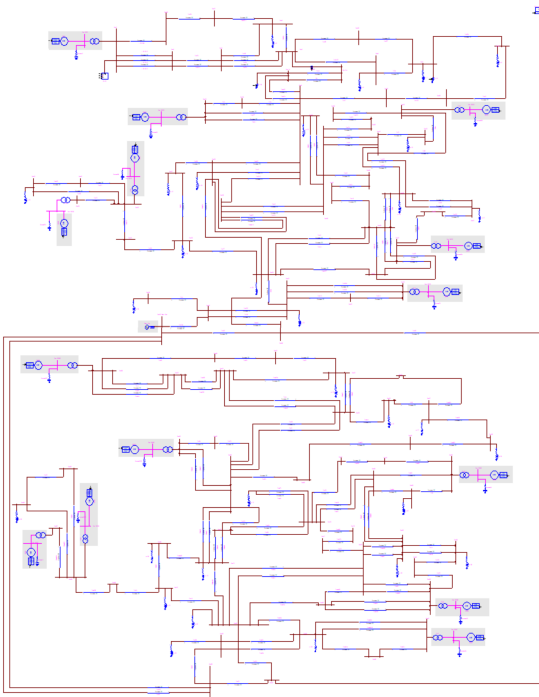


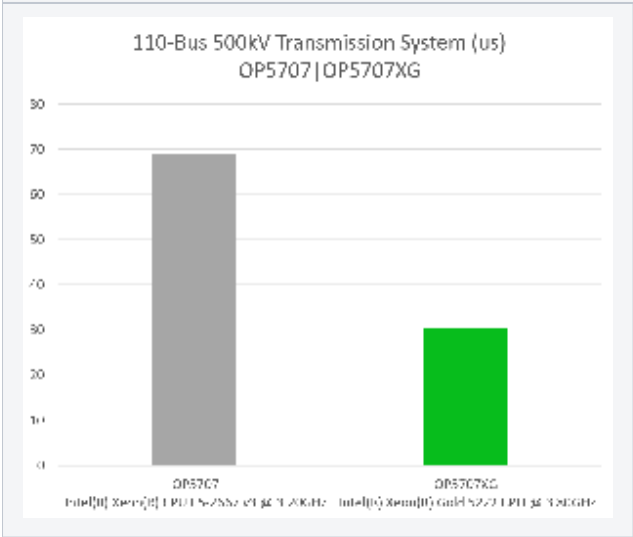
Benchmarks | 110-Bus 500 kV Transmission System

Model name	110-bus 500 kV transmission system
Minimum license required	HXG Max (2 cores)
Highlights	<ul style="list-style-type: none"> • Only simulation tool capable of simulating this network on as few as 1 core at 61 us or 2 cores at 20 us <p>HYPERSIM automatically parallelizes the network into 268 tasks and distributes them on all available cores for maximum speed, e.g. 10 us on 7 cores</p>
Model diagram	
Single-phase nodes	336
Generators (3, synchronous)	14
Transformers (3)	14
Single-circuit lines (3, Bergeron model)	171
RLC (3)	44
Breakers (3) and faults (4)	2 + 1 = 3
Hardware	<p>OP5707XG</p> <ul style="list-style-type: none"> • Motherboard: SuperMicro X11DPL-i • Processor: Intel(R) Xeon(R) Gold 5222 CPU @ 3.80GHz; 8 cores • RAM: 32 GB
Software	<ul style="list-style-type: none"> • Platform: HYPERSIM • Compiler: Intel 2019 (19.03.199)

Results 1 core	<ul style="list-style-type: none"> • Number of core(s): 1 • Minimum time-step: 61 us * • Average execution time: 53.4 us
Results 2 cores	<ul style="list-style-type: none"> • Number of core(s): 2 • Minimum time-step: 20 us * • Total average execution time (sum on all cores): 30.6 us
Results 7 cores	<ul style="list-style-type: none"> • Number of core(s): 7 • Minimum time-step: 10 us * • Total average execution time (sum on all cores): 26.2 us <p>* Performance under transient conditions varying considerably depending on the study type, this benchmark measures the minimum achievable time-step without overruns in steady-state conditions. A rule of thumb is to consider 10 to 20 % buffer time for calculations under transient conditions.</p>

Benchmark

Performance comparison between new (OP5707XG) and previous (OP5700) hardware generations



126%
Speed Increase!