

# PowerDRC Benchmarking Results

## 1. DRC Customer Results

Detailed information on customer designs, evaluation environments and benchmarking results using POLYTEDA PowerDRC.

### Case 1 FAB 1

#### Design

Design type	Test chip (3x DRAM blocks +3x BIST blocks + padding)
Process node	250nm 3 metals
Total device count	4 million
GDS data	15 MB

#### Environment

CPU	32x CPU cores of Xeon E5-2680 2.8GHz (cloud platform)
RAM	32 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

#### Total run time

DRC single-CPU mode	13 min 30 seconds
DRC multi-CPU mode	29 seconds

**Speedup ~27x**

### Case 2 FAB 1

#### Design

Design type	test chip ~13 sq. mm (5x OTP ROM blocks + VPPI + padding)
Process node	130nm 3 metals
Total device count	2 million
GDS data	11 MB

#### Environment

CPU	2x Quad-Core AMD Opteron 2382 2.6 GHz (single host, 2x socket)
RAM	64 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

#### Total run time

DRC single-CPU mode	15 min 33 seconds
DRC multi-CPU mode	2 min 30 seconds

**Speedup ~6.2x**

### Case 3 Customer 1

#### Design

Design type	36x SRAM blocks ~20 sq. mm
Process node	180nm 3 metals
Total device count	16 million
GDS data	16 MB

#### Environment

CPU	32x CPU core of Xeon E5-2680 (cloud platform)
RAM	32 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

#### Total run time

DRC single-CPU mode	<b>26 min</b>
DRC multi-CPU mode	<b>1 min 3 seconds</b>

**Speedup ~26x**

## Case 4 FAB 2

### Design

Design type	ASIC ~20 sq. mm
Process node	90nm 6 metals
Total device count	400 million
GDS data	5 GB

### Environment

CPU	16x CPU of AMD Opteron 8384 2.7GHz (single host, 4x CPU socket )
RAM	114 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

### Total run time

DRC single-CPU mode	<b>14 hours 40 min</b>
DRC Hier + multi-CPU mode	<b>1 hour 7 min</b>

**Speedup ~15.6x**

## Case 5 FAB 2

### Design

Design type	ASIC ~20 sq. mm
Process node	90nm 6 metals
Total device count	400 million
GDS data	5 GB

### Environment

CPU	24x CPU of AMD Opteron 8431 2.4Ghz (single host, 4x CPU socket )
RAM	126 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

### Total run time

DRC single-CPU mode	<b>27 hours 53 min</b>
DRC multi-CPU mode	<b>1 hour 17 min</b>

**Speedup ~21.5x**

## Case 6 Customer 2

### Design

Design type	SIM card ~3 sq. mm
Process node	90 nm EMB.Flash 6 metals
Total device count	n/a
GDS data	150 MB

### Environment

CPU	18x CPU cores of Core 2 Quad Q9400 2.4 GHz (grid, SGE)
RAM	88 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

### Total run time

DRC single-CPU mode	<b>15 min 30 sec</b>
DRC multi-CPU mode	<b>1 min 20 sec</b>

**Speedup ~11.5x**

## 2. LVS Customer Results

Detailed information on customer designs, evaluation environments and benchmarking results using POLYTEDA PowerLVS.

### Case 1 Customer 3

#### Design

Design type	USB 3.0 controller (analog, logic gates, memory cells) 72 sq.mm
Process node	40nm
Total device count	380 million
GDS data	1.5 GB (gzip)
Netlist data	1.8 GB

#### Environment

CPU	Dual-Core Xeon 5160 3.0 GHz (single host)
RAM	128 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 1.7

#### Total run time

LVS extraction (hier mode)	<b>16 hours</b>
LVS comparison (hier mode)	<b>12 hours 30 min</b>

### Case 2 Customer 4

#### Design

Design type	LCD 1280x960 (analog IP and pixel cell array) 55 sq.cm (!)
Process node	4um
Total device count	50 million
GDS data	10 MB
Netlist data	12 MB

#### Environment

CPU	2x Quad-Core AMD Opteron 2382 2.6 GHz (single host, 2x socket)
RAM	64 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.0.1

#### Total run time

LVS extraction (hier mode)	<b>5 min</b>
LVS comparison (hier mode)	<b>1 hour 50 min</b>

### Case 3 FAB 3

#### Design

Design type	Memory 640x512, 287 sq.mm
Process node	600nm
Total device count	3.5 million
GDS data	3 MB
Netlist data	4 MB

#### Environment

CPU	2x Quad-Core AMD Opteron 2382 2.6 GHz (single host, 2x socket)
RAM	64 GB
OS	Linux 64-bit
Product version	PowerDRC/LVS 2.1

#### Total run time

LVS extraction (hier mode)	<b>8 min</b>
LVS comparison (hier mode)	<b>13 min 40 sec</b>