Quick Note 055

Configure a Digi TransPort Router with NAT to a Passive FTP Server.

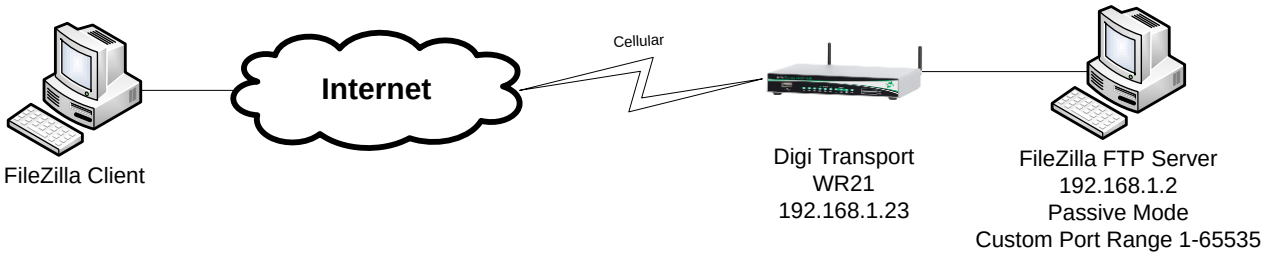
Digi Support
March 2015

Contents

1 INTRODUCTION

1.1 Introduction

This document will show how to configure IP+Port NAT (Network Address Translation) and the required additional settings for successfully connecting a Passive FTP Server behind the Digi TransPort Router.



In this example, a free FTP server configured in Passive Mode will be used: FileZilla Server. The Server will be connected via ETH 0 to a Digi TransPort WR21. The Client will use Filezilla Client and be configured to Passive Mode only.

1.2 Assumptions

This guide has been written for use by technically competent personnel with a good understanding of the communications technologies used in the product and of the requirements for their specific application. It also assumes a basic ability to access and navigate a Digi TransPort router.

This application note applies only to:

Model: DIGI TransPort WR21/41/44

Please note: If using multiple Passive FTP Servers, Enterprise firmware will be required on Digi TransPort WR21/41 to allow firewall usage.

Firmware versions: 5246 and later

Configuration: This document assumes that the devices are set to their factory default configurations. Most configuration commands are shown only if they differ from the factory default.

Please note: This application note has been specifically rewritten for firmware release 5246 and later but will work on earlier versions of firmware. Please contact tech.support@digi.com if your require assistance in upgrading the firmware of the TransPort router.

1.3 Corrections

Requests for corrections or amendments to this application note are welcome and should be addressed to: tech.support@digi.com Requests for new application notes can be sent to the same address.

2 VERSION

Version Number	Status
1.0	Published

3 FILEZILLA SERVER INSTALLATION AND CONFIGURATION

3.1 Install FileZilla Server

FileZilla Server is a Free FTP/FTPS/SFTP server tool that can be downloaded from SourceForge : https://filezilla-project.org/download.php?type=server

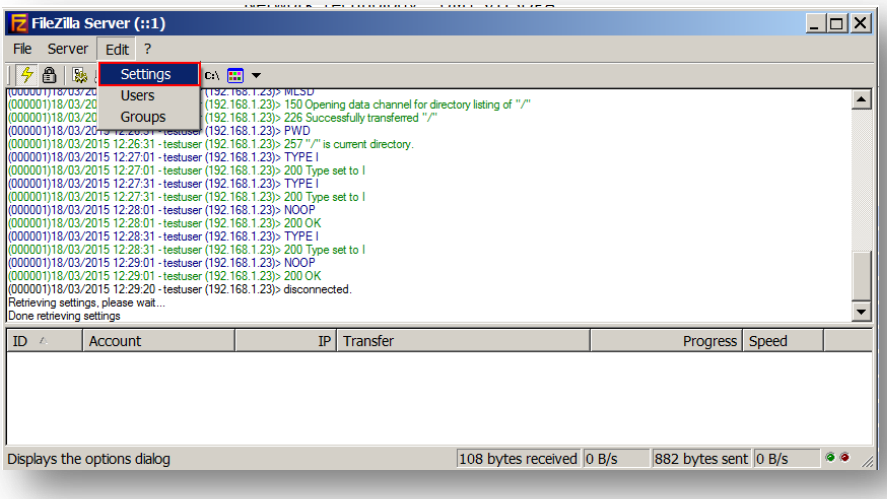
Start the installation and follow the on screen instructions.

At the end of the Installation, start FileZilla Server.

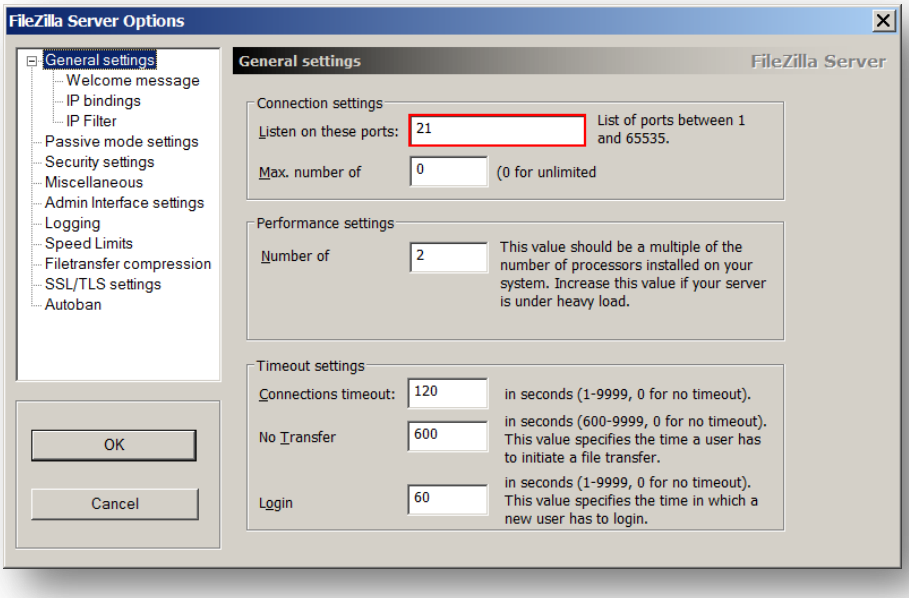
3.2 Configure FileZilla Server

3.2.1 Server Configuration

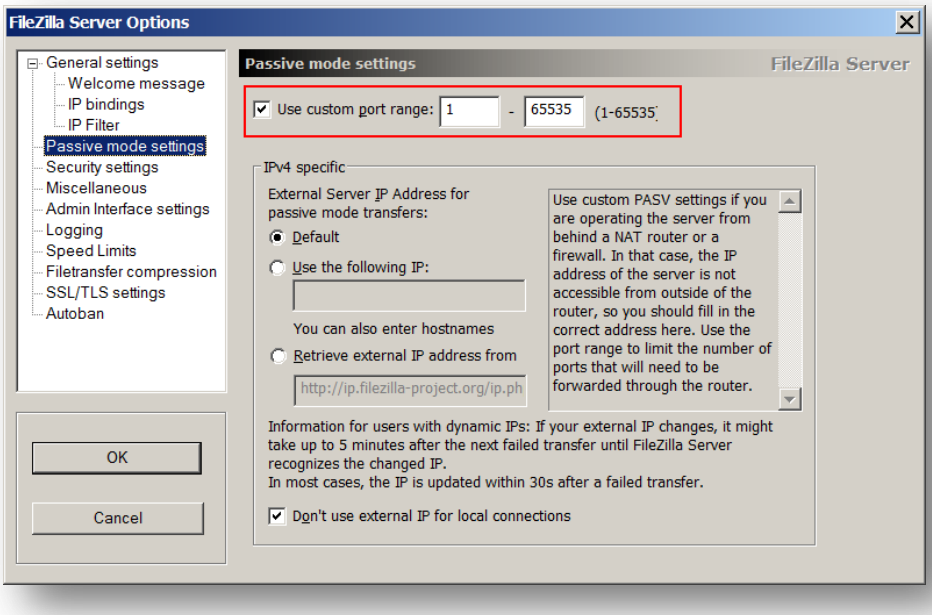
In the main window, click **Edit** and **Settings**



Under **General settings**, select the listening port of the FTP Server. This is the port the WR21 will later use to send the FTP traffic to. By default, the value is **21.**



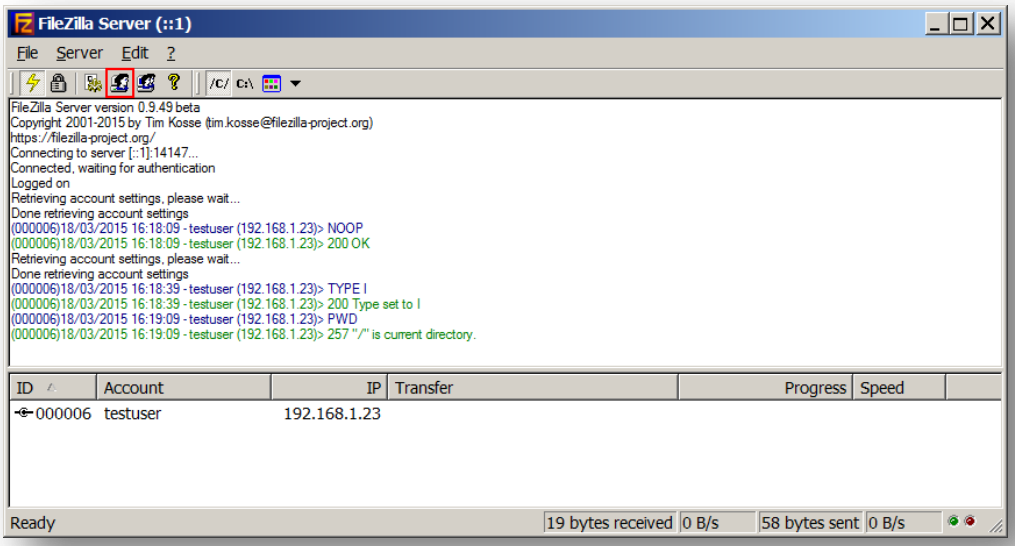
Under **Passive mode settings**, click **Use custom port range** and chose the port range to use for Passive mode. This is the port the server will use as outgoing. By default, the range is **1 – 65535**



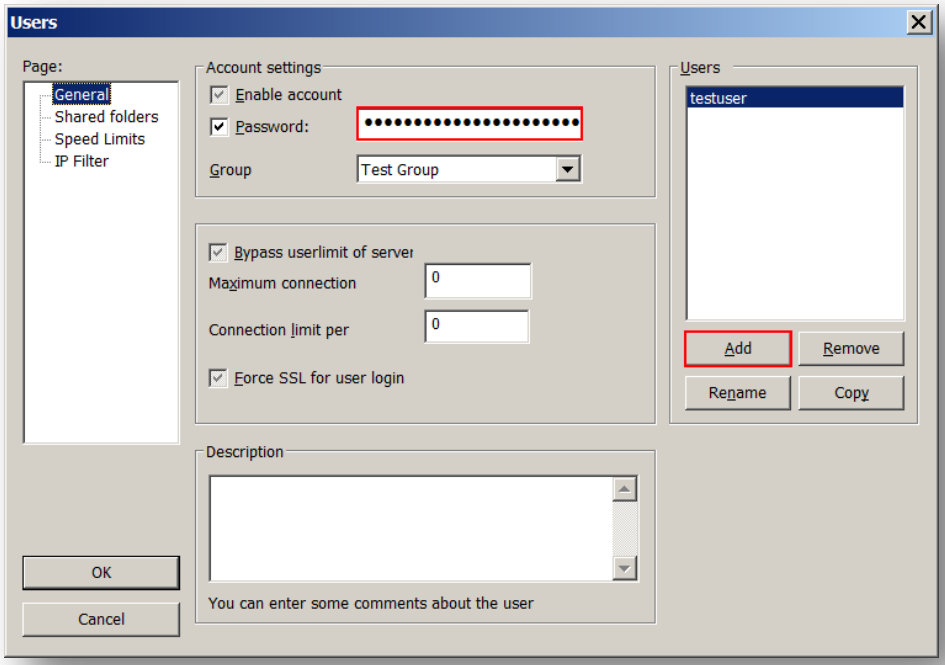
Click **OK**.

3.2.2 User Configuration

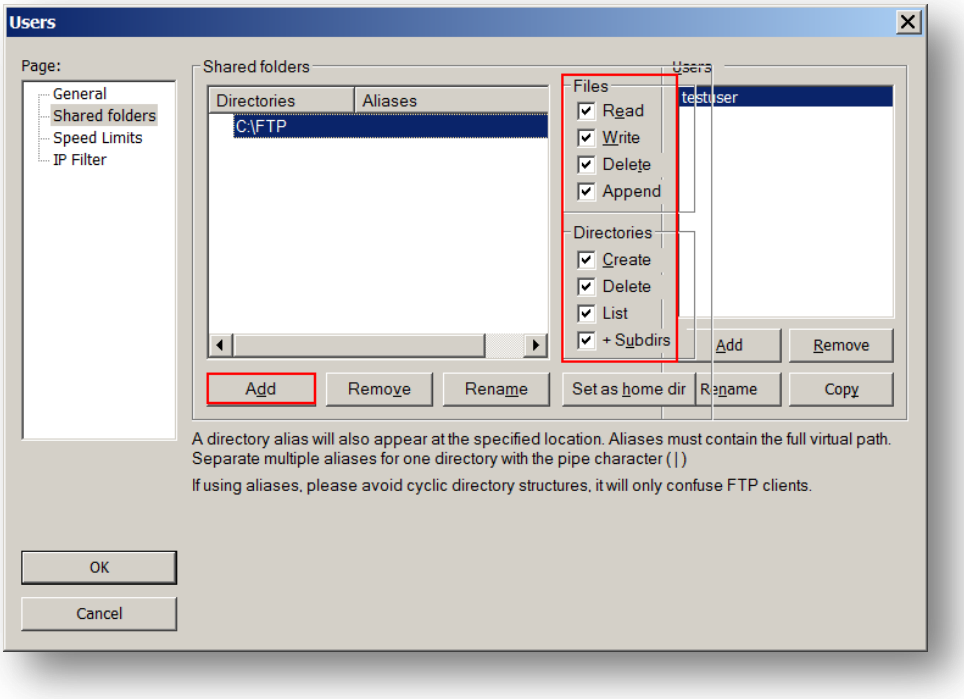
In order to allow access to the FTP Server, it is required to create users and assign each users a “Shared Folder”. To do so, click on the user icon in the toolbar



Select **General**, click on **Add**. Choose a name for the user, in this example: **testuser.** Enter a password in the **password** field



Select **Shared folders**, click on **Add** and select the desired directory on the system to be the root of the FTP Server for this user account. Assign the rights for files and directories by clicking the appropriate boxes on the right.



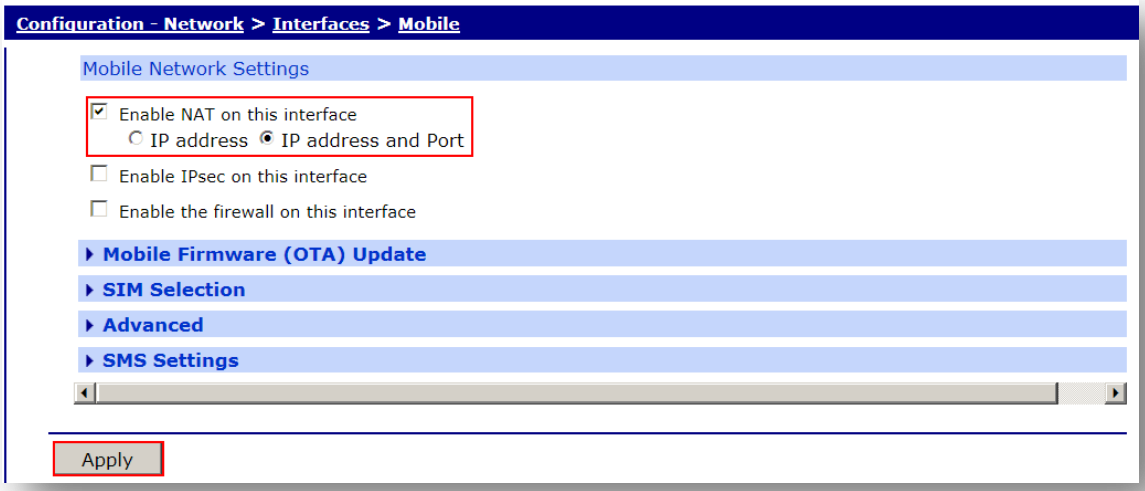
Click **OK**.

4 DIGI TRANSPORT CONFIGURATION

4.1 NAT Configuration

If the default route interface used is the Mobile Interface:

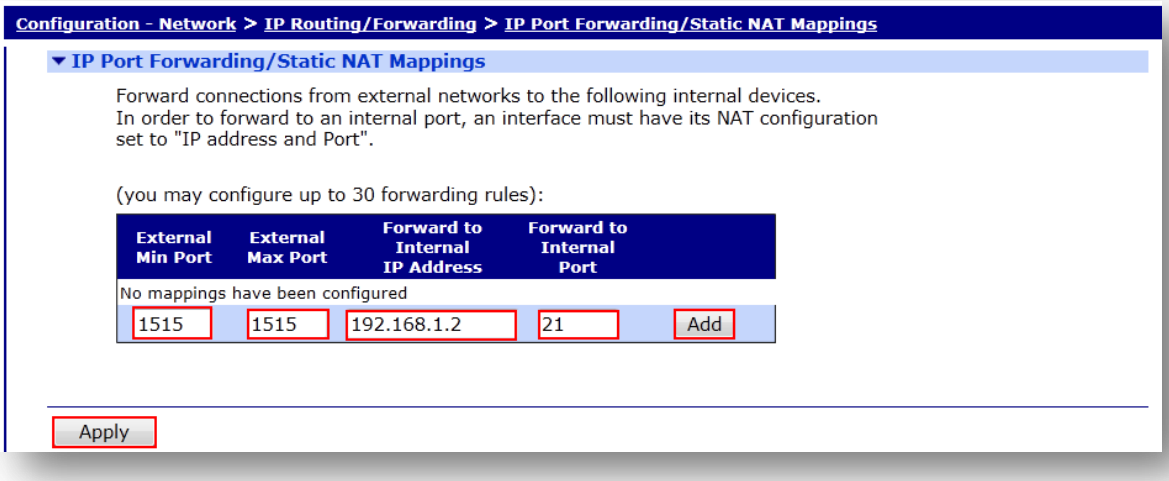
Configuration – Network > Interfaces > Mobile



Click **Enable NAT on this interface** and select **IP address and Port** as the option. This will allow to forward incoming FTP traffic on a specified port and forward it to the server on its configured port (by default 21)

Click **Apply**

Configuration – Network > IP Routing/Forwarding > IP Port Forwarding/Static NAT Mappings



Choose the incoming port that will be used for FTP traffic and forwarded to the Server's local IP and default port 21. In this example, **1515** is used.

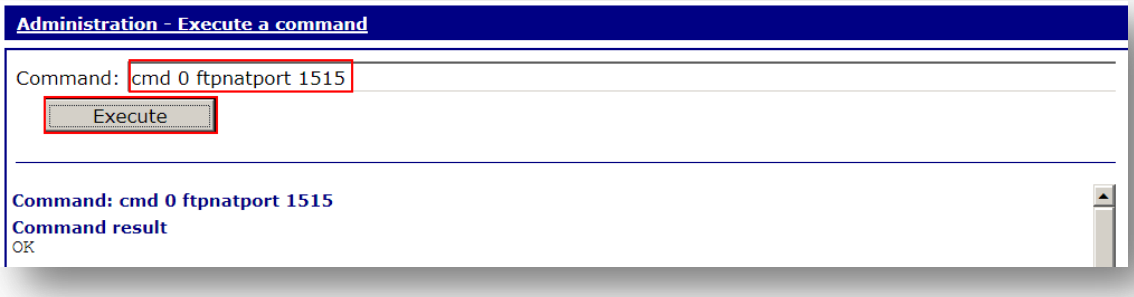
4.2 Single Passive FTP Server configuration

For a Single FTP Server, follow the steps below. For multiple FTP Server configurations, go to Section 4.3

The standard Port Forwarding table will not be able to forward Passive FTP traffic properly without an additional setting to be set via CLI (Command Line). This command will then allow the specified port (same as entered previously) to be used as a NAT port for FTP as long as it matches an External port in the NAT Mappings table.

Please Note: This command will only work to forward 1 FTP connection. Move to the next section for multiple FTP Server forwarding connections.

Administration – Execute a command



The command to be used is:

```
cmd 0 ftpnatport 1515
```

1515: Port number used in the NAT Mapping table.

Click **Execute**.

Jump to the next Section 5 for Client Configuration and Testing

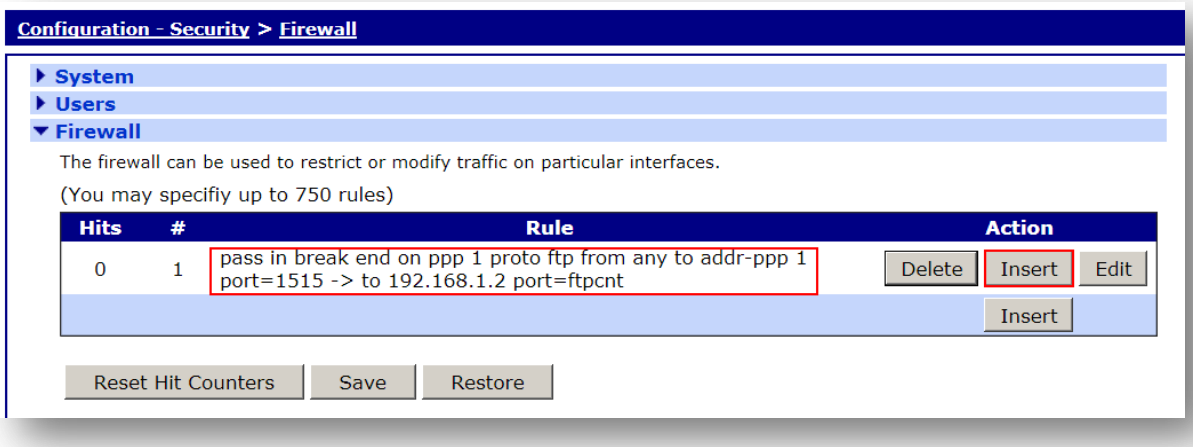
4.3 Multiple Passive FTP Server configuration

For multiple FTP Server configurations, follow the steps below. For Single FTP Server configurations, go to Section 4.2

The standard Port Forwarding table will not be able to forward Passive FTP traffic properly without an additional setting to be set via CLI (Command Line). This command will then allow the specified port (same as entered previously) to be used as a NAT port for FTP as long as it matches an External port in the NAT Mappings table.

Please Note: This configuration is intended to be used when a multiple FTP Server configuration is in place and involves using the Firewall. Please note that this setup can be used for a single FTP Server configuration too if preferred.

Configuration – Security > Firewall



If the firewall is already configured on the device, insert the rule at the top.

If the firewall is not configured and will only be used for this purpose, make sure to **delete all rules.**

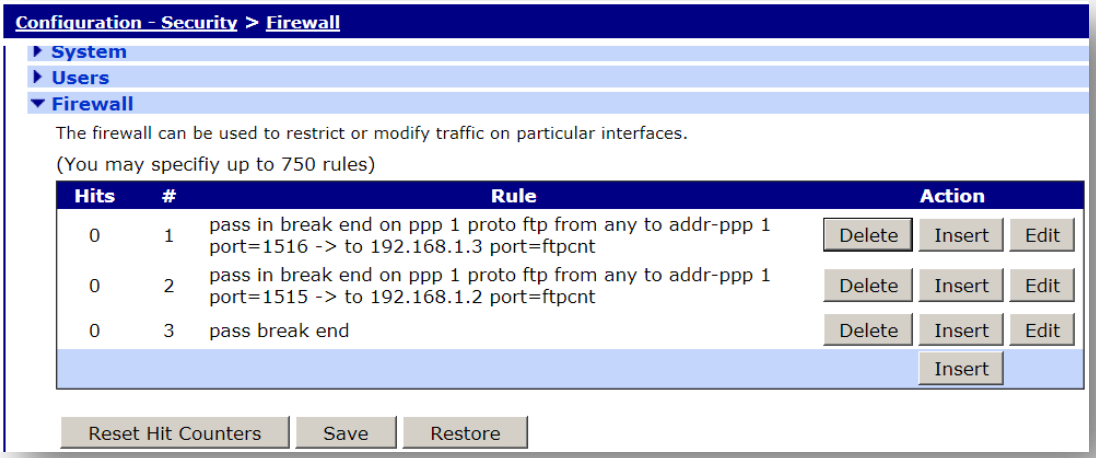
Insert the following line and click **OK**:

```
pass in break end on ppp 1 proto ftp from any to addr-ppp 1 port=1515 -> to
192.168.1.2 port=21
```

1515: External Port used in the NAT Mapping table
192.168.1.2: IP Address of the FTP Server
21: Internal Port used by the FTP Server

This rule will allow incoming FTP traffic on the Mobile Interface (PPP 1) from any sources to the mobile IP on port 1515. When traffic matches this condition, it will be forwarded to the FTP Server IP address on Port 21.

Repeat this step for any further FTP Server by adding each rules after the next one, for example below with 2 servers

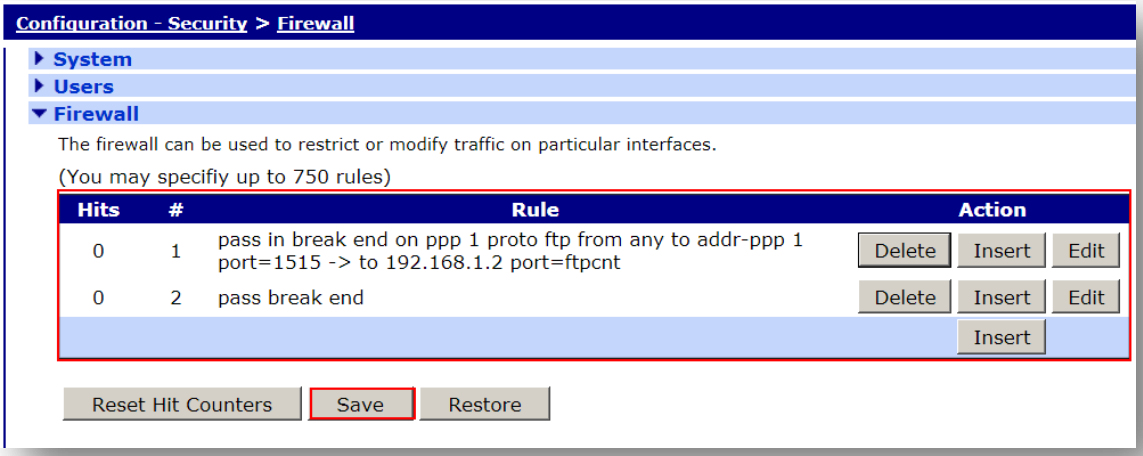


However, another rule will be necessary to allow any other traffic in and out (to have the router act as if the firewall was not enabled)

AFTER the previous line, insert the following rule

```
pass break end
```

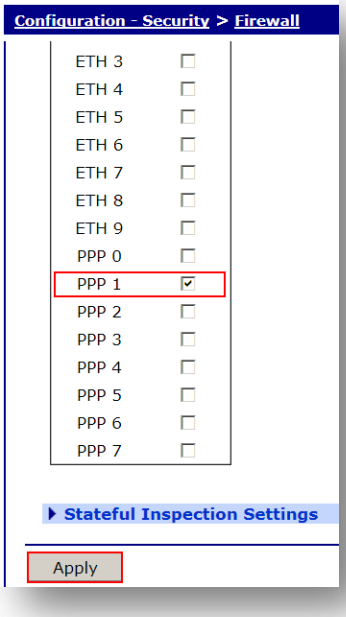
The firewall configuration should now look like this



Click **Save**

Enable the Firewall on the interface

Configuration – Security > Firewall



Check **PPP 1**, click **Apply** and **Save** configuration.

5 FILEZILLA CLIENT CONFIGURATION

5.1 Install FileZilla Client

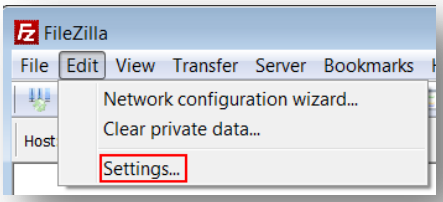
FileZilla Client is a Free FTP/FTPS/SFTP client tool that can be downloaded from SourceForge : https://filezilla-project.org/download.php?type=client

Start the installation and follow the on screen instructions.

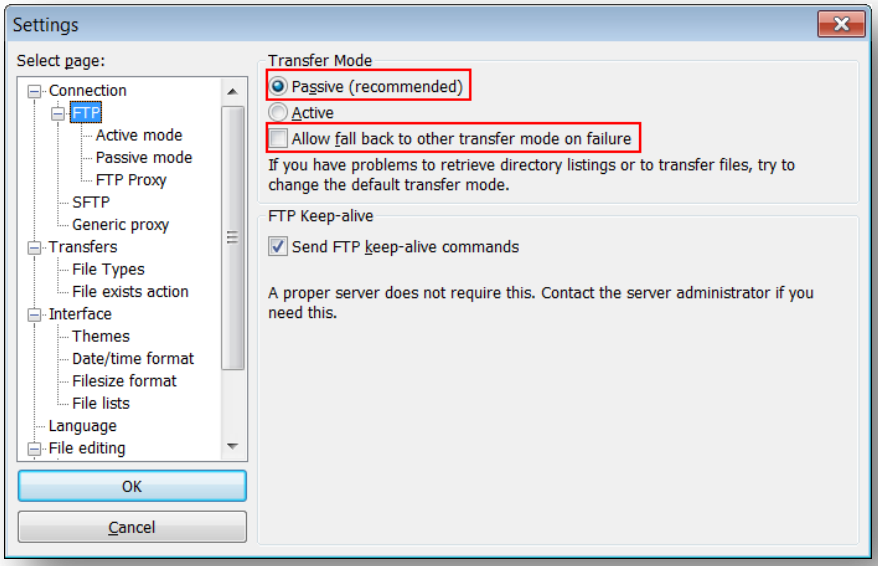
At the end of the Installation, start FileZilla Client.

5.2 Configure FileZilla Client for Passive Mode

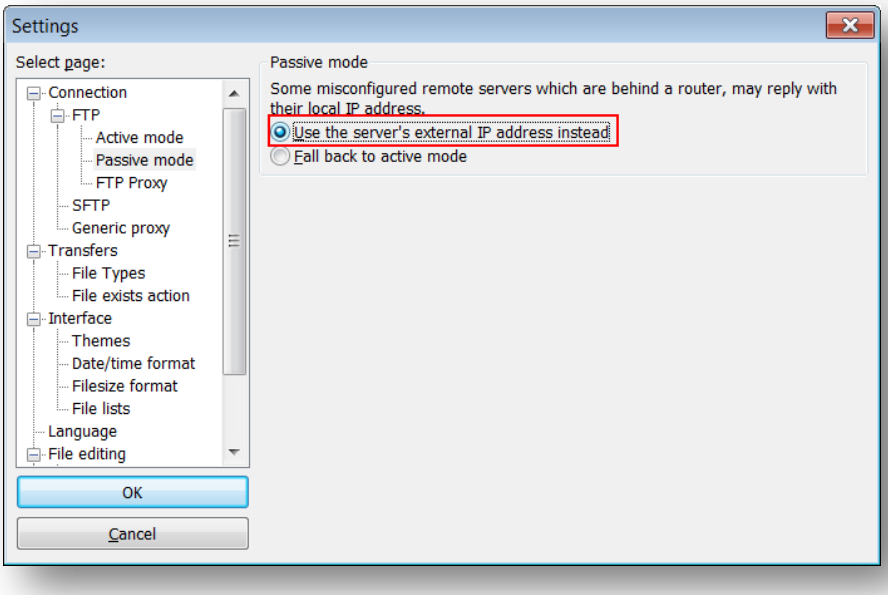
To open FileZilla configuration, click on **Edit** and select **Settings.**



Select **FTP** on the left side and under **Transfer Mode**, choose **Passive** and uncheck "**Allow fall back to other transfer mode on failure**". This will prevent FileZilla to try and use Active Mode.



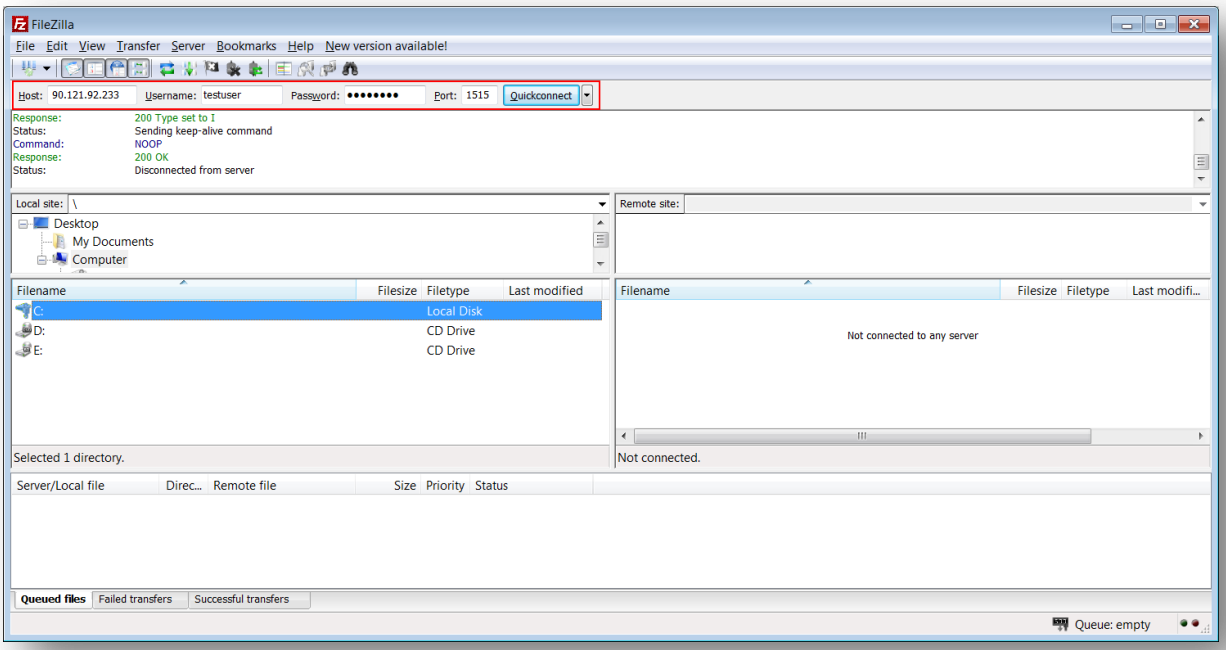
Select **Passive Mode** on the left side and make sure that "**Use the server's external IP address instead**" is selected



Click **OK**.

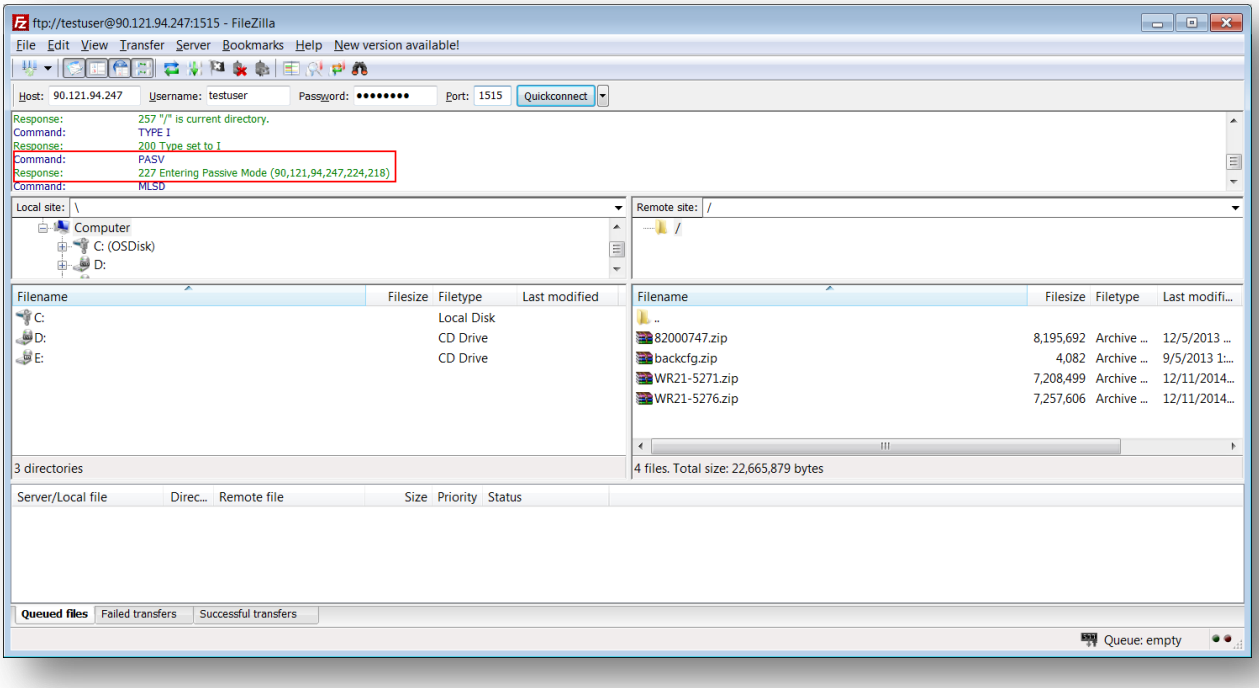
6 TESTING

Open FileZilla Client and enter the following details to connect to the FTP Server



Parameter	Setting	Description
Host	1.2.3.4	IP Address of the TransPort Router's Mobile Interface (PPP 1)
Username	testuser	Username of the FTP User created on the FTP Server (Section 3.2.2)
Password	*****	Password for the FTP User
Port	1515	External Port used in the NAT Mapping table

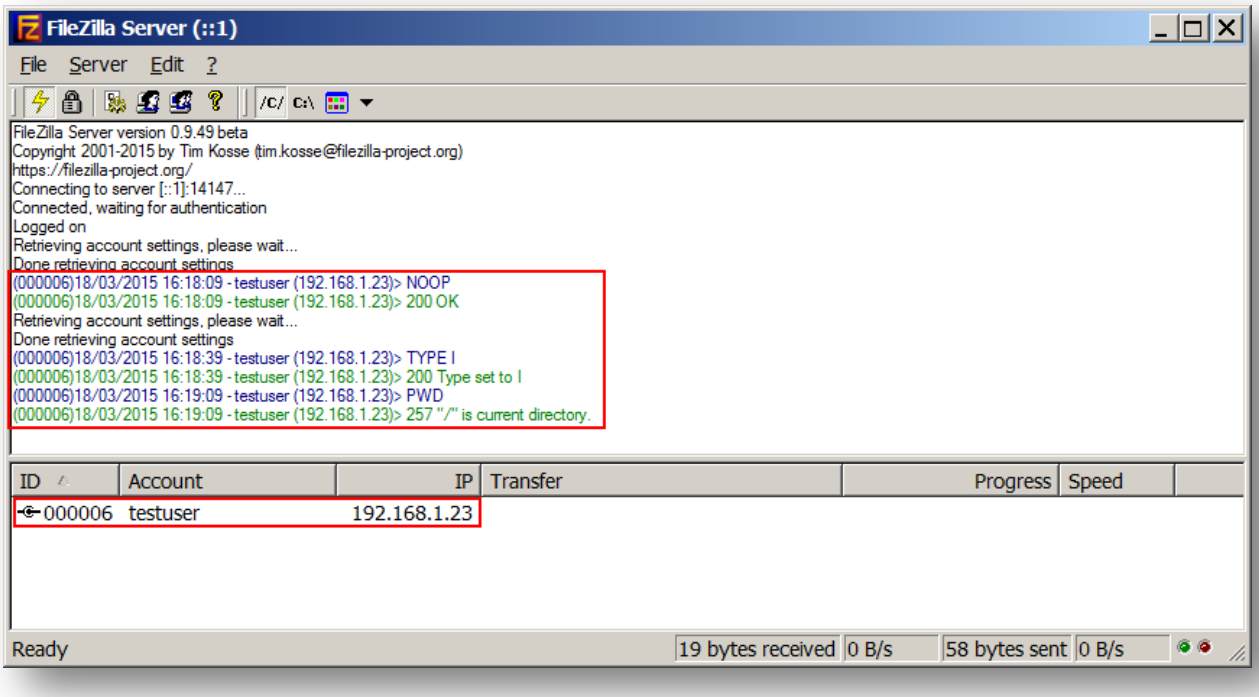
Once the connection is established, the remote directory content should appear on the right side.



It is possible to verify that Passive mode is being used by looking at the connection log. The following lines should appear

```
Command: PASV
Response: 227 Entering Passive Mode(90,121,94,247,224,218)
```

The FTP Server connection log will show activity and currently connected account



7 TRANSPORT CONFIGURATION

Find below the Digi TransPort WR21 Configuration used in this example. Highlighted are required part of the configuration.

```
eth 0 IPaddr "192.168.1.23"
eth 0 gateway "192.168.1.254"
eth 1 IPaddr "192.168.2.23"
addp 0 enable ON
lapb 0 ans OFF
lapb 0 tinact 120
lapb 1 tinact 120
lapb 3 dtemode 0
lapb 4 dtemode 0
lapb 5 dtemode 0
lapb 6 dtemode 0
ip 0 cidr ON
def_route 0 ll_ent "ppp"
def_route 0 ll_add 1
nat 0 minport 1515
nat 0 maxport 1515
nat 0 IPaddr "192.168.1.2"
nat 0 mapport 21
dhcp 0 respdelms 500
dhcp 0 mask "255.255.255.0"
dhcp 0 gateway "192.168.1.1"
dhcp 0 DNS "192.168.1.1"
sntp 0 server "time.etherios.com"
snmp 0 generictraps ON
dnssel 0 pattern "*"
dnssel 0 svr "8.8.8.8"
ppp 0 timeout 300
ppp 1 name "W-WAN (HSPA 3G)"
ppp 1 phonenum "*98*1#"
ppp 1 username "username"
ppp 1 epassword "password"
ppp 1 IPaddr "0.0.0.0"
ppp 1 timeout 0
ppp 1 do_nat 2
ppp 1 use_modem 1
ppp 1 aodion 1
ppp 1 autoassert 1
ppp 1 pingip "8.8.8.8"
ppp 1 pingint 30
ppp 1 ipanon ON
ppp 1 r_chap OFF
ppp 2 pingip "8.8.8.8"
ppp 2 pingint 30
ppp 3 defpak 16
ppp 4 defpak 16
modemcc 0 info_asy_add 3
modemcc 0 init_str "+CGQREQ=1"
modemcc 0 init_str1 "+CGQMIN=1"
modemcc 0 apn "apn"
modemcc 0 link_retries 10
modemcc 0 stat_retries 30
modemcc 0 sms interval 1
modemcc 0 sms_callerid "*"
modemcc 0 sms_access 1
modemcc 0 sms_concat 10
modemcc 0 init_str_2 "+CGQREQ=1"
modemcc 0 init_str1_2 "+CGQMIN=1"
```

```
modemcc 0 apn_2 "Your.APN.goes.here"
modemcc 0 link_retries_2 10
modemcc 0 stat_retries_2 30
ana 0 anon ON
ana 0 l1on ON
ana 0 lapdon 0
ana 0 asyon 1
ana 0 logsize 45
cmd 0 unitid "ss%s>"
cmd 0 cmdnua "99"
cmd 0 hostname "digi.router"
cmd 0 asyled_mode 2
cmd 0 ftpnatport 1515
cmd 0 tremto 1200
cmd 0 rcihttp ON
user 0 access 0
user 1 name "username"
user 1 epassword "KD5lSVJDVVg="
user 1 access 0
user 2 access 0
user 3 access 0
user 4 access 0
user 5 access 0
user 6 access 0
user 7 access 0
user 8 access 0
user 9 access 0
local 0 transaccess 2
sslsvr 0 certfile "cert01.pem"
sslsvr 0 keyfile "privrsa.pem"
ssh 0 hostkey1 "privSSH.pem"
ssh 0 nb_listen 5
ssh 0 v1 OFF
cloud 0 clientconn ON
cloud 0 server "login.etherios.co.uk"
cloud 0 ssl ON
metrics 0 mobile_metrics ON

Power Up Profile: 0
OK
```