

## Updated at ANSYS release 19.x

This document is designed to help you get started with your hardware selection. ANSYS is vendor neutral as we partner with all the major hardware vendors. At the end of this document are some suggested hardware recommendations based on the vendor that you normally purchase from. Please visit the vendor's website and attach any specifications to your SR for further review

Thank you

ANSYS Support

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### Latest INTEL Processors Blog

<http://www.ansys-blog.com/boost-ansys-performance-intel-technologies/>

### EBU (Electronics)

**Intel XEON Gold, Platinum, Bronze – 81xx, 61xx, 31xx series** (High clock speed on chip but not necessarily the highest)

**Note:** HFSS is primarily an in core solver so clock speed and RAM speed is important

- Turn off Hyper-threading
- Leave Turbo boost on

**Memory (Fastest memory, so DDR-4 2666 MHz)**

- To operate at maximum speed all memory channels in both processors should be populated with equal amounts of memory.
- 8 GB per core HFSS, Maxwell, and other Electronic Packages or minimum 128 GB – 256 GB

**Interconnect**

- Omni-Path, QDR or FDR IB interconnect if you will be running on 2 or more nodes in parallel (on a cluster, Minimum 10 G network)

**Hard Drives**

- SSD (SATA, SAS or NVMe interface) drives. Local disk is recommended for the solver for temporary file I/O during solves

**Graphics**

- Nvidia Quadro P1000, P2000, P4000, P5000

**GPU (HFSS, Maxwell Transient, Matrix Solvers)**

Nvidia GP100

### CFD (Fluids)

**Intel XEON Intel XEON Gold, Platinum, Bronze - 81xx, 61xx, 31xx series** (High clock speed on chip but not necessarily the highest)

- Turn off Hyper-threading
- Leave Turbo boost on

**Memory (Fastest memory, so DDR-4 2666 MHz)**

- To operate at maximum speed all memory channels in both processors should be populated with equal amounts of memory.
- 4 GB per core for CFD

### Interconnect

- Omni-Path, EDR, QDR or FDR IB interconnect if you will be running on 4 or more nodes in parallel

### Hard Drives

- SSD (SATA, SAS or NVMe interface) drives. Local disk is recommended for the solver for temporary file I/O during solves

### Graphics

- Nvidia Quadro P1000, P2000, P4000, P5000

### GPU (CFX does not support GPU)

- Nvidia GP100

### AVX2 (Fluent Only)

- Supported **ONLY** for Fluent 18.2 and higher using this flag in your startup script: **-platform=intel**

## Mechanical

### Intel XEON Gold, Platinum, Bronze - 81xx, 61xx, 31xx series (High clock speed on chip but not necessarily the highest)

- Turn off Hyper-threading
- Leave Turbo boost on

### Memory (Fastest memory, so DDR-4 2666 MHz)

- To operate at maximum speed all memory channels in both processors should be populated with equal amounts of memory.
- 8 GB per core

**Note:** Purchasing more RAM will alleviate I/O issues as (1) the solver can use this memory to avoid doing as much I/O, and (2) the operating system can then use available RAM to cache or buffer these I/O that MAPDL writes.

### Interconnect

- Omni-Path, EDR, QDR or FDR IB interconnect if you will be running on 2 or more nodes in parallel

### Hard Drives

- SSD (SATA, SAS or NVMe interface) drives. Local disk is recommended for the solver for temporary file I/O during solves

**Note:** The faster the hard drives the faster the simulation. For DMP, the program writes 8 sets of files (one for each core they run on), so having SSDs with a lower seek time can help avoid having to wait while the hard drive seeks to read/write to all those different files.

### Graphics

- Nvidia Quadro P1000, P2000, P4000, P5000

### GPU

- Nvidia GP100

## Additional Hard drive information (Electronics and Mechanical)

I/O to the hard drive is the third component of a balanced system. Well balanced systems can extend the size of models that can be solved if they use properly configured I/O components. If ANSYS simulations are able to run with all file I/O cached by a large amount of physical memory, then disk resources can be concentrated on storage more than performance.

A good rule of thumb is to have 10 times more disk space than physical memory available for your simulation. With today's large memory systems, this can easily mean disk storage requirements of 500 GB to 1 TB (TeraByte). However, if you use physical disk storage routinely to solve large models, a high performance file system can make a huge difference in simulation time.

A high performance file system could consist of solid state drives SSD (SATA, SAS or NVMe interface drives) or conventional spinning hard disk drives (HDDs). SSDs typically offer superior performance over HDDs, but have other factors to consider, such as cost and mean-time-to-failure. Like HDDs, multiple SSDs can be combined together in a RAID0 array. Maximum performance with a RAID array is obtained when the ANSYS simulation is run on a RAID0 array of 4 or more disks that is a separate disk partition from other system file activity. For example, on a Windows desktop the drive containing the operating system files should not be in the RAID0 configuration. This is the optimal recommended configuration. Many hardware companies do not currently configure separate RAID0 arrays in their advertised configurations. Even so, a standard RAID0 configuration is still faster for ANSYS simulations than a single drive.

## Servers versus Workstations

- If you have or will obtain in the future 32 or more parallel licenses (HPC Packs or Enterprise Licenses) and have one or more users that need to submit jobs using a higher core count than what is available on current Workstations we tend to recommend servers (or a cluster) and a supported Job Scheduler is required.

## IT Support

- If you decide, based on best practices and recommendations from Ansys, to buy a server or build a cluster, IT expertise is required or third party ANSYS Partner support for configuring your cluster and job scheduler (resource manager). Ansys does not configure clusters or job schedulers but we do provide full support for configuring Ansys supported applications on Servers, Workstations or Clusters. If you need a third-party Ansys partner to assist, for a fee please contact one of the third-party ANSYS partners below.

### Third party vendors that can help assist in the configuration and setup of ANSYS and maintain your cluster

**Dasher** - Chris Saso - [chris.saso@dasher.com](mailto:chris.saso@dasher.com) <http://www.dasher.com/>

**NorTech** - Bob Dreiss - [bdreis@reasonco.com](mailto:bdreis@reasonco.com) - Kyle Gross, [Kyleg@nor-tech.com](mailto:Kyleg@nor-tech.com) <http://www.nor-tech.com/>

**TotalCAE** - Rod Mach - [rod@totalcae.com](mailto:rod@totalcae.com) <http://www.totalcae.com/>

**X-ISS** - Jim Decker - [jdecker@x-iss.com](mailto:jdecker@x-iss.com) <http://www.x-iss.com/>

## Suggested Hardware Solutions

### DELL

#### Workstations

Dell Precision T7820, T7920, T5820

#### Servers

If you have 32 or more Ansys parallel licenses and have more than one user that needs to submit jobs we tend to recommend servers (for a cluster) and using a Job Scheduler

#### Some examples:

Dell PowerEdge R640, R740, R740xd

#### HPE

<https://www.hpe.com/us/en/product-catalog/servers/proliant-servers/pip.hpe-proliant-xl230k-gen10-server.1010027178.html>

#### Workstations

HPE Z6, Z8

#### Servers

If you have 32 or more Ansys parallel licenses and have more than one user that needs to submit jobs, we tend to recommend servers (for a cluster) and using a Job Scheduler.

<https://www.hpe.com/us/en/product-catalog/servers/proliant-servers/pip.hpe-proliant-xl230k-gen10-server.1010027178.html>

XL230k, DL380 Gen10, Apollo 86xx

#### LENOVO

#### Workstations

ThinkStation P720, P920

### Supported Job Schedulers

- Microsoft 2012 HPC Server R2 Update 3, **Microsoft 2016 HPC Server is not certified until Release 19.1**
- IBM Platform LSF (Linux)
- Altair PBS Pro (Linux)
- Univa (SGE) (Linux)
- Torque with Moab (Linux) **this is open source software** from Adaptive Computing. For Support and Setup please visit their website
  - <http://docs.adaptivecomputing.com>
  - <http://www.adaptivecomputing.com/pro>

### Information on Laptops and other Mobile Devices

ANSYS does not benchmark on Laptops or other mobile devices at this time and we cannot guarantee the performance or stability in using such devices. Our recommended hardware is based on performance testing on certified workstations and servers.

## Platform Support

Defining the optimum computer infrastructure for use of ANSYS software begins with understanding the computing platforms that are tested and supported by ANSYS. Follow the links below to learn about the computing platforms we support as well as reference system architectures recommended by valued partners.

<http://www.ansys.com/Solutions/Solutions-by-Role/IT-Professionals/Platform-Support>

Defining the optimum computer infrastructure for use of ANSYS software begins with understanding the computing platforms that are tested and supported by ANSYS. Follow the links below to learn about the computing platforms we support as well as reference system architectures recommended by valued partners.

[ANSYS Platform Support - Summary of Strategy and Plans \(PDF\)](#)

- [ANSYS 19.0 - Browser Support \(PDF\)](#)
- [ANSYS 19.0 - CAD Support \(PDF\)](#)
- [ANSYS 19.0 - 3Dconnexion Devices Certification \(PDF\)](#)
- [ANSYS 19.0 - Graphics Cards Tested \(PDF\)](#)
- [ANSYS 19.0 - GPU Accelerator & Co-Processor Capabilities \(PDF\)](#)
- [ANSYS 19.0 - Message Passing Interface Support for Parallel Computing \(PDF\)](#)
- [ANSYS 19.0 - Job Schedulers and Queuing Systems Support \(PDF\)](#)
- [ANSYS 19.0 - Platform Support by Application \(PDF\)](#)
- [ANSYS 19.0 - Remote Display and Virtual Desktop Support \(PDF\)](#)