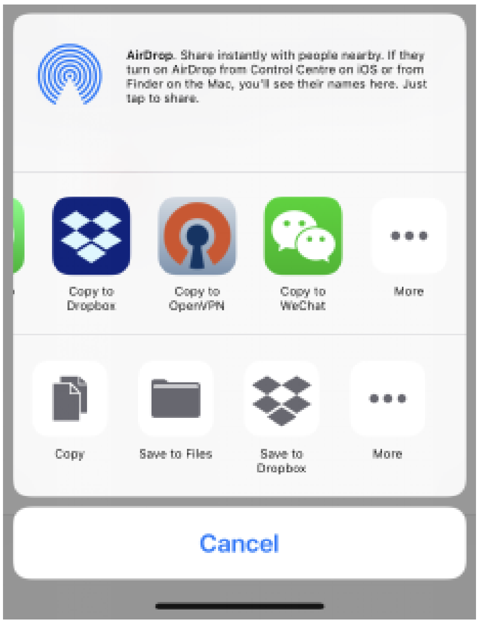
OpenVPN Connect on a mobile device may not require the *auth-user-pass* option. If the option is used, make sure there is no argument passed (i.e. pass.txt) as the application will try to search for the file locally.

Also ensure the correct static IP address and port is inserted in the "remote" line.

Example Client Device Set Up

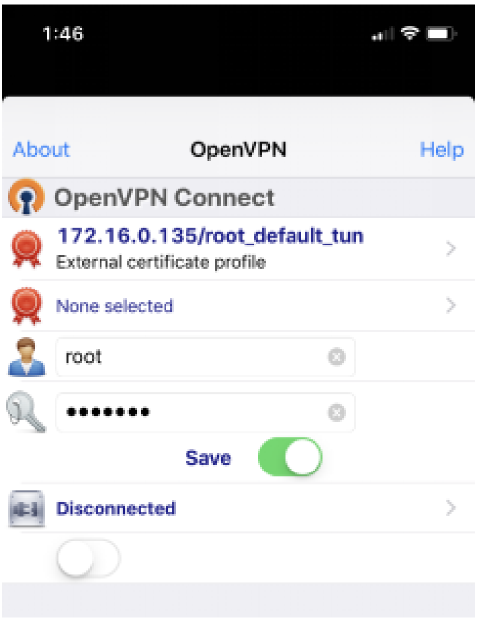
The following example is taken from an iOS device. The steps are similar for an Android OS device:

1. Download and install **OpenVPN Connect** from App Store.
2. Transfer the *.ovpn file to the iOS device. One way is to send it via an email attachment, open it in the Mail app and select **Copy to OpenVPN**.
3. In the OpenVPN app, insert the appropriate credential for the server as it was set up during the certificate/key file creation phase. Save the credential as desired.
4. Select the switch beneath **Disconnected** to initiate the connection.



AirDrop. Share instantly with people nearby. If they turn on AirDrop from Control Centre on iOS or from Finder on the Mac, you'll see their names here. Just tap to share.

Step 2



172.16.0.135/root_default_tun
External certificate profile

None selected

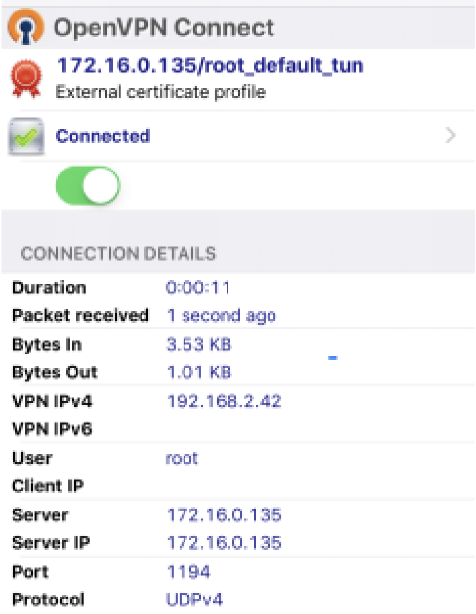
root

•••••••

Save

Disconnected

Step 3



172.16.0.135/root_default_tun
External certificate profile

Connected

CONNECTION DETAILS

Duration	0:00:11
Packet received	1 second ago
Bytes In	3.53 KB
Bytes Out	1.01 KB
VPN IPv4	192.168.2.42
VPN IPv6	
User	root
Client IP	
Server	172.16.0.135
Server IP	172.16.0.135
Port	1194
Protocol	UDPv4

Connected

If the configuration is set up correctly, the OpenVPN Connect app will show all the active connection details.

Note for Android OS users: Step 2 - locating and opening the *.ovpn file can be quite different from an iOS device. You will need to apply the correct steps to load the ovpn file into OpenVPN Connect on Android.