Course 11

XTrace

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Introduction

XTrace tool creates a report with information on unknown values in the simulated model. By default, XTrace generates a report for the X, U, and - (Don't care) values. It is, however, possible to XTrace other values of the std_logic type. XTrace monitors the specified signals and provides exact information on the time of unknown value occurrence, hierarchy path and if necessary drivers contributing to the affected signal.

Using XTrace in GUI

Enabling X-trace

- You can select **Enable XTrace** option under **Design | Setting | Simulation** category, to enable the XTrace.

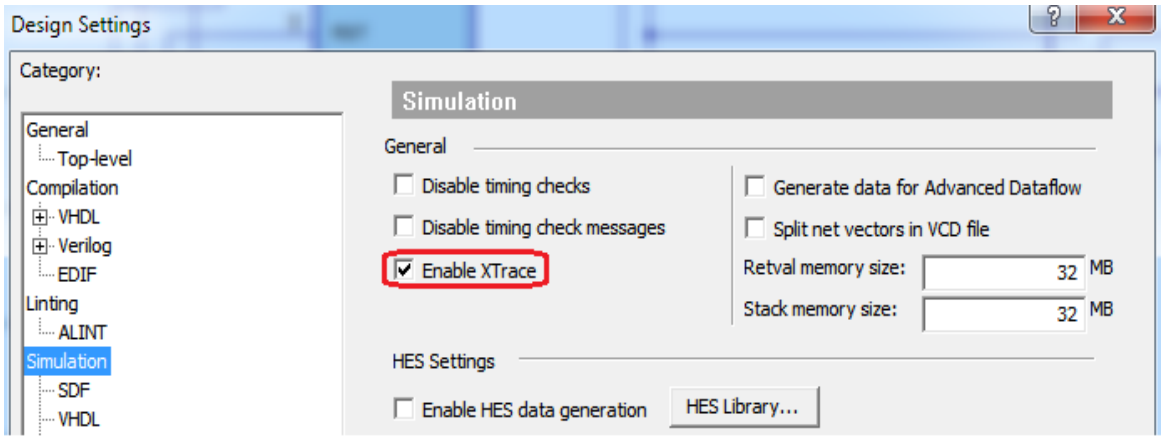

Figure 1 Enabling XTrace

Please note that this option is needed only when source files are compiled with **Generate Debugging Information** option turned off. **Generate Debug Information** option is located under **Design | Setting | Compilation | <Language> category**. <Language> here refers to VHDL or Verilog.

- If the source files were compiled with Generate Debugging Information on, you can proceed to the XTrace Options section below.

XTrace Options

Different options for the XTrace tool can be set when simulation is initialized. Once simulation is initialized you can go to menu **Simulation | Xtrace | Xtrace On** for setting different options for XTrace. Please read the following description for frequently used options listed under XTrace. For details on other options, refer to the help inside Active-HDL.

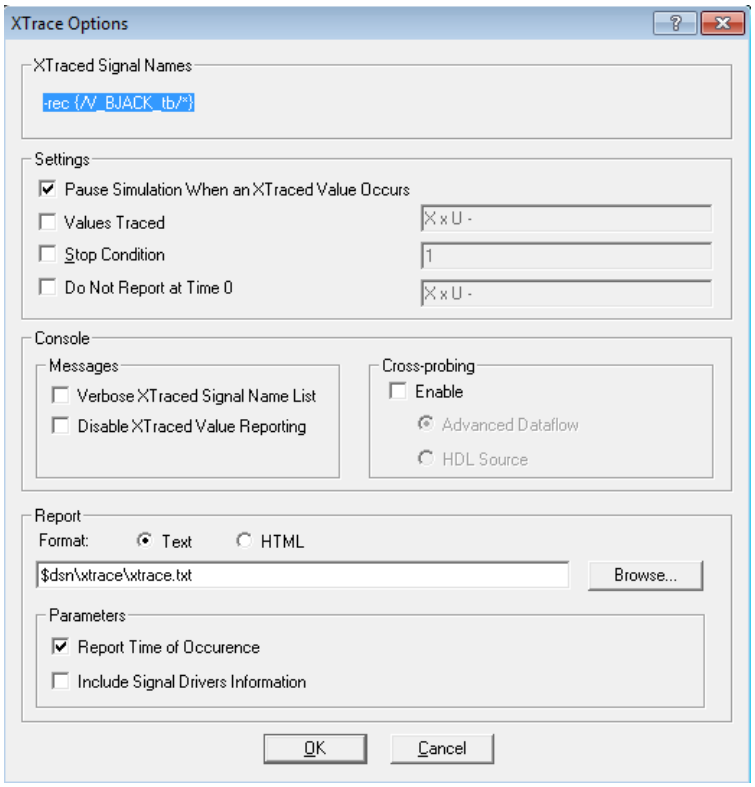

Figure 2 XTrace Options window

Setting Section

Value Traced

Specifies values for which the report should be generated. The default is X and U and - (Don't care). You can specify any other values, for example X and W.

Stop Condition

Simulation stops whenever XTrace finds a value on any of the monitored signals.

Console

Console Messages

Allows you to specify how xtraced signals will be reported in the **Console** window. XTrace can report either a summary about the total number of xtraced signals or the detailed information about the signal path and name (**Verbose XTraced Signal Name List**). If you check the **Disable XTraced Value Reporting** option, xtraced values will not be reported in the **Console** window.

Console Cross-probing

If there are any occurrences of unknown values that have been reported in the **Console** window then double-clicking such a message (generated by xtrace) opens either the **Advanced Dataflow** window with the xtraced net highlighted in red or the HDL Editor window and places the insertion point in the line of an **HDL Source** where a sequential or concurrent statement that caused the unknown value is located (source of Xs or Us).

Before using this option make sure that the option to enable the Advanced Dataflow is enabled. Please refer to Advanced Dataflow course of the Tool Training to learn more about how to enable Advanced Dataflow.

Report

Format

This option specifies the format of the XTrace report. A report is generated automatically when the simulation is ended.

Parameters

It determines whether to add the report information about simulation time (**Report Time of Occurrences**), drivers (**Include Signal Drivers Information**) of the signals experiencing the unknown value. If a signal has multiple drivers, each driver is printed in a separate line.

Adding Signals to XTrace

You can add signals to XTrace from **Structure** tab of **Design Browser** and from **Object Viewer**. The context menus from these windows have **XTrace | XTrace Add** option.

For example, you can add signals to XTrace from **Structure** tab as shown below in the figure.

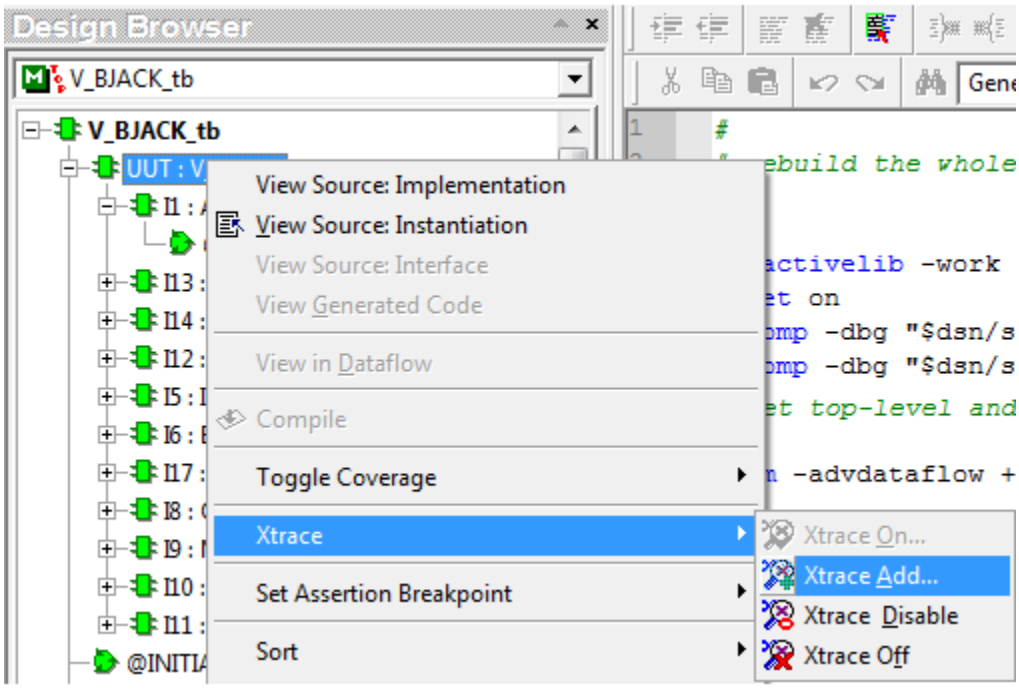

Figure 3 Adding signals to XTrace

Once you add the signals to XTrace, console should print the following message.

```
# XTRACE: 5 signal(s) xtraced.
```

Using XTrace in Batch Mode

XTrace in batch mode does not provide cross probing with Advanced Dataflow or HDL editor. You can receive the XTrace messages in the command batch mode though. Enabling XTrace in batch mode follows the same rules as in GUI. If your source files are compiled with –dbg switch then you don't have to perform additional steps to enable the XTrace. But if source files are compiled without –dbg switch then you have to use –xtrace with asim command during initialization of the simulation.

Once the simulation is initialized, you can use various commands to use XTrace. For example:

- `xtrace *`

Generates a report for all signals of the top-level hierarchy, only the first unknown value is reported for each monitored signal

- `xtrace –value WX_ -rec UUT/*`

  Generates a report for signals at the UUT region and all its subregions (VHDL design), W, X, and - (Don't care) are treated as unknown values. Only the first unknown value is reported for each monitored signal.

- `xtrace –add <arguments>`

  Adds specified signals to the list of signals monitored for unknown values by XTrace, refer the help inside Active-HDL to learn more about the arguments for this command

- `xtrace <arguments>`

  Creates a report with information about unknown values in the simulated model, refer the help inside Active-HDL to learn more about the arguments for this command

- `Xtrace –stop_condition *`

  Generates a report about all unknown values on all signals