MASTERNODE IPv6 GUIDE

HIMSELF

Change Log

Date	Reason	Initials
06/10/2018	*New Document*	*himself*
06/16/2018	*Updated github with vultr ipv6 guide*	*himself*
06/16/2018	*Updated bitcoinwspectrum github address*	*himself*

High Level Assumptions

This document makes the following assumptions:

BWS (version 2 of the Bitcoin w Spectrum coin with MasterNode capability)
Linux VPS server running on Vultr running a cold wallet
IPV6 is enabled on Linux VPS
BWS (version 2) Windows Wallet (64bit preferred – but not required)
Firewall is configured for both Linux VPS and Windows and all appropriate network(s)
Internet connectivity
Required collateral for BWS (v2) Masternode (50,000 BWS v2 coins)
Basic use of PuTTy (SSH client to access Linux VPS)
Basic use of VIM or NANO (command line editing tool(s) for Linux)
Windows wallet has generated the required **masternode genkey** for each masternode
This is not a troubleshooting document
You follow this document at your own risk
Linux server is Ubuntu 16.04 x64
<reserved>
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Useful Links

The following links may be useful during the setup process:

BWS Home Page: https://www.bitcoinwspectrum.com/

BWS Facebook: https://www.facebook.com/bitcoinwspectrum/

BWS Telegram: https://t.me/bitcoinwspectrum

BWS Discord: https://discord.gg/RggTv49

BWS Bitcointalk: https://bitcointalk.org/index.php?topic=2972777

BWS Twitter: https://twitter.com/BitcoinWSpectrm

Check your IP address: http://www.whatsmyip.org/

Check if a specific port is open on your network: http://canyouseeme.org/

BWS (v2) block explorer: http://217.163.23.222:3000/

BWS Github (sourcecode): https://github.com/bitcoinwspectrum/bitcoinwspectrum

VPS hosting site used in document (Windows-Linux no referral link): https://www.vultr.com/

Putty (SSH client) download: https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html

VIM (save and quit tutorial): https://www.cyberciti.biz/faq/linux-unix-vim-save-and-quit-command/

NANO (basic tutorial): https://wiki.gentoo.org/wiki/Nano/Basics_Guide

Vultr IPv6 Setup Guide: https://github.com/himse1f/vps/blob/master/docs/vultr_ipv6.md

Windows Wallet (32bit): https://github.com/raymaker/bitcoinwspectrum/releases/download/Release/bws-qt_x32_silver.exe

Windows Wallet (64bit): https://github.com/raymaker/bitcoinwspectrum/releases/download/Release/bws-qt_x64_silver.exe

Mac Wallet:

https://github.com/raymaker/bitcoinwspectrum/releases/download/Release/BWS-Qt.dmg

General Questions

Why use Linux for a MasterNode instead of Windows?

Linux was designed to have a light foot print and not have unnecessary applications and services running, along with being able to run 24/7.

Unlike a desktop Operating System that does updates on a daily basis and reboots without permission and at any point in time, Linux was built to be a server Operating System and operates as such.

Why use a cold wallet?

A cold wallet is a wallet that is connected to the blockchain but does not have any coins in it. It connects to another wallet using a “masternodeprivkey” which is verified by another wallet. This allows for a wallet to run on a separate system and if the “cold wallet” system is compromised, there are no coins that can be hacked.

Why use IPv6?

In the past, the only type of address was an IPv4 address and because these addresses are getting rare, it costs extra to get extra v4 static IP addresses. On certain VPS services, you can enable IPV6 and because IPV6 have such a large range of addresses, you can run multiple MasterNodes on an IPV6 range without the additional cost.

Desktop Wallet Setup

1. Install the wallet on your desktop (see 'Useful Links' section for link to download)

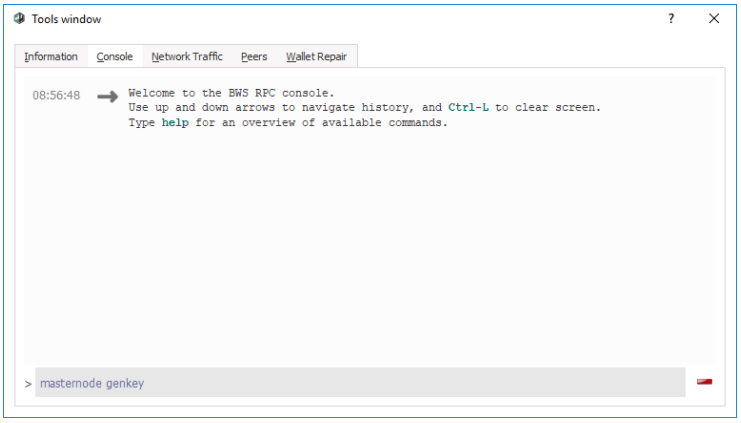
2. If newly installed, wait for wallet to be fully sync'd with the network

3. Once the wallet is completely synchronized with the network/blockchain, unlock the wallet, if encrypted

4. Open the debug window (**Tools | Debug console**)

5. Run the following command in the Console tab and record the results to be used later. If you have multiple masternode(s) run this command to generate a unique key for each masternode

```
masternode genkey
```



NOTE: The results of this command is the unique value used for "**masternodeprivkey**" for each masternode

TIP: This unique key is what connects your Linux VPS "wallet" to your desktop wallet

6. Run the following command in the Console tab and record the results to be used later

```
getaccountaddress <insert generic name for wallet description>
```

Example: getaccountaddress HimselfMN01

NOTE: the address generated from this command is the wallet address you need to send the masternode collateral to. This new wallet's name/address will show up under the "receiving address" for your wallet

7. Send the necessary masternode collateral to the address(es) created by "getcountaddress"

8. Wait at least 15 confirmations of payment before proceeding

9. Open the debug window (**Tools | Debug console**)

10. Run the following command in the Console tab and record the results to be used later.

```
masternode outputs
```

Record the "txhash" without the quotes and the "outputidx" without the quotes for each output – these values will be used for the desktop's wallet masternode.conf file

NOTE: If you have more than one masternode you will have multiple outputs

NOTE: This command ONLY works if you sent the exact collateral to your corresponding masternode wallet. If there are no outputs you did not send the EXACT amount

11. Make sure to record all the information before you close the debug window

12. Close the desktop wallet

13. Edit the desktop's wallet bws.conf file with the following content

```
rpcuser=anyuser
rpcpassword=anypassword
setgenerate=true
rpcbind=127.0.0.1
bind=127.0.0.1
rpcport=41799
port=41798
daemon=1
server=1
staking=0
listenonion=0
txindex=1
listen=1

addnode=45.76.239.226
addnode=45.76.248.116
addnode=144.202.24.153
```

TIP: It is suggested that you create your own username and password for the "rpcuser" and "rpcpassword"

14. Save the **bws.conf** file

15. Setup your Linux VPS server

Linux VPS Setup

1. Please follow the VPS setup guide for IPv6 (Vultr) before proceeding to the next step: https://github.com/himse1f/vps/blob/master/docs/vultr_ipv6.md

2. Once the VPS server is complete and you are able to log into the VPS server with Putty, then you can run some optional steps, such as change your root password, add a new user and disable remote access by root and lockdown SSH.

3. **[Optional]** In Putty, while connected to your VPS server, run:

```
passwd
```

4. **[Optional]** Enter a new password for your root account (remember this password as it will be different than what Vultr shows)

5. **[Optional]** In Putty, while connected to your VPS server, run:

```
Adduser <insert a name>
```

Example: Adduser monkey

6. **[Optional]** It will ask you for the details for the new user you created, it doesn't matter what you enter

7. **[Optional]** Once the new user is created, then run:

```
Adduser <insert a name> sudo
```

Example: Adduser monkey sudo

Note: this will allow the user to preform administrator duties

8. **[Optional]** Modify SSH to secure your server so that root cannot log in and limit access

9. **[Optional]** In Putty, while connected to your VPS server, run:

```
nano /etc/ssh/sshd_config
```

10. **[Optional]** Edit the following lines in the sshd_config file to be as listed below:

```
PermitRootLogin no
LoginGraceTime 30
MaxStartups 3:50:10
```

11. **[Optional]** Add the following line to the sshd_config

```
MaxAuthTries 1
```

12. **[Optional]** Save the sshd_config file

13. **[Optional]** reboot your server and log in with your new user

```
Sudo reboot
```

14. Update the Linux VPS server **repositories** before running any scripts, by running:

```
Sudo apt-get update
```

15. Update the Linux VPS server **packages** before running any scripts, by running:

```
Sudo apt-get upgrade -y
```

16. Reboot your server once updated

17. Login to your VPS server and download the latest "VPS" install script, by running:

```
sudo git clone https://github.com/himse1f/vps.git
```

NOTE: this will download a folder called "vps" to your server

18. Once completed, change to the VPS directory, by running:

```
cd vps
```

19. Run the VPS installation script for BWS, by running:

```
sudo ./install.sh -p bws -c <number of masternodes>
```

Note: if you only want a single masternode, type in the number: 1

Example: sudo ./install.sh -p bws -c 1

Note: if you want 5 masternodes, type in the number: 5

Example: sudo ./install.sh -p bws -c 5

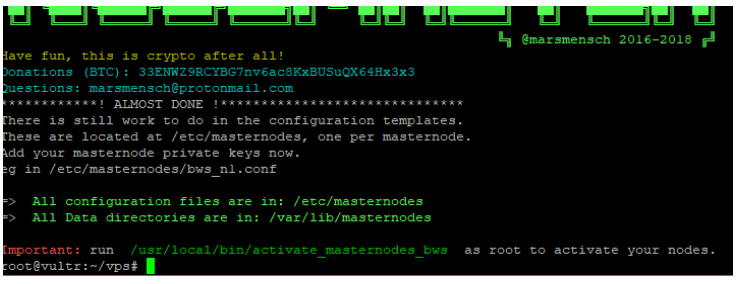
NOTE: Only install the number of MasterNode(s) that you have collateral coins to run. Just because you choose to install a specific number, you have to have collateral coins for the MasterNode to activate. If you run a MasterNode with no collateral coins for it, it will just use resources on your server and take away from an active MasterNode's resources and could delay your MasterNode's earnings.

WARNING: The above script options ASSUME you want to install using IPv6 – so it is a must that you enabled IPv6 on your VPS when you deployed the server

Technical Notes for manual install (do not run these commands):

```
git clone https://github.com/bitcoinwspectrum/bitcoinwspectrum.git

./autogen.sh

./configure --disable-dependency-tracking --enable-tests=no --without-gui --without-miniupnpc --with-incompatible-bdb CFLAGS="-march=native" LIBS="-lcurl -lssl -lcrypto -lz"

make

make install
```

20. Once the script is complete, it will show something similar to the picture below:



21. **[Optional]** When the script is complete, the "**UFW**" **firewall** will be enabled. If you want to disable this (**at your own risk**), run:

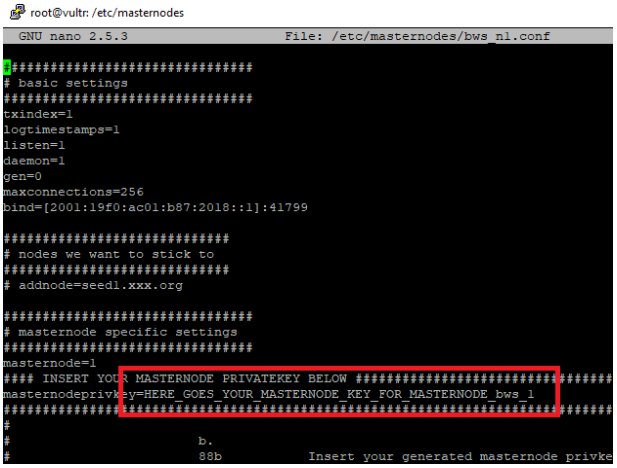
```
sudo ufw disable
```

22. Edit and update each BWS Masternode .conf file with a unique "masternodeprivkey" that was generated from the BWS Mastenode desktop wallet.
Note: The .conf files are located in: **/etc/masternodes**

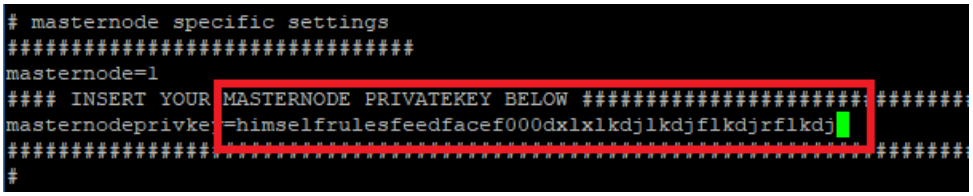
Example: sudo nano /etc/masternodes/bws_1.conf

Insert your unique **masternodeprivkey** in the designated space after the "**=**"

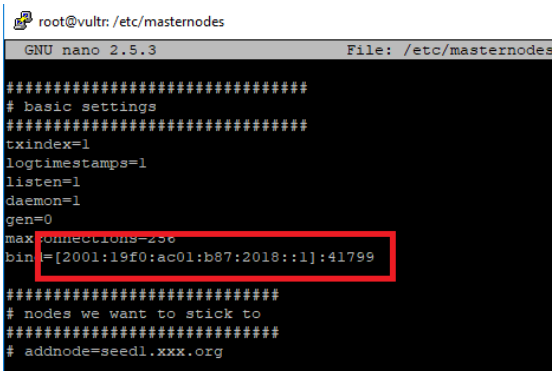
BEFORE:



AFTER:



23. For "each" masternode .conf file – document the IPv6 address as listed in each .conf file



Note: you will need these IPv6 addresses for your desktop's masternode.conf file
<name> <ipaddress:port> <genkey> <tx address> <tx number>

24. Save the BWS configuration file. If necessary, repeat the process for multiple Masternode(s).

NOTE: Each .conf file must have a unique **masternodeprivkey**

NOTE: Just because you have a **masternodeprivkey** does NOT mean that the masternode will work without collateral. If a MasterNode does not have corresponding collateral, the masternode service will run, but it will NOT join the blockchain.

25. Once the BWS .conf files has been modified, then activate the masternode service(s) on the Linux VPS, by running:

```
sudo /usr/local/bin/activate_masternodes_bws
```

26. If you want to see if the service(s) are running, you run the following command:

```
sudo systemctl status bws_n1.service
```

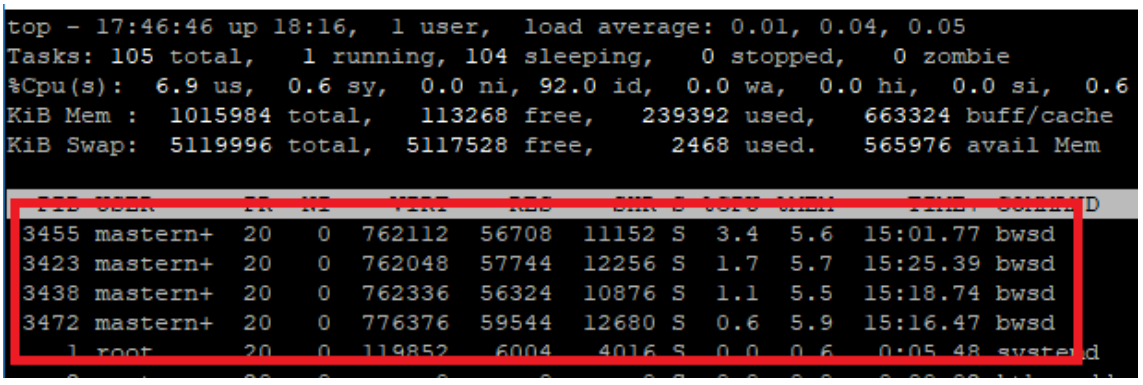
TECHNICAL TIP: The service(s) are located in /etc/systemd/system

27. Once you start the service, the Masternode(s) need to download the blockchain and this will take a while, depending on the size of the blockchain (could be hours)

28. If you run the **top** command to see the processes, the **bwsd** process will be using a large amount of resources while downloading, when they are done, the processes will calm down. You can run see the current processes, by running:

```
top
```

Top command example:



29. Close your desktop wallet (if it is open) and update the "**masternode.conf**" file to include your new IPv6 masternode addresses. Create a new line for each masternode (if you have more than one configured)

Example (ipv6 address is unique to your Linux VPS):
bwsMN1 [2001:19f0:ac01:b87:2018:a:1]:41799 MASTERNODE_PRIVKEY_FOR_BWSMN1 COLLATERAL_TX_FOR_BWSMN1 OUTPUT_NO_FOR_bwsMN1

bwsMN2 [2001:19f0:ac01:b87:2018:a:2]:41799 MASTERNODE_PRIVKEY_FOR_BWSMN2 COLLATERAL_TX_FOR_BWSMN2 OUTPUT_NO_FOR_bwsMN2

bwsMN3 [2001:19f0:ac01:b87:2018:a:3]:41799 MASTERNODE_PRIVKEY_FOR_BWSMN3 COLLATERAL_TX_FOR_BWSMN3 OUTPUT_NO_FOR_bwsMN3

bwsMN4 [2001:19f0:ac01:b87:2018:a:4]:41799 MASTERNODE_PRIVKEY_FOR_BWSMN4 COLLATERAL_TX_FOR_BWSMN4 OUTPUT_NO_FOR_bwsMN4

TIP: Assuming the Linux VPS has not been rebooted after running the VPS install script, a template is created for you on the Linux VPS server after the script has completed, this can be found by running:

```
nano /tmp/bws_masternode.conf
```

30. Save your **masternode.conf** file on your desktop machine

31. Close the wallet on your desktop and open your **bws.conf** and append to the bottom of the file with your masternode information:

```
masternode=<the number of masternodes you want to run>


externalip=[ipv6 address of masternode]
masternodeprivkey=UNIQUE_MASTERNODE_PRIVKEY

externalip=[ipv6 address of masternode]
masternodeprivkey=UNIQUE_MASTERNODE_PRIVKEY
```

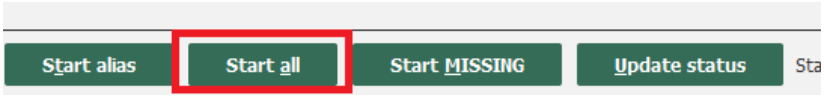
Example:
Masternode=2

externalip=[2001:19f0:ac01:b87:2018:a:1]
masternodeprivkey=MASTERNODE_PRIVKEY_FOR_BWSMN1

externalip=[2001:19f0:ac01:b87:2018:a:2]
masternodeprivkey=MASTERNODE_PRIVKEY_FOR_BWSMN2

32. Once the **bwsd** service(s) on the Linux VPS are back to normal (under 5%), start your desktop wallet

33. In your desktop wallet, go to the "**Masternodes**" section and click on "**Start All**" (you may have to unlock your wallet before running this command, if the wallet is encrypted)



34. Enjoy your new Masternode(s)!

35. Enjoy your coin rewards!

NOTE: It will take time before you start getting rewards as it depends on the block time AND the number of masternodes.

Did this document help?

BWS (v2) Donation Address: **ChQr4RsSARsGarGYVULCSowNjyWggTrq35**

--Himself