

# Belledonne

## Comparison of Extracted Netlists

SILVACO

### Overview

Belledonne has been designed to compare large extracted netlists in order to quickly find differences. Belledonne can very quickly determine if two extracted netlists correspond using statistics and sophisticated analysis of the parasitics without running long-lasting circuit simulation.

Belledonne is a quality tool. In addition to tasks in the design flow, it can be used to compare different settings of a layout parasitics extraction tool, different versions of the same extraction tool, different formats or even compare different layout extraction tools. The tool is also useful to optimize the settings of LPE flows without completely understanding the extraction algorithms.

### Example Applications

1. Determine accurately the impact on insertion delay due to manual changes in the routing without running long lasting Spice simulation or static timing analysis.
2. Determine the change in capacitive load on all wires moving from one technology to the next.
3. Compare the results of two different parasitic extraction tools applied on the same layout in order to tune their parameters.
4. Make sure that a later version of a layout still complies with electrical rules related to the interconnects.

### Methodology

- Statistics
- Effective resistance between pins
- Effective RC-delay between pins
- Capacitive load on nets

Belledonne is available as a batch-processing tool and with a graphical interface (GUI). The GUI allows to show different types of statistics: histograms or scattering plots.

Belledonne can export results in TSV/CSV file formats.

### Input

- 2 extracted netlists, generated by Star RCXT, Assura QRC/Quantus, Calibre XRC or other
- Formats: DSPF, SPEF, CalibreView, Spice, Spectre
- Belledonne can compare cross-formats

### Output

- GUI based scattering plots or histograms showing differences between the two netlists
- ASCII result files (CSV / TSV)

### Typical Performance

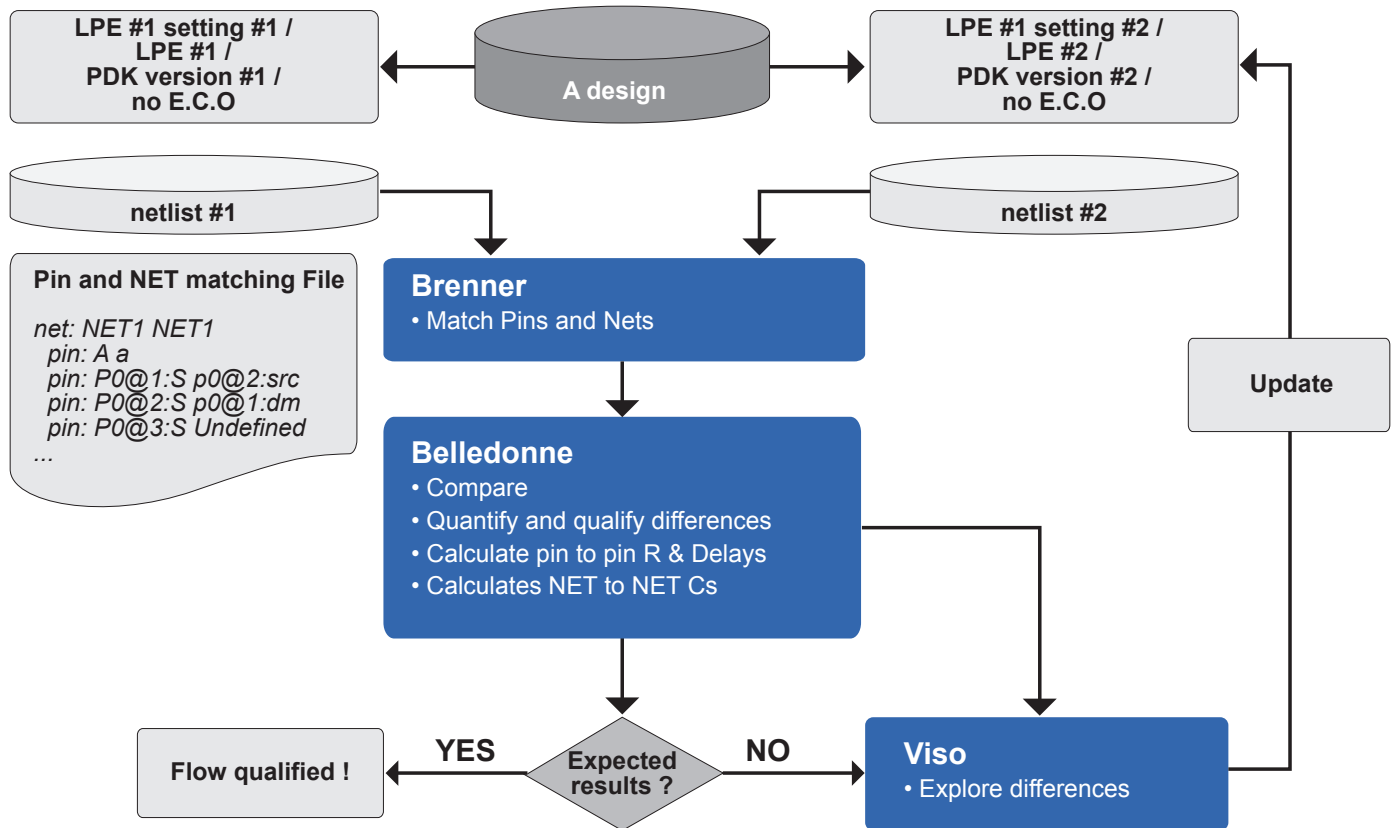
Belledonne delivers spice-accurate results in a fraction of the time of a Spice simulation. The speed-up with respect to SPICE is one or several orders of magnitude.

### Supported Platforms

- Red Hat Enterprise Linux 5, 6: x86, x86\_64
- SuSE Enterprise Linux 11: x86, x86\_64

## LPE Qualification Flow

A straightforward connection has been made between Brenner, Belledonne and Viso to execute the “LPE qualification flow” to quickly detect (Brenner and Belledonne) and explain (Viso) differences between two extracted netlists (see flow below).



LPE qualification flow.