The Quartus Prime Software Debug and Analysis Tool

Debugging Tools: In-System Sources & Probes

Version	Date	Description
0.0	2016	Preliminary version

In-System Sources & Probes (ISSP)

- View status of up to 512 signals during run-time with *probes* (like LEDs) via JTAG
- Drive and toggle the values of up to 512 signals with *sources* (like switches) via JTAG
- Create multiple instances of IP using IP Catalog
  - Up to 128 instances
- Graphical interface makes it easy to manage large numbers of sources and probes across multiple instances

When to Use Sources & Probes

- No external equipment available or needed
- Logic blocks available for IP instance(s)
- Performing functional debug
- JTAG connection required
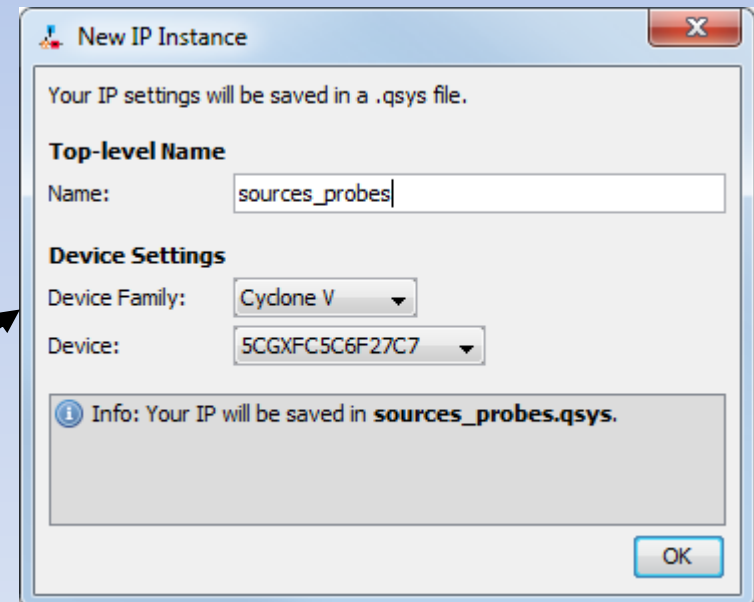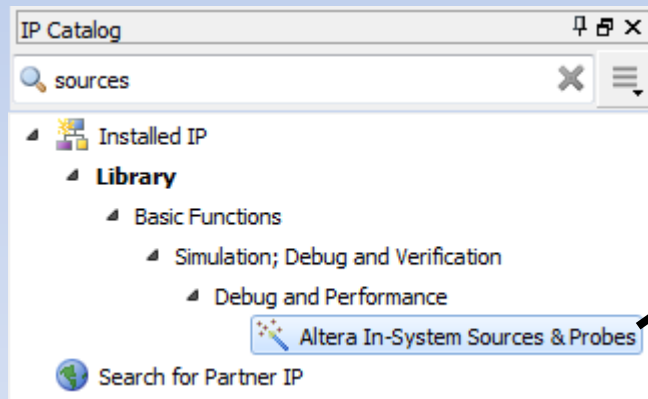
AGSTU
ARBETE GENOM STUDIER

Example Uses

- Virtual push button control of signals in design
- Monitor results of changing design constants
- Extensive Tcl scripting support to create custom automated design control interfaces
- Force trigger conditions for debugging design with the SignalTap II Embedded Logic Analyzer
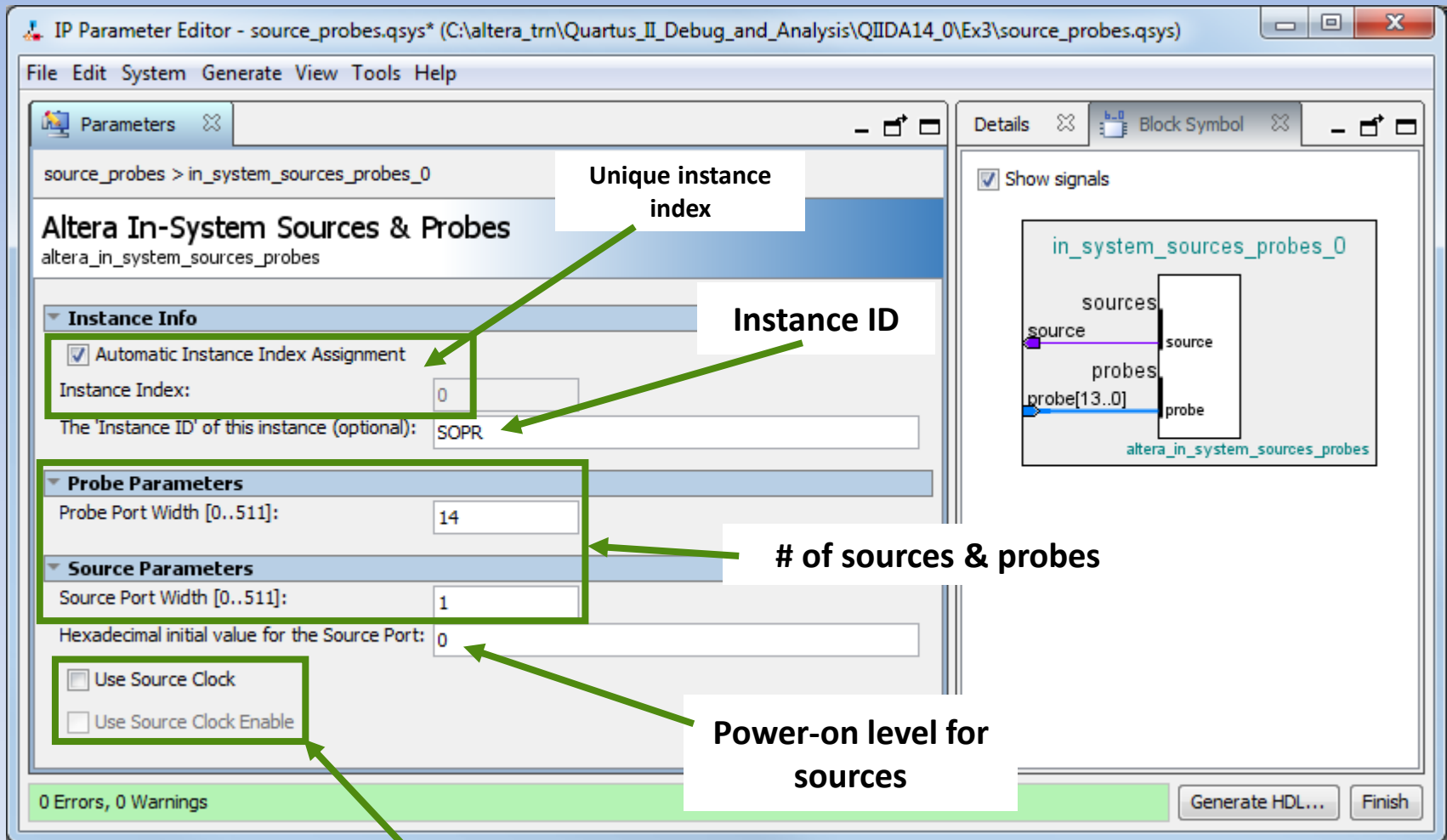
Using In-System Sources & Probes

1. Create In-System Sources & Probes IP instance(s) using the IP Parameter Editor
2. Instantiate in design and compile project
3. Program target device(s)
4. Create and use In-System Sources & Probes Editor (.spf file) to control sources and probes

Create Sources & Probes Megafunction

- In-System Sources and Probes IP (altsource_probe) found in IP Catalog
- Select IP name and target device

IP Parameter Editor for ISSP

In-System Sources & Probes Editor (.spf)

Tools menu → **In-System Sources & Probes Editor**

Sources & Probes Instance Manager

- Select one or more instances
- Click on command

Continuously read

Write source(s)

Read probe(s)

Stop

Refresh source data values

Number of samples in log

Instance Manager: Ready to acquire

Probe read interval
Current interval: 0 samples per second
- Automatic
- Manual 1   s

Event log
Maximum size: 64
☑ Save data to event log

Write source data: Continuously

Index	Instance ID	Status	Sources: 1	Probes: 14	Name
0	SOPR	Unexpected JTA... 1		14	sources_probes:sources_probes_inst|al...

Write once or continuously

AGSTU
ARBETE GENOM STUDIER
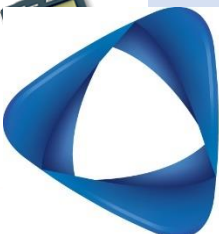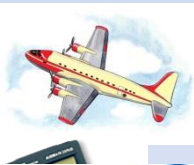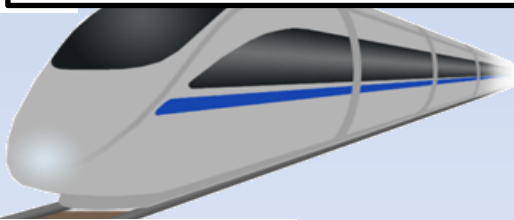
9

Instance Control and Results

- Right-click multiple selected sources or probes to group and set display format
- Click Data column to change source value
    - **Red** number is value to be written (**Write source** button must be clicked)
    - **Black** number is current value
- Click or right-click in Log to zoom in or out
- Log saved in .spf file

P1			ten_seg[1]	1	
P0			ten_seg[0]	0	
S0		reset_n		1	

Click to change source value/level

AGSTU
ARBETE GENOM STUDIER

More Information

- Quartus Prime Handbook: "Design Debugging Using In-System Sources and Probes" (Volume 3)

AGSTU
ARBETE GENOM STUDIER

END

AGSTU
ARBETE GENOM STUDIER