



### **What is Preconfig BSDLCustomizer?**

Preconfig BSDLCustomizer is a TCL script that modifies the port definitions and BSC groups' attributes in a generic BSDL file according to the design and pin assignment from Quartus II PIN file. This tool is available for download at <http://www.altera.com>.

### **When Should I use Preconfig BSDLCustomizer ?**

You should use the Preconfig BSDLCustomizer to generate a customized preconfiguration BSDL file if:

#### *i) For FPGA and CPLD's*

You need a customized BSDL file for preconfiguration Boundary-Scan Test (BST) with all the unused pins set to not testable and the behavior of all I/O pins changed according to the direction in the PIN file.

#### *ii) For Hardcopy<sup>®</sup> Devices*

You want to increase the BST coverage by performing BST in power up mode (i.e with nConfig pulled to low), with all the unused pins set to not testable.

### **How is the behavior of an I/O pin modified by Preconfig BSDLCustomizer?**

The tcl script reads the user assignment of an I/O pin in the PIN file and changes its behavior according to table 1 or table 2. For all unused pins ( i.e GND+, GND\*, RESERVED, RESERVED\_INPUT, RESERVED\_INPUT\_WITH\_WEAK\_PULLUP and RESERVED\_INPUT\_WITH\_BUS\_HOLD), the behavior is changed to not testable. This process is repeated for all the I/O pins.



Table 1 : Pin Behavior Modification by Preconfig BSDLCustomizer for <b>HC230 Only</b>		
I/O Standard in PIN file	Direction in PIN File	Modified Behavior in new BSDL File
All Single Ended ,except SSTL and HSTL	Output	Output
All Single Ended ,except SSTL and HSTL	Input	Input
All Single Ended ,except SSTL and HSTL	Bidirectional	Not modified, remain as I/O
Single Ended SSTL or HSTL	Input	Not testable
Single Ended SSTL or HSTL	Output	Output
Single Ended SSTL or HSTL	Bidirectional	Output
All Differential, except SSTL and HSTL	Output	Output
All Differential, except SSTL and HSTL	Input	Output
All Differential, except SSTL and HSTL	Bidirectional	Output
Differential SSTL or HSTL	Input	Not testable
Differential SSTL or HSTL	Output	Output
Differential SSTL or HSTL	Bidirectional	Output

Table 2 : Pin Behavior Modification by Preconfig BSDLCustomizer for <b>all devices, except HC230</b>		
I/O Standard in PIN file	Direction in PIN File	Modified Behavior in new BSDL File
All Single Ended	Output	Output
All Single Ended	Input	Input
All Differential	Output	Output
All Differential	Input	Input
All I/O standard	Bidirectional	Not modified, remain as I/O



## How to use Preconfig BSDLCustomizer?

Here are the steps to generate a preconfiguration BSDL file successfully:

1. Create a new working directory. Make sure the new directory does not have any space in between the folders' name.
2. Copy the Quartus II PIN file (generated after design compilation) and the BSDL file downloaded from Altera's website into the newly created working folder.
3. Copy the Preconfig BSDLCustomizer TCL script into the same directory. Open Quartus II TCL console and change the directory to the working folder directory by typing "cd <drive>:/<directoryname>/".
4. Source the Tcl script by typing "source Preconfig\_BSDLCustomizervX.tcl". 'X' is the latest script version number.
5. New BSDL file will be generated with the additional "\_new" suffix as the BSDL file name.
6. If there is a **TCL interpreter installed**, user can also double click on the Preconfig BSDLCustomizer TCL script to generate the new BSDL file.

## Troubleshooting Preconfig BSDLCustomizer:

1. If there is **more than one** BSDL file in the same directory, the script will not run and will not generate a new BSDL file.
2. If there is **more than one** PIN file in the same directory, the script will not run and will not generate a new BSDL file.
3. Make sure that path where the TCL script is going to execute **does not** contain any space in between the folder's name.
4. Make sure the BSDL file to modify is the one downloaded from Altera website and it is not modified before.

Preconfig BSDLCustomizer revision history	
Revision	Description
1.0	- 25 <sup>th</sup> July 2007. - Initial release
1.1	-1 <sup>st</sup> April -Updated the script according the behavior shown in Table-1

Document revision history	
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1.0	- 25 <sup>th</sup> July 2007. - Initial release
1.1	-1 <sup>st</sup> April -Updated Table-1 & Table-2