



**Hewlett Packard  
Enterprise**  
operated by Sophela

**intel**

# Intel Xeon Processors for HPE Servers

## Selection Criteria

Alexander Golovchenko

HPE Servers Product Manager  
Sophela LLC, HPE Master Area Partner

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## Event Prerequisite

Please fill YOUR OWN criteria list for selecting processors.  
What is most important for you? When and why?

- ...
- ...
- ...
- ...
- ...
- ...
- ...
- ...



# Agenda

- HPE Servers Gen11 portfolio
- 4<sup>th</sup> Gen Intel Xeon processors
- How to choose the right processor



# HPE Servers Lineup

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Product Portfolio



# HPE ProLiant Gen11: Compute Engineered for *YOUR* Hybrid World

## Intuitive

### Cloud Operating Experience

Simple, self-serve and automated

## Trusted

### Security by Design

Uncompromising, fundamental and protected

## Optimized

### Performance for Your Workloads

Accelerated, open and efficient

**HPE ProLiant** completes your **hybrid environment** wherever it lives — spanning **edge to cloud** — with a **cloud operating experience**, built-in **security**, and **optimized** performance for your workloads to drive your business forward



# Where to Position



## Best fit

- Performance-oriented customers (FSI/Healthcare/etc.)
- Workloads benefiting from increased performance:
  - AI/ML
  - Data Solutions
  - Data Analytics
  - VDI
- Servers Consolidation (one new instead of six old)

Gen11 will be preferred for performance characteristics



## Good fit

- Platforms/Workloads benefiting from increased performance:
  - Hybrid Cloud
  - Containers

Gen11 will have potential, but Gen10 Plus (v2) may be preference due to cost/benefit for these workloads



## Lowest propensity targets

- Price sensitive customers
  - SMB / transactional customers where performance of Gen10 is sufficient
- Customers with limited power capacity per rack

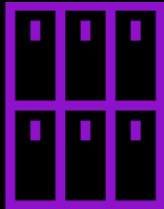
Gen11 is not as likely, as Gen10 / Gen10 Plus (v2) will likely be preferred

# Hewlett Packard Enterprise Servers



## HPE Compute

Accelerate innovation from edge to cloud with workload-optimized compute for today's data-first, hybrid world



## HPE Supercomputing

Empower world-changing innovation and discovery in the Exascale era and beyond, with faster time-to-results and accelerated AI



HPE  
ProLiant

HPE  
Synergy

HPE  
Edgeline

HPE  
Superdome

HPE  
NonStop

HPE  
Apollo

HPE  
Cray XD

HPE  
Cray EX

HPE  
Apollo 4000

HPE  
Alletra 4000



## HPE Data Storage Servers

Unlock the business value of data to power digital transformation at any scale



# HPE ProLiant Gen11 Family



**Intel-based Servers**



# HPE ProLiant DL320 Gen11 Server Overview



TC & Density Optimizes RoBo, Enterprise  
**1P 1U**



Data Collection and Mgmt., Cold Storage, Virtualization, Edge AI, VDI

NOTES:  
— Shares board with ML110 Gen11

| FEATURE            | MAIN SPECS                                                                                                                                                                                                                                           |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | One <b>4<sup>th</sup> Gen</b> Intel Xeon Scalable “ <b>Sapphire Rapids</b> ” processors, up to <b>32 cores</b> , up to <b>270 W</b> TDP                                                                                                              |
| Memory             | <b>16</b> DIMM slots, up to <b>2 TB</b> (16x128GB) <b>DDR5</b> , 8 channels, <b>4800</b> MT/s @1DPC, <b>4400</b> MT/s @2DPC                                                                                                                          |
| System Bus         | <b>PCIe Gen5</b> , <b>32GT/s (~4GB/s)</b> per lane, <b>CXL</b> 1.1 supported                                                                                                                                                                         |
| Drive Carrier      | SFF BC, LFF LP, <b>EDSFF E3.S 1T</b>                                                                                                                                                                                                                 |
| Front Drive Count  | Up to 10 SFF SAS/SATA HDD/SSD and NVMe SSD<br>Up to 4 LFF SAS/SATA HDD/SSD<br>Up to <b>12 LFF</b> SAS/SATA HDD/SSD<br>Up to <b>4 SFF</b> SAS/SATA HDD/SSD and NVMe SSD, <b>or 8 EDSFF E3.s 1T</b> NVMe SSD, with additional <b>4 SW or 2 DW GPUs</b> |
| Boot options       | <b>2 x M.2 SATA/NVMe</b> SSD ( <b>onboard</b> )<br>2 x M.2 Hot-Plug/ <b>Internal</b> NVMe SSD ( <b>NS204i-u</b> , HW RAID 1)                                                                                                                         |
| Storage Controller | Intel VROC SATA/NVMe, Gen11 Controllers (PCIe and OROC)                                                                                                                                                                                              |
| GPU Support        | up to <b>2 SW</b> rear, <b>4 SW or 2 DW front</b>                                                                                                                                                                                                    |
| I/O                | Up to <b>2 x16 PCIe Gen5</b> FHHL slots<br><b>1 x16 OCP3.0</b> slot (PCIe Gen5)                                                                                                                                                                      |
| Cooling            | Air                                                                                                                                                                                                                                                  |
| Chassis Depth      | SFF: 23.8”; 4LFF: 26.2”; 12LFF: <b>39.2”</b> ; GPU front end: 30.4”                                                                                                                                                                                  |



# HPE ProLiant DL360 Gen11 Server Overview



Rack Optimized Dense Standard

2P 1U



IT infrastructure, DB Management,  
CDN, Intelligent Video Analytics, VDI

- Notes:
- Shared board with DL380 and ML350 Gen11
  - Chassis is similar, but not the same as DL365 Gen11

| FEATURE            | MAIN SPECS                                                                                                                                                                        |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two <b>4th Gen</b> Intel Xeon or Xeon Max <b>"Sapphire Rapids"</b> processors, up to <b>60 cores</b> , up to <b>350 W</b> TDP, <b>HBM</b> on Xeon Max SKUs                        |
| Memory             | <b>32</b> DIMM sockets, up to <b>8 TB</b> , <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC<br><b>64GB HBM</b> per <b>Xeon Max</b> processor |
| System Bus         | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                                             |
| Drive Carrier      | SFF BC, LFF LP, <b>EDSFF EC1</b>                                                                                                                                                  |
| Front Drive Count  | Up to 10 SFF SAS/SATA HDD/SSD and NVMe SSD<br>Up to 4 LFF SAS/SATA HDD/SSD<br>Up to <b>20 E3.S 1T EDSFF</b> NVMe SSD                                                              |
| Rear Drive Count   | No rear drive                                                                                                                                                                     |
| Boot options       | <b>Hot-Plug</b> or Non-Hot Plug <b>NS204i-u</b> (2 x M.2 NVMe SSD HW RAID1)                                                                                                       |
| Storage Controller | <b>Intel VROC</b> for SATA or NVMe; <b>Gen11</b> Controllers (PCIe and <b>OROC</b> )                                                                                              |
| GPU Support        | up to <b>3 SW</b>                                                                                                                                                                 |
| I/O                | Up to <b>3 x16</b> PCIe <b>Gen5</b> slots, 1 x FHHL + 2 LP, or 2 FHHL<br>Up to <b>2 x8 OCP3.0</b> slots (PCIe <b>Gen5</b> ; upgradable to <b>x16</b> )                            |
| Cooling            | Air / <b>Smart Closed-loop Liquid Cooling</b> / <b>Direct Liquid Cooling</b>                                                                                                      |
| Chassis Depth      | SFF/EDSFF: 75.3cm (29.65"); LFF: 77.3cm (30.43")                                                                                                                                  |

# HPE ProLiant DL380 Gen11 Server Overview



Performance Optimized Standard

2P 2U



Collaborative, CRM, Analytics & AI,  
VDI, SCM, ERM, Content Management

- Notes:
- Shared board with DL360 and ML350 Gen11
  - Chassis is similar, but not the same as DL385 Gen11

| FEATURE            | MAIN SPECS                                                                                                                                                               |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two <b>4<sup>th</sup> Gen</b> Intel Xeon and Xeon Max “ <b>Sapphire Rapids</b> ” processors, up to <b>60 cores</b> , up to <b>350 W</b> TDP, <b>HBM</b> on Xeon Max SKUs |
| Memory             | 32 DIMM sockets, up to 8TB, <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC                                                         |
| System Bus         | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                                    |
| Drive Carrier      | SFF BC, LFF LP, <b>EDSFF EC1</b>                                                                                                                                         |
| Front Drives       | 8 or 24 SFF SAS/SATA HDD/SSD and NVMe SSD<br>8 or 12 LFF SAS/SATA HDD/SSD<br>Up to <b>36 E3.S 1T EDSFF</b> SSD NVMe                                                      |
| Mid-Tray Drives    | 8 SFF SAS/SATA HDD/SSD and NVMe SSD<br>4 LFF SAS/SATA HDD/SSD                                                                                                            |
| Rear Drives        | 2 or 4 or 6 SFF SAS/SATA HDD/SSD and NVMe SSD<br>2 or 4 LFF SAS/SATA HDD/SSD                                                                                             |
| Boot options       | <b>Hot-Plug</b> or Non-Hot Plug <b>NS204i-u</b> (2 x M.2 NVMe SSD HW RAID1)                                                                                              |
| Storage Controller | <b>Intel VROC</b> for SATA or NVMe; <b>Gen11</b> Controllers (PCIe and <b>OROC</b> )                                                                                     |
| GPU Support        | up to <b>3 DW</b> to <b>8 SW</b>                                                                                                                                         |
| I/O                | Up to <b>8 x16 PCIe Gen5</b> slots, 6 x FHFL + 2 FHHL<br>Up to <b>2 x8 OCP3.0</b> slots (PCIe Gen5; upgradable to x16)                                                   |
| Cooling            | Air / <b>Direct Liquid Cooling</b>                                                                                                                                       |
| Chassis Depth      | SFF: 29.6”; LFF: 30.4”; EDSFF: 30.4”                                                                                                                                     |

# HPE ProLiant DL380a Gen11 Server Overview



GPU Acceleration Optimized

2P 2U



Mid to High-End ML Training and Inferencing (Enterprise AI/HPC)

- Note:
- Both chassis and board is different to DL380 Gen11
  - Shared board with Alletra 4110/4120

| FEATURE            | MAIN SPECS                                                                                                                                                              |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two <b>4th Gen</b> Intel Xeon and Xeon Max “ <b>Sapphire Rapids</b> ” processors, up to <b>56 cores</b> , up to <b>350 W</b> TDP, <b>HBM</b> supported on Xeon Max SKUs |
| Memory             | <b>24</b> DIMM sockets, up to <b>3 TB</b> (with 128GB DIMMs), <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC                      |
| System Bus         | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 support                                                                                                     |
| Drive Carrier      | SFF BC, <b>EDSFF EC1</b>                                                                                                                                                |
| Front Drives       | 8 SFF NVMe SSD<br><b>8 E3.S 1T EDSFF</b> NVMe SSD                                                                                                                       |
| Boot options       | 2 x M.2 Hot-Plug NVMe SSD with <b>NS204i-u</b> Boot Device (HW RAID 1)<br>Rear Hot Plug accessible or internal Non-Hot Plug                                             |
| Storage Controller | <b>Intel VROC</b> (Virtual RAID on CPU) for direct attach NVMe drives<br>Gen11 Tri-Mode Controllers (PCIe and <b>OROC</b> )                                             |
| GPU Support        | <b>4 DW</b> or <b>8 SW</b> (future) front                                                                                                                               |
| I/O                | Up to <b>4 x16</b> FHHL PCIe <b>Gen5</b> slots rear<br><b>2 x8 OCP</b> slots (PCIe <b>Gen5</b> ; upgradable to <b>x16</b> )                                             |
| Cooling            | Air                                                                                                                                                                     |
| Chassis Depth      | 81.6 cm (32.13”)                                                                                                                                                        |



# HPE ProLiant DL560 Gen11 Server Overview



The High-Density Scale-Up Server  
for Business-Critical Workloads

4P 2U



IMDB, Analytic DB, Virtualization

| FEATURE            | MAIN SPECS                                                                                                                                                                           |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Four <b>4<sup>th</sup> Gen</b> Intel Xeon “ <b>Sapphire Rapids</b> ” H processors, up to <b>60 cores</b> , up to <b>3.7GHz</b> , up to <b>350 W</b> TDP, up to 4 x <b>16GT/s</b> UPI |
| Memory             | <b>64</b> DIMM sockets, up to <b>16 TB</b> (with 256GB DIMMs) <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC                                   |
| System Bus         | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                                                |
| Drive Carrier      | SFF BC, <b>EDSFF</b>                                                                                                                                                                 |
| Front Drive Count  | Up to 24 SFF SAS/SATA HDD/SSD and NVMe SSD<br>Up to <b>24 E3.S 1T EDSFF</b> NVMe SSD                                                                                                 |
| Rear Drive Count   | No rear drive                                                                                                                                                                        |
| Boot options       | <b>2 x M.2 Hot-Plug NVMe</b> SSD with <b>NS204i-u</b> Boot Device (HW <b>RAID 1</b> )                                                                                                |
| Storage Controller | <b>Intel VROC, Gen11</b> Controllers (PCIe and <b>OROC</b> )                                                                                                                         |
| GPU Support        | up to <b>2 DW</b> or <b>6 SW</b>                                                                                                                                                     |
| I/O                | Up to <b>6 x16</b> PCIe <b>Gen5</b> slots, 4 x FHHL (10.5”) + 2 FHHL<br>Up to <b>2 x8 OCP3.0</b> slots (PCIe <b>Gen5</b> ; upgradable to <b>x16</b> )                                |
| Cooling            | Air / <b>Smart Closed-loop Liquid Cooling</b>                                                                                                                                        |
| Chassis Depth      | 31.7” (80.6 cm)                                                                                                                                                                      |



# HPE ProLiant ML110 Gen11 Server Overview



SMB Optimized  
Affordable Server

1P  
Tower



IT infrastructure,  
Data Management, VDI, ERP/CRM

NOTE:  
— Shares motherboard with DL320 Gen11

| FEATURE            | MAIN SPECS                                                                                                                             |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two 4 <sup>th</sup> Gen Intel Xeon “Sapphire Rapids” processors, up to <b>32 cores</b> , up to <b>2.5 GHz</b> , up to <b>185 W</b> TDP |
| Memory             | <b>16</b> DIMM sockets, up to <b>1 TB</b> (with 64GB DIMMs), <b>DDR5</b> , 8 channels, <b>4800</b> MT/s @1DPC, <b>4400</b> MT/s @2DPC  |
| System Bus         | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL 1.1</b> supported                                                                  |
| Drive Carrier      | SFF BC, LFF LP                                                                                                                         |
| Front Drives       | Up to 16 SFF SAS/SATA HDD/SSD Hot Plug<br>Up to 8 LFF SAS/SATA HDD/SSD Hot Plug or Non-Hot Plug                                        |
| Internal Drives    | <b>2 x M.2 SATA/NVMe SSD</b> (two 2280/2210 onboard slots)                                                                             |
| Networking         | Embedded <b>2-Port 1GbE</b> controller BCM5720, 2 x RJ45 ports rear                                                                    |
| Boot options       | <b>NS204i-u</b> Boot Device (HW RAID 1) with 2 x M.2 Hot-Plug NVMe SSD                                                                 |
| Storage Controller | <b>Intel VROC SATA</b> , Gen11 Controllers (PCIe and <b>OROC</b> )                                                                     |
| GPU Support        | up to <b>1 DW</b> to <b>2 SW</b>                                                                                                       |
| I/O                | Up to <b>4 x16 PCIe Gen5</b> slots<br><b>1 OCP3.0 x16 PCIe Gen5</b> slot                                                               |
| Chassis Dimensions | 46.2cm (H) x 58.7cm (D) x 19.5cm (W)                                                                                                   |



# HPE ProLiant ML350 Gen11 Server Overview



Out of Datacenter  
Optimized

**2P  
Tower**

IT infrastructure,  
Data Management, VDI, ERP/CRM

NOTES:  
— Shares board with DL360 and DL380 Gen11

| FEATURE            | MAIN SPECS                                                                                                                                   |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two 4 <sup>th</sup> Gen Intel Xeon “Sapphire Rapids” processors, up to <b>60 cores</b> , up to <b>350 W</b> TDP, <b>HBM</b> on selected SKUs |
| Memory             | <b>32</b> DIMM sockets, up to <b>8 TB</b> , <b>DDR5</b> , 8 channels, <b>4800</b> MT/s @1DPC, <b>4400</b> MT/s @2DPC                         |
| System Bus         | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL 1.1</b> supported                                                                        |
| Drive Carrier      | SFF BC, LFF LP, <b>EDSFF</b>                                                                                                                 |
| Front Drive Count  | Up to 24 SFF SAS/SATAHDD/SSD NVMe SSD<br>Up to 12 LFF SAS/SATA HDD/SSD<br>Up to <b>12 E3.S 1T</b> , up to <b>6 E3.S 2T</b> EDSFF NVMe SSD *  |
| Rear Drive Count   | No rear drive                                                                                                                                |
| Boot options       | 2 x M.2 Hot-Plug NVMe SSD with <b>NS204i-u</b> Boot Device (HW RAID 1)                                                                       |
| Storage Controller | Gen11 Controllers (PCIe and <b>OROC</b> )                                                                                                    |
| GPU Support        | up to <b>3 SW</b>                                                                                                                            |
| I/O                | Up to <b>10 x8 PCIe Gen5</b> slots<br>Up to <b>2 x8 OCP3.0</b> slots (PCIe Gen5; upgradable to x16)                                          |
| Chassis Depth      | 28.0”                                                                                                                                        |



# HPE Synergy 480 Gen11 Compute Module Overview



Composable

## 2P Blade



Virtualization, Data Management,  
Containers, Hybrid Cloud, DevOps

| FEATURE             | MAIN SPECS                                                                                                                                                                                                                                                                                                                                |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors          | Two 4 <sup>th</sup> Gen Intel Xeon “Sapphire Rapids” processors, <b>16GT/s</b> UPI, up to <b>56 cores</b> , up to <b>3.7GHz</b> , up to <b>350 W</b> TDP                                                                                                                                                                                  |
| Memory              | <b>32</b> DIMM sockets, up to <b>8 TB</b> (with 256GB DIMMs) <b>DDR5</b> , 8 channels, <b>4800</b> MT/s @1DPC, <b>4400</b> MT/s @2DPC                                                                                                                                                                                                     |
| System Bus          | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane                                                                                                                                                                                                                                                                                               |
| Drive Carrier       | SFF Basic Carrier (BC), <b>EDSFF</b>                                                                                                                                                                                                                                                                                                      |
| Front Drive Options | Drive-Less Cage<br>2 SFF SAS/SATA HDD/SSD and NVMe SSD <b>Tri-Mode</b> Premium Drive Cage<br>4 SFF SAS/SATA HDD/SSD and NVMe SSD <b>Tri-Mode</b> Premium Drive Cage<br>4 SFF NVMe SSD Direct Connect Drive Cage<br><b>8 E3.S 1T EDSFF</b> NVMe SSD Direct Connect Drive Cage<br>Up to 200 SFF SAS/SATA HDD/SSD with D3940 Storage Modules |
| Boot Options        | 2 x M.2 NVMe SSD with NS204i-d <b>Gen11</b> Boot Controller (HW RAID 1)                                                                                                                                                                                                                                                                   |
| Storage Controller  | <b>Intel VROC NVMe</b> , SR416ie-m <b>Gen11</b> Mezzanine Controller                                                                                                                                                                                                                                                                      |
| PCI Slots           | 3 x <b>PCIe 5.0</b> x16 Mezzanine connectors, two Type C/D and one Type C                                                                                                                                                                                                                                                                 |
| Management          | HPE <b>iLO 6</b> Advanced and HPE OneView Advanced (included)                                                                                                                                                                                                                                                                             |



# HPE Cray XD220v Server Overview



Multi-Node Shared Infrastructure

## 1U 2P Node



Purpose-Built and HPC-Optimized  
Solution for Exascale Era

| FEATURE             | MAIN SPECS                                                                                                                                                           |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Blades              | Up to 4 blade servers per HPE Cray v2240 chassis                                                                                                                     |
| Processors          | Two 4 <sup>th</sup> Gen Intel Xeon or Xeon Max “Sapphire Rapids” processors, up to <b>56 cores</b> , up to <b>3.7GHz</b> , up to <b>350 W</b> TDP, <b>16GT/s</b> UPI |
| Memory              | <b>16</b> DIMM sockets, up to <b>2 TB</b> (with 128GB DIMMs) <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC                                                  |
| System Bus          | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane                                                                                                                          |
| Front Drive Options | 2 x SFF Cray carrier Hot Plug NVMe SSD from chassis drive cage<br>1 x M.2 2280/22110 NVMe SSD on the M.2 Mezz Riser Kit                                              |
| PCI Slots           | 2 x16 <b>PCIe 5.0</b> Low Profile slots<br>1 OCP3.0 x16 <b>PCIe 5.0</b> slot                                                                                         |
| Management          | HPE Cray XD BMC with Hardware Root of Trust                                                                                                                          |
| Cooling             | Air / <b>Direct Liquid Cooling</b>                                                                                                                                   |
| Chassis Depth       | 38.43” (91.6 cm)                                                                                                                                                     |



# HPE Cray XD670 Server Overview



Top-Performing GPU-Accelerated Server

**5U 2P 8GPU**



Large Model AI Training  
and Deep Learning

| FEATURE            | MAIN SPECS                                                                                                                                 |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | Two <b>4<sup>th</sup> Gen</b> Intel Xeon “ <b>Sapphire Rapids</b> ” processors, up to <b>56 cores</b> , up to <b>350 W</b> TDP             |
| Accelerators       | <b>8 NVIDIA H100 80GB SXM5 GPU</b>                                                                                                         |
| Memory             | <b>32</b> DIMM sockets, up to 4TB (with 128GB DIMMs), <b>DDR5</b> , 8 channels, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC |
| System Bus         | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                      |
| Drive Carrier      | 3 <sup>rd</sup> part SFF carrier                                                                                                           |
| Front Drives       | 8 SFF NVMe SSD                                                                                                                             |
| Boot options       | Non-Hot Plug <b>4</b> x M.2 NVMe SSD 22110 HW RAID                                                                                         |
| Storage Controller | HW RAID Controllers (PCIe)                                                                                                                 |
| I/O                | Up to <b>12 x16 PCIe Gen5</b> Low Profile slots                                                                                            |
| Chassis Depth      | 33.75” (85.7cm)                                                                                                                            |



# HPE Alletra 4110 Data Storage Server Overview



All-NVMe Data Storage Server  
**2P 1U**



Data Stores for ML, Distributed and NoSQL DB, High-Performance SDS

- Notes:
- Shared board with Alletra 4120 and ProLiant DL380a Gen11
  - EDSFF chassis is similar, but a bit different to DL360 Gen11, 20EDSFF x4 drive backplane is the same

| FEATURE       | MAIN SPECS                                                                                                                                                        |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors    | Two <b>4<sup>th</sup> Gen</b> Intel Xeon “ <b>Sapphire Rapids</b> ” processors, up to <b>48 cores</b> , up to <b>350 W</b> TDP, up to 3.7 GHz, up to <b>4</b> UPI |
| Memory        | <b>24</b> DIMM sockets, up to <b>6 TB, DDR5</b> , 8 channels, 2-2-1-1 configuration, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC                   |
| System Bus    | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                             |
| Drive Carrier | SFF BC, <b>EDSFF EC1</b>                                                                                                                                          |
| Front Drive   | Up to 20 SFF NVMe SSD<br>Up to <b>20 E3.S 1T EDSFF</b> NVMe SSD                                                                                                   |
| Rear Drive    | No rear drive                                                                                                                                                     |
| Boot options  | Non-Hot Plug <b>NS204i-u</b> (2 x 480GB M.2 NVMe SSD HW RAID1) or Non-Hot Plug Pass Thru Board (2 x M.2 NVMe SSD)                                                 |
| I/O           | <b>2 x16</b> PCIe <b>Gen5</b> FHHL slots<br><b>2 x16 OCP</b> slots (PCIe <b>Gen5</b> )                                                                            |
| Cooling       | Air / <b>Smart Liquid Cooling Closed-Loop Solution</b>                                                                                                            |
| Chassis Depth | SFF: 84.2cm (33.16”); EDSFF: 73.3cm (28.85”)                                                                                                                      |

# HPE Alletra 4120 Data Storage Server Overview



## Hybrid-NVMe Data Storage Server 2P 2U



Active Analytics Data Lakes, Converged  
DP, File and Object SDS, Deep Archives

### Notes:

- Shared board with Alletra 4110 and ProLiant DL380a Gen11
- Chassis is similar in front, but different in rear to Apollo 4200 Gen10

| FEATURE            | MAIN SPECS                                                                                                                                              |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors         | One or Two <b>4<sup>th</sup> Gen</b> Intel Xeon “ <b>Sapphire Rapids</b> ” processors, up to <b>48 cores</b> , up to <b>350 W</b> TDP, up to 3.7 GHz    |
| Memory             | <b>24</b> DIMM sockets, up to <b>6 TB</b> , <b>DDR5</b> , 8 channels, 2-2-1-1 configuration, up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC |
| System Bus         | <b>PCIe Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                   |
| Drive Carrier      | SFF BC, LFF LP, <b>EDSFF EC1</b>                                                                                                                        |
| Front Drive Count  | Up to 24 LFF SAS/SATA HDD/SSD<br>Up to 48 SFF SAS/SATA HDD/SSD                                                                                          |
| Rear Drive Count   | 2 or 4 LFF SAS/SATA HDD/SSD (with 24LFF chassis only)<br>6 SFF SAS/SATA HDD/SSD and NVMe SSD<br><b>12 EDSFF E3.S 1T</b> NVMe SSD                        |
| Boot options       | Non-Hot Plug <b>NS204i-u</b> (2 x 480GB M.2 NVMe SSD HW RAID1)<br>or Non-Hot Plug Pass Thru Board (2 x M.2 NVMe SSD)                                    |
| Storage Controller | <b>Gen11</b> Controllers (PCIe and <b>OROC</b> ), no expander design                                                                                    |
| I/O                | Up to <b>8 x16</b> PCIe <b>Gen5</b> FHHL slots<br>Up to <b>2 x8 OCP3.0</b> slots (PCIe <b>Gen5</b> ; upgradable to <b>x16</b> )                         |
| Cooling            | Air                                                                                                                                                     |
| Chassis Depth      | SFF/LFF: 81.3 (32.0”)                                                                                                                                   |

# HPE Compute Scale-up Server 3200\* Overview



Modular, reliable and secure compute platforms  
for critical applications, analytics, HPC and AI

4..16P 5..20U



SAP HANA, Oracle, SQL Server, Epic

| FEATURE       | MAIN SPECS                                                                                                                                                                           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Processors    | 4 to 16 <b>4<sup>th</sup> Gen</b> Intel Xeon “ <b>Sapphire Rapids</b> ” processors, up to <b>60 cores</b> , up to <b>3.7GHz</b> , up to <b>350 W</b> TDP, 3 or 4 x <b>16GT/s</b> UPI |
| Memory        | up to <b>256</b> DIMM sockets, up to <b>32 TB</b> (w/128GB DIMMs) <b>DDR5</b> , 8 ch., up to <b>4800</b> MT/s @1DPC, up to <b>4400</b> MT/s @2DPC                                    |
| System Bus    | PCIe <b>Gen5</b> , 32GT/s (~4GB/s) per lane, <b>CXL</b> 1.1 supported                                                                                                                |
| Drive Carrier | SFF BC, <b>EDSFF EC1</b>                                                                                                                                                             |
| Rear Drives   | up to <b>96 EDSFF</b> NVMe SSD<br>up to 40 SFF SAS/SATA HDD/SSD and NVMe SSD                                                                                                         |
| I/O           | up to <b>64 x16</b> PCIe <b>Gen5</b> slots                                                                                                                                           |
| GPU           | up to <b>16 DW</b>                                                                                                                                                                   |

\* - announced, not launched yet

# New Intel Xeon Processors

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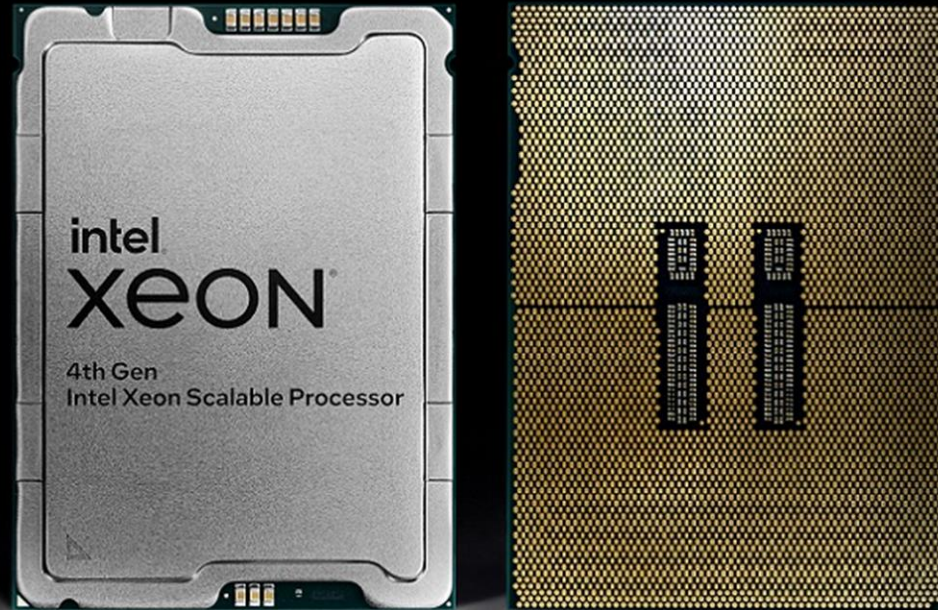
## Features and Technologies Overview



# 4<sup>th</sup> Gen Intel Xeon Scalable Processors

## *“Sapphire Rapids”*

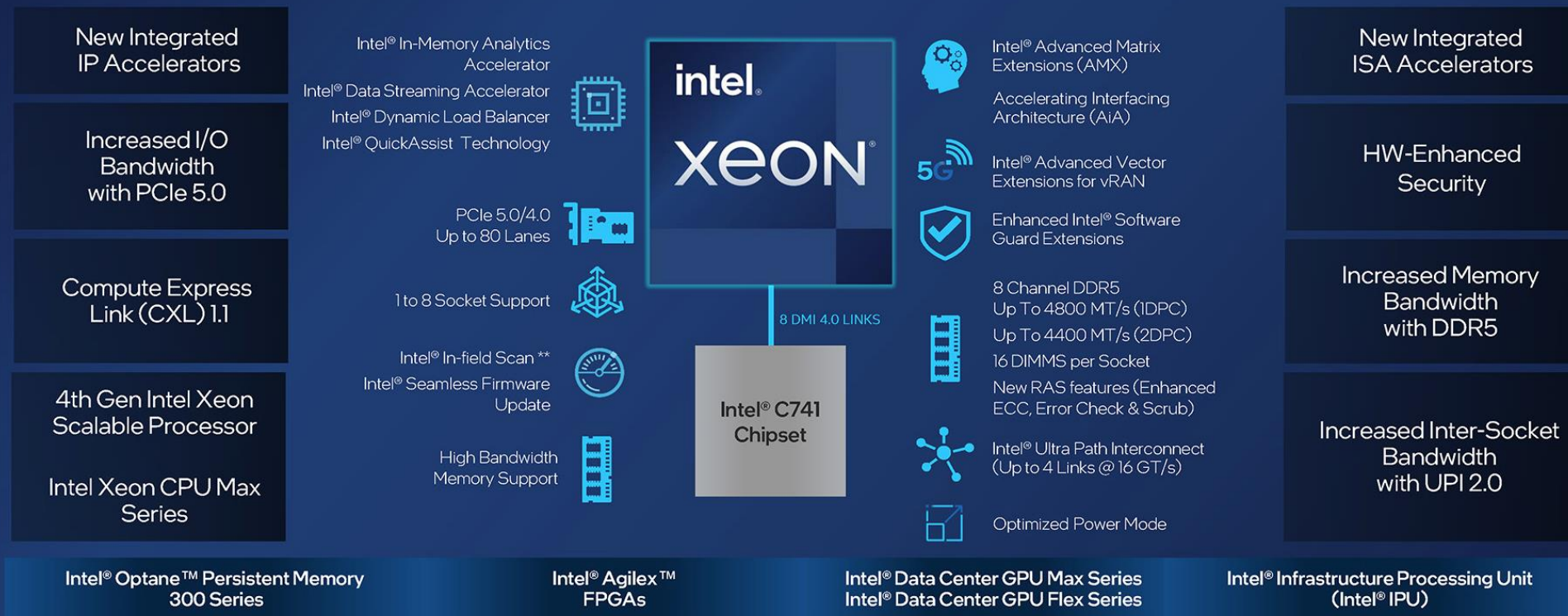
Product Information



intel

# Intel's Most Feature Rich Server Platform

4th Gen Intel® Xeon® Scalable Processors and Intel® Xeon® CPU Max Series Processors



intel  
xeon Accelerate with Xeon

\* Enabled for WorkStation + vPro Skus ONLY  
\*\* Intel In-Filed Scan is a new capability available through select providers in 2023

Source: Intel



intel

# Driving Platform Innovation

Broad Ecosystem Readiness To Deploy Today

## DDR5

- 8ch DDR5 (per CPU): up to 4800 MT/s
- 9x4 RDIMM support
- 3DS RDIMM support
- New RAS features
  - Enhanced ECC
  - Error Check and Scrub
- Both 2DPC and 1DPC today

Up to **1.5x**  
higher memory bandwidth  
vs. DDR4

## PCIe 5.0

- 80 lanes
- Improved DDIO and QoS capabilities
- X2 bifurcation @ Gen 4

Up to **2x**  
Increased I/O Bandwidth  
vs. PCIe 4.0

## CXL 1.1

- Next Gen I/O
- Up to 4 CXL devices supported per CPU
- Type 1 device: CXL.io and CXL.cache (e.g., SmartNIC)
- Type 2 device: CXL.io, CXL.cache and CXL.mem (e.g., GPU, ASIC, FPGA)

Type 1  
and Type 2

## UPI 2.0

- Up to 4 UPI links @ 16 GT/s
- New 8S-4 UPI Performance Optimized Topology

Up to **1.9x**  
Increased inter-socket  
bandwidth vs. prior gen

**intel**  
**XEON** Accelerate with Xeon

See backup for workloads and configurations. Results may vary.

Source: Intel

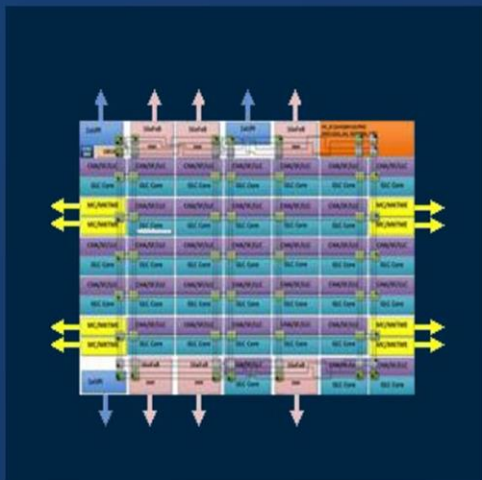


**intel**

# Unique Die Packages for Unique Market Needs

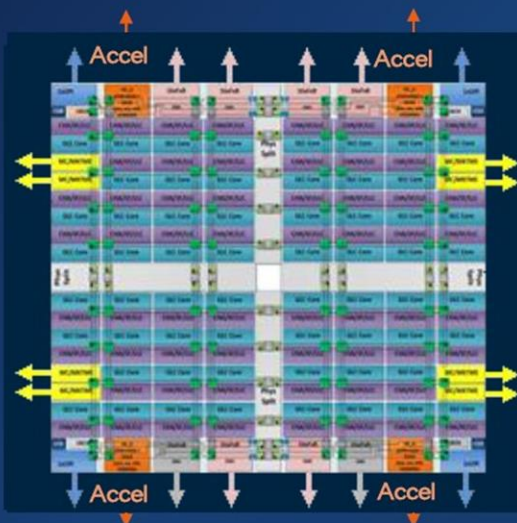
## Intel® Xeon® Die Package Architecture

4<sup>th</sup> Gen Intel Xeon processor - MCC  
Monolithic Architecture



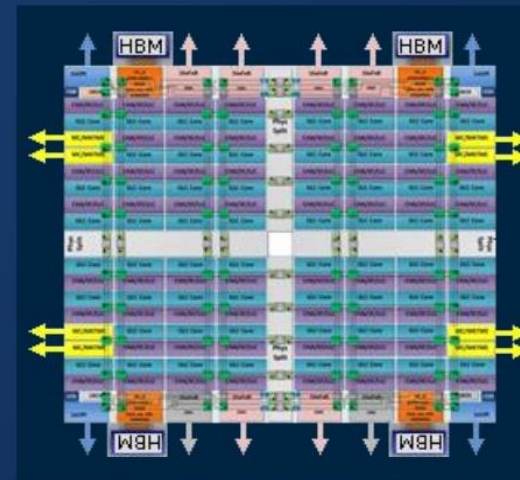
Mainstream Market, Higher Frequencies,  
Lower Latency

4<sup>th</sup> Gen Intel Xeon processor - XCC  
4 Tile Architecture



Socket Scalability,  
Highest Core Count

Intel Xeon CPU Max Series  
4 Tile Architecture



HPC and Memory Bandwidth  
Bound Applications

**intel**  
**XEON** Accelerate with Xeon

Source: Intel



**intel**

# Die Package Details

| Features                   | 4 <sup>th</sup> Gen Intel® Xeon® Scalable Processors                                                      |                                                                                      | Intel® Xeon® CPU Max Series                                                              |
|----------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
|                            | Medium Core Count (MCC)                                                                                   | Extreme Core Count (XCC)                                                             | High Bandwidth Memory (HBM)                                                              |
| Die Construction           | 1 monolithic chip                                                                                         | 4 tiles connected using MDF over Intel Embedded Multi-die Interconnect Bridge (EMIB) | 4 tiles connected using MDF over Intel Embedded Multi-die Interconnect Bridge (EMIB)     |
| Core Count                 | Up to 32 active cores                                                                                     | Up to 60 active cores                                                                | Up to 56 active cores                                                                    |
| TDP Range                  | 125 to 350W                                                                                               | 225 to 350W                                                                          | 350W                                                                                     |
| Memory                     | DDR5 @ 4800 (1DPC), 4400 (2DPC), 16 Gb DRAM, 8 Channels<br>Intel® Optane™ PMem 300 (Crow Pass) @4400 MT/s |                                                                                      | DDR5 @ 4800 (1DPC), 4400 (2DPC), 8Channels<br>64 GB HBM2e memory with up to 1.14 GB/core |
| Intel UPI                  | UPI 2.0 @ 16 GT/s, up to 3 Ultra Path Interconnects                                                       | UPI 2.0 @ 16 GT/s, up to 4 Ultra Path Interconnects                                  | UPI 2.0 @ 16 GT/s, up to 4 Ultra Path Interconnects                                      |
| Scalability                | 1 Socket, 2 Socket, 4 Socket                                                                              | 1 Socket, 2 Socket, 4 Socket, 8 Socket                                               | 1 Socket, 2 Socket                                                                       |
| PCIe/Compute Express Link  | PCIe 5.0 (80 lanes),<br>Up to 4 devices supported via Compute Express Link (CXL) 1.1                      |                                                                                      |                                                                                          |
| Security                   | Intel® SGX<br>Minimum Enclave Page Cache (EPC) size 256 MB                                                |                                                                                      | Intel® SGX (Flat mode only)                                                              |
| Integrated IP Accelerators | Intel® QAT, DLB (up to 2 devices each)<br>Intel® DSA, IAA (1 device each)                                 | Intel® QAT, DLB, IAA, DSA (up to 4 devices each)                                     | Intel® DSA (4 devices)                                                                   |

**intel**  
**XEON** Accelerate with Xeon



**intel**

# Intel® Accelerator Engines

Most Built-in Accelerators of any CPU on the market providing customers with increased **performance**, **costs savings** and **sustainability** advantages for the biggest and fastest-growing workloads

## Intel® AI Engines

Intel® Advanced Matrix Extensions (Intel® AMX)

Intel® Advanced Vector Extensions 512 (Intel® AVX-512)

Intel® Deep Learning Boost (Intel® DL Boost)

## Intel® Security Engines

Intel® Control-Flow Enforcement Technology (Intel® CET)

Intel® Crypto Acceleration

Intel® Software Guard Extensions (Intel® SGX)

Intel® Trust Domain Extensions (Intel® TDX)

Intel® QuickAssist Technology (Intel® QAT)

## Intel® HPC Engines

Intel® Advanced Vector Extensions 512 (Intel® AVX-512)

Intel® Advanced Matrix Extensions (Intel® AMX)

Intel® Data Streaming Accelerator (Intel® DSA)

Intel® QuickAssist Technology (Intel® QAT)

## Intel® Network Engines

Intel® QuickAssist Technology (Intel® QAT)

Intel® Dynamic Load Balancer (Intel® DLB)

Intel® Data Streaming Accelerator (Intel® DSA)

Intel® Advanced Vector Extensions (Intel® AVX) for vRAN

Intel® vRAN Boost

Intel® Speed Select Technology (Intel® SST)

## Intel® Analytics Engines

Intel® In-memory Analytics Accelerator (Intel® IAA)

Intel® Data Streaming Accelerator (Intel® DSA)

Intel® Advanced Vector Extensions 512 (Intel® AVX-512)

Intel® QuickAssist Technology (Intel® QAT)

## Intel® Storage Engines

Intel® Data Streaming Accelerator (Intel® DSA)

Intel® QuickAssist Technology (Intel® QAT)

Intel® In-memory Analytics Accelerator (Intel® IAA)

Intel® Data Direct I/O (Intel® DDIO)

Intel® Advanced Vector Extensions 512 (Intel® AVX-512)

Intel® Crypto Acceleration

**intel**  
**XEON** Accelerate with Xeon

Supported in 4th Gen Intel® Xeon® Scalable processors and Intel® Xeon® CPU Max Series processors

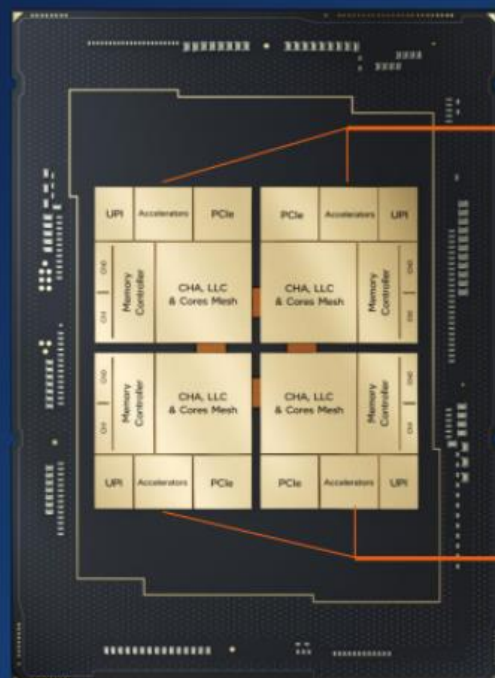
Source: Intel



**intel**

# Enabling the Intel® Accelerator Engines

Tools for developers to take advantage and deploy today



IAA, DSA,  
QAT, DLB

IAA, DSA,  
QAT, DLB



## Intel® Advanced Matrix Extensions (Intel® AMX)

- TensorFlow
- PyTorch
- ONNX Runtime
- OpenVINO
- oneDNN (Intel oneAPI)



## Intel® Advanced Vector Extensions (Intel® AVX) for vRAN

- FlexRAN
- Data Plane dev Kit (DPDK)\*



## Intel® In-memory Analytics Accelerator (Intel® IAA)

- Intel Query Processing Library



## Intel® Data Streaming Accelerator (Intel® DSA)

- Storage Perf Dev Kit (SPDK)\*
- Data Plane Dev Kit (DPDK)\*



## Intel® QuickAssist Technology (Intel® QAT)

- QATzip\* (Intel lib)
- OpenSSL\*\*
- Boring SSL



## Intel® Dynamic Load Balancer (Intel® DLB)

- VPP IPsec
- Data Plane Dev Kit (DPDK)\*

intel  
XEON Accelerate with Xeon

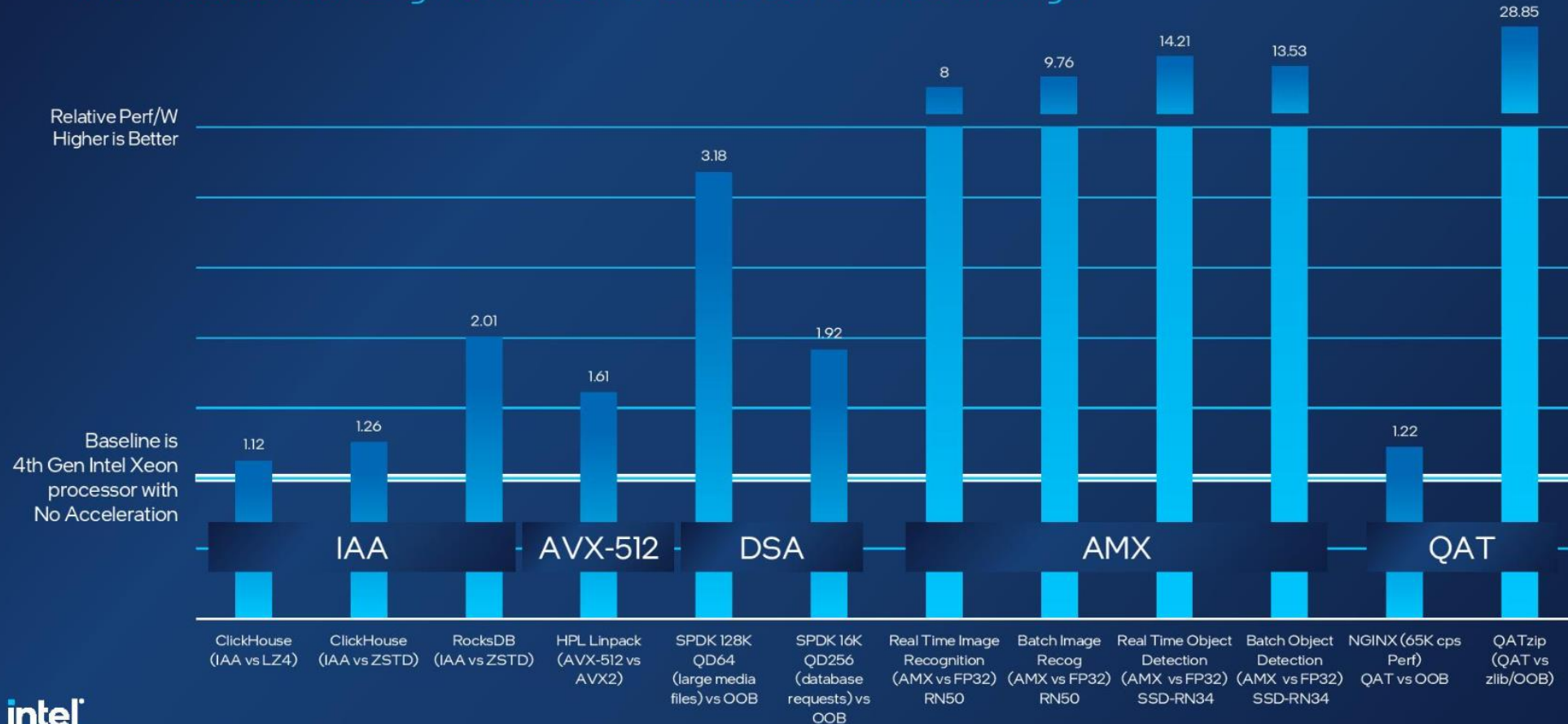
\*Intel open-source library (not part of stock SW).  
\*\*Difference between Intel version and stock version.  
\*\*\*Intel® QPL and \*Intel® DML in open-source beta, v1.0.0 coming shortly.



intel

# A More Energy Efficient Server Architecture

Intel® Accelerator Engines Raise Performance Per Watt Ceilings



**intel**  
**xeon** Accelerate with Xeon

See backup for workloads and configurations. Results may vary.

Source: Intel



**intel**



# Intel® Xeon® CPU Max Series

formerly codenamed Sapphire Rapids HBM



up to  
**56 P-cores**



Constructed with  
**Embedded  
Multi-Die  
Interconnect  
Bridge**

**350W**  
TDP

**CXL** Compute  
Express  
Link  
**1.1**

**20**  
Intel Accelerator  
Engines built in

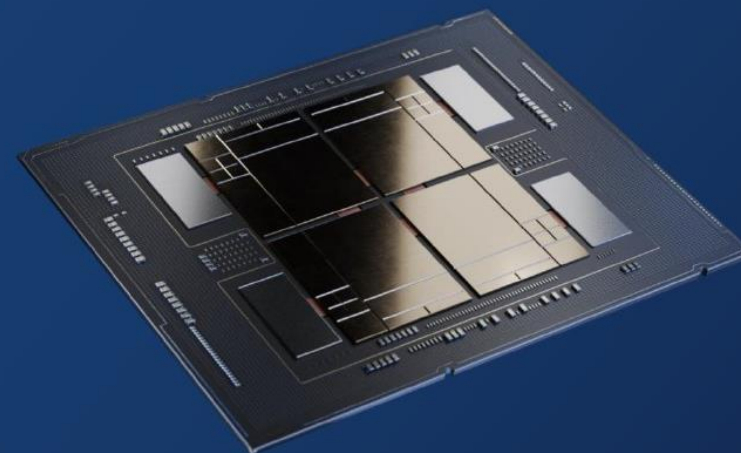
intel



intel



# Only x86 CPU with High Bandwidth Memory (HBM)



**64GB**  
HBM2e

up to  
**112.5MB**  
shared LLC

**DDR5**  
8 channels per  
CPU @ 4800MTS (1DPC)  
/ 16 DIMMs per socket

~1TB/s memory BW

>1GB/core HBM memory capacity

## Memory modes

### HBM Only

Workloads ≤ 64GB capacity

No code change  
No DDR

System boots  
and operates with  
HBM only

HBM

### HBM Flat Mode

Flat Mem Regions w/ HBM & DRAM  
Workloads > 64GB capacity

Code change may be  
needed to optimize perf

Provides flexibility for  
applications that require  
large memory capacity

HBM

DDR

### HBM Caching Mode

DRAM backed cache  
Improved performance for workloads > 64GB capacity

No code change  
HBM Caches DDR

Blend of both prior modes. Whole  
applications may fit in HBM cache  
Blurs line between cache and memory

HBM

DDR

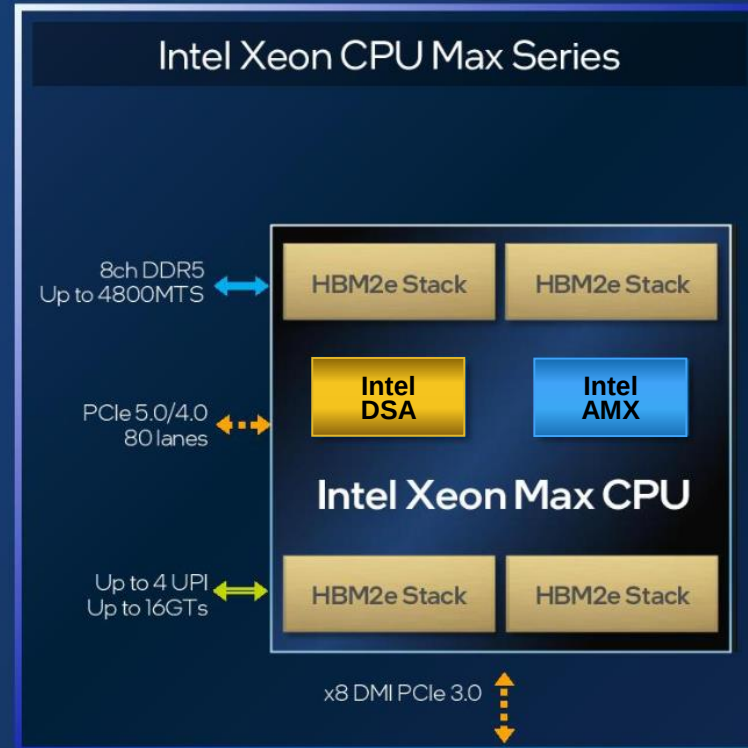
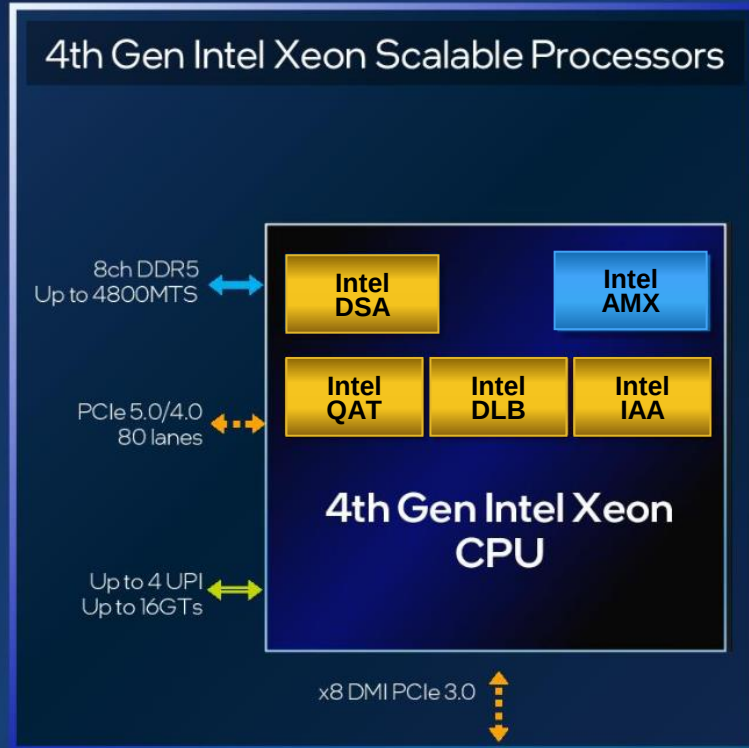
intel  
**xeon** Accelerate with Xeon

Source: Intel



intel

# Intel® Xeon Processors – built on the same foundation



intel  
xeon Accelerate with Xeon

Source: Intel

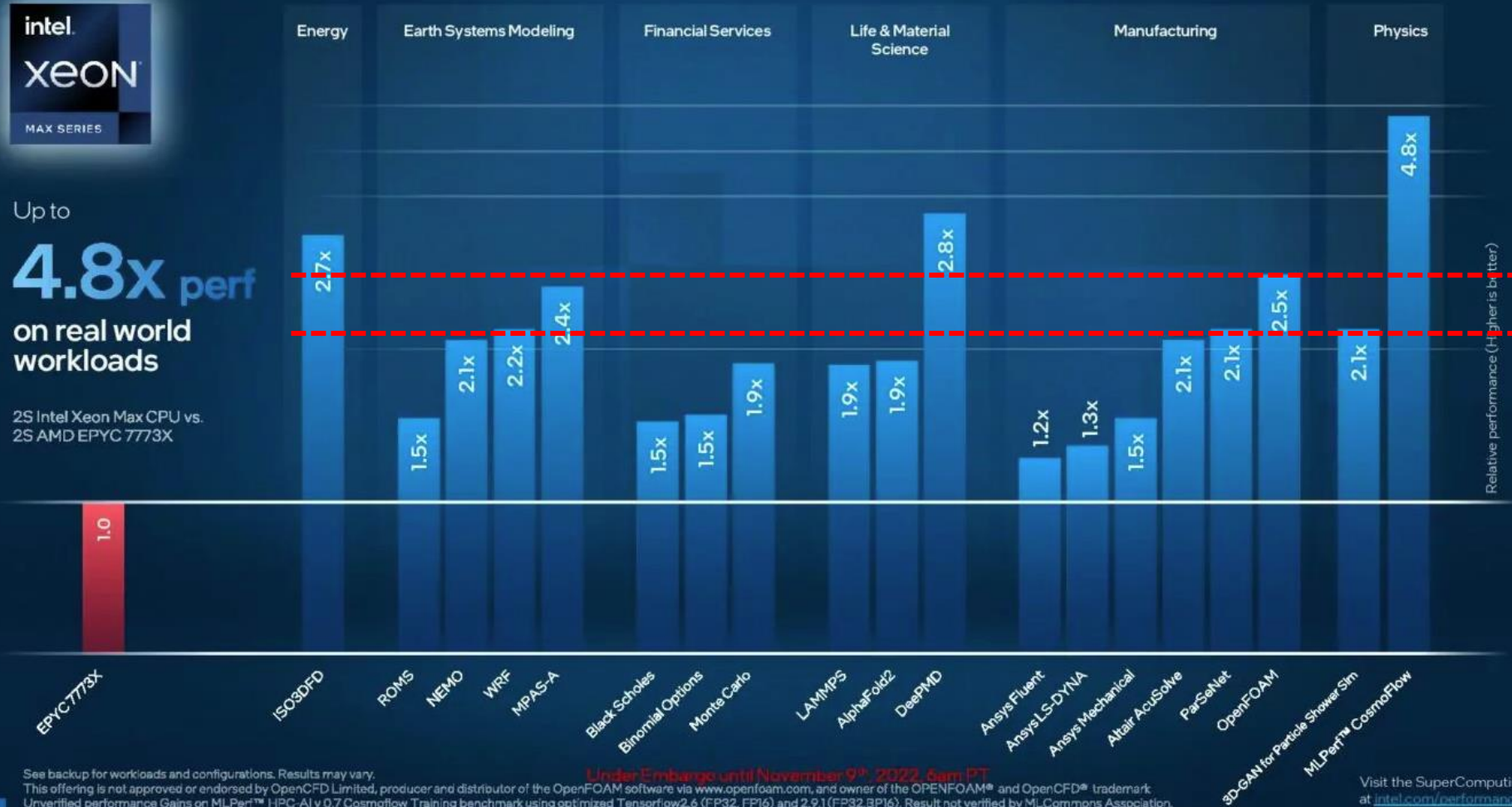


intel



Up to  
**4.8x perf**  
on real world  
workloads

2S Intel Xeon Max CPU vs.  
2S AMD EPYC 7773X



EPYC 9754

~

EPYC 9684X  
EPYC 9654

See backup for workloads and configurations. Results may vary.

This offering is not approved or endorsed by OpenCFD Limited, producer and distributor of the OpenFOAM software via [www.openfoam.com](http://www.openfoam.com), and owner of the OPENFOAM® and OpenCFD® trademark. Unverified performance Gains on MLPerf™ HPC-AI v 0.7 CosmoFlow Training benchmark using optimized Tensorflow2.6 (FP32, FP16) and 2.9.1 (FP32, BP16). Result not verified by MLCommons Association. Unverified results have not been through an MLPerf™ review and may use measurement methodologies and/or workload implementations that are inconsistent with the MLPerf™ specification for verified results. The MLPerf™ name and logo are trademarks of MLCommons Association in the United States and other countries. All rights reserved. Unauthorized use strictly prohibited. See [www.mlcommons.org](http://www.mlcommons.org) for more information.

Visit the SuperComputing 22 page at [intel.com/performanceindex](http://intel.com/performanceindex) for workloads and configurations. Results may vary.

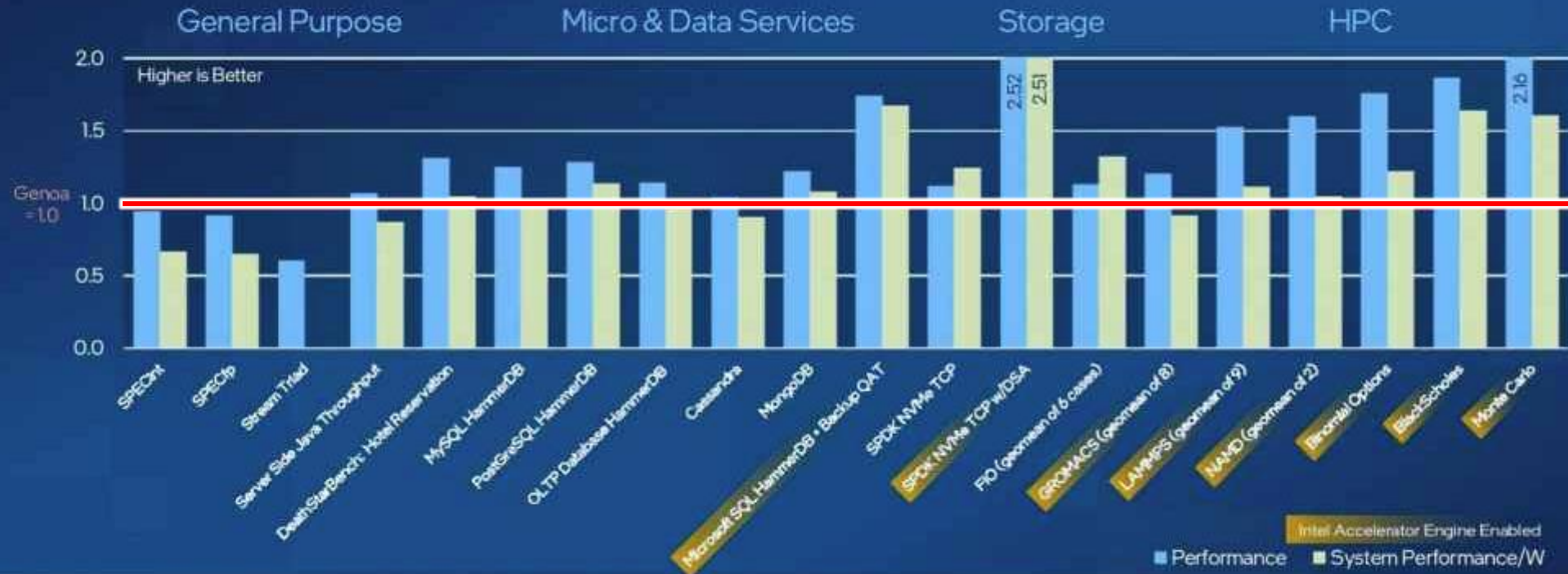
Source: Intel



intel

# 4<sup>th</sup> Gen Intel® Xeon® CPUs vs AMD 4<sup>th</sup> Gen EPYC

32C Broad Workload Performance: Intel Xeon 8462Y+ vs AMD Genoa 9354



Greater Performance And Efficiency On A Broad Range of Real-World Workloads

intel

Source: Intel



intel

## Intel® Xeon® CPU Max Series

**64GB**  
HBM2e in  
4 stacks of  
16GB

**>1GB**  
HBM2e  
per  
P-core

### Mem Modes

HBMonly  
Flat  
Cache

Xeon  
Max



GPU  
Max Series

Seamlessly Scale Software

2023 Release

Ext. SYCL Support

Enhanced CUDA to SYCL

Optimizations for TF & PyT

## 4th Gen Intel® Xeon®

**Scalable Processor**  
**Up to 1.6x**  
**Up to 2.6x**

Performance  
vs Intel® Xeon®  
8380 processor on  
Industry Benchmarks

Performance uplift across  
wide range of workloads  
vs. Intel® Xeon® 8380  
processor

**Up to 20x**  
NLP Speed up

Numenta on  
25 Intel® Xeon® Max CPU  
vs. AMD Milan

**Only x86**

CPU with High  
Bandwidth  
Memory



# Maximize Impact

**intel.**  
**Acceleration**  
**Engines**  
**Built-in**  
**for HPC & AI**

Intel AVX512

Intel DL Boost

Intel DSA

Intel AMX

**Up to 5x**

Performance  
vs Intel® Xeon®  
8380 processor  
(Stream Triad)

**Up to 3.7x**

Performance  
vs Intel® Xeon® 8380  
processor

Anelastic Wave Propagation

Standard Staggered Grid

MPAS-A

NEMO

OpenFOAM

CosmoFlow

**Better Together**  
**Max Series CPU & GPU**  
**Up to 12.9x**

Performance  
vs Intel® Xeon® 8380  
LAMMPS.9 (Liquid Crystal  
Workload)



Max Series 1100 GPU

300W



Max Series 1350 GPU  
Max Series 1550 GPU

450W

600W



Max Series Subsystem

1800W

2400W



Accelerate with Xeon

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See backup for workloads and configurations. Results may vary.



**intel**

# Numbering Convention

|                     |   |   |   |   |   |   |
|---------------------|---|---|---|---|---|---|
| Intel Xeon Max      | 9 | 4 | # | # | a | a |
| Intel Xeon Platinum | 8 | 4 | # | # | a | a |
| Intel Xeon Gold     | 6 | 4 | # | # | a | a |
| Intel Xeon Gold     | 5 | 4 | # | # | a | a |
| Intel Xeon Silver   | 4 | 4 | # | # | a | a |
| Intel Xeon Bronze   | 3 | 4 | # | # | a | a |

SKU Shelf

- 9 = Max
- 8 = Platinum
- 6 = Gold
- 5 = Gold
- 4 = Silver
- 3 - Bronze

Processor SKU

- Ex. 20, 34

Generation

- “1” = 1<sup>st</sup> Gen (Skylake)
- “2” = 2<sup>nd</sup> Gen (Cascade Lake + Refresh)
- “3” = 3<sup>rd</sup> Gen (Ice Lake & Cooper Lake)
- “4” = 4<sup>th</sup> Gen (Sapphire Rapids)

| Workload Optimized                                      | Built-in Accelerators* |     |     |     |     | Up to       | SKU Shelf |
|---------------------------------------------------------|------------------------|-----|-----|-----|-----|-------------|-----------|
|                                                         | AMX                    | DSA | IAA | DLB | QAT | Socket/UPI  |           |
| <b>P</b> Cloud-IaaS                                     | ✓                      | 1   | 1   | 1   | 1   | 2S/3UPI     | P         |
| <b>V</b> Clous-SaaS                                     | ✓                      | 1   | 1   | 1   | 1   | 2S/3UPI, 1S | P         |
|                                                         | ✓                      | 1   | 1   |     |     | 2S/3UPI     | G6        |
| <b>M</b> Media Transcode                                | ✓                      | 1   | 1   |     |     |             | G6        |
| <b>H</b> DB and Analytics                               | ✓                      | 4   | 4   | 4   | 4   | 8S/4UPI     | P         |
|                                                         | ✓                      | 1   | 1   | 2   | 2   | 4S/3UPI     | G6        |
| <b>N</b> Network / 5G / Edge<br>(High TPT /Low latency) | ✓                      | 4   |     | 4   | 4   | 2S          | P         |
|                                                         | ✓                      | 1   |     | 2   | 2   | 2S, 1S      | G6, G5    |
| <b>S</b> Storage & HCI                                  | ✓                      | 4   |     | 4   | 4   | 2S/3UPI     | G6        |
|                                                         | ✓                      | 1   |     | 2   | 2   | 2S/3UPI     | G5        |
| <b>T</b> Long-life / Hight Tcase                        | ✓                      | 1   |     |     |     | 2S/2UPI     | S         |
| <b>U</b> 1-Socket*                                      | ✓                      | 1   |     |     |     | 1S          | G6        |
| <b>Q</b> Liquid Cooling                                 | ✓                      | 1   |     |     |     | 2S/3UPI     | P, G6     |
| <b>+</b> Feature +                                      | ✓                      | 1   | 1   | 1   | 1   |             |           |

- Notes:
- 1 to 4 Accelerator devices/instances supported on select SPR SKUs
  - Accelerators not available on 1S Bronze SKUs

- AMX: Available on all Silver to Platinum SKUs;
- DSA: 1 device available on all SKUs.
- “Y” designator used for general SKU stack to highlight SST-PP feature enabled.  
Workload optimized SKUs may have SST-PP enabled as well but will not have this designator.  
Please refer to Workload specific details in their respective section.  
1S Workload optimized SKUs will have a “1” digit before their respective letter (i.e. xxx1N)



# Expanding the Intel Xeon Processor Roadmap



Sapphire Rapids  
Intel 7  
2022



Emerald Rapids  
Intel 7  
2023



Granite Rapids  
Intel 3  
2024



Next Gen

P-Core

Perf/core  
optimized for  
mainstream &  
premium cloud and  
data-center  
applications



Sierra Forest  
Intel 3  
2024



Next Gen

E-Core

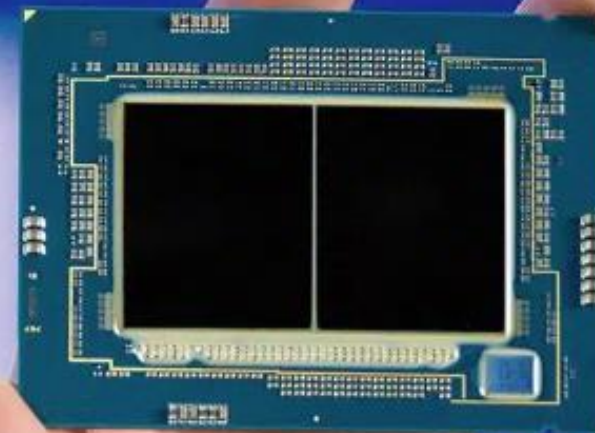
Power/perf  
optimized to  
support high-  
density, ultra-  
efficient compute  
for the cloud



intel

Source: Intel

# Nearest Future: Intel Xeon "Emerald Rapids"



- 2 Die
- up to 64 cores
- up to 320MB L3 Cache



intel

# Selecting Criteria

---

Intel Processors for HPE Servers



| Processor Number (SKU) | Cores | Threads | Frequency, GHz |           |           | Cache per chip, MiB |       | Memory   |      |             |      | UPI Q-ty@Speed | TDP, W     | Max Sockets | PCI Lanes & Gen | P M M    | Target Use Case (Workload Optimization) | Core Count                              | SGX, GB | On Demand | Accelerators        |      |      |      |      |     |
|------------------------|-------|---------|----------------|-----------|-----------|---------------------|-------|----------|------|-------------|------|----------------|------------|-------------|-----------------|----------|-----------------------------------------|-----------------------------------------|---------|-----------|---------------------|------|------|------|------|-----|
|                        |       |         | Base           | All Turbo | Max Turbo | L2                  | L3    | Max, TiB | Type | Speed, MT/s |      |                |            |             |                 |          |                                         |                                         |         |           | Default (On Demand) |      |      |      |      |     |
|                        |       |         |                |           |           |                     |       |          |      | 1DPC        | 2DPC |                |            |             |                 |          |                                         |                                         |         |           | Channels            | QAT  | DLB  | DSA  | IAA  | AMX |
| Max                    |       |         |                |           |           |                     |       |          |      |             |      |                |            |             |                 |          |                                         |                                         |         |           |                     |      |      |      |      |     |
| 9480                   | 56    | 112     | 1,9            | 2,6       | 3,5       | 112                 | 112,5 | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | -                                       | High Performance Computing Optimized    | HBM     | 512       | —                   | 0    | 0    | 4    | 0    | +   |
| 9470                   | 52    | 104     | 2,0            | 2,7       | 3,5       | 104                 | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | -                                       | High Performance Computing Optimized    | HBM     | 512       | —                   | 0    | 0    | 4    | 0    | +   |
| 9468                   | 48    | 96      | 2,1            | 2,6       | 3,5       | 96                  | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | -                                       | High Performance Computing Optimized    | HBM     | 512       | —                   | 0    | 0    | 4    | 0    | +   |
| 9462                   | 32    | 64      | 2,7            | 3,1       | 3,5       | 64                  | 75,0  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 350         | 2S              | 80 x 5.0 | -                                       | High Performance Computing Optimized    | HBM     | 128       | —                   | 0    | 0    | 4    | 0    | +   |
| 9460                   | 40    | 80      | 2,2            | 2,7       | 3,5       | 80                  | 97,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 350         | 2S              | 80 x 5.0 | -                                       | High Performance Computing Optimized    | HBM     | 128       | —                   | 0    | 0    | 4    | 0    | +   |
| Platinum               |       |         |                |           |           |                     |       |          |      |             |      |                |            |             |                 |          |                                         |                                         |         |           |                     |      |      |      |      |     |
| 8490H                  | 60    | 120     | 1,9            | 2,9       | 3,5       | 120                 | 112,5 | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 4    | 4    | 4    | 4    | +   |
| 8480+                  | 56    | 112     | 2,0            | 3,0       | 3,8       | 112                 | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | XCC     | 512       | Y                   | 1(4) | 1(4) | 1(4) | 1(4) | +   |
| 8471N                  | 52    | 104     | 1,8            | 2,8       | 3,6       | 104                 | 97,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | —          | 300         | 1S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | XCC     | 128 (512) | Y                   | 4    | 4    | 4    | 0    | +   |
| 8470Q                  | 52    | 104     | 2,1            | 3,2       | 3,8       | 104                 | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Liquid Cooling General Purpose          | XCC     | 512       | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 8470N                  | 52    | 104     | 1,7            | 2,7       | 3,6       | 104                 | 97,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 300         | 2S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | XCC     | 128 (512) | Y                   | 4    | 4    | 4    | 0    | +   |
| 8470                   | 52    | 104     | 2,0            | 3,0       | 3,8       | 104                 | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | XCC     | 512       | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 8468H                  | 48    | 96      | 2,1            | 3,0       | 3,8       | 96                  | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 330         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 4    | 4    | 4    | 4    | +   |
| 8468V                  | 48    | 96      | 2,4            | 2,9       | 3,8       | 96                  | 97,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 330         | 2S              | 80 x 5.0 | +                                       | Cloud-Optimized / SaaS                  | XCC     | 128 (512) | Y                   | 1    | 1    | 1(4) | 1(4) | +   |
| 8468                   | 48    | 96      | 2,1            | 3,1       | 3,8       | 96                  | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | XCC     | 512       | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 8462Y+                 | 32    | 64      | 2,8            | 3,6       | 4,1       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 300         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 1(2) | 1(2) | 1    | 1    | +   |
| 8461V                  | 48    | 96      | 2,2            | 2,8       | 3,7       | 96                  | 97,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | —          | 300         | 1S              | 80 x 5.0 | +                                       | Cloud-Optimized / SaaS                  | XCC     | 128 (512) | Y                   | 1    | 1    | 1(4) | 1(4) | +   |
| 8460H                  | 40    | 80      | 2,2            | 3,1       | 3,8       | 80                  | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 330         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 0    | 0    | 4    | 4    | +   |
| 8460Y+                 | 40    | 80      | 2,0            | 2,8       | 3,7       | 80                  | 105   | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 300         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | XCC     | 128 (512) | Y                   | 1(4) | 1(4) | 1(4) | 1(4) | +   |
| 8458P                  | 44    | 88      | 2,7            | 3,2       | 3,8       | 88                  | 82,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Cloud-Optimized / IaaS                  | XCC     | 512       | Y                   | 1    | 1    | 1(4) | 1(4) | +   |
| 8454H                  | 32    | 64      | 2,1            | 2,7       | 3,4       | 64                  | 82,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 270         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 4    | 4    | 4    | 4    | +   |
| 8452Y                  | 36    | 72      | 2,0            | 2,8       | 3,2       | 72                  | 67,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 300         | 2S              | 80 x 5.0 | +                                       | Mainline General Purpose                | XCC     | 128 (512) | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 8450H                  | 28    | 56      | 2,0            | 2,6       | 3,5       | 56                  | 75    | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 250         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 0    | 0    | 4    | 4    | +   |
| 8444H                  | 16    | 32      | 2,9            | 3,2       | 4,0       | 32                  | 45    | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 270         | 8S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | XCC     | 512       | —                   | 0    | 0    | 4    | 4    | +   |

Note: **X4XX** Processor not [yet] supported by HPE Servers

| Processor Number (SKU) | Cores | Threads | Frequency, GHz |           |           | Cache per chip, MiB |       | Memory   |      |             |      | UPI Q-ty@Speed | TDP, W     | Max Sockets | PCI Lanes & Gen | P M      | Target Use Case (Workload Optimization) | Core Count                              | SGX, GB | On Demand | Accelerators        |      |      |      |      |     |
|------------------------|-------|---------|----------------|-----------|-----------|---------------------|-------|----------|------|-------------|------|----------------|------------|-------------|-----------------|----------|-----------------------------------------|-----------------------------------------|---------|-----------|---------------------|------|------|------|------|-----|
|                        |       |         | Base           | All Turbo | Max Turbo | L2                  | L3    | Max, TiB | Type | Speed, MT/s |      |                |            |             |                 |          |                                         |                                         |         |           | Default (On Demand) |      |      |      |      |     |
|                        |       |         |                |           |           |                     |       |          |      | 1DPC        | 2DPC |                |            |             |                 |          |                                         |                                         |         |           | Channels            | QAT  | DLB  | DSA  | IAA  | AMX |
| Gold                   |       |         |                |           |           |                     |       |          |      |             |      |                |            |             |                 |          |                                         |                                         |         |           |                     |      |      |      |      |     |
| 6458Q                  | 32    | 64      | 3,1            | 4,0       | 4,0       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 350         | 2S              | 80 x 5.0 | +                                       | Liquid Cooling General Purpose          | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6454S                  | 32    | 64      | 2,2            | 2,8       | 3,4       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 4 @ 16GT/s | 270         | 2S              | 80 x 5.0 | +                                       | Storage and HCI Optimized               | XCC     | 128 (512) | Y                   | 4    | 4    | 4    | 0    | +   |
| 6448H                  | 32    | 64      | 2,4            | 3,2       | 4,1       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 250         | 4S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | MCC     | 512       | —                   | 2    | 2    | 1    | 1    | +   |
| 6448Y                  | 32    | 64      | 2,1            | 3,0       | 4,1       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 225         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6444Y                  | 16    | 32      | 3,6            | 4,0       | 4,0       | 32                  | 45    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 270         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6442Y                  | 24    | 48      | 2,6            | 3,3       | 4,0       | 48                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 225         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6438Y+                 | 32    | 64      | 2,0            | 2,8       | 4,0       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 205         | 2S              | 80 x 5.0 | +                                       | Mainline General Purpose                | MCC     | 128 (512) | Y                   | 1(2) | 1(2) | 1    | 1    | +   |
| 6438N                  | 32    | 64      | 2,0            | 2,7       | 3,6       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 205         | 2S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 2    | 2    | 1    | 0(1) | +   |
| 6438M                  | 32    | 64      | 2,2            | 2,8       | 3,9       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 205         | 2S              | 80 x 5.0 | +                                       | Cloud-Optimized / Media                 | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 1    | +   |
| 6434H                  | 8     | 16      | 3,7            | 4,1       | 4,1       | 16                  | 22,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 195         | 4S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | MCC     | 512       | —                   | 0    | 0    | 1    | 1    | +   |
| 6434                   | 8     | 16      | 3,7            | 4,1       | 4,1       | 16                  | 22,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 195         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6430                   | 32    | 64      | 2,1            | 2,6       | 3,4       | 64                  | 60    | 4,0      | DDR5 | 4400        | 4400 | 8              | 3 @ 16GT/s | 270         | 2S              | 80 x 5.0 | +                                       | Mainline General Purpose                | XCC     | 128 (512) | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 6428N                  | 32    | 64      | 1,8            | 2,5       | 3,8       | 64                  | 60    | 4,0      | DDR5 | 4000        | 4000 | 8              | 3 @ 16GT/s | 185         | 2S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 2    | 2    | 1    | 0(1) | +   |
| 6426Y                  | 16    | 32      | 2,5            | 3,3       | 4,1       | 32                  | 37,5  | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 185         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6421N                  | 32    | 64      | 1,8            | 2,6       | 3,6       | 64                  | 60    | 4,0      | DDR5 | 4400        | 4400 | 8              | —          | 185         | 1S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 6418H                  | 24    | 48      | 2,1            | 2,9       | 4,0       | 48                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 185         | 4S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | MCC     | 512       | —                   | 0    | 0    | 1    | 1    | +   |
| 6416H                  | 18    | 36      | 2,2            | 2,9       | 4,2       | 36                  | 45    | 4,0      | DDR5 | 4800        | 4400 | 8              | 3 @ 16GT/s | 165         | 4S              | 80 x 5.0 | +                                       | IMDB/Analytics/Virtualization Optimized | MCC     | 512       | —                   | 0    | 0    | 1    | 1    | +   |
| 6414U                  | 32    | 64      | 2,0            | 2,6       | 3,4       | 64                  | 60    | 4,0      | DDR5 | 4800        | 4400 | 8              | —          | 250         | 1S              | 80 x 5.0 | +                                       | Single-Socket General Purpose           | XCC     | 128 (512) | Y                   | 0    | 0    | 1(4) | 0(4) | +   |
| 5433N                  | 20    | 40      | 2,3            | ?         | 4,1       | 40                  | 37,5  | 4,0      | DDR5 | 4000        | 4000 | 8              | —          | 160         | 1S              | 48 x 4.0 | -                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0    | +   |
| 5423N                  | 20    | 40      | 2,1            | ?         | 4,0       | 40                  | 37,5  | 4,0      | DDR5 | 4000        | 4000 | 8              | —          | 145         | 1S              | 48 x 4.0 | -                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0    | -   |
| 5420+                  | 28    | 56      | 2,0            | 2,7       | 4,1       | 56                  | 52,5  | 4,0      | DDR5 | 4400        | 4400 | 8              | 3 @ 16GT/s | 205         | 2S              | 80 x 5.0 | +                                       | Mainline General Purpose                | MCC     | 128 (512) | Y                   | 1(2) | 1(2) | 1    | 1    | +   |
| 5418Y                  | 24    | 48      | 2,0            | 2,8       | 3,8       | 48                  | 45    | 4,0      | DDR5 | 4400        | 4400 | 8              | 3 @ 16GT/s | 185         | 2S              | 80 x 5.0 | +                                       | Mainline General Purpose                | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 5418N                  | 24    | 48      | 1,8            | 2,6       | 3,8       | 48                  | 45    | 4,0      | DDR5 | 4000        | 4000 | 8              | 3 @ 16GT/s | 165         | 2S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 2    | 2    | 1    | 0(1) | +   |
| 5416S                  | 16    | 32      | 2,0            | 2,8       | 4,0       | 32                  | 30    | 4,0      | DDR5 | 4400        | 4400 | 8              | 3 @ 16GT/s | 150         | 2S              | 80 x 5.0 | +                                       | Storage and HCI Optimized               | MCC     | 128 (512) | Y                   | 2    | 2    | 1    | 0(1) | +   |
| 5415+                  | 8     | 16      | 2,9            | 3,6       | 4,1       | 16                  | 22,5  | 4,0      | DDR5 | 4400        | 4400 | 8              | 3 @ 16GT/s | 150         | 2S              | 80 x 5.0 | +                                       | Performance General Purpose             | MCC     | 128 (512) | Y                   | 1(2) | 1(2) | 1    | 1    | +   |
| 5412U                  | 24    | 48      | 2,1            | 2,9       | 3,9       | 48                  | 45    | 4,0      | DDR5 | 4400        | 4400 | 8              | —          | 185         | 1S              | 80 x 5.0 | +                                       | Single-Socket General Purpose           | MCC     | 128 (512) | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 5411N                  | 24    | 48      | 1,9            | 2,8       | 3,9       | 48                  | 45    | 4,0      | DDR5 | 4400        | 4400 | 8              | —          | 165         | 1S              | 80 x 5.0 | +                                       | 5G / Networking Optimized               | MCC     | 128 (512) | Y                   | 2    | 2    | 1    | 0(1) | ?   |
| Silver                 |       |         |                |           |           |                     |       |          |      |             |      |                |            |             |                 |          |                                         |                                         |         |           |                     |      |      |      |      |     |
| 4416+                  | 20    | 40      | 2,0            | 2,9       | 3,9       | 40                  | 37,5  | 4,0      | DDR5 | 4000        | 4000 | 8              | 2 @ 16GT/s | 165         | 2S              | 80 x 5.0 | -                                       | Mainline General Purpose                | MCC     | 64 (512)  | Y                   | 1(2) | 1(2) | 1    | 1    | +   |
| 4410Y                  | 12    | 24      | 2,0            | 2,8       | 3,9       | 24                  | 30    | 4,0      | DDR5 | 4000        | 4000 | 8              | 2 @ 16GT/s | 150         | 2S              | 80 x 5.0 | -                                       | Mainline General Purpose                | MCC     | 64 (512)  | Y                   | 0    | 0    | 1    | 0(1) | +   |
| 4410T                  | 10    | 20      | 2,7            | 3,4       | 4,0       | 20                  | 26,25 | 4,0      | DDR5 | 4000        | 4000 | 8              | 2 @ 16GT/s | 150         | 2S              | 80 x 5.0 | -                                       | Long-Life Use (IoT) General Purpose     | MCC     | 64 (512)  | Y                   | 0    | 0    | 1    | 0(1) | +   |
| Bronze                 |       |         |                |           |           |                     |       |          |      |             |      |                |            |             |                 |          |                                         |                                         |         |           |                     |      |      |      |      |     |
| 3408U                  | 8     | 8       | 1,8            | 1,9       | 1,9       | 16                  | 22,5  | 4,0      | DDR5 | 4000        | 4000 | 8              | —          | 125         | 1S              | 80 x 5.0 | -                                       | Single-Socket General Purpose           | MCC     | 64        | N                   | 0    | 0    | 1    | 0    | ?   |

Note: **X4XX** Processor not [yet] supported by HPE Servers

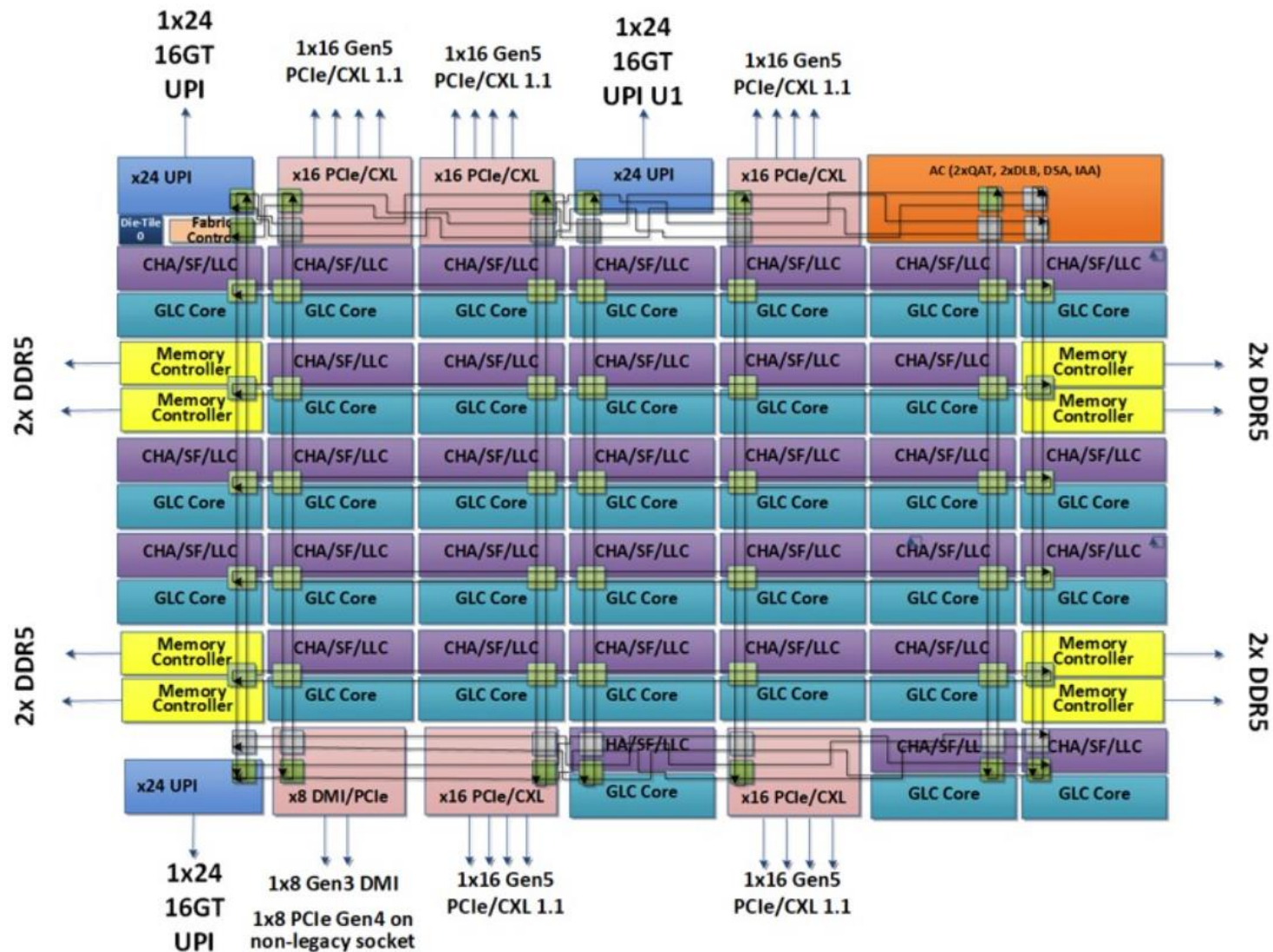
| Processor Number (SKU) | Description<br>(Base Frequency / Number of Cores / Memory Type and max Speed / max TDP) | Speed Select Technology                                           |                |            |                 | Default  |                |           |           | SST - PP |       |                |           |           |        |       |                |                     |           |                    |            | SST - BF |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------|------------|-----------------|----------|----------------|-----------|-----------|----------|-------|----------------|-----------|-----------|--------|-------|----------------|---------------------|-----------|--------------------|------------|----------|------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|
|                        |                                                                                         | Performance Profile                                               | Base Frequency | Core Power | Turbo Frequency | Config 0 |                |           |           | Config 1 |       |                |           | Config 2  |        |       |                | High Priority Cores |           | Low Priority Cores |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|                        |                                                                                         |                                                                   |                |            |                 | Cores    | Frequency, GHz |           |           | TDP, W   | Cores | Frequency, GHz |           |           | TDP, W | Cores | Frequency, GHz |                     |           |                    |            | TDP, W   |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|                        |                                                                                         |                                                                   |                |            |                 |          | Base           | All Turbo | Max Turbo |          |       | Base           | All Turbo | Max Turbo |        |       | Base           | All Turbo           | Max Turbo | Q-ty               | Freq., GHz |          | Q-ty | Freq., GHz |     |     |     |     |     |     |     |     |     |     |  |  |
| Max                    |                                                                                         |                                                                   |                |            |                 |          |                |           |           |          |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 9480                   | Intel Xeon Max 9480 Processor (1.9GHz/56-core/DDR5-4800/64GB HBM/350W)                  | —                                                                 | —              | CP         | —               | 56       | 1,9            | 2,6       | 3,5       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 9470                   | Intel Xeon Max 9470 Processor (2.0GHz/52-core/DDR5-4800/64GB HBM/350W)                  | PP                                                                | —              | CP         | TF              | 52       | 2,0            | 2,7       | 3,5       | 350      | 48    | 2,1            | ?         | ?         | 350    | 32    | 2,6            | ?                   | ?         | 350                |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 9468                   | Intel Xeon Max 9468 Processor (2.1GHz/48-core/DDR5-4800/64GB HBM/350W)                  | PP                                                                | —              | CP         | TF              | 48       | 2,1            | 2,6       | 3,5       | 350      | 40    | 2,2            | ?         | ?         | 350    | 36    | 2,4            | ?                   | ?         | 350                |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 9462                   | Intel Xeon Max 9462 Processor (2.7GHz/32-core/DDR5-4800/64GB HBM/350W)                  | —                                                                 | —              | CP         | —               | 32       | 2,7            | 3,1       | 3,5       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 9460                   | Intel Xeon Max 9460 Processor (2.2GHz/40-core/DDR5-4800/64GB HBM/350W)                  | —                                                                 | —              | CP         | —               | 40       | 2,2            | 2,7       | 3,5       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| Platinum               |                                                                                         |                                                                   |                |            |                 |          |                |           |           |          |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
| 8490H                  | Intel Xeon Platinum 8490H Processor (1.9GHz/60-core/DDR5-4800/350W)                     | —                                                                 | BF             | CP         | TF              | 60       | 1,9            | 2,9       | 3,5       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2   | 44  | 1,6 |     |     |     |     |     |     |  |  |
| 8480+                  | Intel Xeon Platinum 8480+ Processor (2.0GHz/56-core/DDR5-4800/350W)                     | —                                                                 | BF             | CP         | TF              | 56       | 2,0            | 3,0       | 3,8       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2,1 | 40  | 1,7 | 4,0 | 350 | 8   | 3,3 | 24  | 2,8 |  |  |
| 8471N                  | Intel Xeon Platinum 8471N Processor (1.8GHz/52-core/DDR5-4800/300W)                     | PP                                                                | BF             | CP         | TF              | 52       | 1,8            | 2,8       | 3,6       | 300      | 52    | 1,8            | 2,8       | 3,6       | 300    | 52    | 2,1            | 2,7                 | 3,6       | 300                | 16         | 1,9      | 36   | 1,3        | 3,4 | 225 | 12  | 2,3 | 20  | 1,7 |     |     |     |     |  |  |
| 8470Q                  | Intel Xeon Platinum 8470Q Processor (2.1GHz/52-core/DDR5-4800/350W)                     | —                                                                 | BF             | CP         | TF              | 52       | 2,1            | 3,2       | 3,8       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2,3 | 36  | 1,9 | 4,1 | 205 | 12  | 2,6 | 20  | 2,1 |  |  |
| 8470N                  | Intel Xeon Platinum 8470N Processor (1.7GHz/52-core/DDR5-4800/300W)                     | PP                                                                | BF             | CP         | TF              | 52       | 1,7            | 2,7       | 3,6       | 300      | 52    | 1,8            | 2,7       | 3,6       | 300    | 52    | 2,1            | 2,7                 | 3,6       | 300                | 16         | 1,8      | 36   | 1,3        | 4,1 | 205 | 12  | 2,4 | 20  | 2,0 |     |     |     |     |  |  |
| 8470                   | Intel Xeon Platinum 8470 Processor (2.0GHz/52-core/DDR5-4800/350W)                      | —                                                                 | BF             | CP         | TF              | 52       | 2,0            | 3,0       | 3,8       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2,2 | 36  | 1,8 | 4,0 | 200 | 4   | 3,7 | 12  | 3,2 |  |  |
| 8468H                  | Intel Xeon Platinum 8468H Processor (2.1GHz/48-core/DDR5-4800/330W)                     | —                                                                 | BF             | CP         | TF              | 48       | 2,1            | 3,0       | 3,8       | 330      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2,2 | 32  | 1,8 | 4,0 | 205 | 8   | 2,8 | 16  | 2,5 |  |  |
| 8468V                  | Intel Xeon Platinum 8468V Processor (2.4GHz/48-core/DDR5-4800/330W)                     | PP                                                                | BF             | CP         | TF              | 48       | 2,4            | 2,9       | 3,8       | 330      | 48    | 2,1            | 2,7       | 3,7       | 300    | 48    | 1,8            | 2,4                 | 3,5       | 270                | 16         | 2,5      | 32   | 2,1        | 4,0 | 185 | 12  | 2,1 | 20  | 1,9 |     |     |     |     |  |  |
| 8468                   | Intel Xeon Platinum 8468 Processor (2.1GHz/48-core/DDR5-4800/350W)                      | —                                                                 | BF             | CP         | TF              | 48       | 2,1            | 3,1       | 3,8       | 350      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 16  | 2,3 | 32  | 1,9 | 3,6 | 205 | 12  | 2,2 | 20  | 1,8 |  |  |
| 8462Y+                 | Intel Xeon Platinum 8462Y+ Processor (2.8GHz/32-core/DDR5-4800/300W)                    | PP                                                                | BF             | CP         | TF              | 32       | 2,8            | 3,6       | 4,1       | 300      | 32    | 2,6            | 3,4       | 4,1       | 270    | 24    | 3,0            | 3,7                 | 4,1       | 270                | 12         | 3,0      | 32   | 2,6        | 3,9 | 165 | 12  | 2,3 | 20  | 1,8 |     |     |     |     |  |  |
| 8461V                  | Intel Xeon Platinum 8461V Processor (2.2GHz/48-core/DDR5-4800/300W)                     | PP                                                                | BF             | CP         | TF              | 48       | 2,2            | 2,8       | 3,7       | 300      | 48    | 1,9            | 2,5       | 3,4       | 270    | 48    | 1,7            | 2,3                 | 3,5       | 250                | 16         | 2,3      | 32   | 1,9        |     |     | 2   | 3,9 | 6   | 3,4 |     |     |     |     |  |  |
| 8460H                  | Intel Xeon Platinum 8460H Processor (2.2GHz/40-core/DDR5-4800/330W)                     | —                                                                 | BF             | CP         | TF              | 40       | 2,2            | 3,1       | 3,8       | 330      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 12  | 2,4 | 28  | 2,0 |     |     | 2   | 3,9 | 6   | 3,3 |  |  |
| 8460Y+                 | Intel Xeon Platinum 8460Y+ Processor (2.0GHz/40-core/DDR5-4800/300W)                    | PP                                                                | BF             | CP         | TF              | 40       | 2,0            | 2,8       | 3,7       | 300      | 36    | 2,1            | 2,8       | 3,7       | 300    | 32    | 2,3            | 2,9                 | 3,7       | 300                | 12         | 2,1      | 28   | 1,7        |     |     | 12  | 2,2 | 20  | 1,8 |     |     |     |     |  |  |
| 8458P                  | Intel Xeon Platinum 8458P Processor (2.7GHz/44-core/DDR5-4800/350W)                     | PP                                                                | —              | CP         | TF              | 44       | 2,7            | 3,2       | 3,8       | 350      | 40    | 2,7            | 3,1       | 3,8       | 330    | 32    | 3,0            | 3,2                 | 3,8       | 330                |            |          |      |            | 3,8 | 185 | 12  | 1,9 | 20  | 1,5 |     |     |     |     |  |  |
| 8454H                  | Intel Xeon Platinum 8454H Processor (2.1GHz/32-core/DDR5-4800/270W)                     | —                                                                 | BF             | CP         | TF              | 32       | 2,1            | 2,7       | 3,4       | 270      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 12  | 2,2 | 20  | 1,8 | 4,1 | 150 | 4   | 2,7 | 12  | 2,4 |  |  |
| 8452Y                  | Intel Xeon Platinum 8452Y Processor (2.0GHz/36-core/DDR5-4800/300W)                     | PP                                                                | BF             | CP         | TF              | 36       | 2,0            | 2,8       | 3,2       | 300      | 32    | 1,9            | 2,5       | 3,2       | 270    | 24    | 2,1            | 2,5                 | 3,2       | 250                | 12         | 2,2      | 24   | 1,8        | 3,6 | 185 |     |     |     |     |     |     |     |     |  |  |
| 8450H                  | Intel Xeon Platinum 8450H Processor (2.0GHz/28-core/DDR5-4800/250W)                     | PP                                                                | BF             | CP         | TF              | 28       | 2,0            | 2,6       | 3,5       | 250      | 24    | 1,9            | 2,3       | 3,2       | 225    | 20    | 1,9            | 2,1                 | 3,1       | 205                | 8          | 2,1      | 20   | 1,7        | 4,0 | 185 | 8   | 2,3 | 16  | 1,9 |     |     |     |     |  |  |
| 8444H                  | Intel Xeon Platinum 8444H Processor (2.9GHz/16-core/DDR5-4800/270W)                     | —                                                                 | —              | CP         | TF              | 16       | 2,9            | 3,2       | 4,0       | 270      |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            | 4,2 | 165 | 6   | 2,4 | 12  | 2,0 |     |     |     |     |  |  |
|                        | 6414U                                                                                   | Intel Xeon Gold 6414U Processor (2.0GHz/32-core/DDR5-4800/250W)   |                |            |                 |          | —              | BF        | CP        | TF       | 32    | 2,0            | 2,6       | 3,4       | 250    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     | 12  | 2,1 | 20  | 1,6 |     |  |  |
|                        | 5433N                                                                                   | Intel Xeon Gold 5433N Processor (2.3GHz/20-core/DDR5-4000/160W)   |                |            |                 |          | PP             | —         | CP        | TF       | 20    | 2,3            | ?         | 4,1       | 160    | ?     | ?              | ?                   | ?         | ?                  | ?          | ?        | ?    | ?          | ?   | ?   |     |     |     |     |     |     |     |     |  |  |
|                        | 5423N                                                                                   | Intel Xeon Gold 5423N Processor (2.1GHz/20-core/DDR5-4000/145W)   |                |            |                 |          | PP             | —         | CP        | TF       | 20    | 2,1            | ?         | 4,0       | 145    | ?     | ?              | ?                   | ?         | ?                  | ?          | ?        | ?    | ?          | ?   | ?   |     |     |     |     |     |     |     |     |  |  |
|                        | 5420+                                                                                   | Intel Xeon Gold 5420+ Processor (2.0GHz/28-core/DDR5-4400/205W)   |                |            |                 |          | —              | BF        | CP        | TF       | 28    | 2,0            | 2,7       | 4,1       | 205    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     | 8   | 2,2 | 20  | 1,8 |     |  |  |
|                        | 5418Y                                                                                   | Intel Xeon Gold 5418Y Processor (2.0GHz/24-core/DDR5-4400/185W)   |                |            |                 |          | PP             | BF        | CP        | TF       | 24    | 2,0            | 2,8       | 3,8       | 185    | 16    | 2,3            | 3,1                 | 3,8       | 165                | 12         | 2,7      | 3,2  | 3,8        | 165 | 8   | 2,2 | 16  | 1,7 |     |     |     |     |     |  |  |
|                        | 5418N                                                                                   | Intel Xeon Gold 5418N Processor (1.8GHz/24-core/DDR5-4000/165W)   |                |            |                 |          | PP             | BF        | CP        | TF       | 24    | 1,8            | 2,6       | 3,8       | 165    | 24    | 1,7            | 2,6                 | 3,8       | 165                | 24         | 1,9      | 2,6  | 3,8        | 165 | 8   | 2,0 | 16  | 1,6 |     |     |     |     |     |  |  |
|                        | 5416S                                                                                   | Intel Xeon Gold 5416S Processor (2.0GHz/16-core/DDR5-4400/150W)   |                |            |                 |          | PP             | BF        | CP        | TF       | 16    | 2,0            | 2,8       | 4,0       | 150    | 12    | 1,9            | 2,8                 | 4,0       | 135                | 8          | 2,5      | 3,1  | 4,0        | 135 | 4   | 2,1 | 12  | 1,7 |     |     |     |     |     |  |  |
|                        | 5415+                                                                                   | Intel Xeon Gold 5415+ Processor (2.9GHz/8-core/DDR5-4400/150W)    |                |            |                 |          | —              | BF        | CP        | TF       | 8     | 2,9            | 3,6       | 4,1       | 150    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     | 2   | 3,1 | 6   | 2,7 |     |  |  |
|                        | 5412U                                                                                   | Intel Xeon Gold 5412U Processor (2.1GHz/24-core/DDR5-4400/185W)   |                |            |                 |          | —              | BF        | CP        | TF       | 24    | 2,1            | 2,9       | 3,9       | 185    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     | 8   | 2,3 | 16  | 2,0 |     |  |  |
|                        | 5411N                                                                                   | Intel Xeon Gold 5411N Processor (1.9GHz/24-core/DDR5-4400/165W)   |                |            |                 |          | PP             | BF        | CP        | TF       | 24    | 1,9            | 2,8       | 3,9       | 165    | 24    | 1,9            | 2,8                 | 3,9       | 165                | 24         | 2,1      | 2,8  | 3,9        | 165 | 8   | 2,1 | 16  | 1,7 |     |     |     |     |     |  |  |
|                        | Silver                                                                                  |                                                                   |                |            |                 |          |                |           |           |          |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|                        | 4416+                                                                                   | Intel Xeon Silver 4416+ Processor (2.0GHz/20-core/DDR5-4000/165W) |                |            |                 |          | —              | —         | —         | —        | 20    | 2,0            | 2,9       | 3,9       | 165    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|                        | 4410Y                                                                                   | Intel Xeon Silver 4410Y Processor (2.0GHz/12-core/DDR5-4000/150W) |                |            |                 |          | PP             | —         | —         | —        | 12    | 2,0            | 2,8       | 3,9       | 150    | 8     | 2,0            | 2,9                 | 3,9       | 130                | 6          | 2,2      | 3,2  | 3,9        | 125 |     |     |     |     |     |     |     |     |     |  |  |
|                        | 4410T                                                                                   | Intel Xeon Silver 4410T Processor (2.7GHz/10-core/DDR5-4000/150W) |                |            |                 |          | PP             | —         | CP        | —        | 10    | 2,7            | 3,4       | 4,0       | 150    | 8     | 2,2            | 3,1                 | 4,0       | 125                | 6          | 2,7      | 3,3  | 4,0        | 125 |     |     |     |     |     |     |     |     |     |  |  |
|                        | Bronze                                                                                  |                                                                   |                |            |                 |          |                |           |           |          |       |                |           |           |        |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |
|                        | 3408U                                                                                   | Intel Xeon Bronze 3408U Processor (1.8GHz/8-core/DDR5-4000/125W)  |                |            |                 |          | —              | —         | —         | —        | 8     | 1,8            | 1,9       | 1,9       | 125    |       |                |                     |           |                    |            |          |      |            |     |     |     |     |     |     |     |     |     |     |  |  |

Note: **X4XX** Processor not [yet] supported by HPE Servers

# MCC Die Details

## Medium Core Count

- Monolithic Architecture
- Up to 32 cores
- Cache Memory - 2.0 MB L2 per Core, up to 60 MB L3 per Chip
- 4 Dual-Channel DDR5 Memory Controllers
- 3 or 2 x24 UPI 2.0 Links
- 5 x16 PCIe 5.0 / CXL 1.1 Controllers
- 1 x8 DMI Gen3 / PCIe 4.0 Controller
- 1 Accelerators Block :  
1 x DSA; 0 or 1 x IAA;  
0, 1, (or 2) x QAT; 0, 1, (or 2) x DLB

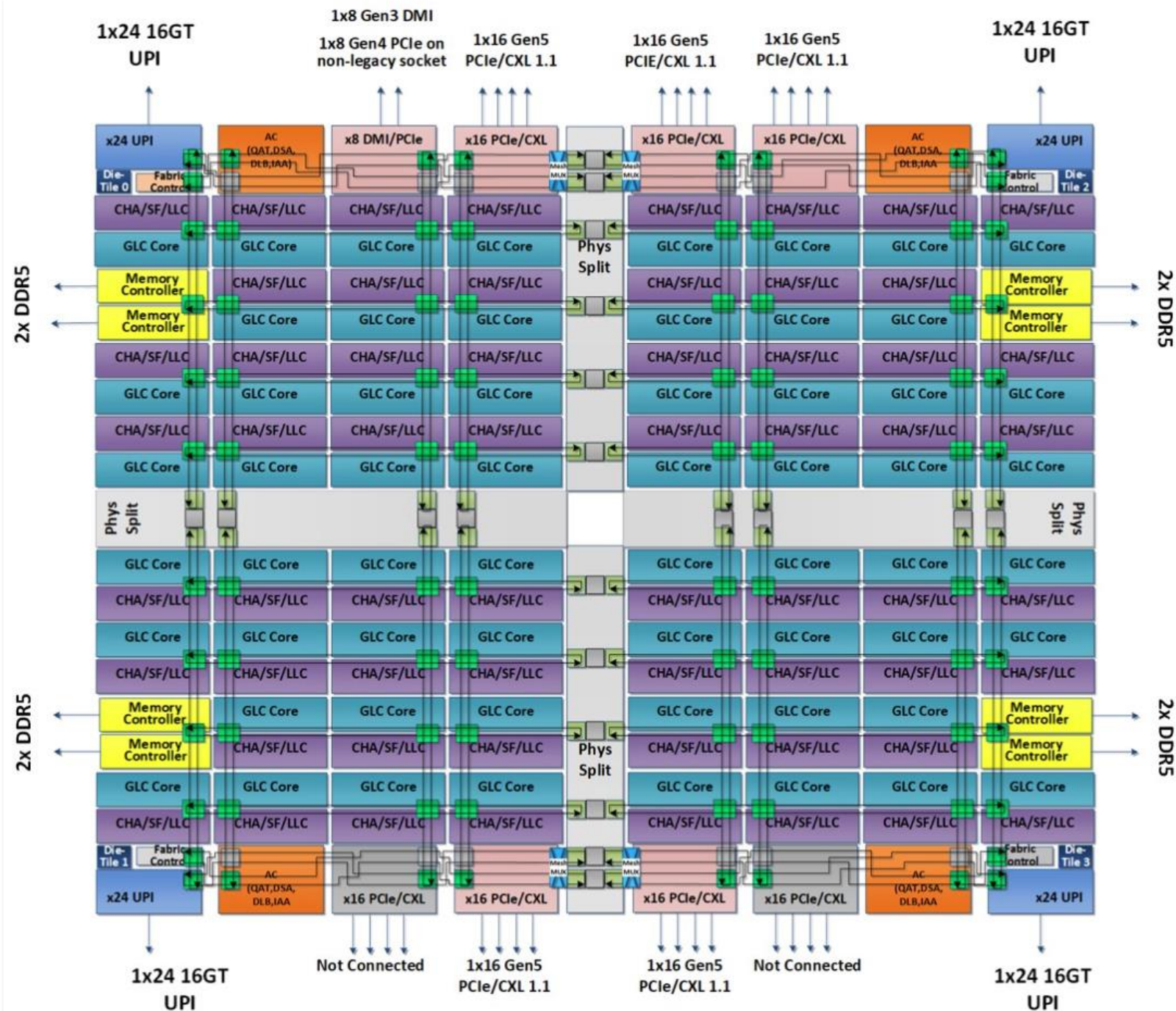


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# XCC Die Details

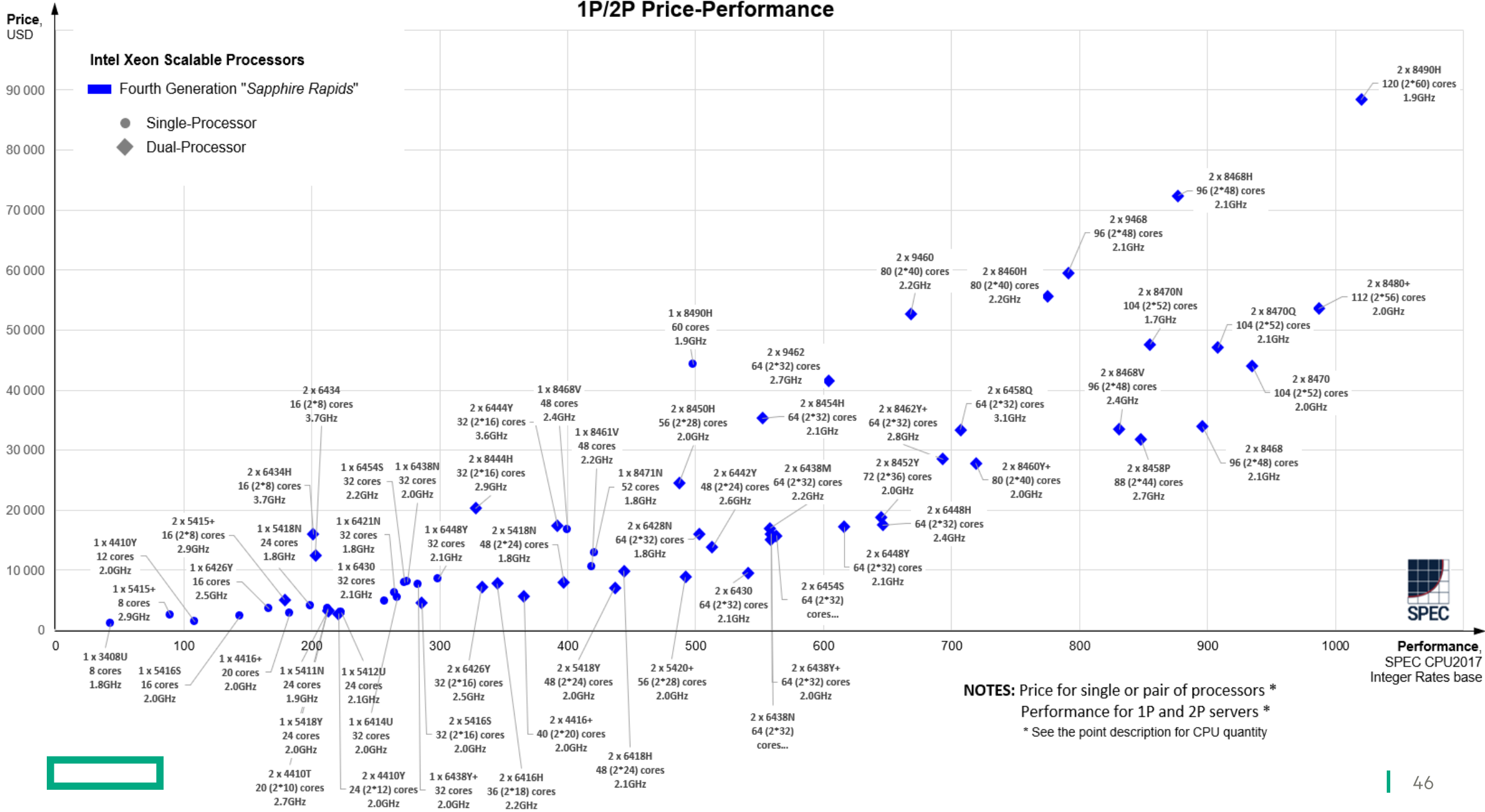
## Extreme Core Count

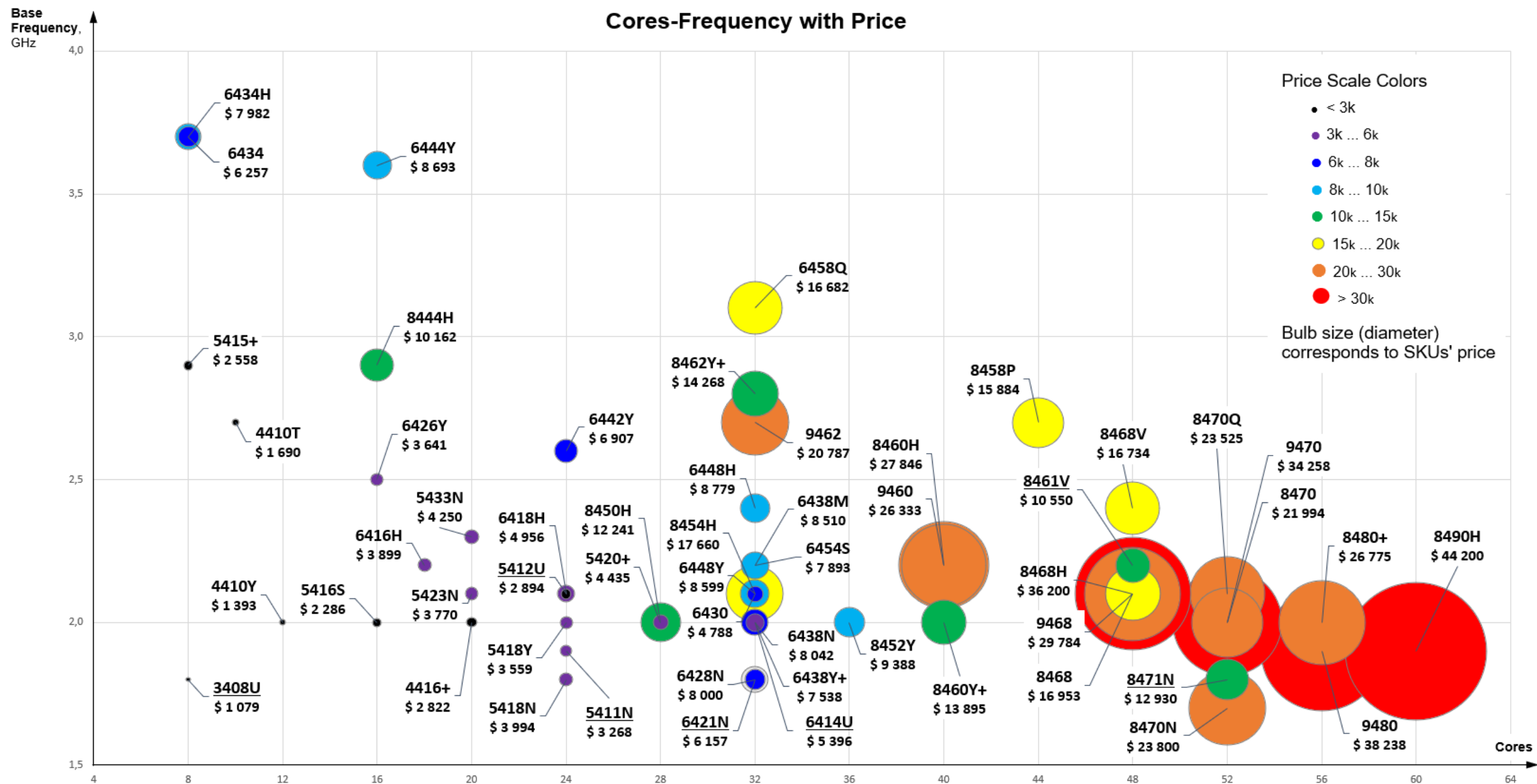
- 4 Dies per Chip, 10 Embedded Multi-Die Interconnect Bridge (EMIB) connections
- Up to 15 Cores per Die, 60 per Chip
- Cache Memory - 2.0 MB L2 per Core, up to 112.5 MB L3 per Chip
- 4 Dual-Channel DDR5 Memory Controllers, One per Die
- 4 or 3 x24 UPI 2.0 Links
- 5 x16 PCIe 5.0 / CXL 1.1 Controllers, One or Two per Die
- 1 x8 DMI Gen3 / PCIe 4.0 Controller, on the Die 0
- 1 Accelerators Block per Die, 4 per Chip: 1 or 4 x DSA; 0, 1 or 4 x IAA; 0, 1, or 4 x QAT; 0, 1, or 4 x DLB



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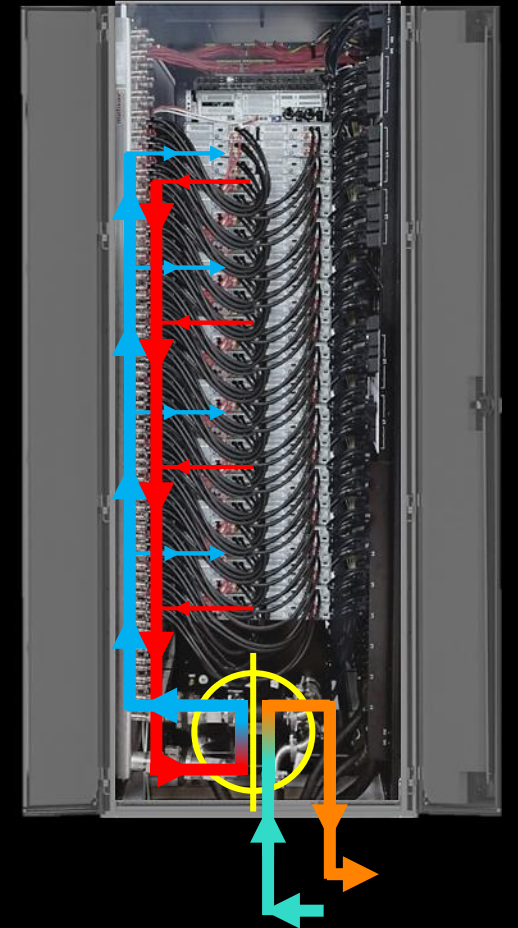
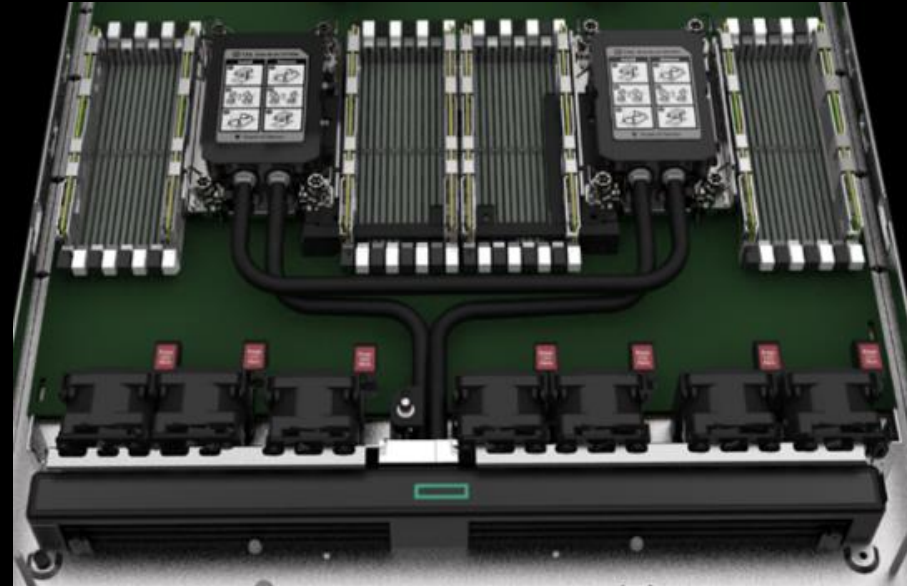
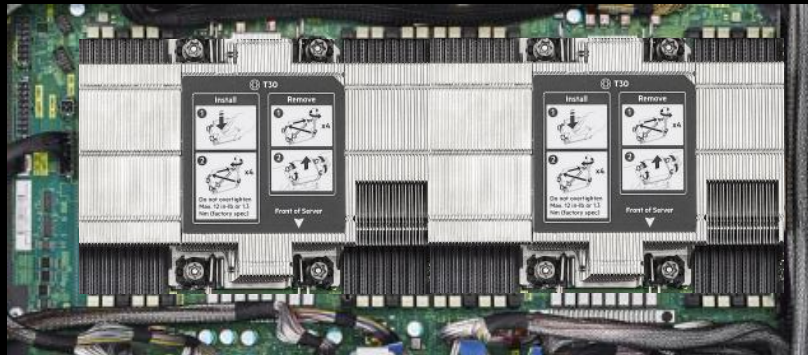
# 1P/2P Price-Performance





NOTE: Single-socket only SKUs underlined

# Processor Cooling Options



# Availability / Lead Time

|            |                                                                 |    |
|------------|-----------------------------------------------------------------|----|
| P49655-B21 | Intel Xeon-Platinum 9468 2.1GHz 48-core 350W Processor for HPE  | 42 |
| P49645-B21 | Intel Xeon-Platinum 9462 2.7GHz 32-core 350W Processor for HPE  | 42 |
| P49630-B21 | Intel Xeon-Platinum 8490H 1.9GHz 60-core 350W Processor for HPE | 28 |
| P49607-B21 | Intel Xeon-Platinum 8480+ 2.0GHz 56-core 350W Processor for HPE | 28 |
| P49625-B21 | Intel Xeon-Platinum 8444H 2.9GHz 16-core 270W Processor for HPE | 4  |
| P49608-B21 | Intel Xeon-Gold 6458Q 3.1GHz 32-core 350W Processor for HPE     | 28 |
| P49654-B21 | Intel Xeon-Gold 6454S 2.2GHz 32-core 270W Processor for HPE     | 28 |
| P49599-B21 | Intel Xeon-Gold 6442Y 2.6GHz 24-core 225W Processor for HPE     | 4  |
| P49615-B21 | Intel Xeon-Gold 6438Y+ 2.0GHz 32-core 205W Processor for HPE    | 4  |

Current Availability Status

- Short time
- Mid time
- Long time

Working days to option availability  
on the factory production line

EDT, Estimated Delivery Time



# Selecting Criteria

- Core Count
- Base Frequency
- All-Cores Turbo Frequency
- SST Profiles
- Memory Speed
- Cache Memory Size
- HBM on-Chip
- UPI Links q-ty
- Built-in Accelerators
- SGX Enclave Size
- Socket Scalability
- TDP / Cooling

- Performance
- Performance-per-Core
- Performance-per-Watt
- Performance-per-Price

- Processor Price
- Availability / Delivery Time



Do you have one more?



**Q & A**



# Thank You

Alexander Golovchenko

HPE Servers Product Manager

Alexander.Golovchenko@hpe.ua

+380 (67) 577-19-98

Sophela LLC, HPE Master Area Partner

110 Zhylyanska str., 6th floor,

Kyiv 01032, Ukraine

