

Setup guide for installing the technical support applications for the BACnet P2 on an Ubuntu Server.

1. Setup Open-SSH terminal connection

The Open-SSH is a Secure Shell remote terminal control application used to execute commands remotely over a network.

To install Open-SSH enter the following command into the command line with the root user.

sudo apt install openssh-server

2. Setup of ZeroTier SDN

The ZeroTier application is a Software Defined Networking tool that will create a private and encrypted network link to the device over the internet. This SDN works in a similar way to a VPN.

To install the software into your Ubuntu machine type in the following command into the command line with a root user

curl -s https://install.zerotier.com | sudo bash

To join a SDN network, type in the following command into the command line followed by the network address given. Network address will be given out separately, please contact bacnetp2@purpleswift.com if no SDN Network address was given.

sudo zerotier-cli join *NETWORK ID ADDRESS HERE*

Appendix A: ZeroTier – Extra Commands list:

Install into Ubuntu: `curl -s https://install.zerotier.com | sudo bash`

- # Get your ZeroTier address and check the service status
`sudo zerotier-cli status`
- # Join, leave, and list networks
`sudo zerotier-cli join #####`
`sudo zerotier-cli leave #####`
`sudo zerotier-cli listnetworks`
- # Stop and start the service with launchctl
`sudo launchctl unload /Library/LaunchDaemons/com.zerotier.one.plist`
`sudo launchctl load /Library/LaunchDaemons/com.zerotier.one.plist`
- # Cleanly uninstall ZeroTier One, preserving only your secret identity
`sudo "/Library/Application Support/ZeroTier/One/uninstall.sh"`

Appendix B: ZeroTier – Using ZeroTier for your own SDN network:

ZeroTier is a Software Defined Networking tool that creates a private and encrypted network link to the device over the internet. This SDN works in a similar way to a VPN but can be used for multiple network devices on one IP range.

1. Creating a User on the ZeroTier portal website.

To use the ZeroTierOne service a User must be created, visit my.zerotier.com and follow the prompts to create your user profile. After your user is created, at the top of the page, click on Networks and create a Network. A network ID is generated for your network and with this ID the clients can join your network.

2. Adding the ZeroTier clients to the network on Ubuntu OS.

In the Ubuntu command prompt, enter the following command followed by the network ID to join your network. ***sudo zerotier-cli join *NETWORK ID****

3. Adding the ZeroTier clients to the network on Windows OS:

Download and install the windows client from www.zerotier.com. Run the ZeroTier application, this will run in the Taskbar icons menu on the right of the Taskbar, click on the ZeroTier icon to open its menu and click Join Networks. Add your network ID to the Networks to join entry box.

4. Considerations to correctly configure your network.

The BACnet network “whois” explore service only explores the network of its current IP range, i.e. 192.168.0.1-255. By making all BACnet devices to be on the same IP range this will ensure that all devices are visible by your BACnet explorer application. The SDN network IP range can be set under IPv4 Auto-Assign in the Network ID menu. The IP range to pick will have the first 3 ranges fixed, i.e. 192.168.195.***.

It is good practice to give descriptive names to your network members connected to your network as only the device ID of the connected members is visible in the website portal

It is also a good practice to use a PRIVATE network configuration so that you have full control of network members on your network and to prevent unwanted clients connecting to your network without your permission, this can be set under the access control menu.

When using private networks, members will need to be given Authorisation to use the network. This can be set in the Members menu with the far left tick box on each member's entry.

Under Managed IP in the Members menu, each member will need to be assigned an IP to use the network. The Plus symbol will assign its IP address if the IP is not automatically assigned upon Authorisation.