

Iperf Design on Nios[®] V/m Processor

Agilex[™] 7 FPGA

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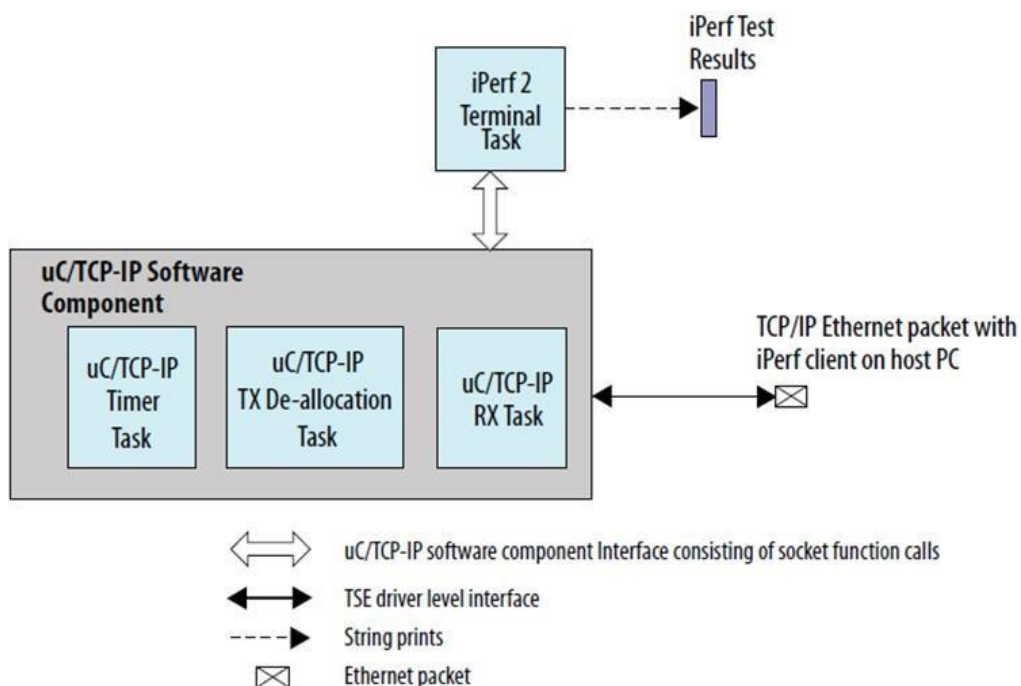
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1.0 Theory of Operation

Perf 2 is a benchmarking tool for measuring performance between two systems, and it can be used as a server or a client.

An iPerf server receives an iPerf request sent over a TCP/IP connection from any iPerf clients and runs the iPerf test according to the provided arguments. Each test reports the bandwidth, loss, and other parameters.

Figure 1-1. Block Diagram



1.1 IP Cores

The following IPs are used in this design.

- Nios V/m soft processor core
- On Chip RAM-II
- JTAG UART
- Triple Speed Ethernet (TSE)
- System ID
- Altera MSGDMA

2.0 Executing the design on Development Kit

2.1 Creating and validating the design

Note: Please refer to the readme.txt file in the package for the steps to create the design, application and generate the programming files.

- Unpackage/extract the design in your working directory.
Locate the "ready_to_test" folder within the package.
- The folder contains the necessary files for executing the application on the board.
Refer to the readme file for the steps to program the application files on the board.
- Validate the design by observing the prints on the terminal.

3.0 Expected Results

The following is the output as observed on the JTAG UART terminal. The output is analogous to the logic from the application code. Users should be able to observe same output on their terminal/setup.

```
[crt0.S] Clearing BSS
[crt0.S] Calling alt_main.
[alt_main.c] Entering alt_main, calling alt_irq_init.
[alt_main.c] Done alt_irq_init, calling alt_os_init.
[alt_main.c] Done OS Init, calling alt_sem_create.
[alt_main.c] Calling alt_sys_init.
[alt_main.c] Done alt_sys_init.
[alt_main.c] Redirecting IO.
[alt_main.c] Calling C++ constructors.
[alt_main.c] Calling atexit.
[alt_main.c] Calling main.
[main] Main Task TOS: 0x4f13c
Print the value of System ID
System ID from Peripheral core is 0xFACECAFE
[uc_main_task]
[uc_main_task] =====
[uc_main_task] uC/TCP-IP Setup
[uc_main_task] =====
[uc_main_task] TSE MAC base: 0x212000.
[uc_main_task] Rx csr name: /dev/sys_tse_msgdma_rx_csr.
[uc_main_task] Tx csr name: /dev/sys_tse_msgdma_tx_csr.
[uc_main_task] INFO: Initializing network stack.
[conf_static] Configuring (static) IP address
[conf_static] * Address: 192.168.1.100
[conf_static] * Mask: 255.255.255.0
[conf_static] * Gateway: 192.168.1.254
[uc_main_task] INFO: Initializing network stack: Success. Using interface 1.

IPerf Terminal

>

-----
TEST ID : 1
*****
TCP Server listening on 192.168.1.100 Port 5001
Window size: 4096 bytes
Buffer size: 8192 bytes
-----
Local 192.168.1.100 Port 5001 connected with 192.168.1.50 Port 47872
L[ 6] R[ 5] 0.000 - 1.060 sec : 2117000 Bytes, 15977 Kbits/sec
L[ 6] R[ 5] 1.060 - 2.119 sec : 2105320 Bytes, 15903 Kbits/sec
L[ 6] R[ 5] 2.119 - 3.179 sec : 2108976 Bytes, 15916 Kbits/sec
L[ 6] R[ 5] 3.179 - 4.243 sec : 2111160 Bytes, 15873 Kbits/sec
L[ 6] R[ 5] 4.243 - 5.307 sec : 2105320 Bytes, 15828 Kbits/sec
L[ 6] R[ 5] 5.307 - 6.399 sec : 1655640 Bytes, 12129 Kbits/sec
L[ 6] R[ 5] 6.399 - 7.479 sec : 2108240 Bytes, 15615 Kbits/sec
L[ 6] R[ 5] 7.479 - 8.552 sec : 2108240 Bytes, 15717 Kbits/sec
L[ 6] R[ 5] 8.552 - 9.624 sec : 2108240 Bytes, 15732 Kbits/sec
L[ 6] R[ 5] 9.624 - 10.691 sec : 2111160 Bytes, 15828 Kbits/sec
```

4.0 Document Revision History

Date	Version	Changes
2024-09-30	24.3.0	<ul style="list-style-type: none"> Initial release on github

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