Sundance

Multiprocessor Technology Ltd

X-Link:

The FPGA Interface to Sundance Peripherals

High-tech DSP solutions. Giving you the freedom to design

What is an X-Link?

An X-Link is a general-purpose *interface* between DSP programs and Sundance peripherals.

It provides software with a standard way to interact with peripherals implemented in the FPGAs on TIMs.

Is an X-Link a device?

No. An X-Link is an *interface* between software and an actual device.

X-Links can be used to control existing devices such as comports and SDBs.

X-Links do not alter the hardware properties of these devices; the signals presented to the outside world are unchanged.

Why were X-Links created?

Devices are controlled with registers and memory areas.

Before X-Links, each type of device had different registers, different sizes of memory areas, and different ways of being controlled.

Each device type needed its own, unique software driver.

How do X-Links help?

X-Links treat all devices in the same way and give them identical registers.

You can find out everything you need to know about a device from the X-Link interface.

This means that you only need one device driver to handle any device with an X-Link interface.

What X-Links are on a TIM?

At a fixed place in each FPGA there is a Table Of Contents (TOC).

The TOC allows software to discover what X-Links are implemented on the TIM and where their registers are.

Software can adapt automatically to support different TIMs.

What about performance?

The raw performance of a device depends on the device itself and the software used to control it.

X-Links do not change the devices, but they allow controlling software to be more effective. This reduces both the amount of code needed and the overhead it adds to transfers.

Any other benefits?

X-Links hide the differences between 32 and 64-bit devices.

You can continue to transfer in any multiples of 32-bit words and yet get the benefits of 64-bit hardware transport mechanisms when they are available.

You do not have to align buffers or ensure transfers are multiples of 64-bits long.

X-Links

- Simplify software

- Reduce software overheads

- Allow flexibility in the provision of devices

- Allow new devices to be added easily

- Give flexibility to FPGA firmware