



## OpenVPN for LES Series Console Servers

**Works with LES1200, LES1300, and LES1500 Series console servers.**

### OpenVPN connection on the Black Box console servers

The LES1200 Series (LES1202A-R2, LES1204A-R2, LES1203A-11G, LES1203A-M-R2, LES1204A-3G-R2), LES1300 Series (LES1308A, LES1316A, LES1332A, LES1348A), and LES1500 Series (LES1508A, LES1516A, LES1532A, LES1548A) console servers with Firmware V3.2 and later each have OpenVPN clients and server software embedded.

OpenVPN allows secure VPN tunneling of data through a single TCP/UDP port over an unsecured network. So an OpenVPN tunnel could be established between a roaming Windows client and a console server within a data center. Or, OpenVPN tunnels could be set up between distributed LES1204A-3G-R2 edge devices (which may not have any publicly accessible IP addresses allocated from their carrier) and some third-party OpenVPN server at the enterprise central management site.

Configuring OpenVPN can be complex, so Black Box provides a simple GUI interface for basic set up. More detailed information on the OpenVPN Access server and client can be found at <https://openvpn.net>.

Enabling OpenVPN on your console server:

- Select OpenVPN on the Serial & Networks menu.
- Click Add and complete the Add OpenVPN Tunnel screen (see the illustration on the next page).

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NETWORK SERVICES

**Serial & Network**

- Serial Port
- Users & Groups
- Authentication
- Network Hosts
- Trusted Networks
- IPsec VPN
- OpenVPN
- PPTP VPN
- Call Home
- Cascaded Ports
- UPS Connections
- RPC Connections
- Environmental
- Managed Devices

**Alerts & Logging**

- Port Log
- Auto-Response
- SMTP & SMS
- SNMP

**System**

- Administration
- SSL Certificates
- Configuration Backup
- Firmware
- IP
- Date & Time
- Dial
- Firewall
- Services
- DHCP Server
- Nagios
- Configure Dashboard
- I/O Ports

**Status**

- Port Access
- Active Users
- Statistics
- Support Report
- Syslog
- UPS Status
- RPC Status
- Environmental Status
- Dashboard

**Manage**

- Devices
- Port Logs
- Host Logs
- Power
- Terminal

### Add OpenVPN Tunnel

Tunnel Name   
A descriptive name for the tunnel.

Enabled  Enable this tunnel. Free-form

### Security

PKI (X.509 Certificates)   
Authenticate and encrypt using SSL/TLS with client and server certificates.

Pre-shared Secret (Static Key File)   
Authenticate and encrypt using a shared static key file. *Note: restricted to one client, on*

Custom Configuration   
Upload a custom configuration file.

### Tunnel Settings

Device Driver   
The type of virtual network device.

Protocol   
Tunnel transport protocol.

Compression   
Enable LZO compression.

Server Mode   
Accept remote OpenVPN client connections.

Client Mode   
Connect to a remote OpenVPN server.

### Server Mode Details

Local Port   
The TCP/IP port to listen on. *Default is 1194.*

### Networking

IP Pool Network   
Network addresses to allocate to clients.

IP Pool Netmask   
Network mask for IP Pool.

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The TCP/IP port to listen on. *Default is 1194.*

### Networking

IP Pool Network

- Enter any descriptive name you wish to identify the OpenVPN Tunnel you are adding, for example NorthStOutlet-VPN.
- Check Enabled to enable the tunnel.
- Check Control by Auto-Response if the tunnel is to be controlled by "Network Interface" Auto-Response action. If selected, the default state for the tunnel will be Down
- Select the authentication method to be used. To authenticate using certificates, select PKI (X.509 Certificates) or select Custom Configuration to upload custom configuration files. Custom configurations must be stored in/etc/config

NOTE: If you select PKI (public key infrastructure), you will need to establish:

1. Separate certificate (also known as a public key). This Certificate File will be a \*.crt file type.
2. Private Key for the server and each client. This Private Key File will be a \*.key file type.
3. Master Certificate Authority (CA) certificate and key, which is used to sign each of the server and client certificates. This Root CA Certificate will be a \*.crt file type.
4. For a server, you may also need dh1024.pem (Diffie Hellman parameters). Refer to <https://openvpn.net> for a guide to basic RSA key management, or for alternative authentication methods.

- Select the Device Driver to be used, either Tun-IP or Tap-Ethernet. The TUN (network tunnel) and TAP (network tap) drivers are virtual network drivers that support IP tunneling and Ethernet tunneling, respectively. TUN and TAP are part of the Linux® kernel.
- Select either UDP or TCP as the Protocol. UDP is the default and preferred protocol for OpenVPN.
- In Tunnel Mode, nominate whether this console server is to be the Client or Server end of the tunnel. When running as a Server, the console server supports multiple clients connecting to the VPN server over the same port.
- Check or uncheck the Compression button to enable or disable compression, respectively.

The screenshot displays the 'Add OpenVPN Tunnel' configuration page in the BlackBox Network Services web interface. The page is organized into several sections: Serial & Network, Alerts & Logging, System, Status, Manage, Security, Tunnel Settings, Server Mode Details, and Networking. The 'Serial & Network' sidebar on the left contains a tree view of navigation options. The main content area is titled 'Add OpenVPN Tunnel' and includes the following fields and options:

- Tunnel Name:** A text input field containing 'SouthStOutletVPN' with a tooltip: 'A descriptive name for the tunnel.'
- Enabled:** A checked checkbox with the label 'Enable this tunnel.'
- Security:** A section with three radio button options:
  - PKI (X.509 Certificates):** Selected. Description: 'Authenticate and encrypt using SSL/TLS with client and server certificates.'
  - Pre-shared Secret (Static Key File):** Unselected. Description: 'Authenticate and encrypt using a shared static key file. Note: restricted to one client, one server per tunnel.'
  - Custom Configuration:** Unselected. Description: 'Upload a custom configuration file.'
- Tunnel Settings:** A section with four fields:
  - Device Driver:** A dropdown menu set to 'Tun - IP'. Description: 'The type of virtual network device.'
  - Protocol:** A dropdown menu set to 'UDP'. Description: 'Tunnel transport protocol.'
  - Compression:** A checked checkbox. Description: 'Enable LZO compression.'
  - Server Mode:** A selected radio button. Description: 'Accept remote OpenVPN client connections.'
- Client Mode:** An unselected radio button. Description: 'Connect to a remote OpenVPN server.'
- Server Mode Details:** A section with one field:
  - Local Port:** An empty text input field. Description: 'The TCP/IP port to listen on. Default is 1194.'
- Networking:** A section with two fields:
  - IP Pool Network:** A text input field containing '10.100.0.0'. Description: 'Network addresses to allocate to clients.'
  - IP Pool Netmask:** A text input field containing '255.255.255.0'. Description: 'Network mask for IP Pool.'

An 'Apply' button is located at the bottom of the configuration area.

# OpenVPN for LES Series Console Servers

Configure your console server to be the OpenVPN Server or an OpenVPN Client.

- Complete the Client Details or Server Details depending on the Tunnel Mode selected.

- If Client has been selected, the Primary Server Address will be the address of the OpenVPN Server.

- If Server has been selected, enter the IP Pool Network address and the IP Pool Network mask for the IP Pool. The network defined by the IP Pool Network address/mask is used to provide the addresses for connecting clients.

- Click Apply to save changes.
- To enter authentication certificates and files, Edit the OpenVPN tunnel.
- Select the Manage OpenVPN Files tab. Upload or browse to relevant authentication certificates and files.
- Apply to save changes. Saved files will display in red on the right-hand side of the Upload button.
- To enable OpenVPN, Edit the OpenVPN tunnel.
- Check the Enabled button and click Apply to save changes.

*NOTE: Make sure that the console server system time is correct when working with OpenVPN. Otherwise, authentication issues may arise.*

- Select Statistics on the Status menu to verify that the tunnel is operational.

The screenshot shows the Black Box Network Services web interface. The left sidebar contains a navigation menu with categories: Serial & Network, Alerts & Logging, System, Status, and Manage. The main content area is titled 'Interfaces' and has tabs for 'Routes/DNS', 'Serial Ports', 'IP', and 'ICMP'. The 'IP' tab is active, showing configuration for three interfaces: eth0, eth0:0, and lo. Each interface entry includes details like 'Link encap', 'inet addr', 'Bcast', 'Mask', 'Scope', and statistics for RX and TX packets, errors, and dropped frames. An orange arrow points to the 'IP' tab.

```
eth0 Link encap:Ethernet HWaddr 00:13:C6:00:A9:00
inet addr:192.168.0.1 Bcast:192.168.0.255 Mask:255.255.255.0
inet6 addr: fe80::213:c6ff:fe00:a900:64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:44235 errors:0 dropped:0 overruns:0 frame:0
TX packets:784 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 brqueuelen:1000
Interrupt:12 Memory:1ff8000-1ff80ff

eth0:0 Link encap:Ethernet HWaddr 00:13:C6:00:A9:00
inet addr:10.8.100.32 Bcast:10.8.255.255 Mask:255.255.0.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
Interrupt:12 Memory:1ff8000-1ff80ff

lo Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:16436 Metric:1
RX packets:481 errors:0 dropped:0 overruns:0 frame:0
TX packets:481 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
```

### Windows OpenVPN Server or an OpenVPN Client

For details on installing an OpenVPN Windows client (or server) and connecting to your console server OpenVPN server (or client), refer to <https://openvpn.net>.





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