

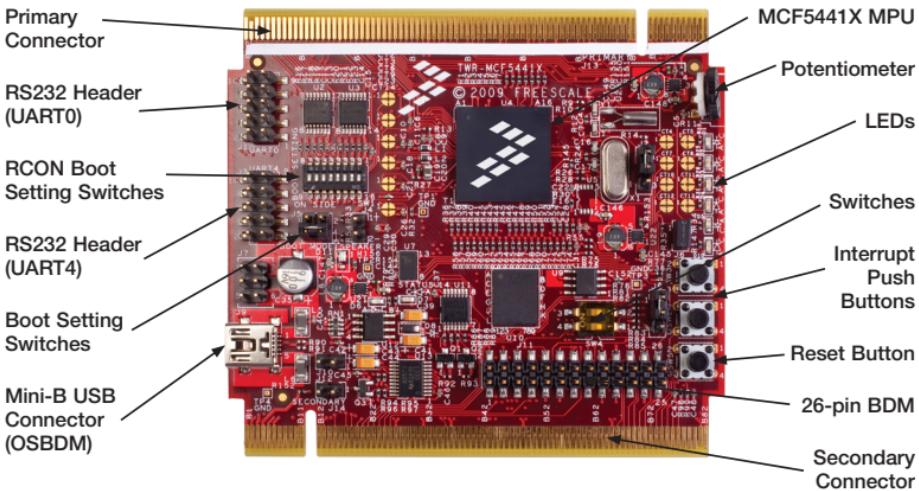
LAB
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MCF5441X

MQX™—Dual Web server
using Freescale MQX RTOS



Get to know the TWR-MCF5441x



TWR-MCF5441X-KIT Freescale Tower System

The TWR-MCF5441X module is part of the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Take your design to the next level and begin constructing your Tower System today.

**LAB
1**

MQX™—Dual Web server using Freescale MQX RTOS

This lab will guide you through a demo that runs two independent Web servers on the MCF5441X. The first Web server will be used to control various aspects of the board, while the Web server on the other Ethernet port will be used to display the status of the system. The lab will cover the use of the Freescale MQX operating system under the CodeWarrior environment. This will familiarize you with the general compile and download process, as well as provide an understanding of how to use the demo.

Step by Step Instructions

1. Install CodeWarrior for Microcontrollers v10 Professional Edition (30 day evaluation version available), then install the CW10 MCF5441X patch.
2. Install MQX 3.6 and the MCF5441X MQX patch.
3. Press the card edge connector of the MCU module into a slot on the elevator—take care to match the primary connector card edges and plug them into a functional elevator. Do the same for the TWR-SER2 module. A module may be placed into any slot on the elevator, but it is recommended to put the MCU module on the top for easier access to the switches and LEDs. Then press the secondary elevator onto the card edges labeled “secondary.”
4. Make the following connections from the MCF5441X tower kit:
 - a. USB debugger connection (J9 on the TWRMCF5441X module) to a USB port on PC
 - b. Ethernet cables from both Ethernet jacks on the TWR-SER2 to a switch

5. Connect your computer to a switch that will put the TWR-MCF5441X on the same network as your computer. Alternatively, you could connect the board to your computer directly, and alternate the Ethernet port on the TWR-SER2 that is connected to your computer.
6. The first time you connect the USB debugger cable to your PC, Windows® will install a driver for the debugger. Follow the prompts to automatically detect and install the driver.
7. The default IP addresses of the Ethernet ports for this lab are 169.254.3.3 and 169.254.3.2. Typically, when you connect your computer directly to a switch or to the TWR-SER2, the computer will default to an auto IP address on the same subnet as the board (169.254.x.x), therefore requiring no setup.
8. If you did not install the MQX project in the default C:\Program Files\Freescale\Freescale MQX 3.6\ directory during installation, you must first recompile the MQX libraries to reflect the new path name. See the MQX release notes in the \Freescale MQX 3.6\doc directory for information before continuing on with the lab.
9. Open CodeWarrior and set your workspace to the default MQX directory at C:\Program Files\Freescale\Freescale MQX 3.6
10. Click on “File” > “Import” in the menu bar. In the dialog box that comes up, select “Existing Projects in Workspace” under the General folder. Then click “Next.”

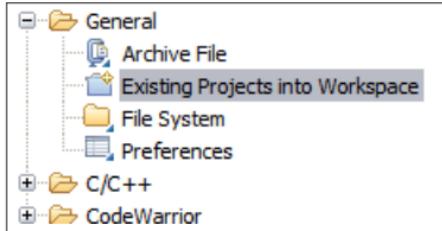


Figure 1

Note: The PC may take a few minutes to default to the auto IP address and may report Limited or No Connection. Alternatively, you may also configure the IP address of the computer manually. Select Start > Settings > Network Connections > Local Area Connection. Note your original TCP/IP settings, and then set your IP address to 169.254.3.4 and your subnet mask to 255.255.0.0.

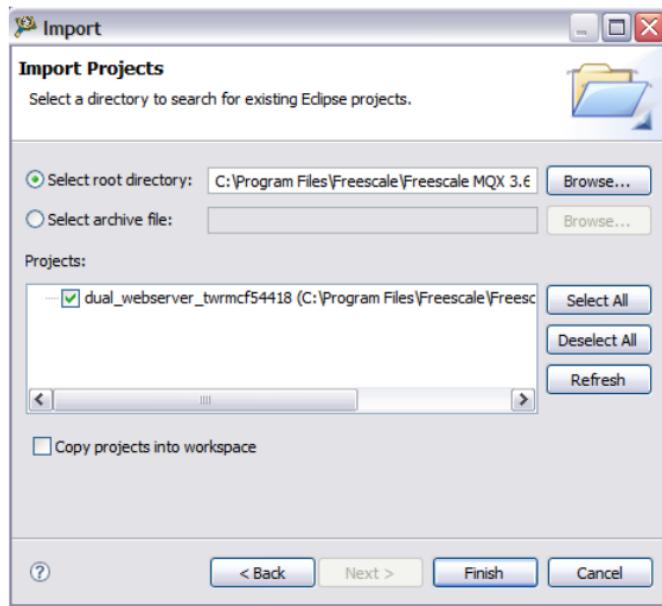


Figure 2

11. On the next screen, select the “**Select Root Directory**” option, and click on Browse to select the dual Web server project folder. (**C:\Program Files\Freescale\Freescale MQX 3.6\rtcs\examples\dual_webserver**)

12. CodeWarrior will search that directory, and you will see all the different CodeWarrior v10 projects available. Un-check the box marked “**Copy projects into workspace.**”
13. Hit “**Deselect All.**”
14. Check **dual_webserver_twrmcf54418** and click “**Finish.**”

TOWER SYSTEM

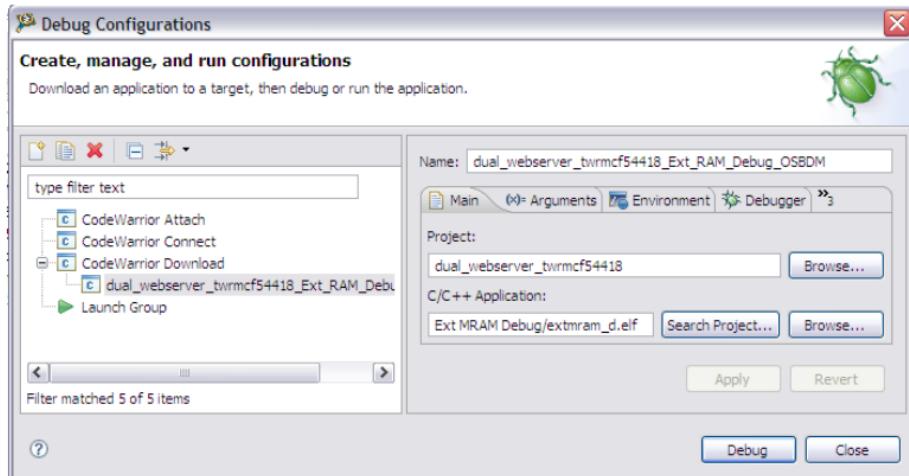


Figure 3

15. Build the project by clicking the build icon in the toolbar.



16. Now, go to “Run” > “Debug Configurations” and select the “dual_webserver_twrmcf54418_Ext_RAM_Debug_OSBDM” debug configuration.

17. Press the “**Debug**” button in the lower right corner, and wait for the program to be copied into the RAM on the TWR-MCF5441X
18. The debug view will come up, and the code will pause at the start of the MQX main() function.
19. Hit the run icon to continue the program execution.



20. Start your Internet browser, disable any proxy settings, and navigate to the configuration server address. In this case, it will be the Ethernet Port A which set to 169.254.3.3
21. This Web server is the control interface to the TWR-MCF5441X. It lets you set the LEDs, gives usage statistics and more.
22. Go to IP address 169.254.3.2. If connecting directly to your computer, ensure the Ethernet cable is plugged into Ethernet Port B for this section of the lab.
23. This Web server gives the status of the TWR-MCF5441X. It includes the uptime, the status of the LEDs and more.
24. Continue to explore the Web pages on both the control and status Web servers to see how they interact.

About the Tower System

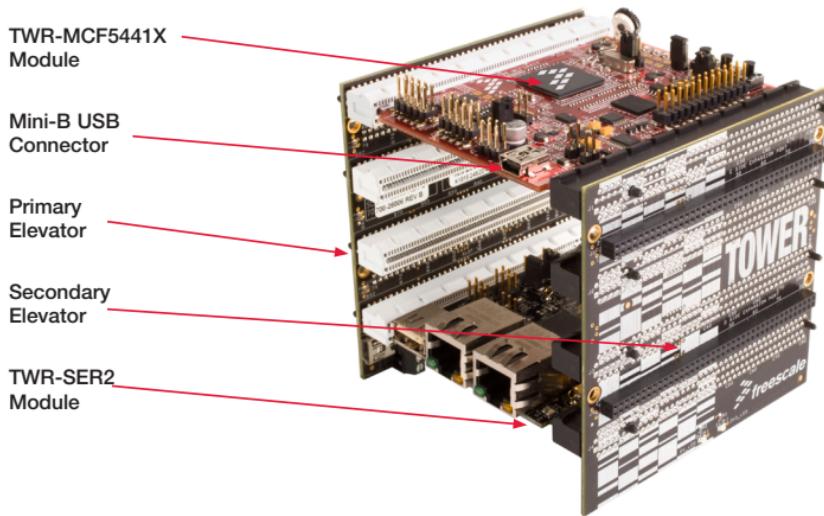


Figure 1: Tower System

Learn more at freescale.com/tower.

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