Application Note: AN10105

How to use the XTA to time between 2 I/O instructions

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to use the XTA to time between 2 I/O instructions.

Required tools and libraries

This application note is based on the following components:

- xTIMEcomposer Tools - Version 14.0.0

Required hardware

Programming how-tos are generally not specific to any particular hardware and can usually run on all XMOS devices. See the contents of the note for full details.

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1 How to use the XTA to time between 2 I/O instructions

The XTA can be used to time the code between 2 I/O instructions. Compile the following code and load it into the XTA.

In the xTIMEcomposer studio, select the *Analyze* button on the left-hand side navigation toolbar. Next select the *Analyse Timing* perspective via the main toolbar. A binary can be loaded into the XTA then via the *Load Binary into XTA* toolbar button.

```
#include <xs1.h>

port p = XS1_PORT_1A;
```

In the editor, right-click on the endpoint marker in the border of the following line and select 'set from endpoint'

```
#pragma xta endpoint "endpoint1"
p :> x; // endpoint 1

// Some computation here...
```

In the editor, right-click on the endpoint marker in the border of the following line and select 'set to endpoint'

```
#pragma xta endpoint "endpoint2"
p :> x; // endpoint 2
```

Click the 'Analyse Between Endpoints' button in the main toolbar. The best and worst case timing for this path will then be displayed in the Routes view in the left hand panel.

To load a binary, then time between endpoints using the command line XTA, or from XTA scripts/embedded source commands, the following commands can be used:

```
load a.xe
analyze endpoints endpoint1 endpoint2
```

Note: In order to do this is a maintainable way, the above relies on the *xta endpoint* pragma, which lets you associate a label with an endpoint (I/O instruction) in the source code.