Chips-2.0 Demo for ATLYS Development Card

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This project is intended to demonstrate the capabilities of the Chips-2.0 development environment. The project is targets the Xilinx Spartan 6 device, and more specifically, the Digilent ATLYS development platform. The demo implements a TCP/IP socket interface, and a simple web application. So far the demonstration has been tested on a Ubuntu Linux only.

Dependencies

You will need:

- Xilinx ISE 12.0 or later (webpack edition is free)
- Python 2.7 or later (but not Python 3)
- Chips-2.0 (Included)
- Digilent ATLYS Spartan 6 Development Kit.
- Digilent ADEPT2 utility
- git

Install

Clone the git the repository with git:

```
$ git clone git@github.com:dawsonjon/Chips-Demo.git
$ cd Chips-Demo
$ git submodule init
$ git submodule update
```

Chips Compile

To compile the c code in chips, issue the following command in the project folder:

```
$ ./atlys.py compile
```

Build in ISE

Edit the Xilinx variable in the scripts/user_settings to point to the Xilinx ISE install directory. Then build the design using the following command:

```
$ ./atlys.py build
```
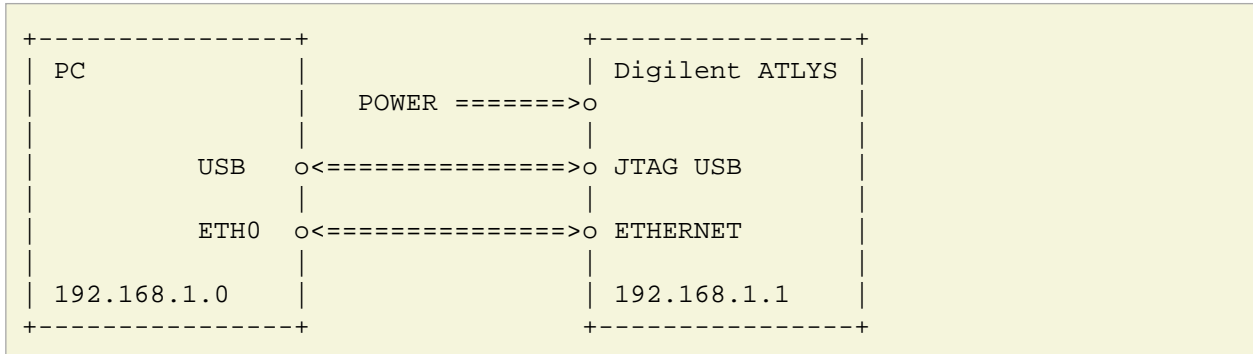
Download to ATLYS

Power up the ATLYS, and connect the JTAG USB cable to your PC. Run the download command:

```
$ ./atlys.py download
```

You can complete all three steps in one go using the *all* option:

```
$ ./atlys.py all
```

Setup and Test

```
+----------------+                  +----------------+
| PC             |                  | Digilent ATLYS |
|                |    POWER ======>o |                |
|                |                  |                |
|       USB    o<===============>o JTAG USB          |
|                |                  |                |
|       ETH0   o<===============>o ETHERNET          |
|                |                  |                |
| 192.168.1.0    |                  | 192.168.1.1    |
+----------------+                  +----------------+
```

Connect the Ethernet port to ATLYS, using a crossed over Ethernet cable (which comes with the development kit).

Using the script, configure Ethernet port with IP address 192.168.1.0 and subnet mask 255.255.255.0. Turn off TCP Window Scaling and TCP time stamps:

```
$ ./configure_network
```

Verify connection using ping command:

```
$ ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_req=2 ttl=255 time=0.207 ms
64 bytes from 192.168.1.1: icmp_req=3 ttl=255 time=0.263 ms
64 bytes from 192.168.1.1: icmp_req=4 ttl=255 time=0.124 ms
64 bytes from 192.168.1.1: icmp_req=5 ttl=255 time=0.185 ms
64 bytes from 192.168.1.1: icmp_req=6 ttl=255 time=0.275 ms
--- 192.168.1.1 ping statistics ---
6 packets transmitted, 5 received, 16% packet loss, time 5001ms
rtt min/avg/max/mdev = 0.124/0.210/0.275/0.057 ms
```

Connect to 192.168.1.1 using your favourite browser.