

Application Note: AN10102

# How to enable VCD tracing when running on the simulator

This application note is a short how-to on programming/using the xTIMEcomposer tools. It shows how to enable VCD tracing when running on the simulator.

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## 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.

## 1 How to enable VCD tracing when running on the simulator

The xTIMEcomposer simulator can optionally generate a VCD (value change dump) trace file which describes external and/or internal simulation state. This file can then be viewed in the VCD viewer built in to xTIMEcomposer Studio, or in an 3rd party VCD viewer such as GTKWave. This mechanism is typically used to visualize the transitions on the ports/pins, although you can also use it to examine internal machine state such as the instructions/functions executed and the state of other machine resources such as channels or clockblocks.

As an example, compile the following code:

```
#include <xs1.h>

port p = XS1_PORT_1A;
int main() {
    p <: 1;
    p <: 0;
    return 0;
}
```

From within xTIMEcomposer Studio, the VCD tracing can be enabled using:

*Run -> Run Configurations -> Simulator -> Signal Tracing -> Enable signal tracing*

Check this box, then click the *ADD* button situated within the *Trace Tile Options* group. Check the *ports* box. When the run terminates, a .vcd file is produced and added at the top level of the relevant project directory, the VCD tracing perspective is opened and the VCD file is loaded. Double-click on XS1\_PORT\_1A in the signals view to import the associated signals into the *Waves* view. Click the *zoom fit* button located in the *Waves* view toolbar to examine the activity on the port.

From the command line, VCD tracing can be enabled using the following:

```
xsim --vcd-tracing '-o trace.vcd -ports' a.xe
```

The above will produce a *trace.vcd* file, which can then be opened in a VCD viewer.