

Configuring MassTransit Server to listen on ports less than 1024 using WaterRoof on Macintosh Workstations

Summary

This article explains how to configure MassTransit to listen on ports less than 1024 without running as root using the WaterRoof utility. Most commonly, this configuration is necessary to allow MassTransit to listen on the standard FTP ports (20 and 21) or the standard TCP/IP Secure port (443) without running as root.

Consult the sections below to:

- **To Configure FTP Port Redirection Using WaterRoof**
- **To configure SSL Port redirection using WaterRoof**

Notes:

- This article explains how to configure MassTransit to listen on ports less than 1024 on Mac OS X Workstation. To configure MassTransit on Mac OS X Server, please follow the appropriate link for Mac OS X 10.4 or 10.5 in this KB article:
<http://support.grouplogic.com/?p=1518>
- To use this configuration to listen on the default FTP ports without running as root, you will need to use MassTransit 4.5.1x22 or later.

Background

In Mac OS X, only the root user has access to ports below 1024. Because of this limitation, in order for MassTransit to listen on the standard FTP or TCP/IP Secure ports, MassTransit needed to be run with root privileges.

In order to avoid this requirement, WaterRoof can be used to redirect traffic from one port to another. This allows MassTransit to be configured to listen on a port above 1024 but receive incoming traffic on a port below 1024.

Description

Group Logic has tested and recommends using WaterRoof, a free standalone application that can perform a port redirection on Mac OS X 10.4 or later.

WaterRoof is freeware available from <http://www.hanynet.com/waterroof/>. It provides a wizard to configure your rules, as well as the ability to save them and set a launch script to run when you log into the Mac to persist the rules. You can also export and import the rule sets.

Things to keep in mind:

- The Mac firewall should be turned off. To turn off the firewall on OS X 10.4, go to System Preferences > Sharing > Firewall and stop it. Mac OS X 10.5 has two firewalls: ipfw (ipfirewall—the underlying Unix firewall) and an application layer firewall (the one that pops up sometimes and asks if you want to allow an application to accept incoming connections). You can manage the application layer firewall through System Preferences > Security > Firewall.
- If WaterRoof or any other application/process is already listening on the ports specified for the MassTransit FTP listen, the FTP listen will fail.
- Make sure that that your MassTransit FTP listen is enabled without an error before continuing to configure WaterRoof.

To Configure FTP Port Redirection Using WaterRoof

In order to have a MassTransit FTP server on the default ports of 20 and 21 without root user privileges, you must first configure the MassTransit FTP server listen on ports above 1024. This configuration requires MassTransit 4.5.1x22 or later and is described at the end of this article.

WaterRoof Setup:

1. Configure an FTP Server listen in MassTransit that uses ports > 1024. See the section “To Configure an FTP Server Listen With Non-Default Ports.”
2. After configuring MassTransit, run WaterRoof.
3. Click on “Static Rules”.
4. Click the “+” icon to add a new rule.
5. Enter the following information in the “Add new rule” window that appears:

Protocol: IP

Rule Action: Forward

In the “x.x.x.x, port” field enter the IP Address and the FTP Data Port number that MassTransit is configured to listen on. The **FTP Data Port** number must be the same as the one in the ‘FTP Data Port’ field of the “Configure FTP Server” window (see *Figure – 1* below)

Source address, subnet or network: any

Port or range: (leave blank)

Destination address, subnet, or network: me

Port or range: 20 (Port number to which you would like WaterRoof to redirect traffic from)

Options: Select the **In/Out** radio button

6. Click the “+” icon to add another new rule, and enter the following information:

Protocol: IP

Rule Action: Forward

In the “x.x.x.x, port” field enter the IP Address and the FTP Command Port number that MassTransit is configured to listen on. The **FTP Command Port** number must be the same as the one in the ‘FTP Command Port’ field of the “Configure FTP Server” window (see *Figure – 1* below)

Source address, subnet or network: any

Port or range: (leave blank)

Destination address, subnet, or network: me

Port or range: 21 (Port number to which you would like WaterRoof to redirect traffic from)

Options: Select the **In/Out** radio button

WaterRoof should now be configured to redirect any traffic between a port configured in the MT FTP Server listen and the standard FTP port 21.

Saving Rules to Persist Across Startups

To save the rules to persist across startups, you need to save the rule set and then install a LaunchDaemon script to issue the ipfw commands to add the rules to the firewall. This happens at login time. Otherwise, the system will reset to defaults on the next restart.

Click **Tools > Rules Configuration > Save to startup configuration**

This will save the rule set.

Then, click **Tools > Startup Script > Install Startup Script**

This will install the startup script

To configure SSL Port redirection using WaterRoof

To use MassTransit TCP/IP Secure, you must also configure it to use a port above 1024 in order to run with non-root privileges. For instructions on properly configuring a TCP/IP Secure listen, please refer to MassTransit manual.

WaterRoof Setup:

1. After configuring MassTransit, run WaterRoof.
2. Click on “Static Rules”.
3. Click the” +” icon to add a new rule, and use the following information:

Protocol: IP

Rule Action: Forward

In the “x.x.x.x, port” field enter the IP Address and the TCP/IP Secure Port number that MassTransit is configured to listen on.

Source address, subnet or network: any

Port or range: (leave blank)

Destination address, subnet, or network: me

Port or range: 443(Port number to which you would like WaterRoof to redirect traffic to. This must be the same port number that MassTransit TCP/IP Secure listen is configured for.)

Options: Select the **In/Out** radio button

WaterRoof should now be configured to redirect any traffic between the port configured in the MT TCP/IP Secure listen and the standard TCP/IP Secure port 443.

You should now have three new rules in your table:

```
01000 fwd 127.0.0.1, 4443 ip from any to me dst-port 443
01100 fwd 127.0.0.1, 4020 ip from any to me dst-port 20
01200 fwd 127.0.0.1, 4021 ip from any to me dst-port 21
65535 allow ip from any to any
```

Note: 4443, 4020, 4021 are example ports configured in MassTransit. You can choose any ports above 1024 that are not in use. The rule number 65535 is there by default and is required on Mac.

Saving Rules to Persist Across Startups

To save the rules to persist across startups, you need to save the rule set and then install LaunchDaemon script to issue the ipfw commands to add the rules to the firewall. This happens at login time. Otherwise, the system will reset to defaults on the next restart.

Click **Tools > Rules Configuration > Save to startup configuration**

This will save the rule set.

Then, click **Tools > Startup Script > Install Startup Script**

This will install the startup script

Export and Import Rule Set

WaterRoof lets you export and import your rule set. To export the rule set choose **Export rules to file** from the **Tools > Rules Configuration**. To import the rules just write the rules in text file and choose **Import rules from file** from the **Rules Configuration**. In our case the file looks like this:

```
add 01000 fwd 127.0.0.1, 4443 ip from any to me dst-port 443
add 01100 fwd 127.0.0.1, 4020 ip from any to me dst-port 20
add 01200 fwd 127.0.0.1, 4021 ip from any to me dst-port 21
add 65535 allow ip from any to any
```

To Configure an FTP Server Listen With Non-Default Ports

1. In MassTransit, go to Setup and click on “**Incoming Calls**” tab.
2. Click on the “Add” button and select “FTP Server” from method drop down list. The following window will appear:

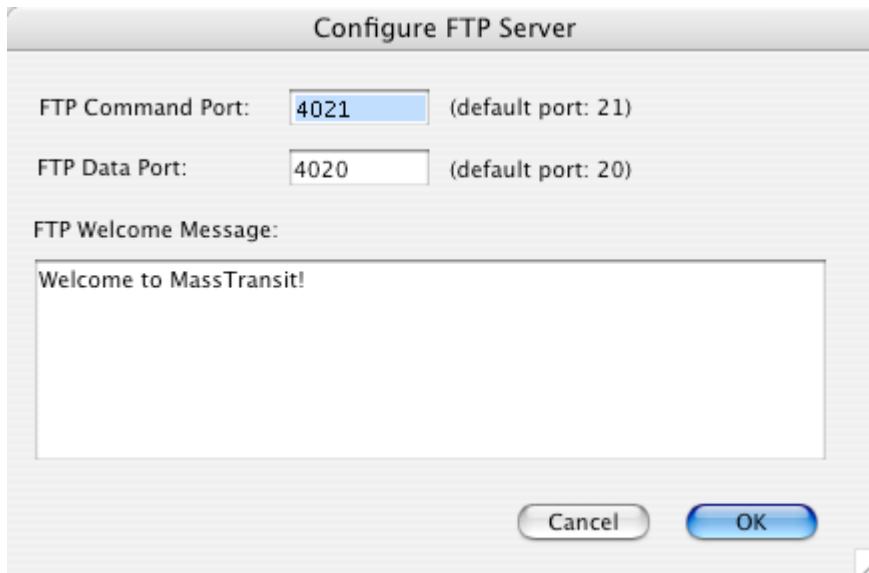


Figure – 1: Configure FTP Server window of MassTransit

Note: As stated in the window, ports 21 and 20 are default command and data ports respectively.

3. FTP requires two ports to function properly. Enter two different port numbers of your choice. If you wish to run MT as non-root user, then you must enter ports >1024.
4. Click ‘OK’ to close the window and ‘Save’ to close the setup dialog. Verify that MassTransit is listening on FTP. If you receive an error, you may need to select different ports.