Cold Masternode Setup Guide

1. Introduction

This guide will instruct you how to setup and configure a cold Ittrium masternode (MN), on an 64bit Ubuntu 16.04 LTS virtual private server (VPS). A cold MN wallet is much safer and highly recommended, as this method is more secure as the cold wallet method allows you get to keep your XIT in your local (home) wallet and host your MN remotely.

2. Prerequisites

You will need the following to progress through this guide.

i. Ittrium MN required 5,000.0001 XIT collateral.
ii. A local (control or hot node) computer. This will run the control 'hot' wallet, hold your collateral 5,000 XIT, and all MN rewards will be set to this wallet and can be turned on and off without affecting the MN.
iii. A virtual private server (VPS or cold node) with a minimum of 1GB RAM and 20GB of storage requires a static (dedicated) IP address. The VPS computer will host the MN 24/7. VPS can be rented from www.hetzner.com, www.digitalocean.com or www.vultr.com .
iv. A SSH client software so you can remote connect to your local (home) computer to the VPS. For the purposes of this guide Putty (https://putty.org/) is recommend.

3. Configuration Overview

1. Sending 5,000 XIT collateral to yourself to generating the MN private key on the local wallet and configuring the masternode.conf file.
2. Installing and setting up putty (SSH client)
3. Installing dependencies, setting up memory swap (required if VPS has less than 2GB of RAM) and compiling Ittrium wallet.
4. Configuring the ittrium.conf file on the VPS.
5. Starting the MN and check it's operating correctly.
6. Stopping the MN

7. Generating the MN private key

i. Using the local (control) wallet, click on the 'Receive' tab. In the 'Label' box, enter a MN alias. It recommended that MN01 be used and subsequent MN's be labelled in conservative order (i.e. MN2, MN3 etc.). This will make it easier to identify and trouble shoot issues if/when you have multiple MN's in the future.

ii. Click the 'Request Payment' button and then click the 'Copy Address' button, then close.

iii. Click on the 'Send' tab and paste the address you just copied into the 'Pay To' box. Set the amount to exactly 5,000 XIT, make sure the and click 'Send'. You should see MN01 appear in the 'Label' box.

iv. Then click 'Yes' to accept the fee. Note, you must have 5000.0001 XIT in your wallet to allow for the transaction fees.

v. **IMPORTANT**, you need to wait at least **15 confirmations** before the masternode private key and transaction hash can be generated.

vi. Using the local (control) wallet, enter the debug console (Tools > Debug console) and enter the following commands to generate the MN private key, transaction has and output ID.

```
masternode genkey

masternode outputs
```

vii. Open the masternode.conf file (Tools > Open Masternode Configuration File) and enter your MN alias (i.e. MN01) insert 1 space followed by your VPS IP address with the ittrium port (i.e. :39993), then paste your MN private key, transaction hash and output ID you just generated (Note: one space between each). **IMPORTANT**: The masternode private key tells the server that your wallet is the correct controller for it. **Never give this key to anyone**!

```
MN_ALIAS VPS_IP_ADDRESS:39993 MN_PRIVATE_KEY TRANSACTION_HASH OUTPUT_ID

MN01 102.110.268.14:39993 87soq8CB5xKZTvKawM7c67jT6SmyBruJcxdRmWKhmyserm9Zo1s
7d4e82b653e3b2ab75c5af30ea51639b9ed99e9dd1ce9cffc75ff0ae090dd80 1
```

viii. There is an example to follow in the masternode.conf file, please note however, the # must not be included for your configuration. Also ensure there are only one space between each part and there are no spaces at the end or any blank lines. Save and close the masternode.conf file.

ix. Close the local ittrium wallet and re-open it. Click on the 'Masternode' tab and you should see you MN listed with MISSING status. Before we can continue, we need to setup out VPS.

8. Installing and setting up putty (SSH client)

i. Download and install Putty if not already installed from https://putty.org

ii. Open Putty and enter your VPS IP address in the 'Host Name' (see red box in Figure 2). Note, leave the default port as 22.

iii. In the 'Save Session' (see Figure 1) give VPS the same name as the receive transaction label corresponding to the MN name (i.e. MN01) and click the 'Save' button. This makes it easier

if/when you have multiple MN's in the future. This will add MN01 in the green box and will allow you to connect by simply double-clicking next time.

iv. Make sure you log in as a root user and enter your password (Figure 2). TIP: right click to copy text into Putty.

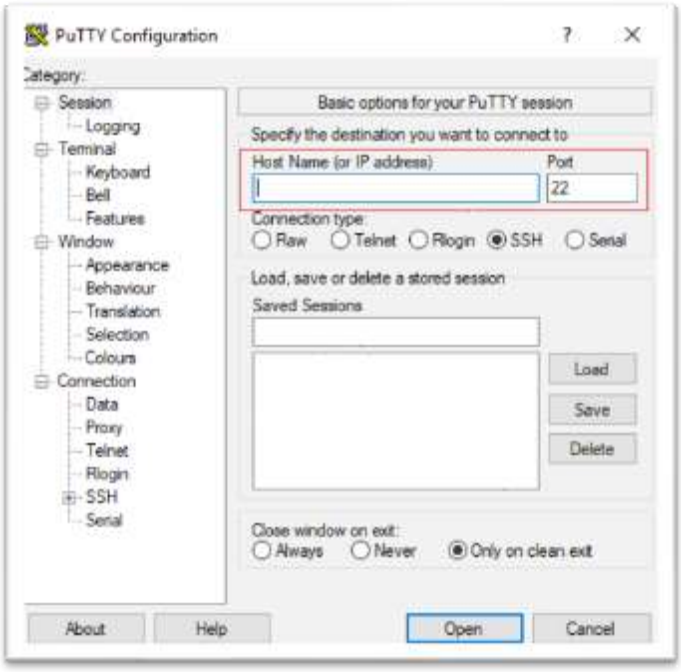

Figure 1 – Putty GUI

```
login as: root
root@ password:
Welcome to Ubuntu 16.04.4 LTS (GNU/Linux 4.4.0-116-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

86 packages can be updated.
47 updates are security updates.


*** System restart required ***
Last login: Sun Aug  5 13:18:19 2018
root@ubuntu-2gb-nbg1-dc3-1 ~ #
```

Figure 2 – Putty terminal screen.

9. Installing and setting up the VPS

You have two options for section 9, when setting up your masternode. The first is to follow the steps below, the second option is to use the setup and install script (i.e. xit-mn-installer.sh). If you have no or little experience with Linux terminal, the manual method recommended as you may learn something, which will certainly benefit trouble shooting, if (or perhaps when) issues arise in the future!

i. Log into the VPS as root and copy and paste the following into the VPS terminal. Note, only copy one text box at a time and paste is right click in Putty.

```
sudo apt-get update
```

```
sudo apt-get install build-essential libtool autotools-dev autoconf pkg-config libssl-dev -y
```

```
sudo apt-get install automake libboost-all-dev libzmq-dev git -y
```

```
sudo add-apt-repository ppa:bitcoin/bitcoin
```

```
sudo apt-get update -y
```

```
sudo apt-get install libdb4.8-dev libdb4.8++-dev -y
```

```
sudo apt-get install libminiupnpc-dev libqrencode-dev libqt5gui5 libevent-dev -y
```

```
sudo apt-get install libqt5core5a libqt5dbus5 qttools5-dev qttools5-dev-tools -y
```

```
sudo apt-get install libzmq3-dev libqrencode-dev libprotobuf-dev protobuf-compiler -y
```

```
sudo apt-get upgrade -y
```

ii. Setup the swap memory (only required if VPS has less than 2GB RAM or if you're running multiple different masternodes) coping and pasting the following into the VPS terminal.

```
dd if=/dev/zero of=/mnt/myswap.swap bs=1M count=4000
```

```
mkswap /mnt/myswap.swap
```

```
chmod 0600 /mnt/myswap.swap
```

```
swapon /mnt/myswap.swap
```

iii. Installing (typically installed already) and setting up the firewall to allow access to Ittrium ports (i.e. 39993 and 50369) by coping and pasting the following into the VPS terminal.

```
sudo apt-get install ufw
```

```
sudo ufw allow ssh

sudo ufw allow 39993/tcp

sudo ufw allow 50369/tcp
```

iv. Download and compile the Ittrium core wallet by coping and pasting the following into the VPS terminal. Note, this can be copied all at once and may take up to an hour depending on the amount of RAM, number of CPU cores and internet connection speed.

```
git clone https://github.com/IttriumCore/ittrium.git

cd ittrium

sudo chmod +x autogen.sh

sudo chmod +x build-aux/m4

sudo chmod +x share/genbuild.sh

sudo chmod +x src/leveldb/build_detect_platform

./autogen.sh

./configure

make
```

v. Check it compiled correctly by running the daemon by entering the following commands into the VPS terminal. This should produce an error indicating your ittrium.conf configuration file hasn't been setup with an RPC user and password (see Figure 3). It will also generate a user name and randomly generated password. Note: you don't need to wright this password down. You can also create your own username and password if you'd like.

```
cd src

./ittriumd -daemon
```

```
root@ubuntu-2gb-nbg1-dc3-1 ~/ittrium/src # Error: To use ittriumd, or the -server option to ittrium-qt, you must set
an rpcpassword in the configuration file:
/root/.ittrium/ittrium.conf
It is recommended you use the following random password:
rpcuser=ittriumrpc
rpcpassword=GWQyfNJGHijaAVdtk6FkFrUp6YbvXg9AWjMdtvslHBau
(you do not need to remember this password)
The username and password MUST NOT be the same.
If the file does not exist, create it with owner-readable-only file permissions.
It is also recommended to set alertnotify so you are notified of problems;
for example: alertnotify=echo %s | mail -s "Ittrium Alert" admin@foo.com
```

Figure 3 – First run error

vi. Configure the ittrium.conf file by entering the following commands into the VPS terminal.

```
cd

cd .ittrium

sudo nano ittrium.conf
```

vii. Paste the following text into the ittrium.conf file. Be sure to enter the same masternode private key you generated earlier with the command 'masternode genkey'. The press 'Ctrl x', 'y' and 'enter' to save and exit.

```
rpcuser= YOUR_USERNAME

rpcpassword=YOUR_PASSWORD

rpcallowip=127.0.0.1

server=1

index=1

daemon=1

port=39993

logintimestamps=1

maxconnections=64

externalip= VPS_IP_ADDRESS:39993

masternode=1

masternodeprivkey= MN_PRIVATE_KEY
```

viii. Restart the daemon and wait for the wallet to sync to the latest block. Note this may take some time depending on the number of block required to update.

```
cd

cd ittrium/src

./ittriumd -daemon
```

ix. Periodically check syncing process by entering the following commands into the VPS terminal. Once the number of 'block' matches the latest block in your local (control) confirm it's the latest block by entering the second text box command into the VPS terminal. If 'IsBlockchainSynced' is true, proceed to the next step.

```
./ittrium-cli getinfo
```

```
./ittrium-cli mnsync status
```

10. Starting and checking the MN setup correctly

i. Using the local (control) wallet, enter the debug console (Tools > Debug console) and enter the following command to start the masternode. Be sure to enter the same masternode alias you generated earlier (i.e. MN01). Note: this can be done using the GUI but it best to use the debug console.

```
startmastermode alias false MN_ALIAS
```

ii. Go back to the VPS terminal entering the following commands to confirm the MN has successfully started. You should see a message 'Masternode successfully started'. If not, you've likely made a mistake somewhere, in which case it's recommended you start again.

```
./ittrium-cli masternode status
```