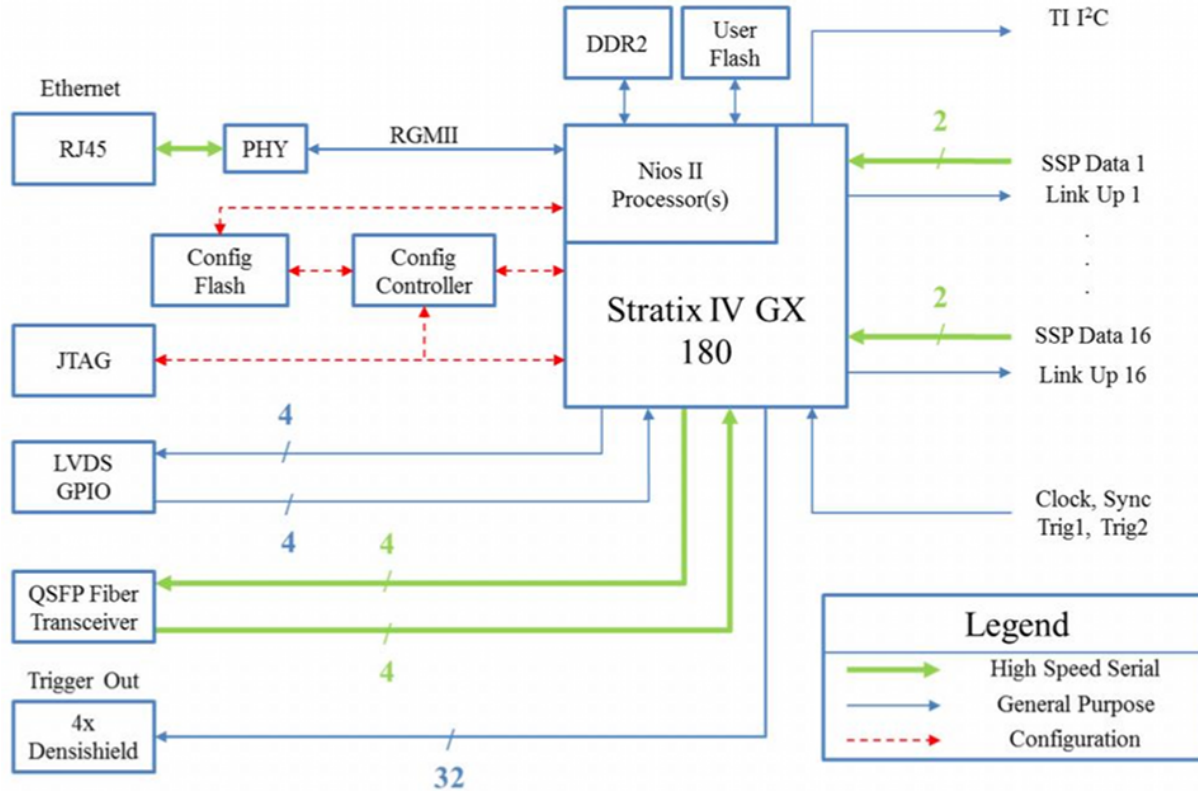


Linux on the Global Trigger Processor

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GTP Block Diagram



The Barebox Bootloader

- Loads boot image through flash, TFTP, NFS
- Passes boot arguments to kernel
 - Serial console configuration
 - Partition table for NOR flash
 - Root filesystem
- Familiar command line interface
 - Easily scriptable

The Barebox Bootloader

```
barebox 2013.11.0-gtp-proto-00004-ga2d1d13-dirty
```

```
Board: Jefferson Lab Global Trigger Processor
```

```
cfi_flash cfi_flash0: found cfi flash at e0000000, size  
33554432
```

```
mdio_bus: miibus0: probed
```

```
malloc space: 0xd7b00000 -> 0xd7efffff (size 4 MiB)
```

```
running /env/bin/init...
```

```
Hit any key to stop autoboot: 4
```

```
barebox:/
```

Linux Kernel

- Based on current stable release, Linux 3.12
- Maintained by RocketBoards community
- Significant support for Altera FPGAs
- Familiar environment for driver development
 - Memory map peripheral address space
 - Manipulate memory as desired
 - Cross compile loadable module with GCC

Linux Kernel

```
Linux version 3.12.0-00299-ga6d6767-dirty
(hewittc@gtplinuxdev.jlab.org) (gcc version 4.7.3
(Sourcery CodeBench Lite 2013.05-43) )
bootconsole [early0] enabled
early_console initialized at 0xe8004d50
On node 0 totalpages: 32768
free_area_init_node: node 0, pgdat d0328dc0, node_mem_map
d0349540
...
Kernel command line: debug console=ttyJ0,115200
mtdparts=flash:512k(barebox),128k(env),8192k(kernel),
23424k(rootfs),512k(config) root=/dev/mtdblock3
rootfstype=jffs2 rw
```

Buildroot

There's no distribution of Linux for NIOS II...

- Can build what we need from source
- Builds a bootable root filesystem from scripts
- Builds a number of other useful packages
 - openssh, ntpd, socat, uemacs, ...
- Creates a JFFS2 filesystem image that can be copied to NOR flash or mounted remotely

Linux on GTP

```
# uname -a
```

```
Linux gtplinux 3.12.0-00299-ga6d6767-dirty #56 Mon Dec 16  
14:26:18 EST 2013 nios2 GNU/Linux
```

```
# cat /proc/cpuinfo
```

```
CPU:      Nios II/fast
```

```
MMU:      present
```

```
FPU:      none
```

```
Clocking: 125.00 MHz
```

```
BogoMips: 61.56
```

```
Calibration: 30784000 loops
```