Lenovo ThinkEdge SE455 V3 Open RAN Performance Results

Power efficiency and core performance validated by 3rd party testing proves unparalleled TCO

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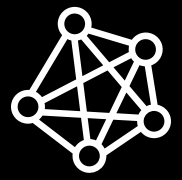
Edge-Optimized Lenovo ThinkEdge SE455 V3 Power Consumption and CPU Performance Testing



(Open) Radio Access Network (RAN) software vendors conducted rigorous testing on the SE455 V3 to evaluate its power savings and performance capabilities.

The testing process included comprehensive assessments conducted by verified third-party communication services providers specifically focusing on Open RAN functionality, power consumption and core performance.

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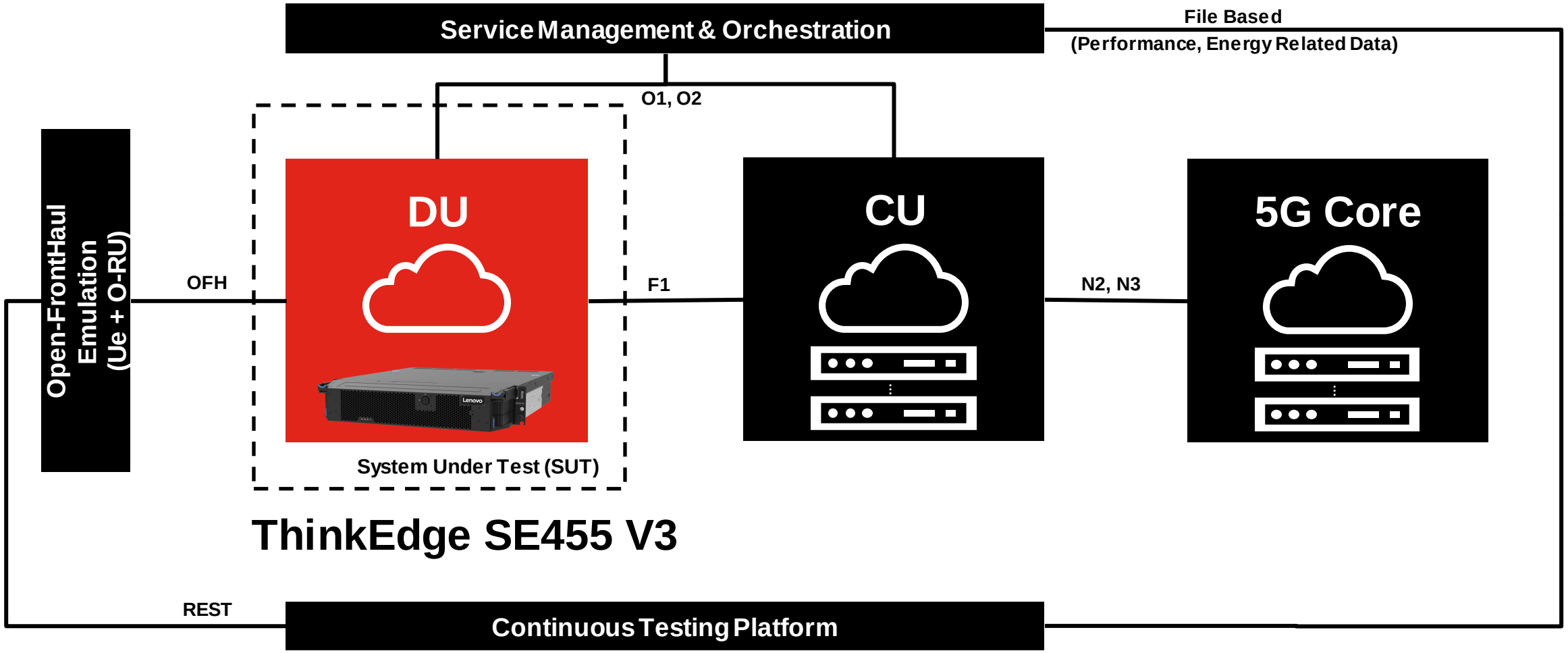
Testing Setup for DU Performance and Energy Efficiency



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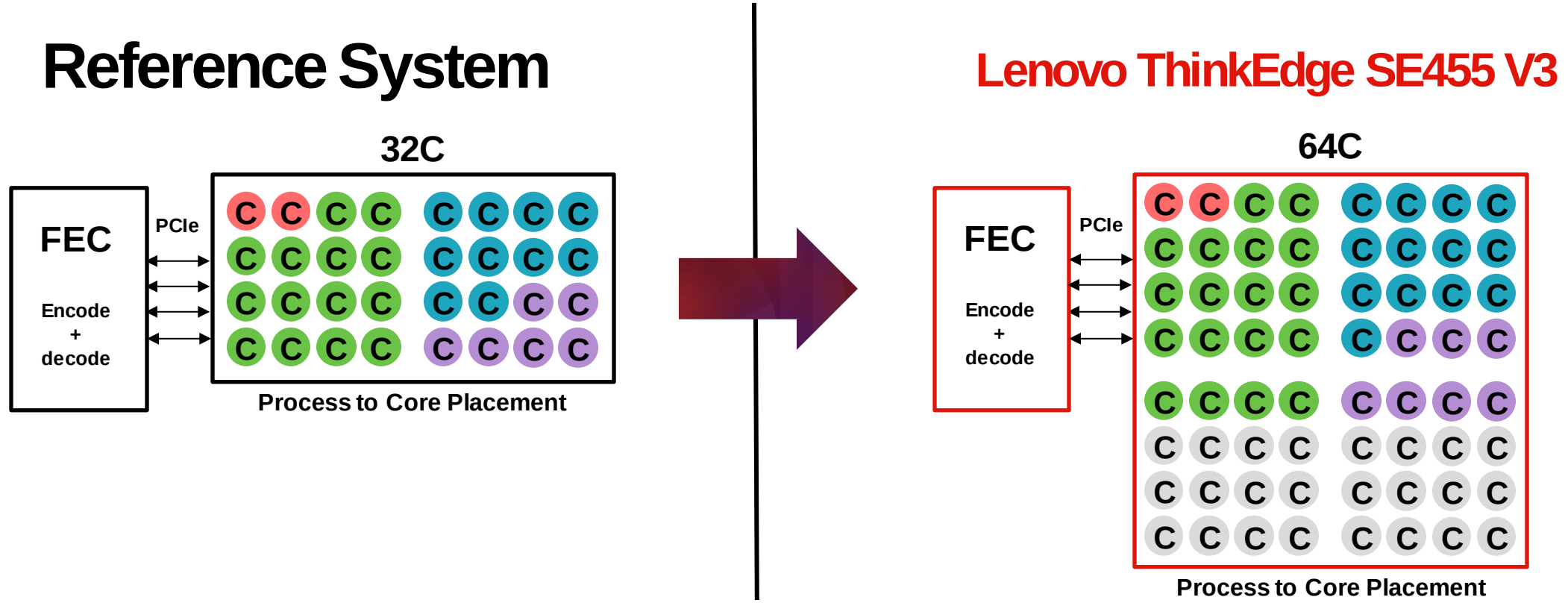
CPU Core Placement for Performance Test

- Testing performed with 2.5GHz CPU clock frequencies on both platforms to achieve a baseline.
- Remaining system elements kept similar to avoid non-CPU related bottlenecks.



CPU Core Allocation

C Linux OS C L1 PHY C L2 Proc C L3 Proc C Unused

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Best in Class Energy Efficiency for Telco Workloads at Edge[1]

Deploy Multiple DUs or All User Plane Functions in a Single Server [2]

↑ 45%

Greater CPU Performance

per socket for complex L1-L2
Radio Access Network (RAN) computations

↑ 89%

Higher Thread Performance

or every 1 watt consumed

↑ 62%

Energy Efficient

in power consumption per thread

↓ 52%

Less Power Consumption

for the same performance under
busy hour load

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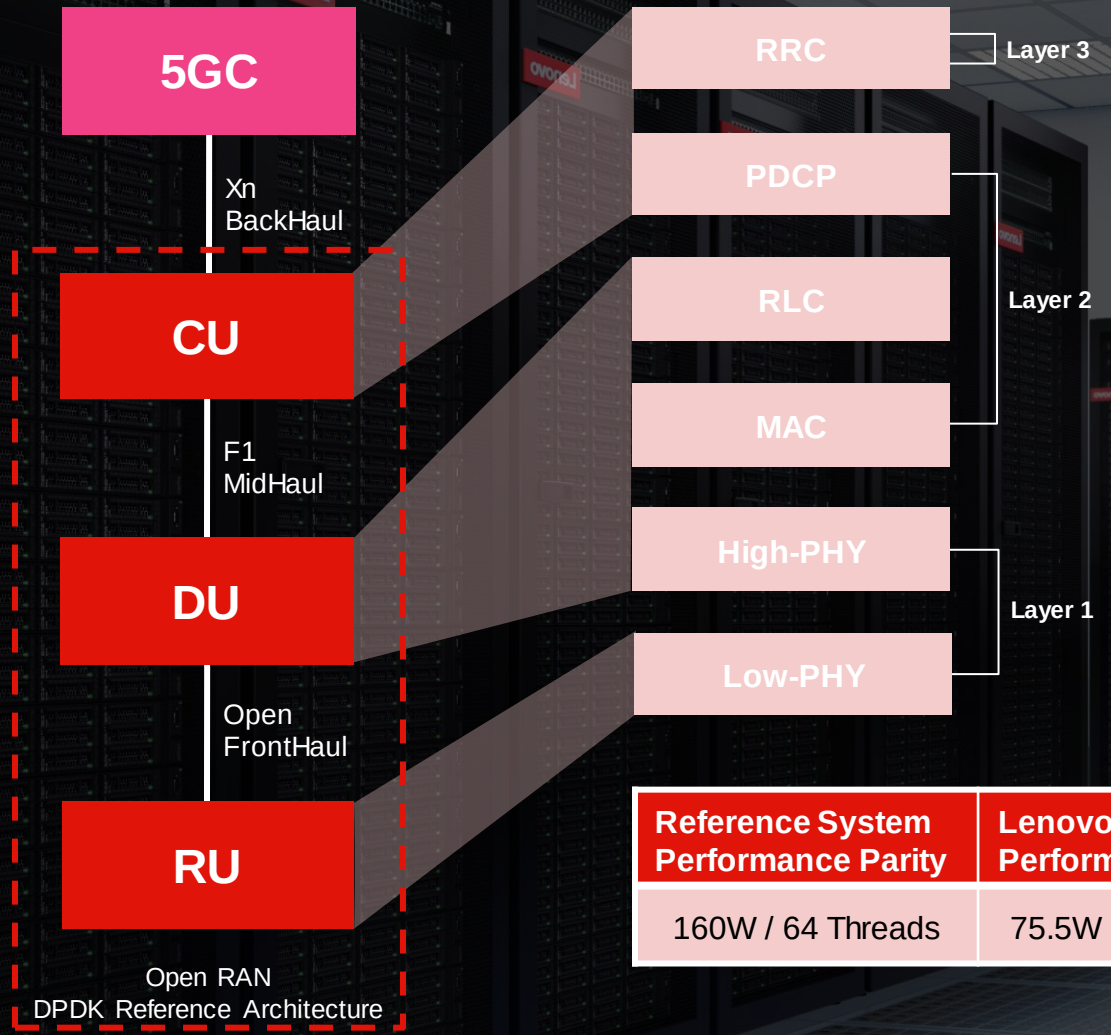
[1]Tested and benchmarked against up-to-date GPPs widely used in Telco RAN workloads
[2]Further subject to software vendor dimensioning study

Lenovo ThinkEdge SE455 V3
Reference Architecture & Testing Results



DU Service Layer	Reference System			Lenovo SE455 V3			Perf./Thread per Watt Delta
	Perf./Thread	Watts per Thread	Perf/Thread per Watt	Perf./Thread vs. Reference	Watts per Thread	Perf/Thread per Watt vs Reference	
vDU FDD	1.0	2.5	0.4	0.72	0.95	0.758	+0.358
vDU TDD	1.0	2.5	0.4	0.70	0.95	0.734	+0.334
L2	1.0	2.5	0.4	0.75	0.95	0.789	+0.389
L1 FDD	1.0	2.5	0.4	0.62	0.95	0.653	+0.253
L1 TDD	1.0	2.5	0.4	0.62	0.95	0.653	+0.253

Reference System Performance Parity	Lenovo SE455 V3 Performance Parity	# Threads Required for Perf. Parity	Power Optimization	Power Reduction, SE455 V3/Reference
160W / 64 Threads	75.5W / 79 Threads	+15	-84.5W	52%

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Unparalleled Power at the Edge

Key Findings:

- Lenovo ThinkEdge SE455 V3 is capable of CPU frequency overclocking without killing power efficiency –mainly linear increase
- There still exists room for performance improvement with platform & compiler optimization (DPDK distributions mostly tuned for reference system)
- Lenovo ThinkEdge SE455 V3 performs even better in upper layers L3 and above, hence achieves greater potential for edge workloads as CU, UPF or other content, application services
- Longer term, FP16/FP8 roadmap and other accelerator architecture revisions subject to even better results
- It is further possible to co-locate multiple DUs or other services CU, UPF, content server, etc. due to great number of cores/threads per server from the Lenovo ThinkEdge SE455 V3

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Smarter technology for all

Lenovo

Lenovo servers voted #1

9 Years in a row for reliability

thanks.