Preface

Thanks for choosing MilesightVPN. As a web-based VPN monitoring and management platform, MilesightVPN establishes a virtual private network for communications between users and devices to offer a highly reliable, efficient and secure solution for connecting to machines remotely. This guide teaches you how to configure and operate the MilesightVPN. You can refer to it for detailed functionality and configuration.

Readers

This guide is intended for the following users:
- Distributors
- Network Planners
- On-site technical support and maintenance personnel
- Network administrators responsible for network configuration and maintenance

Copyright © 2011-2022 Milesight. All rights reserved.
All information in this guide is protected by copyright law. Whereby, no organization or individual shall copy or reproduce the whole or part of this user guide by any means without written authorization from Xiamen Milesight IoT Co., Ltd.

For assistance, please contact
Milesight technical support:
Email: iot.support@milesight.com
Tel: 86-592-5085280
Fax: 86-592-5023065
Address: Building C09, Software Park III, Xiamen 361024, China

Revision History

<table>
<thead>
<tr>
<th>Date</th>
<th>Doc Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 29, 2018</td>
<td>V.1.0</td>
<td>Initial version</td>
</tr>
<tr>
<td>Mar. 25, 2020</td>
<td>V.1.1</td>
<td>Optimize the installation steps</td>
</tr>
<tr>
<td>Jun. 3, 2021</td>
<td>V 2.0</td>
<td>Replace Brand to MilesightVPN</td>
</tr>
<tr>
<td>Sept. 2, 2021</td>
<td>V 2.1</td>
<td>Support Ubuntu 20.04</td>
</tr>
<tr>
<td>Dec. 9, 2021</td>
<td>V 2.2</td>
<td>1. Logo Change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Add uninstall commands and network tool detection</td>
</tr>
</tbody>
</table>
# Contents

**Introduction**........................................................................................................................................... 4
  - Compatibility........................................................................................................................................ 4
  - System Requirements......................................................................................................................... 5

**Installation**........................................................................................................................................ 5
  - Requirements....................................................................................................................................... 5
  - Package Upload.................................................................................................................................. 5
  - MilesightVPN Installation.................................................................................................................. 7
  - MilesightVPN Uninstallation................................................................................................................ 8
  - Services and Ports............................................................................................................................... 9
  - Expand Manage Devices...................................................................................................................... 9

**General Settings**................................................................................................................................. 10
  - Login MilesightVPN............................................................................................................................ 10
  - Device.................................................................................................................................................. 10
  - Control................................................................................................................................................ 11
  - VPN..................................................................................................................................................... 11
  - Certificate.......................................................................................................................................... 13
  - Account.............................................................................................................................................. 13
  - Ping Tool.......................................................................................................................................... 13

**Application Example**........................................................................................................................... 14
  - Connect Milesight Devices to MilesightVPN.................................................................................... 14
  - Connect Control Device to MilesightVPN.......................................................................................... 16
  - Devices Communication...................................................................................................................... 18
Introduction

MilesightVPN, based on WEB service design, addresses the increasing demand for bandwidth and wireless remote data access and establishes a secure and reliable VPN tunnel for users and remote devices to ensure the security of data transmission. It also solves the problem of the lack of public network IP for routers in mobile cellular network, and implements local direct access to remote devices. Basic usage of MilesightVPN are as follows:

1. MilesightVPN works as OpenVPN server. Note that OpenVPN server needs to have public IP.
2. Milesight routers or CPEs work as OpenVPN client and connect with MilesightVPN.
3. The control station can be a laptop or other devices also working as OpenVPN clients. After establishing connection with the MilesightVPN, control station can remotely access to the devices that connected with Milesight routers or CPEs.

Compatibility

The following Milesight IoT products support connection and management with MilesightVPN:

- UR Series Router
- UF51 5G CPE
System Requirements

Hardware

It’s suggested to use the server which suit following requirements:
For 500 devices
- CPU: 2 Cores, 2.0 GHz
- RAM: 16 GB
- Disk: 512 GB
- Bandwidth: ≥100MBps

For 1000 devices
- CPU: 8 Cores, 3.2 GHz
- RAM: 32 GB
- Disk: 1 TB
- Bandwidth: ≥100MBps

Software

- Operating System: Ubuntu Server 20.04
- Browser: Chrome, Firefox

Installation

Requirements

- Ubuntu Server
- MilesightVPN Software Package
- WinSCP
- Putty (or other SSH tool)

Package Upload

Following steps are based on WinSCP tool. You can also use other tools to upload packages.
1. Download the MilesightVPN package from Milesight IoT website, then extract and check files:
2. Open WinSCP and set up a session between WinSCP and server.

3. Select the MilesightVPN folder and click "Upload", select the server path and click "OK" to upload.
MilesightVPN Installation

1. Log in the server via Putty. You can also use other SSH tools.

2. Ensure the network tool is installed in the server. You can type `ifconfig` to check it. If not found, execute `apt install net-tools` to install it.

```bash
root@yuxy:/etc/netplan# ifconfig
Command 'ifconfig' not found, but can be installed with:
apt install net-tools
root@yuxy:/etc/netplan#
```
3. Run following commands under MilesightVPN directory.

```
chmod +x depend_install_urvpn.sh
./depend_install_urvpn.sh
```

```
root@ubuntu:/home/harry/MilesightVPN
harry@ubuntu:~$ sudo -i
[sudo] password for harry:
root@ubuntu:/home/harry/MilesightVPN/
root@ubuntu:/home/harry/MilesightVPN# chmod +x depend_install_urvpn.sh
root@ubuntu:/home/harry/MilesightVPN# ./depend_install_urvpn.sh
Reading package lists... Done
Building dependency tree
Reading state information... Done
E: Unable to locate package norcie
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package ‘norcie’ is not installed, so not upgraded.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Hit:1 http://ua.archive.ubuntu.com/ubuntu xenial InRelease
Hit:2 http://security.ubuntu.com/ubuntu xenial-security InRelease
Hit:3 http://us.archive.ubuntu.com/ubuntu xenial-updates InRelease
Reading package lists... Done
Reading package lists... Done
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note:
If you need to upgrade to V2.0.1 from V1.0.19, please backup the VPN database and uninstall the old version program, then install new version. More details about backup and restore please contact Milesight technical support.

MilesightVPN Uninstallation

If you need to uninstall the MilesightVPN, run following commands:

```
dpkg -i milesight_vpn_2.0.1_amd64.deb
```

It will take about 10 minutes to complete the installation and there will show following message when the installation complete.

```
----------- Installation of Milesight Vpn Server [2.0.1] is complete! -----------
Processing triggers for systemd (286-5ubuntu1.11) ...
```

Note:
If you need to upgrade to V2.0.1 from V1.0.19, please backup the VPN database and uninstall the old version program, then install new version. More details about backup and restore please contact Milesight technical support.
Services and Ports

In order to ensure the security and unblocked communication, here are ports for services:

<table>
<thead>
<tr>
<th>Port</th>
<th>Protocol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18080</td>
<td>TCP</td>
<td>HTTP Service</td>
</tr>
<tr>
<td>18443</td>
<td>TCP</td>
<td>HTTPS Service</td>
</tr>
<tr>
<td>1194</td>
<td>TCP</td>
<td>OpenVPN Service</td>
</tr>
</tbody>
</table>

Expand Manage Devices

The number of available managing devices can be checked in “Device” tab. Maximum number of managing devices is 25 by default. Please refer to following steps to expand manage devices.

1. Log in MilesightVPN and go to “VPN” tab, then click “Create&Download” to download license info file.
2. Contact Milesight sales or technical support and send the license info file.
3. Get expand license from Milesight and click “Browse” to import the license.
4. Click “save” to save the settings and the max manageable devices will change.

```
sudo rm /etc/init.d/milesight_vpn.sh /etc/init.d/urvpn-watchdog_start.sh
sudo rm -rf /milesight_vpn
sudo dpkg -P milesight-vpn
sudo apt-get remove mysql*
```
General Settings

Login MilesightVPN

After installation, type https://server ip:18443 or http://server ip:18080 to visit the login page.
Default username: admin
Default password: password

Device

Display the information about Milesight devices connected to MilesightVPN. You can modify the “Name” and “Remote Subnet” when the subnet allocation method is “Manual”.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Show the name of device. Users can click it to change the name.</td>
</tr>
<tr>
<td>Status</td>
<td>Show the connection status of device.</td>
</tr>
<tr>
<td>Serial Number</td>
<td>Show the serial number of device.</td>
</tr>
<tr>
<td>Virtual IP</td>
<td>Show the virtual IP of device.</td>
</tr>
<tr>
<td>Real IP</td>
<td>Show the real IP address of device’s WAN port/cellular.</td>
</tr>
</tbody>
</table>
Remote subnet
Show the subnet segment and mask of devices. Users can click it to change it.

Time
Show the connected time of the control device.

View
Click to view historical statistics record.

Clear
Click to clear disconnect device records.

Control

Display the information about control devices (PC, laptop, etc.) connected to MilesightVPN. You can modify the “Name” and “Remote Subnet” when the subnet allocation method is “Manual”.

<table>
<thead>
<tr>
<th>Control Information</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Show the name of the control device.</td>
</tr>
<tr>
<td>Status</td>
<td>Show the connection status of control device.</td>
</tr>
<tr>
<td>Virtual IP</td>
<td>Show the virtual IP of device.</td>
</tr>
<tr>
<td>Real IP</td>
<td>Show the real IP address of control device.</td>
</tr>
<tr>
<td>Time</td>
<td>Show the connected time of the control device.</td>
</tr>
<tr>
<td>Clear</td>
<td>Click to clear disconnect device records.</td>
</tr>
</tbody>
</table>

VPN

Configure basic VPN settings and import expand license. After changing VPN settings, please re-connect the Milesight devices to make it take effect.
### VPN

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Listen IP</td>
<td>Enter the IP address of the MilesightVPN.</td>
<td>Null</td>
</tr>
<tr>
<td>Protocol</td>
<td>Select communication protocol (TCP/UDP).</td>
<td>UDP</td>
</tr>
<tr>
<td>Port</td>
<td>Service port</td>
<td>1194</td>
</tr>
<tr>
<td>Client Subnet</td>
<td>Set the segment and the mask of the virtual addresses pool.</td>
<td>10.8.0.0/16</td>
</tr>
<tr>
<td>Subnet Behind Client</td>
<td>Configure Milesight device subnet.</td>
<td>Null</td>
</tr>
<tr>
<td>Ping Interval</td>
<td>Set the Ping interval (in second)</td>
<td>60</td>
</tr>
<tr>
<td>Ping Restart</td>
<td>Reconnection interval (in second)</td>
<td>150</td>
</tr>
<tr>
<td>Compression</td>
<td>Select from &quot;None&quot; or &quot;LZO&quot; options. LZO: Lempel-Ziv-Oberhumer (or LZO) is a lossless algorithm that compresses data to ensure high decompression speed.</td>
<td>LZO</td>
</tr>
<tr>
<td>Encryption</td>
<td>Select from &quot;NONE&quot;, &quot;BF-CBC&quot;, “DES-EDE3-CBC”, &quot;AES-128-CBC&quot;, &quot;AES-192-CBC&quot; and “AES-256-CBC&quot;.</td>
<td>BF-CBC</td>
</tr>
<tr>
<td>Authorization Code</td>
<td>Input the Authorization Code for Milesight device connection (5 to 31 alphanumeric combinations) .</td>
<td>Random</td>
</tr>
<tr>
<td>License</td>
<td>Import the license for expanding manage devices.</td>
<td>/</td>
</tr>
</tbody>
</table>
Certificate

After clicking “Create & Download”, it will generate a unique ovpn file with certificate for control devices to connect to MilesightVPN.

Account

You can edit the information about user account on this page.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Username</td>
<td>Enter a new username. You can use characters such as a-z, 0-9, &quot; &quot;, &quot;,&quot;, &quot;$&quot;. The first character can't be a number.</td>
</tr>
<tr>
<td>Old Password</td>
<td>Enter the old password.</td>
</tr>
<tr>
<td>New Password</td>
<td>Enter a new password to change the password.</td>
</tr>
<tr>
<td>Confirm New Password</td>
<td>Enter the new password again.</td>
</tr>
</tbody>
</table>

Ping Tool

Ping tool is used for checking network connection between MilesightVPN and other devices.
Application Example

Connect Milesight Devices to MilesightVPN

1. Ensure the network between routers and MilesightVPN platform is normal.
2. Go to “System -> Device Management -> MilesightVPN” page to fill in MilesightVPN server information.
   - **Server**: MilesightVPN server address or domain name
   - **Port**: 18443 (Fixed)
   - **Authorization Code**: this code can be found on VPN page of MilesightVPN server
   - **Device Name**: user-define name

3. Click “Connect” and after a while, you can check it shows “connected”.
Router connection status can also be checked on MilesightVPN web GUI.

<table>
<thead>
<tr>
<th>Milesight VPN Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server</td>
</tr>
<tr>
<td>Port</td>
</tr>
<tr>
<td>Authorization Code</td>
</tr>
<tr>
<td>Device Name</td>
</tr>
</tbody>
</table>

**Milesight VPN Status**

<table>
<thead>
<tr>
<th>Status</th>
<th>Connected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local IP</td>
<td>10.8.0.2</td>
</tr>
<tr>
<td>Remote IP</td>
<td>10.8.0.1</td>
</tr>
<tr>
<td>Duration</td>
<td>30s</td>
</tr>
</tbody>
</table>

**Note:** time synchronization is needed between MilesightVPN and routers.

4. Go to “Network -> Firewall -> Security” to enable remote access services if you need to remotely access routers. You can also change service ports here.
Connect Control Device to MilesightVPN

This example mainly introduces how to connect a Windows10 laptop to the MilesightVPN platform.

1. Install OpenVPN software. You can select either OpenVPN Connect or Community OpenVPN as OpenVPN client.

2. After installation, open Windows Service Manager to ensure OpenVPN services are running.

3. Go to “Certificate” page of MilesightVPN, fill in a certificate name, click “Create & Download” to download the certificate.
Note:

1) If there is not Milesight VPN server IP address in the certificate, check if you fill in Listen IP in VPN page of MilesightVPN.

2) If you use default certificate, all traffic will pass VPN tunnels and the laptop may not access the Internet. In order to define a specific tunnel and not affect normal Internet access, please open the certificate and change “redirect-gateway def1” to “route 192.168.0.0 255.255.0.0” (192.168.0.0 is the subnet of Milesight routers).

```plaintext
comp-lzo
cipher BF-CBC
dev tun100
remote 192.168.22.113 1194
proto udp
resolv-retry 0
nobind
up-delay
verb 3
keepalive 60 150
topology subnet
client
redirect-gateway def1
<ca>
```

4. Run OpenVPN software with the certificate.

1) If you use Community OpenVPN, put the certificate under “OpenVPN/config” folder.
then run OpenVPN GUI, select this file to click Connect.

2) If you use OpenVPN Connect, run the software and import the certificate, then connect device to MilesightVPN.

**Devices Communication**

**Method 1: Virtual IP Access**

Users can use virtual IP: http port to access router from laptop.
If you need to access the devices under router subnet, you can add a port mapping rule in router web GUI and use virtual IP: port to access the device.

**Method 2: Real IP Access**

Users can use real subnet IP (bridge0) to access router from laptop. For that ensure the subnet is different from your laptop and laptop routing table should include the subnet.