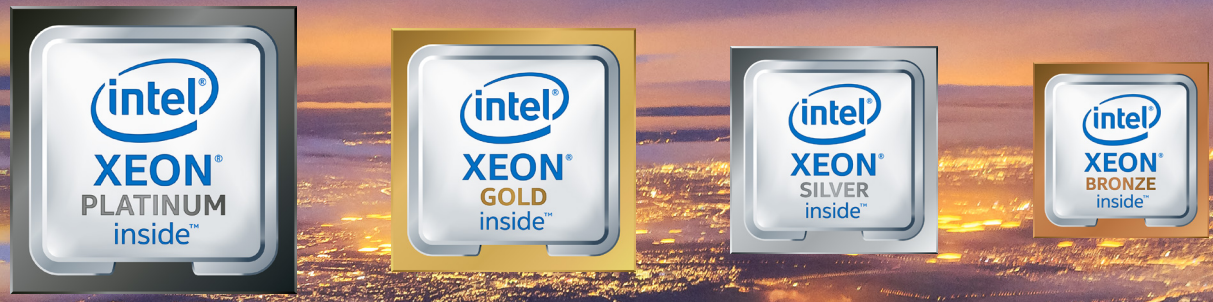
# ACCELERATE DATA-CENTRIC BUSINESS TRANSFORMATION

2nd Gen Intel® Xeon®
Scalable processors
deliver performance,
agility and scalability




## ACCELERATE INSIGHTS

Experience up to **30x AI performance**[1] versus prior generation with new, performance-optimized processor and platform features that let you discover more insights, faster.

## SCALE PERFORMANCE

Platform-wide performance improvements with:

- Up to **112 processor cores** in a 2-socket system
- Up to **2x memory bandwidth**[2] versus prior generation
- Up to **3.5x more VMs**[3] per server (5-year refresh improvement)
- Supports revolutionary **Intel® Optane™ DC Persistent Memory**

## IMPROVE SECURITY

Built-in data protection features helps better secure platforms and data. Provides trusted service delivery and accelerated encryption.

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**1 Up to 30X AI performance with Intel® Deep Learning Boost (Intel DL Boost)** compared to Intel® Xeon® Platinum 8180 processor (July 2017). Tested by Intel as of 2/26/2019. Platform: Dragon rock 2 socket Intel® Xeon® Platinum 9282(56 cores per socket), HT ON, turbo ON, Total Memory 768 GB (24 slots/ 32 GB/ 2933 MHz), BIOS: SE5C620.86B.0D.01.0241.112020180249, Centos* 7 Kernel 3.10.0-957.5.1.el7.x86_64, Deep Learning Framework: Intel® Optimization for Caffe* version: https://github.com/intel/caffe d554cbf1, ICC 2019.2.187, MKL DNN version: v0.17 (commit hash: 830a10059a018cd-2634d94195140cf2d8790a75a), model:https://github.com/intel/caffe/blob/master/models/intel_optimized_models/int8/resnet50_int8_full_conv.prototxt, BS=64, No datalayer DummyData: 3x224x224, 56 instance/2 socket, Datatype: INT8 vs Tested by Intel as of July 11th 2017: 2S Intel® Xeon® Platinum 8180 cpu @ 2.50GHz (28 cores), HT disabled, turbo disabled, scaling governor set to "performance" via intel_pstate driver, 384GB DDR4-2666 ECC RAM. CentOS* Linux release 7.3.1611 (Core), Linux kernel* 3.10.0-514.10.2.el7.x86_64. SSD: Intel® SSD DC S3700 Series (800GB, 2.5in SATA 6Gb/s, 25nm, MLC). Performance measured with: Environment variables: KMP_AFFINITY='granularity=fine, compact', OMP_NUM_THREADS=56, CPU Freq set with cpupower frequency-set -d 2.5G -u 3.8G -g performance. Caffe: (https://github.com/intel/caffe/), revision f96b759f71b2281835f690af267158b82b150b5c. Inference measured with "caffe time --forward_only" command, training measured with "caffe time" command. For "ConvNet" topologies, dummy dataset was used. For other topologies, data was stored on local storage and cached in memory before training. Topology specs fromhttps://github.com/intel/caffe/tree/master/models/intel_optimized_models (ResNet-50),. Intel C++ compiler ver. 17.0.2 20170213, Intel® Math Kernel Library (Intel® MKL) small libraries version 2018.0.20170425. Caffe run with "numactl -l".

**2 Double the memory bandwidth** with 12 memory channels per CPU and 24 memory channels per compute module, compared against CLX-SP product family with 6 memory channels per CPU.

**3 Up to 3.50X 5-Year Refresh Performance Improvement VM density** compared to Intel® Xeon® E5-2600 v6 processor: 1-node, 2x E5-2697 v2 on Canon Pass with 256 GB (16 slots / 16GB / 1600) total memory, ucode 0x42c on RHEL7.6, 3.10.0-957.el7.x86_65, 1x Intel 400GB SSD OS Drive, 2x P4500 4TB PCIe*, 2*82599 dual port Ethernet, Virtualization Benchmark, VM kernel 4.19, HT on, Turbo on, score: VM density=74, test by Intel on 1/15/2019. vs. 1-node, 2x 8280 on Wolf Pass with 768 GB (24 slots / 32GB / 2666) total memory, ucode 0x2000056 on RHEL7.6, 3.10.0-957. el7.x86_65, 1x Intel 400GB SSD OS Drive, 2x P4500 4TB PCIe*, 2*82599 dual port Ethernet, Virtualization Benchmark, VM kernel 4.19, HT on, Turbo on, score: VM density=21, test by Intel on 1/15/2019.