How To Erase Xilinx XC9500 devices using ISE 10.1

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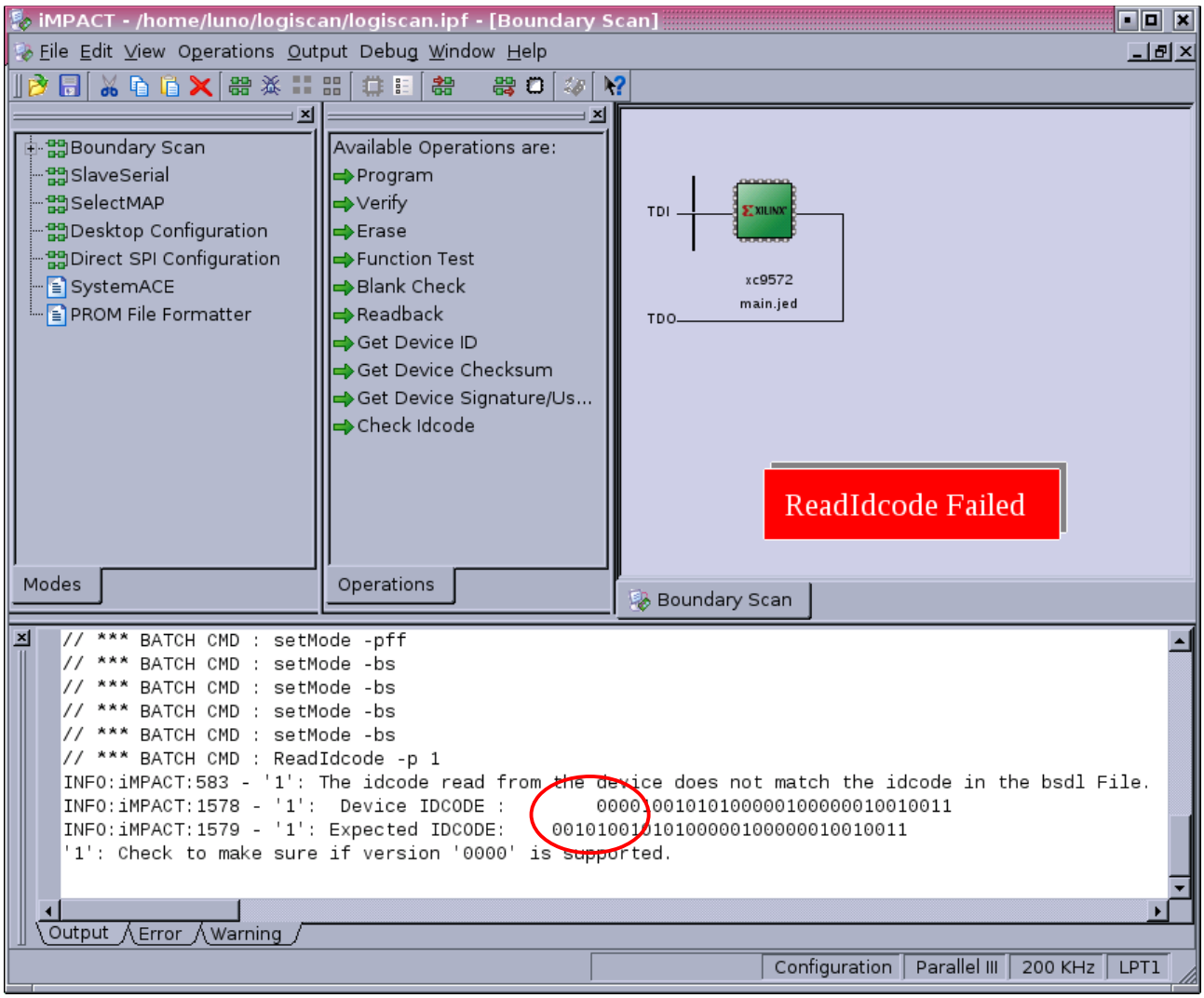
Abstract: *Guideline to erase obsolete XILINX CPLDs using an SVF file.*

Contents

1 The Problem

CPLD devices of the XC9500 series sometimes refuse to be erased when using ISE later than version 3.3. An early sign of this problem is announced by ISE when initializing the scan chain (auto detecting devices) or doing the ID-CODE check.

Reason:
Some devices have an ID-CODE not matching the required code of 0010b in the upper four bits of the 32 bit ID-CODE as shown below:



Consequences:

- ISE assumes an unsupported device as target.
- After modifying the ID-CODE in the basing BSDL file, assigning the *.jed file to the target, overriding the warning of an unsupported device, programming the device fails. It fails because the devices affected to not support the newer and faster *bulk erase* mechanism. This mechanism is used by ISE. There is **no** option in the ISE user interface to change back to the older but slower *sectored erase* mechanism.
- **The device can not be erased this way !**

2 Workaround

To erase the device via *vectored erasing* an SVF-file has to be written and played. Since it is a large ASCII-file, here is the URL to it:
http://www.blunk-electronic.de/pub/logiksynthese/erase_sectored_fast.svf

Note: I wrote this file by guessing and praying to Jesus Christ since XILINX does not disclose the algorithm for sectored erasing. There may be sectors left and not erased within the device which I have not figured out yet.

1. Change to directory /opt/Xilinx/10.1/ISE/xc9500/data

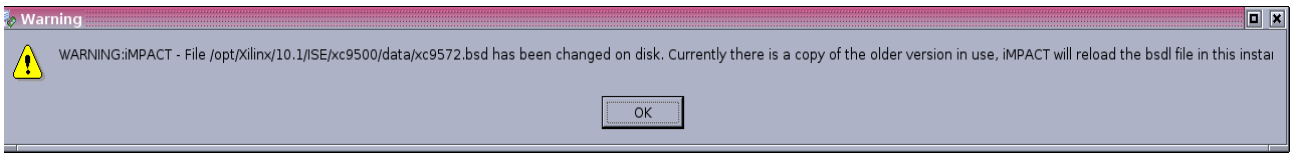
2. Open the file *xc95xx.bsd* (e.g. *xc9572.bsd*) with a text editor like *Notepad* or *Kate.*

3. Change the section defining the expected ID-CODE this way:

```
attribute IDCODE_REGISTER of XC9572 : entity is
        "00XX" &                -- version
        "1001010100000100" &    -- part number
        "00001001001" &         -- manufacturer's id
        "1";
```

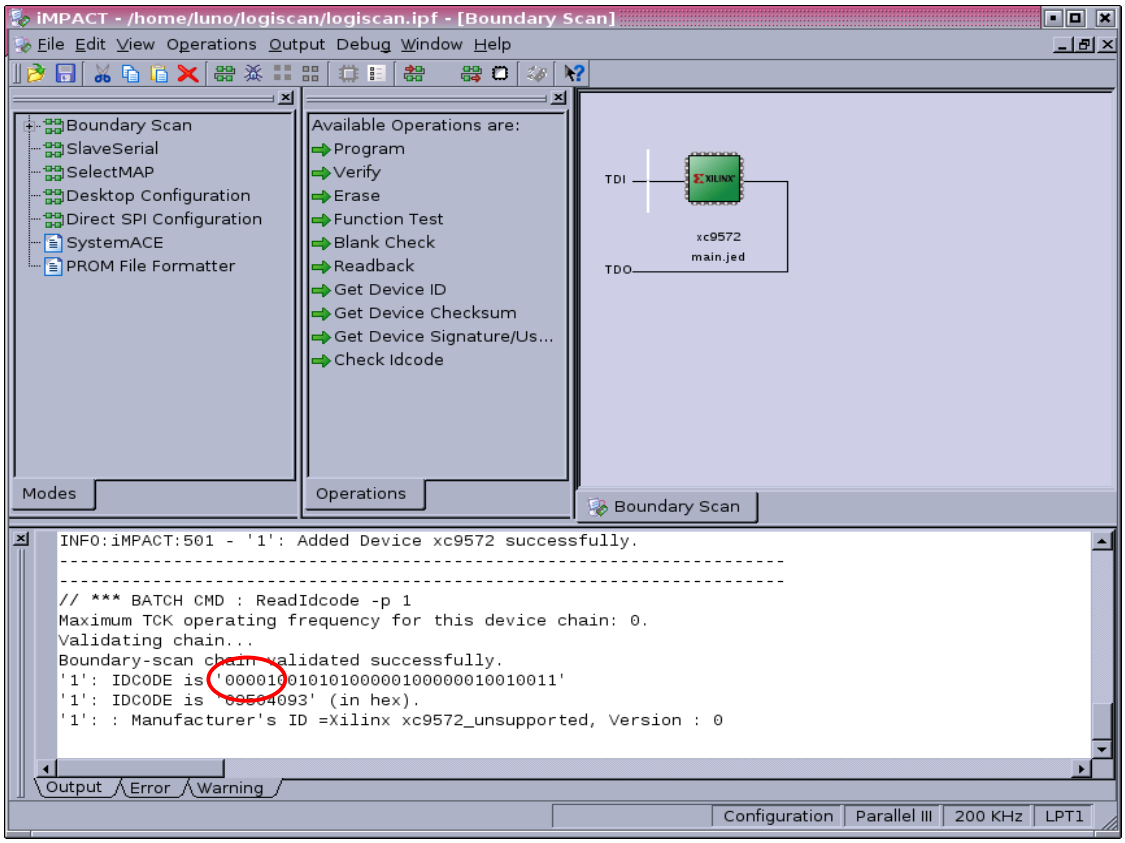
4. Save the file and exit your editor.

5. (Re)assign the configuration file (*.jed) to your target and click on OK when this message comes up:

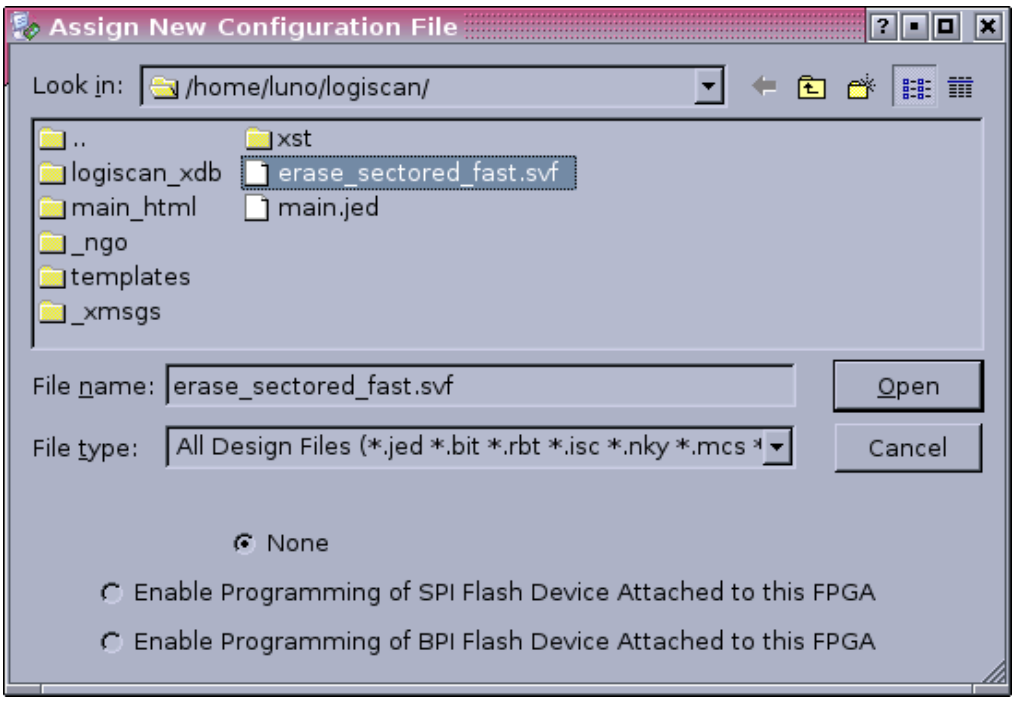


The modified BSDL file also gets reloaded on restart of ISE or Impact.

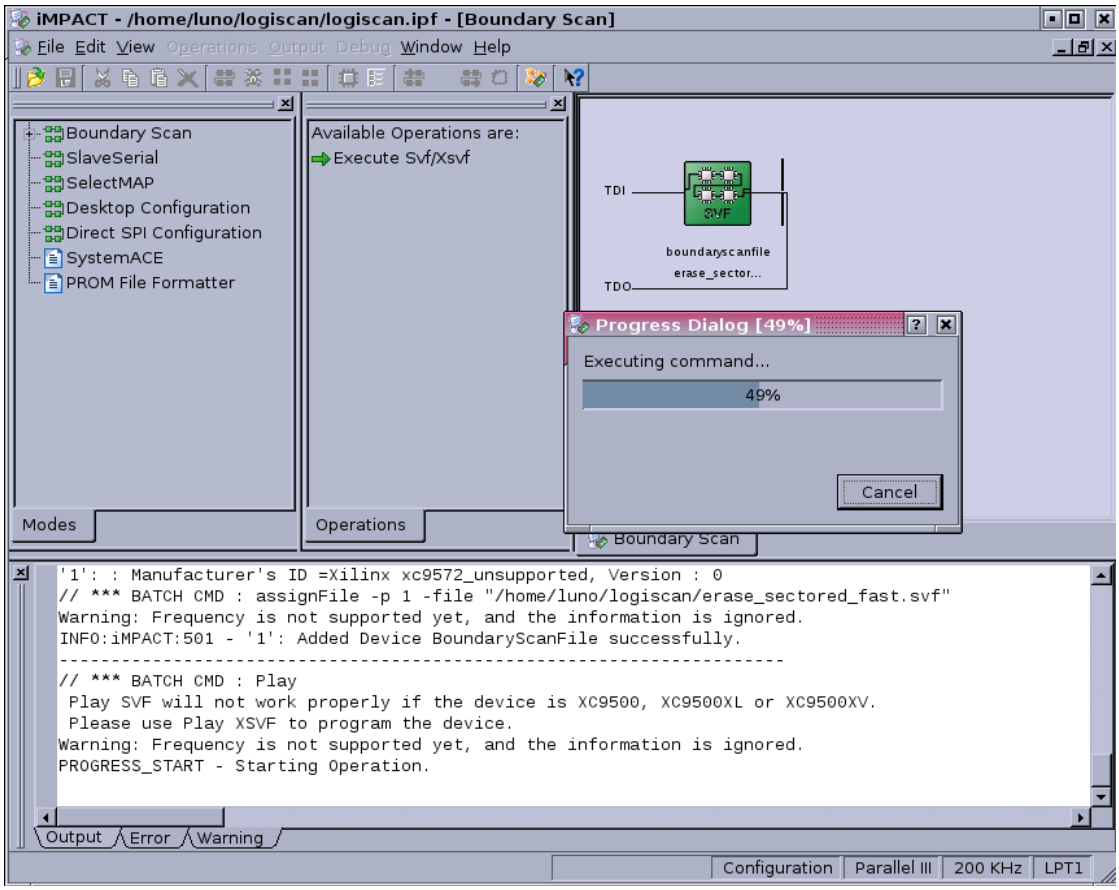
6. Do the ID-CODE check. It passes now since the ID-bits 28 and 29 (X'ed) get not checked any more.

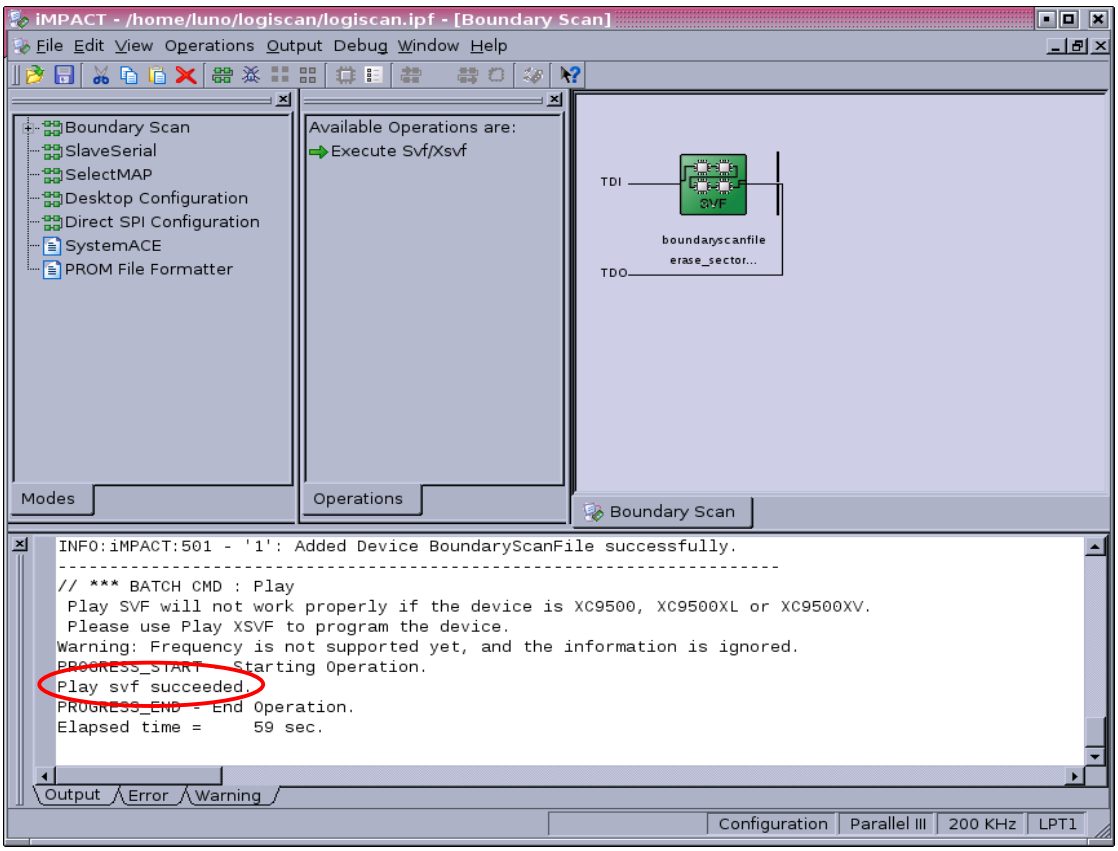


7. Now you need to assign the SVF-file to your target as shown below:



8. Play the SVF and don't care about the warnings.



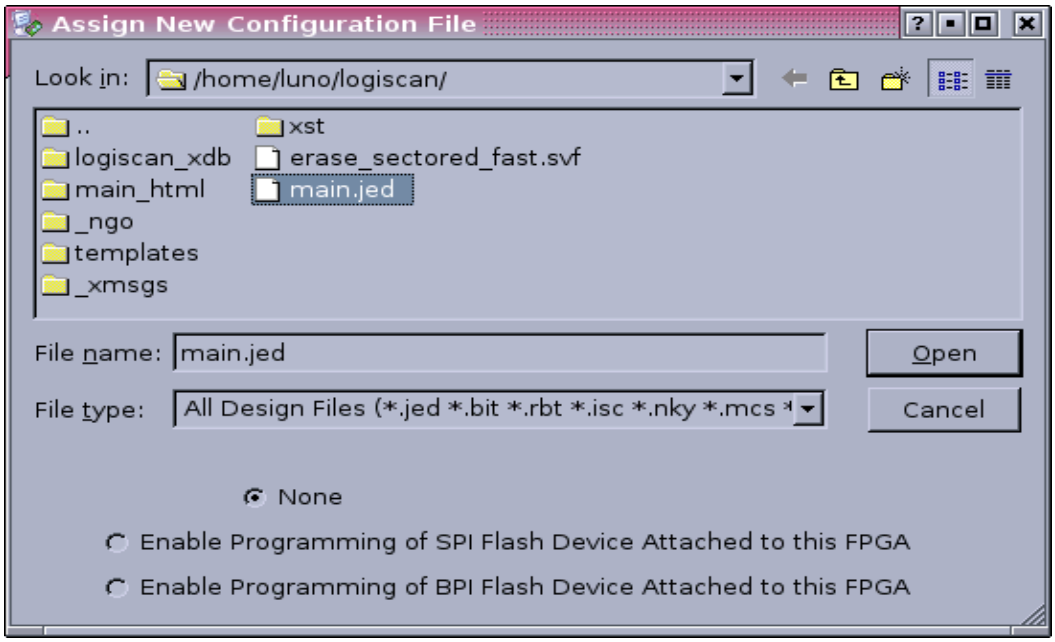


If it fails you should increase the delays written in the SVF file (I reduced them to get it playing as fast as possible.) e.g.:

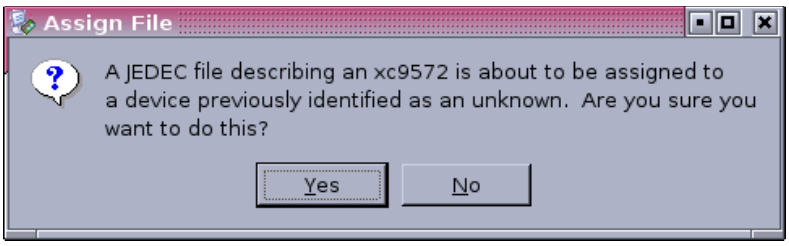
```
RUNTEST 1000000 TCK;
SDR 27 TDI (01c000fe) TDO (00000003) MASK (00000003) ;
```

If it passes the device should be blank.

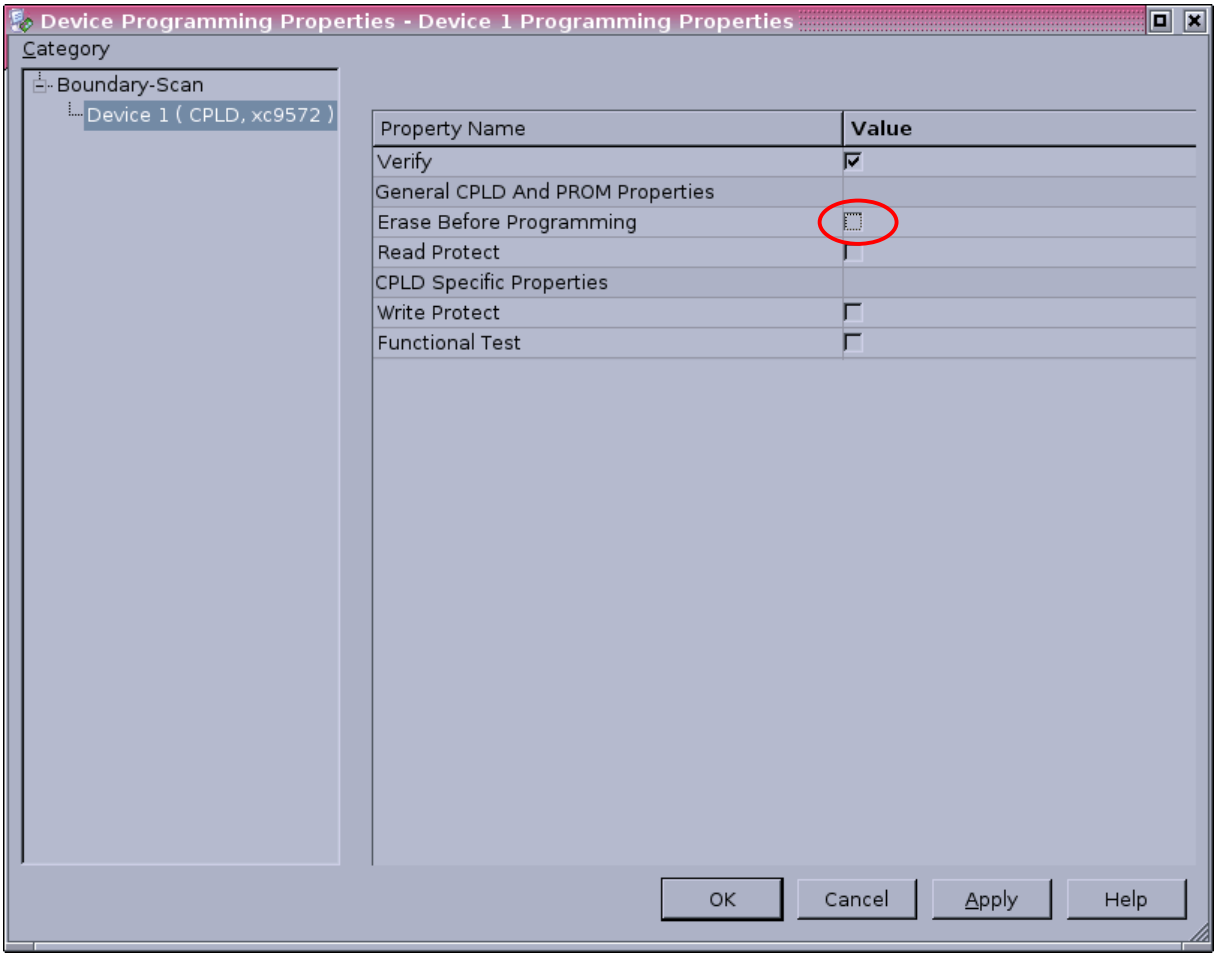
9. Assign your *.jed file to your target.



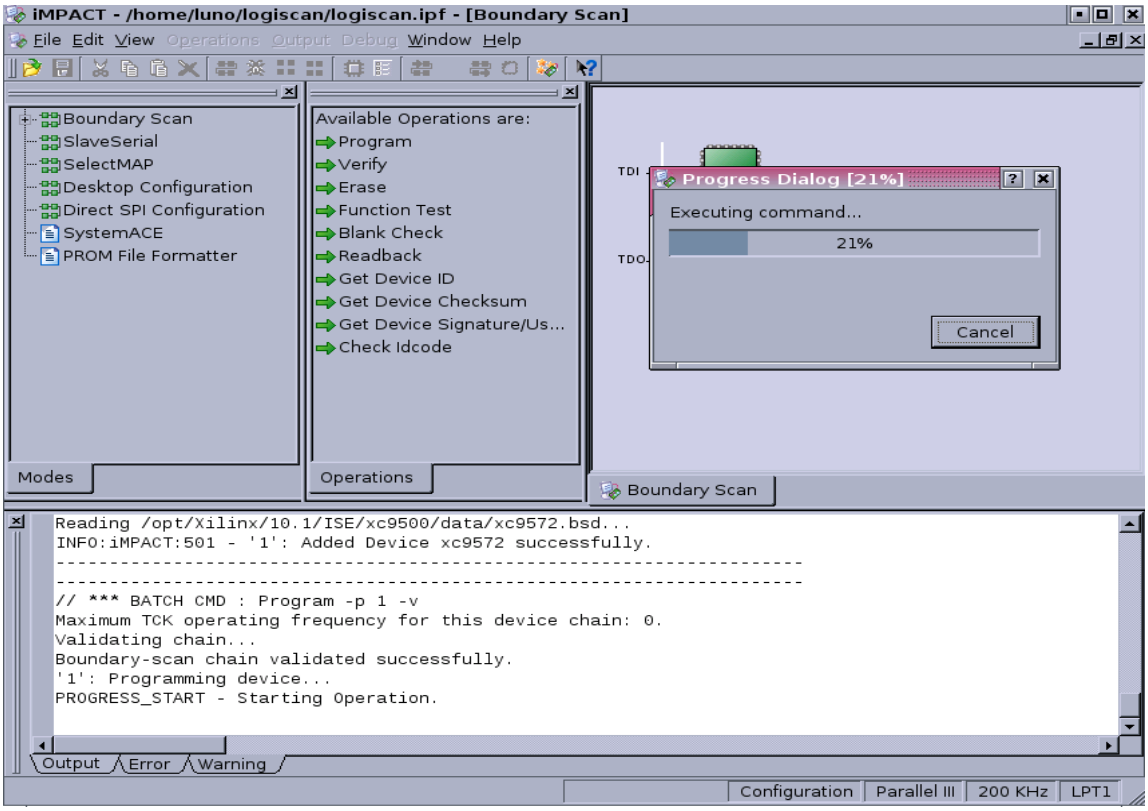
10. Say YES to the warning below:

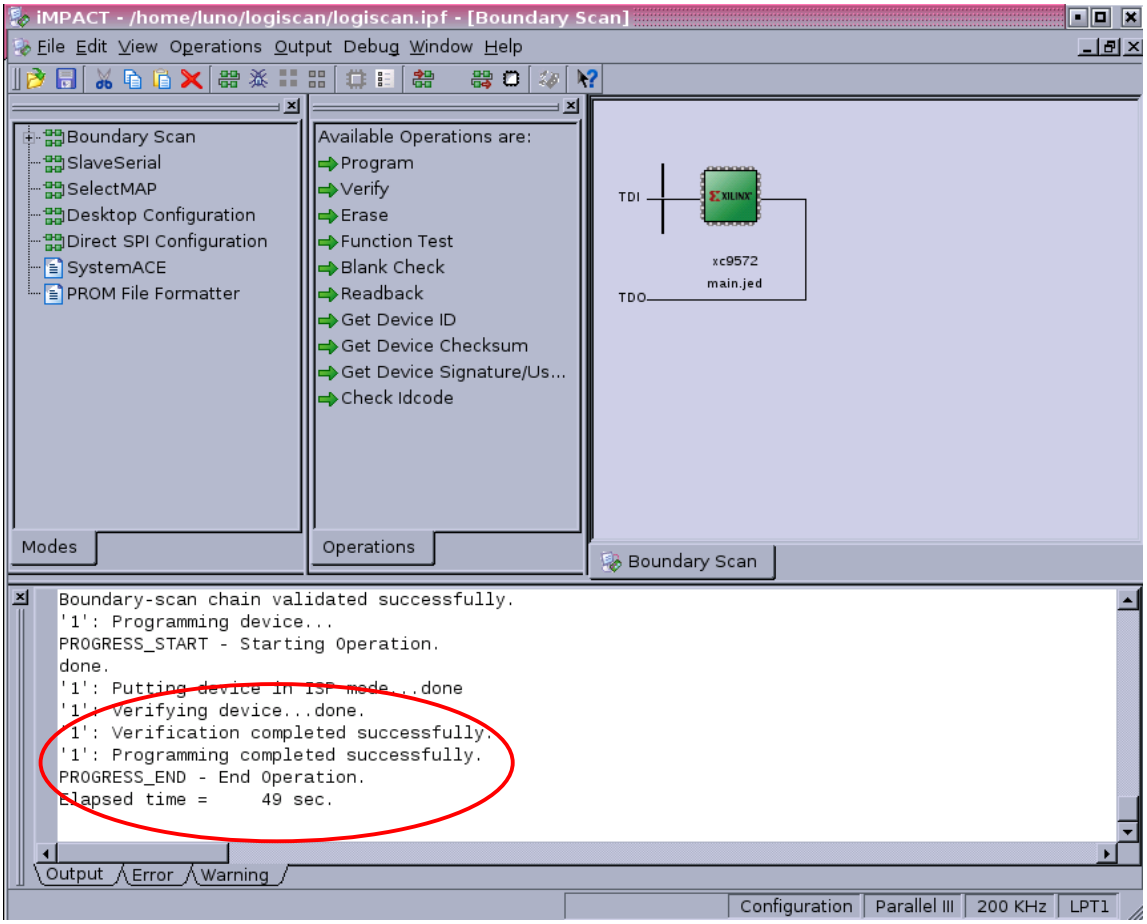


11. Set programming properties so that erasing is **unchecked** (Remember ISE will erroneously try the *bulk erase* algorithm if “Erase Before Programming” is checked.)


Device Programming Properties - Device 1 Programming Properties
Category
Boundary-Scan
Device 1 (CPLD, xc9572)
Property Name
Value
Verify
General CPLD And PROM Properties
Erase Before Programming
Read Protect
CPLD Specific Properties
Write Protect
Functional Test
OK
Cancel
Apply
Help

12. Program your target:





3 Useful Links

- EAGLE - an affordable and very efficient schematics and layout tool at http://www.cadsoftusa.com/

4 Disclaimer

This document is believed to be accurate and reliable. I do not assume responsibility for any errors which may appear in this document. I reserve the right to change it at any time without notice, and do not make any commitment to update the information contained herein.

I appreciate every hint or critics to improve the quality of this document. Please send your feedback to mario.blunk@blunk-electronic.de.

My Boss is a Jewish Carpenter !

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