KOVE™

Kove:SDM™

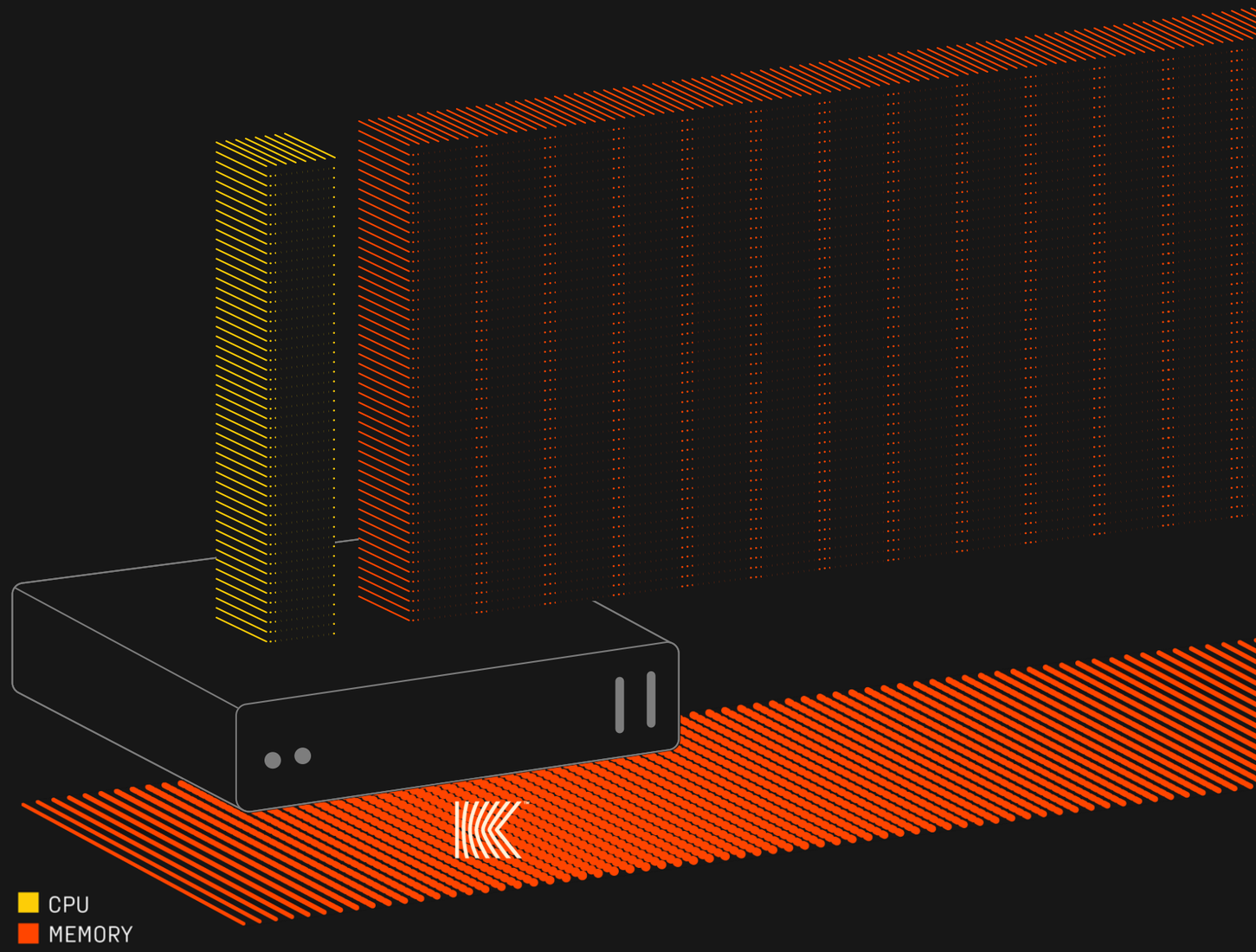
—

Real Memory Software-Defined

KOVE:SDM™

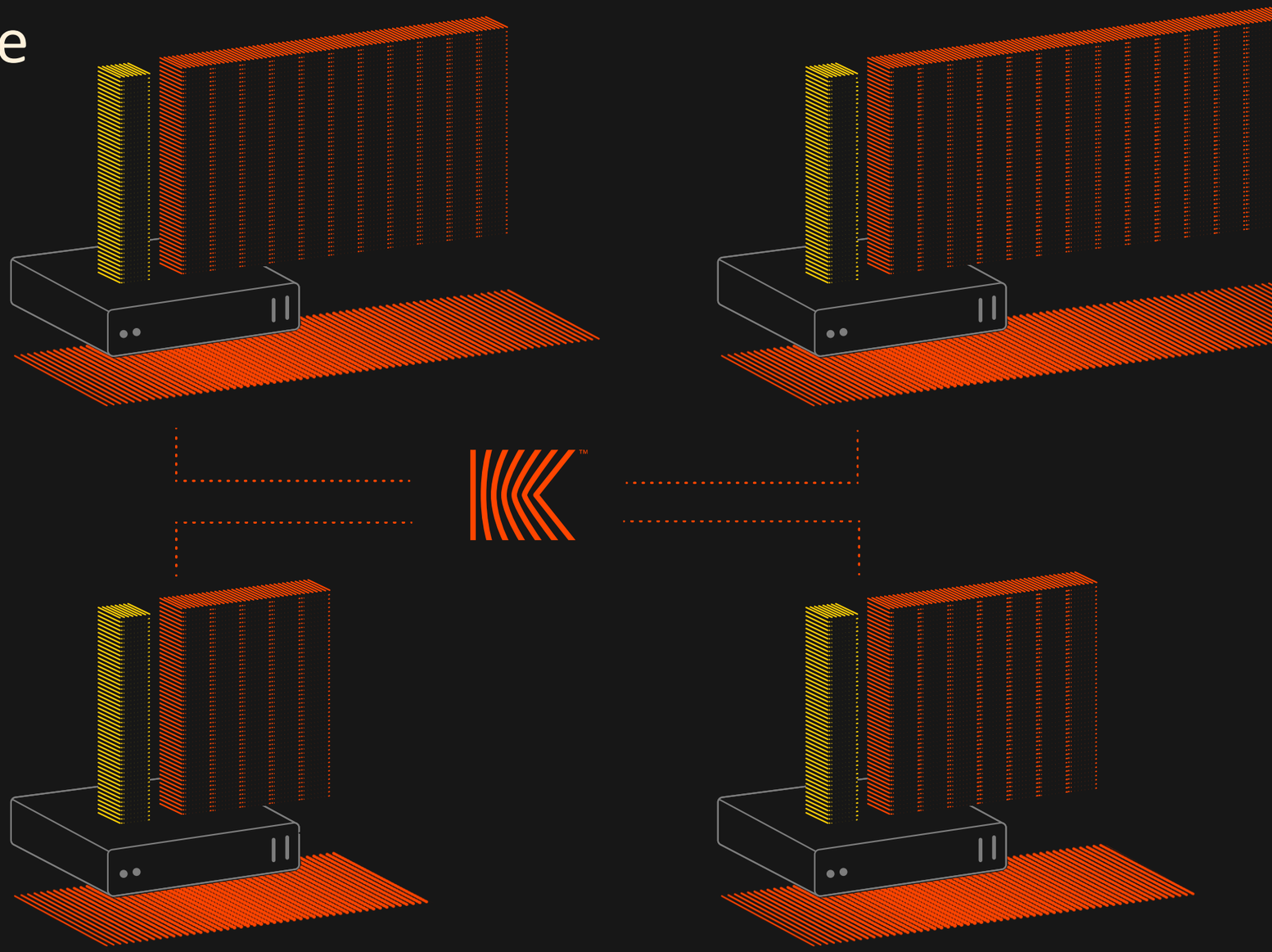
Unlimited server memory with Kove:SDM™

Kove:SDM™ pools memory across the data center with no physical limit.



Memory pools go beyond the memory wall

Servers receive disaggregated memory with local memory performance.



“What’s the latency?”

Kove:SDM™ solves the latency problem across the data center.

Kove:SDM™ delivers local performance from over 150m away

Stress-NG Workload Results

Stress-NG Workload Summary [3200 MHz]

Stressor	Performance						Comparison						Powersave					
							Without v. With Kove											
CPU	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle						
Node A	-5.75%	0.17%	-0.67%	0.80%	-0.06%	-0.84%	-5.62%	0.33%	-0.42%	0.16%	-0.59%	-0.73%						
B	-6.11%	-0.49%	-1.15%	0.04%	-0.62%	-0.65%	-6.00%	-0.24%	-1.24%	-0.39%	-1.40%	-1.01%						
C	-5.53%	0.45%	-0.05%	0.89%	0.38%	-0.51%	-5.37%	0.21%	-0.06%	0.06%	-0.21%	-0.28%						
% Improvement	-5.80%	0.04%	-0.63%	0.58%	-0.10%	-0.67%	-5.66%	0.10%	-0.58%	-0.06%	-0.74%	-0.67%						
MEMCPY																		
Node A	85.58%	-0.19%	1.62%	0.54%	2.23%	1.81%	102.06%	-0.03%	10.63%	-0.23%	10.41%	10.66%						
B	90.42%	-0.03%	3.82%	0.60%	4.41%	3.86%	97.77%	-0.13%	8.54%	-0.19%	8.23%	8.68%						
C	89.57%	0.64%	3.16%	0.98%	3.60%	2.52%	100.05%	0.00%	9.80%	0.00%	9.63%	9.79%						
% Improvement	88.52%	0.14%	2.87%	0.71%	3.41%	2.73%	99.96%	-0.05%	9.65%	-0.14%	9.42%	9.71%						
Without Kove																		
CPU	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle						
Node A	12,664,274	34,609,152,767,922	57,411,500,014,404	57.2	94.8	1.7	3,503,401	8,903,280,444,084	15,791,883,535,932	14.7	26.1	1.8						
B	12,872,638	35,031,216,439,050	58,391,821,530,114	57.8	96.4	1.7	3,564,641	8,951,892,331,806	16,082,376,078,774	14.8	26.6	1.8						
C	12,999,677	35,299,596,948,822	58,916,269,812,594	58.3	97.4	1.7	3,586,105	8,953,770,174,786	16,122,655,615,476	14.8	26.6	1.8						
Average	12,845,530	34,979,988,718,598	58,239,863,785,704	57.8	96.2	1.7	3,551,382	8,936,314,316,892	15,998,971,743,394	14.8	26.4	1.8						
MEMCPY																		
Node A	111,362	1,806,851,787,646	5,552,138,094,325	3.0	9.2	3.1	28,330	464,611,108,984	1,404,168,748,202	0.8	2.3	3.0						
B	112,756	1,815,774,706,718	5,641,868,762,309	3.0	9.3	3.1	29,440	466,051,460,177	1,456,154,839,642	0.8	2.4	3.1						
C	113,725	1,825,004,093,302	5,704,627,108,369	3.0	9.4	3.1	29,642	466,676,873,637	1,467,047,306,536	0.8	2.4	3.1						
Average	112,614	1,815,876,862,555	5,632,877,988,334	3.0	9.3	3.1	29,137	465,779,814,266	1,442,456,964,793	0.8	2.4	3.1						
With Kove																		
CPU	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle	bogo ops	CPU Cycles	Instructions	CPU Cycles (B/Sec)	Instructions (B/Sec)	Instr. per cycle						
Node A	11,936,343	34,668,597,849,336	57,025,422,015,504	57.6	94.8	1.6	3,306,421	8,932,855,120,591	15,724,972,434,562	14.7	25.9	1.8						
B	12,085,723	34,857,865,423,598	57,717,661,541,037	57.9	95.8	1.7	3,350,935	8,930,584,250,935	15,882,457,944,607	14.7	26.2	1.8						
C	12,281,149	35,460,201,827,715	58,885,110,980,853	58.9	97.7	1.7	3,393,687	8,972,961,297,573	16,113,027,506,534	14.8	26.6	1.8						
Average	12,101,072	34,995,555,033,550	57,876,064,845,798	58.1	96.1	1.7	3,350,348	8,945,466,889,699	15,906,819,295,234	14.7	26.2	1.8						
MEMCPY																		
Node A	206,663	1,803,408,518,772	5,642,031,212,531	3.0	9.4	3.1	57,243	464,491,007,003	1,553,373,148,288	0.8	2.6	3.3						
B	214,714	1,815,143,975,303	5,857,498,125,219	3.0	9.7	3.2	58,223	465,467,607,900	1,580,474,429,593	0.8	2.6	3.4						
C	215,589	1,836,621,896,026	5,884,925,057,105	3.0	9.8	3.2	59,299	466,685,221,123	1,610,789,589,345	0.8	2.7	3.5						
Average	212,322	1,818,391,463,367	5,794,818,131,619	3.0	9.6	3.2	58,255	465,547,945,342	1,581,545,722,409	0.8	2.6	3.4						

Stress-NG Workload Comparison

Stress-NG Workload Summary [3200 MHz]												
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CPU	**bogo ops**	**CPU Cycles**	**Instructions**	**CPU Cycles (B/Sec)**	**Instructions (B/Sec)**	**Instr. per cycle**	**bogo ops**	**CPU Cycles**	**Instructions**	**CPU Cycles (B/Sec)**	**Instructions (B/Sec)**	**Instr. per cycle**
Node A	**-5.75%**	0.17%	-0.67%	0.80%	-0.06%	-0.84%	-5.62%	0.33%	-0.42%	0.16%	-0.59%	-0.73%
B	-6.11%	-0.49%	-1.15%	0.04%	-0.62%	-0.65%	-6.00%	-0.24%	-1.24%	-0.39%	-1.40%	-1.01%
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% Improvement	**-5.80%**	**0.04%**	**-0.63%**	**0.58%**	**-0.10%**	**-0.67%**	**-5.66%**	**0.10%**	**-0.58%**	**-0.06%**	**-0.74%**	**-0.67%**
MEMCPY												
Node A	85.58%	-0.19%	1.62%	0.54%	2.23%	1.81%	102.06%	-0.03%	10.63%	-0.23%	10.41%	10.66%
B	90.42%	-0.03%	3.82%	0.60%	4.41%	3.86%	97.77%	-0.13%	8.54%	-0.19%	8.23%	8.68%
C	89.57%	0.64%	3.16%	0.98%	3.60%	2.52%	100.05%	0.00%	9.80%	0.00%	9.63%	9.79%
% Improvement	**88.52%**	**0.14%**	**2.87%**	**0.71%**	**3.41%**	**2.73%**	**99.96%**	**-0.05%**	**9.65%**	**-0.14%**	**9.42%**	**9.71%**

Red Hat Blog

Ultra-low Power Architecture for the Network Edge

https://www.redhat.com/en/blog/ultra-low-power-architecture-network-edge

Supermicro Solution Brief

Supermicro and Kove Empower Large In-Memory Applications Running on Red Hat OpenShift

https://www.supermicro.com/solutions/Solution_Brief_KoveSDM.pdf

Kove:SDM™ Memory Tower

Fully integrated software-hardware system available
powered by Kove, Red Hat, Viking-Sanmina and Computacenter

Add more towers to create a larger memory pool

SCALE TO MEET YOUR NEEDS

3 x KOVE:SDM™ MEMORY TOWER 39i
117 TiB MEMORY POOL

5 x KOVE:SDM™ MEMORY TOWER 39i
195 TiB MEMORY POOL

10 x KOVE:SDM™ MEMORY TOWER 39i
390 TiB MEMORY POOL

100 x KOVE:SDM™ MEMORY TOWER 39i
3.8 PiB MEMORY POOL

KOVE + Red Hat + VIKING Enterprise Solutions A Sanmina Division + Computacenter

Thank You

For additional information please reach out to sales@kove.com