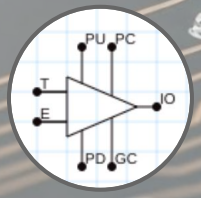
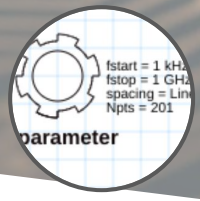
TDR/TDT

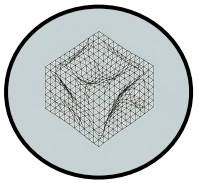
SERDES/IBIS



AC/ S-parameter



Parametric
Statistical
Optimization



synclesis

For more information, including free trial:
info@synclesis.com

© Synclesis Inc. 01/2025

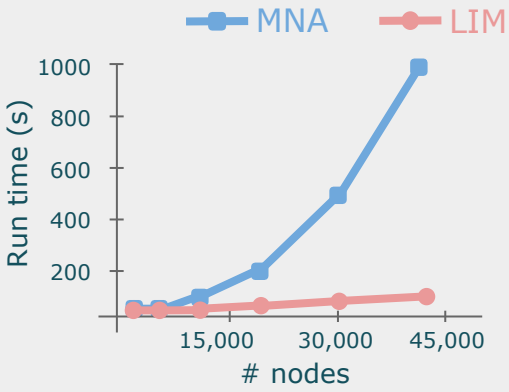
Latency Insertion Method

A revolutionary transient circuit solver

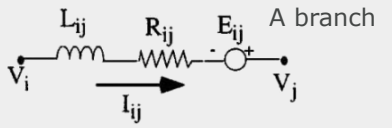
product note

🔗 https://synclesis.com

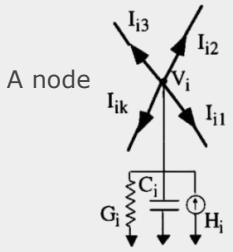
LIM is the first circuit simulator that exhibits linear numerical complexity. LIM's advantage increases dramatically with the size of the network.



LIM classifies networks into ***nodes*** and ***branches*** and does leapfrog updates.

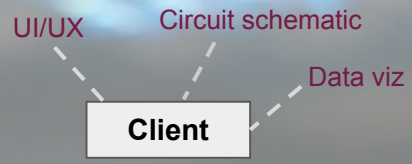


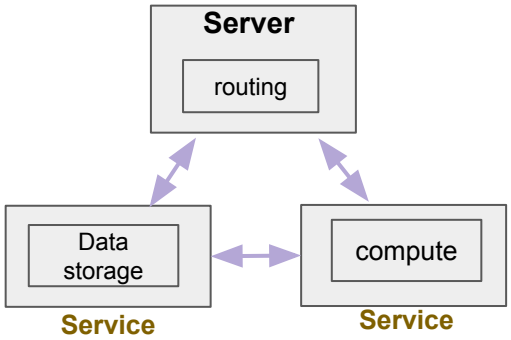
$$I_{ij}^{n+1} = I_{ij}^{n} + \frac{\Delta t}{L_{ij}}\left(V_i^{n+\frac{1}{2}} - V_j^{n+\frac{1}{2}} - R_{ij}I_{ij}^{n} + E_{ij}^{n+\frac{1}{2}}\right)$$

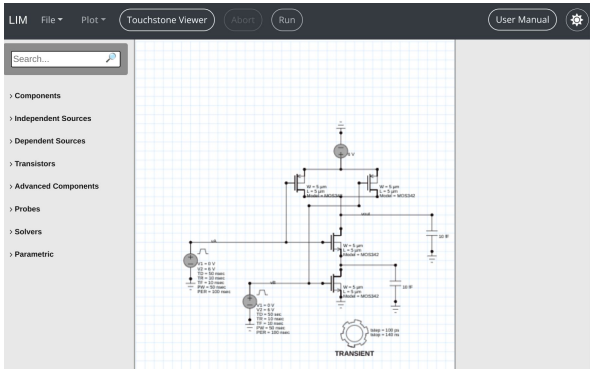


$$V_i^{n+\frac{1}{2}} = V_i^{n-\frac{1}{2}} + \frac{\Delta t}{C_i}\left(-\sum_{k=1}^{M_i} I_{ik}^{n} - G_i V_i^{n-\frac{1}{2}} + H_i^{n}\right)$$

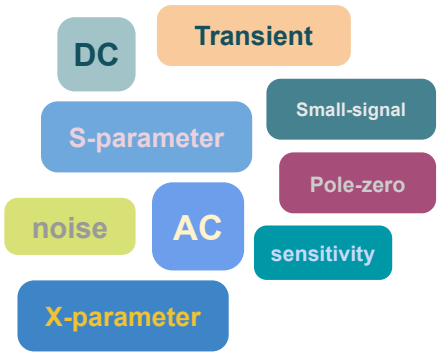
LIM comes with a modern web-based UI and a scalable backend.



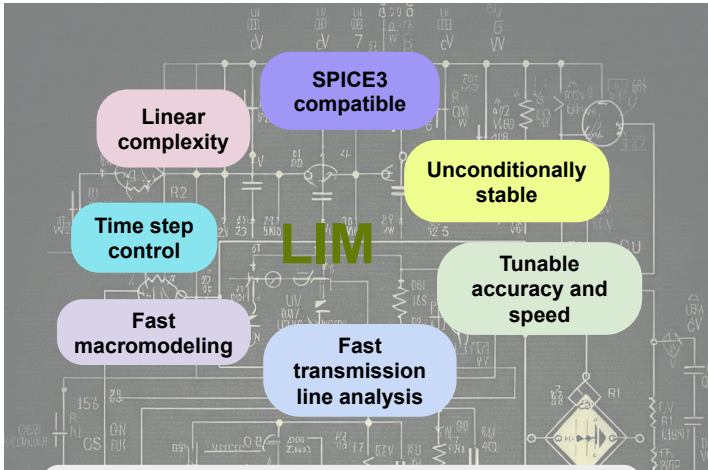




https://designcon2025.synclesis.com



LIM supports various analyses both in time- and frequency-domain by using appropriate excitations to extract information.



Applications

- Power Delivery Networks
- IR Drop Analysis
- Analog/Mixed Signal
- Macromodel Analysis
- IC Verification
- High-Speed Link Design

© Synclesis Inc. 01/2025