



RAMTERA

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RAMTERA-WP21

Distributed Multi-Corner Timing

Exact equivalence between local and multi-host analysis

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Distributed Multi-Corner Timing: Exact Equivalence Between Local and Multi-Host Analysis

Multi-mode multi-corner analysis multiplies timing runtime by the view count; distributing views across hosts is the standard remedy. The question that matters is not speed but trust: does the distributed answer equal the local one? PRE's acceptance criterion is exact equality, and this paper reports it: every view's worst slack, total negative slack, endpoint count, and violation count from a two-host run reproduces the in-process reference to the last displayed digit.

3 views (two setup corners + hold)	exact distributed = local, all fields	2-way concurrent remote jobs	ssh / queue launcher modes
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The acceptance run

Two RC corners scale wire parasitics by 1.4× and 0.8× under a 0.14 ns clock so that the corners produce distinct, nonzero violations — a test that all-zero slacks cannot fake.

View	Check	Local WNS/TNS	Distributed WNS/TNS
worst-RC corner	setup	−0.0948 / −0.0948	−0.0948 / −0.0948
best-RC corner	setup	−0.0841 / −0.0841	−0.0841 / −0.0841
best-RC corner	hold	0.0000 / 0.0000	0.0000 / 0.0000

Operational model

The user configures hosts (or a batch queue) once; the same timing command then runs distributed, with concurrent remote jobs capped by the configured way count and results collected into the standard per-view table. Launchers are pluggable — a secure-shell command per host or a queue submission — and the regression suite ships a local shim so the distributed path is testable on a laptop, no cluster required.

WHY THE TEST IS STRONG — Per-view corner conditions demonstrably travel to the remote side: if RC scaling were lost in transit, the two setup views could not report different slacks. The distinct −0.0948 and −0.0841 are the proof.

About Ramtera

Ramtera Inc. (Delaware, USA), with R&D at Ramtera Design Automation India Pvt Ltd (Bangalore), builds electronic design automation software for physical verification and physical implementation. LVR is Ramtera's physical verification engine (DRC, LVS, ERC, XOR, parasitic extraction); PRE is Ramtera's physical implementation environment (floorplanning, placement, clock tree synthesis, routing, timing analysis and optimization), built on industry-standard command conventions so existing flow scripts and operator skills transfer directly. The company holds granted patents and registered copyrights covering its engines.

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This document reports measurements from Ramtera's engineering environment (Ubuntu 24.04, GCC 13.3, Tcl 8.6) unless stated otherwise. Product behavior and figures are subject to change; no compatibility, certification, or endorsement by any third party is stated or implied.