

Ethernet Slice Simple Webserver Application Quickstart

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This simple demonstration of xTimeComposer Studio functionality uses the sliceKIT Ethernet Slice together with the xSOFTip TCP/IP Ethernet component to:

- ▶ Run a TCP/IP stack on the XCore
- ▶ Run a very simple HTTP server to display a “hello world” webpage

1 Hardware Setup

The sliceKIT Core Board has four slots with edge connectors: SQUARE, CIRCLE, TRIANGLE and STAR.

To setup up the system:

1. Connect the sliceKIT Ethernet Slice to the sliceKIT Core Board using the connector marked with the CIRCLE.
2. Connect the XTAG Adapter to sliceKIT Core Board and connect XTAG-2 to the adapter.
3. Connect the XTAG-2 to host PC. Note that a USB cable is not provided with the sliceKIT starter kit.
4. Plug the power supply into the sliceKIT Core Board and turn the power supply on.

2 Import and Build the Application

1. On your PC, open xTIMEcomposer. You need to be in the edit perspective (Window->Open Perspective->XMOS Edit). If the XMOS Edit option isn't in the list, you are already in the edit perspective.
2. Locate the 'Simple HTTP Demo' item in the xSOFTip pane on the bottom left of the window and drag it into the Project Explorer window in the xTimeComposer.



Figure 1:
Hardware
Setup for
Simple HTTP
Demo

This will also cause the modules on which this application depends to be imported as well.

3. Click on the `app_simple_webserver` item in the Explorer pane then click on the build icon (hammer) in xTimeComposer. Check the console window to verify that the application has built successfully.

For help in using xTimeComposer, try the xTimeComposer tutorials, which you can find by selecting Help->Tutorials from the xTimeComposer menu.

Note that the Developer Column in the xTimeComposer on the right hand side of your screen provides information on the xSOFTip components you are using. Select the `module_xtcp` component in the Project Explorer, and you will see its description together with API documentation (reached by double clicking on the Documentation item within the project). If you view other documentation, you can get back to this quickstart guide by clicking the *back* icon in the Developer Column until you return to this quickstart guide.

3 Run the Application

Now that the application has been compiled, the next step is to run it on the sliceKIT Core Board using the tools to load the application over JTAG (via the XTAG-2 and XTAG Adaptor Card) into the xCORE multicore microcontroller.

1. Click on the Run icon (the white arrow in the green circle). The debug console window in xTimeComposer should then display the message:

```
**WELCOME TO THE SIMPLE WEBSERVER DEMO**
```

This has been generated from the application code via a call to the `printstr()` function.

2. Connect the sliceKIT Ethernet Slice your network via an ethernet cable. The application is configured by default to use DHCP to obtain an IP address. If you wish to change this to a static IP address edit the `main.xc` file in the application (you can reach this via the Project Explorer in the xTIMEcomposer) and change the `ipconfig` data structure.
3. The console window should display a message like:

```
IP Address: 192.168.0.4
```

the actual IP address will depend on your local network.

4. From a PC connected to the same network, open a web browser and open the link:

```
http://192.168.0.4
```

using the IP address printed out by the application. This should display a “hello world” webpage. You have now got the ethernet slice up and running.

4 Troubleshooting

If the demo does not work try the following:

- ▶ Ensure the sliceKIT Ethernet Slice is connected to the CIRCLE connector of the core board.
- ▶ Ensure the slice network cable is fully connected. There are activity LEDs next to the ethernet connector that should illuminate if connected.
- ▶ Ensure that both the PC and Ethernet Slice are connected to the same network and can route to each other. If you are using a dynamically allocated address, make sure your DHCP server is configured correctly. If using a static address, make sure your PC is configured to talk to that address (in Windows you need to check your Network Adapter TCP/IP settings).

5 Next Steps

5.1 Look at the Code

1. Examine the application code. In xTimeComposer navigate to the `src` directory under `app_simple_webserver` and double click on the `main.xc` file within it. The file will open in the central editor window.

2. Find the main function and note that it runs the `ethernet_xtcp_server()` (which runs the ethernet driver and tcp stack) and the `xhttpd()` function in parallel.
3. Look at the `xhttpd.xc` and `httpd.xc` files. These implement the webserver logic that connects to the TCP/IP stack. In particular the `httpd_handle_event` function that responds to a TCP event over an XC channel and performs the functions of the webserver. See the TCP/IP programming guide for details on how the `xtcp` stack works.

5.2 Look at Other Examples

Within the xSOFTip browser you can find other examples in the Networking/Ethernet category.



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