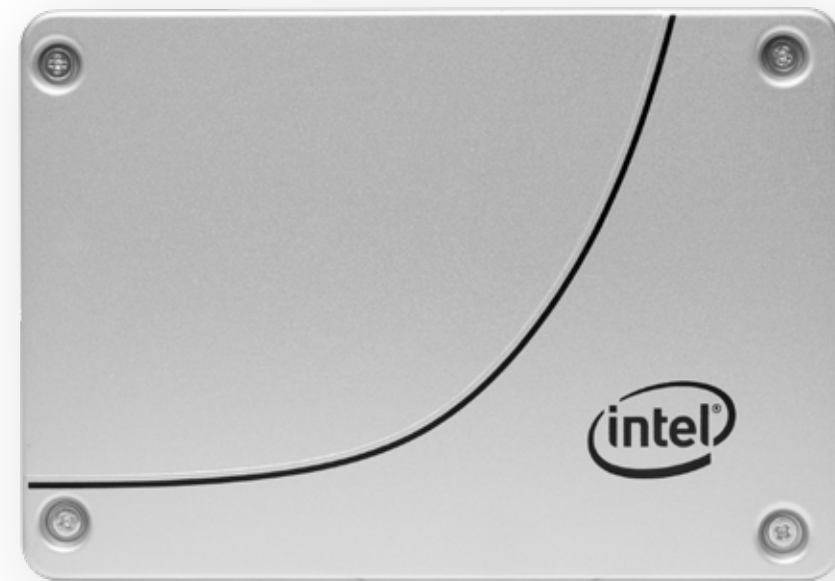


# SCALE **IT** UP TO UPLEVEL PERFORMANCE

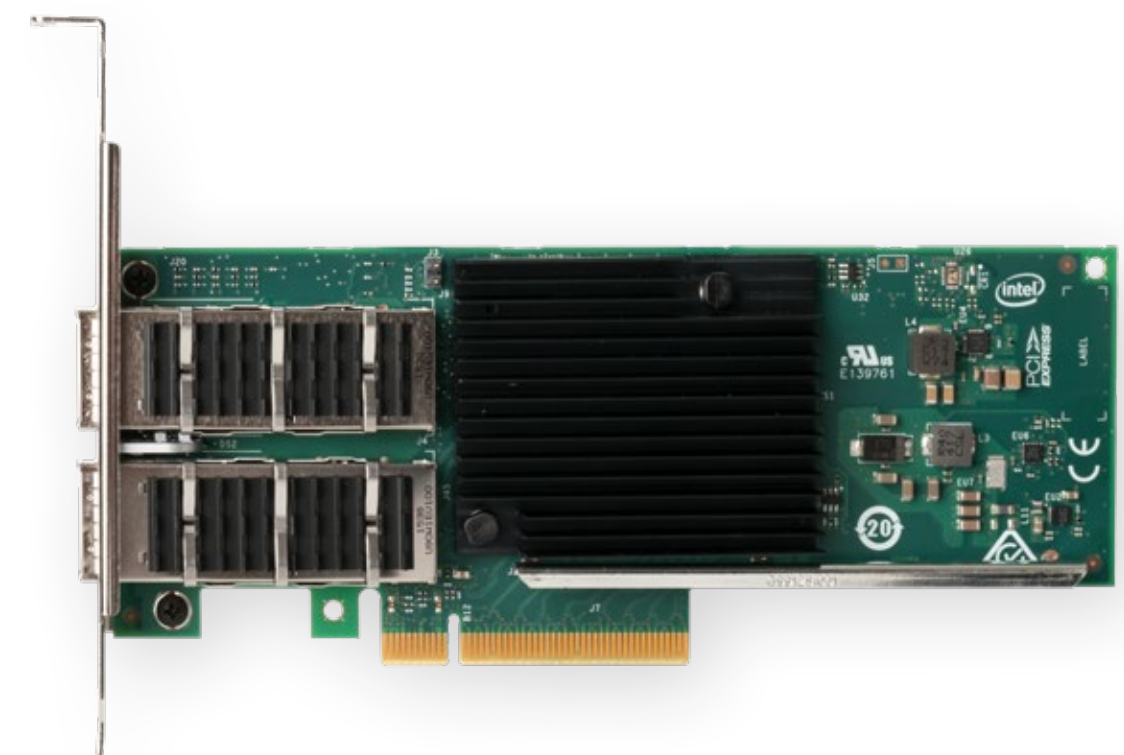
Get the most out of your server investment by balancing Intel® Xeon® Scalable processors, Intel® SSDs, and Intel® Ethernet network adapters.



Intel® Xeon® Scalable processors



Intel® SSDs

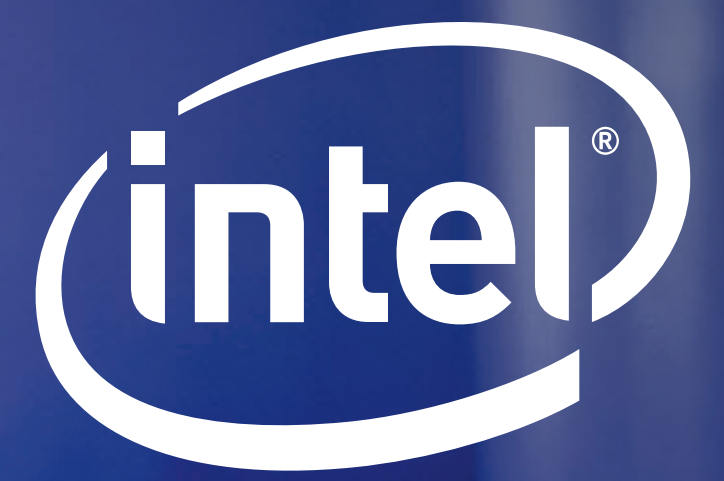


Intel® Ethernet network adapters

**See how balancing compute, storage, and network from Intel can maximize performance.**



Evaluate performance benefits with the Storage and Networking Comparison Tool at [scaleitup.intel.com](https://scaleitup.intel.com)



# SCALE IT UP TO UP LEVEL PERFORMANCE

Get the most out of your server investment by balancing Intel® Xeon® Scalable processors, Intel® SSDs, and Intel® Ethernet network adapters.

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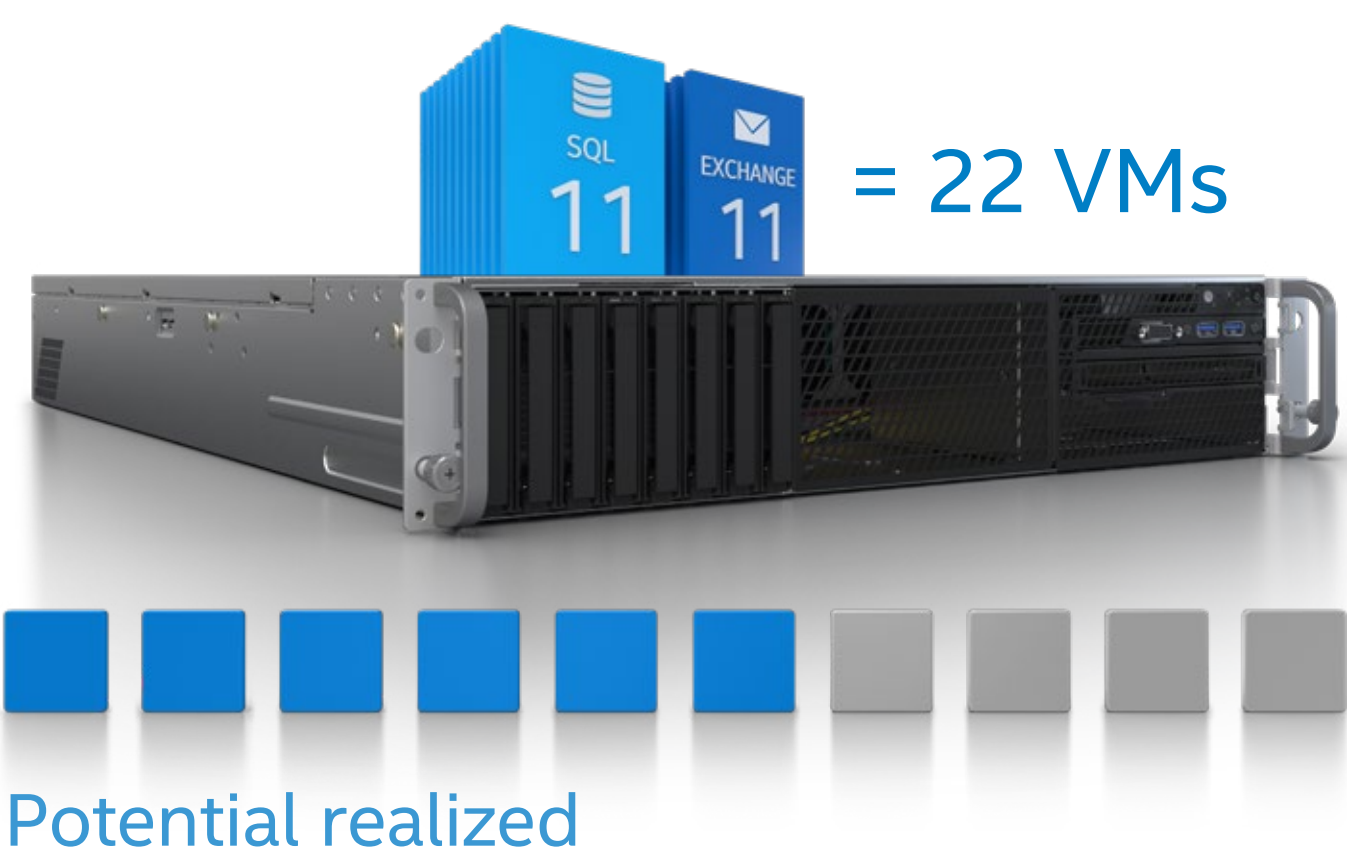
Maximize server performance by upgrading all three component subsystems.



## OPTIMAL

Intel® Xeon® Platinum 8180 Processor  
Intel® SSD DC P4600 Series  
25GbE Intel® Ethernet Adapter XXV710

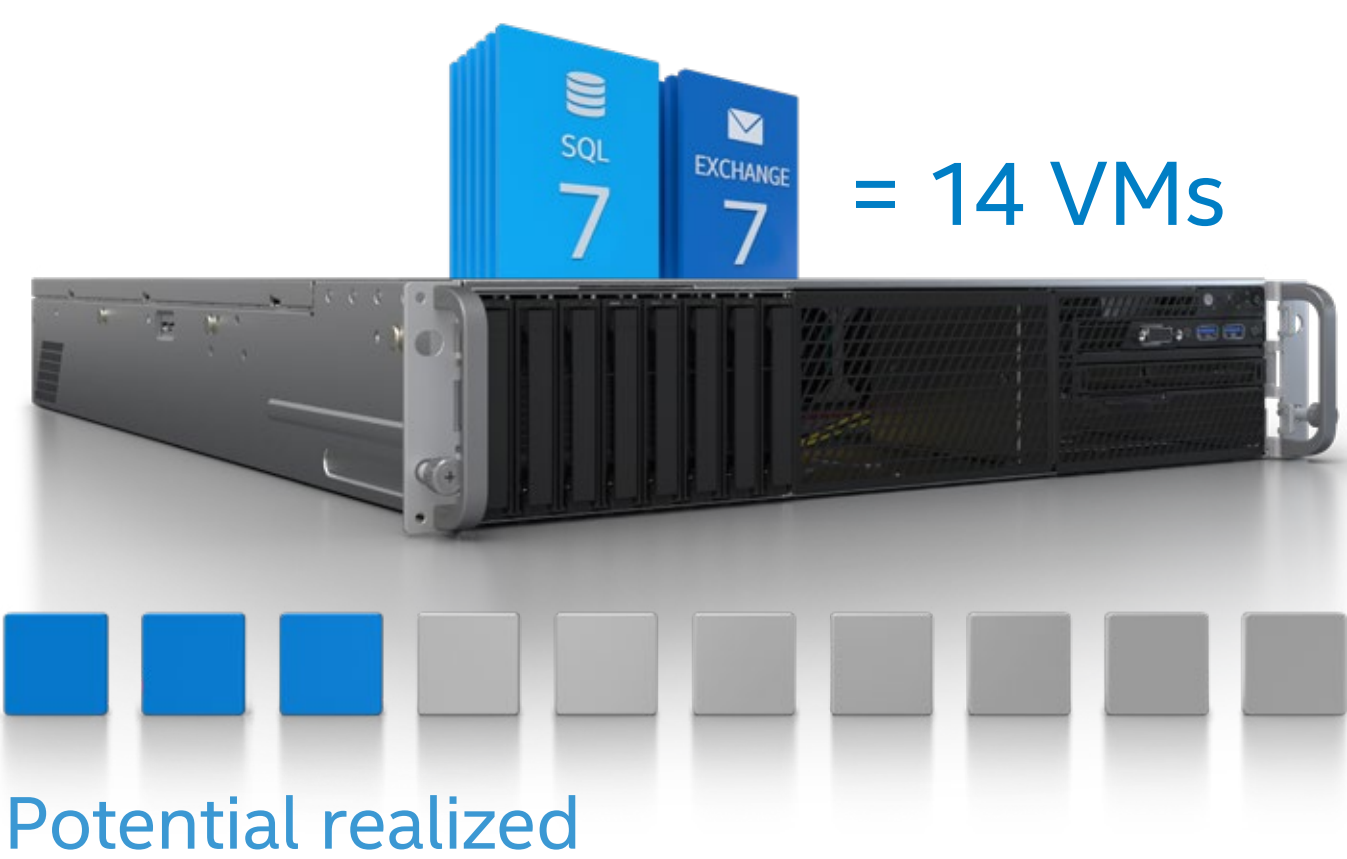
After upgrading to 10GbE, performance improves, but storage becomes the bottleneck.



## BETTER

Intel® Xeon® Gold 6148 Processor  
Intel® SSD S4500 Series  
10GbE Intel® Ethernet Adapter X710

Processor and storage performance potential is constrained by 1GbE network.



## GOOD

Intel® Xeon® Silver 4114 Processor  
SAS HDD  
1Gb Ethernet

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit [intel.com/benchmarks](https://www.intel.com/benchmarks).

Intel technologies, features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer to learn more at [intel.com](https://www.intel.com).

Performance results are based on testing as of September 2018 and may not reflect all publicly available security updates. See configuration disclosure for details. No products can be absolutely secure.

**System configurations:** The following configurations were tested by HeadGear Strategic Communications (Pty) Ltd as of September 2018:

VM Host Server One: Processors tested in built Intel® Xeon® Gold 4114, 6148, 8180 (CPUID 50654, Microcode Revision 0x200004D); Intel® Server Board S2600WTF (Board Model No. H48104-850, BIOS ID SE5C620.868.00.01.0014.070920180847, BMC Version 1.60.56383bef, ME Version 04.00.04.340, SDR Package Revision 1.60); 512GB DDR4 2133MHz registered memory; one Intel® Ethernet Network Adapter XXV710-DA2; one Intel® Ethernet Converged Network Adapter X710-DA2; OS drive configuration; two Intel® SSD DC S3500 Series in Intel® RSTe RAID 10 configuration; OS: Microsoft Windows® Server 2016 Data Centre Version 10.0.14393 Build 14393, Hyper-V Version 10.0.14393.0, Hyper-V Scheduler Type 0x3, installed updates KB4457131, KB4091664, KB1322316, KB3192197, KB3192197.

VM Host Server Two and VM Client Server: Two Intel® Xeon® Processors E-2699v4 (CPUID 406F1, Microcode Revision 0x800002E); Intel® Server Board S2600WTF (Board Model No. G92187-350, BIOS ID SE5C610.868.01.01.0027.071020182329, BMC Version 1.53.11210, ME Version 03.01.03.050, SDR Package Revision 1.71); 384GB DDR 4 2133MHz registered memory; two Intel® SSD DC S3500 Series in Intel® RSTe RAID 10 configuration; OS: Microsoft Windows Server 2016 Data Centre Version 10.0.14393 Build 14393, Hyper-V Version: one Intel® Ethernet Converged Network Adapter X710-DA2, Hyper-V Version 10.0.14393.0, Hyper-V Scheduler Type 0x3, installed updates KB4457131, KB4091664, KB1322316, KB3192197, KB3192197.

Email Virtual Machine Configuration: Microsoft Windows Server 2012 Data Centre Version 6.2.9200 Build 9200, four vCPUs (two logical threads per core); 12GB system memory; BIOS Version/Date: Microsoft Hyper-V Release v1.0.2012.11726; SMBIOS Version 2.4, Microsoft Exchange® Server 2013, workload generation via VM clients running Microsoft Exchange Load Generator™ 2013, application version 15.00.0805.000.

Database Virtual Machine Configuration: Microsoft Windows Server 2016 Data Centre Version 10.0.14393 Build 14393, 4 x vCPU (1 Logical Thread per Core); 7.5GB System Memory; BIOS Version/Date: Microsoft Corporation Hyper-V Release v1.0.2012.11726; SMBIOS Version 2.4, Microsoft SQL® Server 2016 Workload generation DVDStore Application (<https://www.dell.com/downloads/global/power/p3405-20095217-14ffe-DE.pdf>).

Storage Server 1: Intel® Server System R2224WTF2S; Intel® Server Board S2600WTF (Board Model Number H48104-850, BIOS ID SE5C620.868.00.01.0014.070920180847, BMC Version 1.60.56383bef, ME Version 04.00.04.340, SDR Package Revision 1.60); 64GB DDR4 2133MHz Registered Memory, one Intel® Ethernet Network Adapter XXV710-DA2; one Intel® Ethernet Converged Network Adapter X710-DA2; OS drive configuration; two Intel® SSD DC S3500 Series in Intel® RSTe RAID 10 configuration; Storage configuration: eight Intel® SSD DC P4600 Series (2.5TB) configured as RAID 5 Volume using Intel® VROC (Volume Configuration RAID 5, BK); 16 Intel® SSD RAID 10 configuration via Intel® RAID Module RMSP3AD160F; Microsoft Windows® Server 2016 Data Centre Version 10.0.14393 Build 14393, Hyper-V Version 10.0.14393.0, Hyper-V Scheduler Type 0x3, installed updates KB4457131, KB4091664, KB1322316, KB3192197, KB3192197.

Storage Server 2: Intel® Server Board S2600WTF (Board model number G92187-350, BIOS ID SE5C610.868.01.01.0027.071020182329, BMC Version 1.53.11210, SDR Package 1.0); two Intel® Xeon® E5-2670v3; 32GB DDR4 2133 MHz Registered Memory; one Intel® Ethernet Converged Network Adapter X710-DA2; Storage configuration: 16 300GB SAS HDD

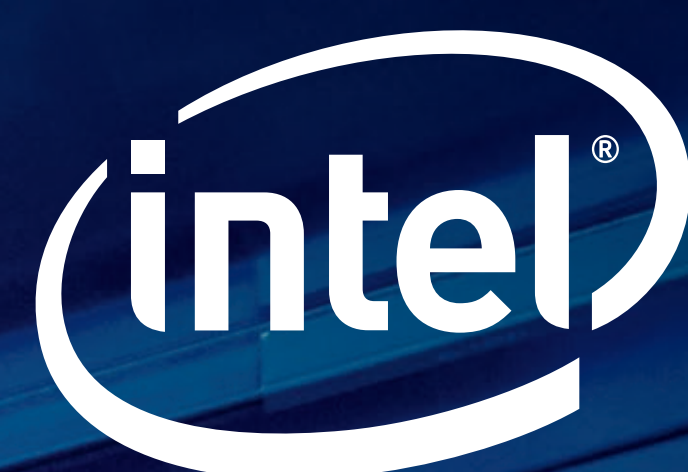
Network switches: 1790GB SuperMicro S5E-12345; Hardware Version PA-01; Firmware Version 1.0.7.15; 10/35GbE Anixia DCS-7160-48VCS; IOS: 4.18.2-RE2-DF.

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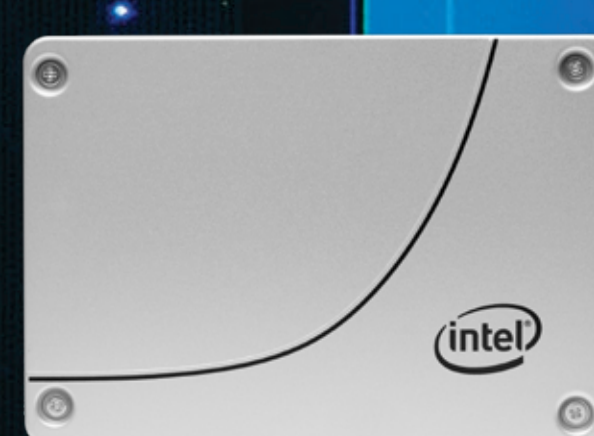


# WHICH DELIVERS PEAK SERVER PERFORMANCE?

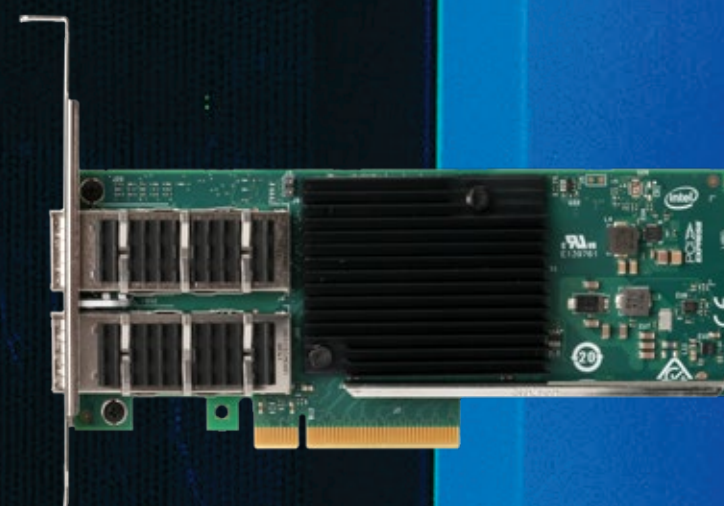
a. **Processor**



b. **Storage**



c. **Network**



Answer: **All of the above**



Get the most from your server upgrades while minimizing performance bottlenecks. See how balancing compute, storage, and network from Intel can maximize performance.

Evaluate performance benefits with the **Storage and Networking Comparison Tool** at [scaleitup.intel.com](https://scaleitup.intel.com)