ContextCapture software is a processing application that uses computer resources intensively. This document focuses on the hardware usage and the recommendation to build fast processing machines. For the main PC components, we propose 3 different options (low, medium and high), depending on the available budget. Of course, components from different budget categories can be mixed. Beware that the processing power can be drastically reduced by choosing low budget components, although it remains perfectly functional.

Each configuration is different, depending on whether you work in a local or a network environment, the number of ContextCapture processing nodes you have and the nature of your data. Therefore, we can only make basic recommendations. Please contact Bentley support to help you build more complex architecture if needed.

Important Note: This document was updated January 2019 and better alternatives for the different computer components may now be offered or available since the release of this document.

CPU: Central Processing Unit

The fastest CPUs would be the **Intel processors** with the most number of cores and the fastest speed possible. For the same speed and same number of cores, there would be no difference between i7 and Xeon. The i7 can have up to 10 cores, the i9 up to 10 cores and Xeon can have up to 28 cores with various speeds and turbo speed. **However, for the same price, an i7 or i9 processor is usually faster than a Xeon processor**.

The number of cores is useful in parallel processes, such as the AT (Aerotriangulation) and some parts of the reconstruction stage. However, in the reconstruction stage, there are many parts that run on only one thread. Therefore, having fast cores is primordial.

Indeed, when using only one thread, the program runs proportionally to the processor speed (if we do not consider the hard disk access and the GPU part).

If we consider the total power of a processor as **#threads * #speed**, then for the same amount of total power, **we should pick the ones having the highest speed**.
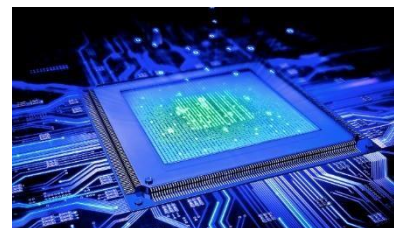
For example, in the same generation, a processor with 8 threads at 3.6 Ghz is better than a processor with 12 threads at 2.4 Ghz. However, it is possible that a newer generation processor is more efficient than an older one which has the same speed.

Recommended CPUs:

Low budget: **Intel Core I7-4770**

Medium budget: **Intel Core I7-5820K +**

High budget: **Intel Core i9-9900K**

GPU: Graphics Processing Units

ContextCapture takes full advantage of the processing capabilities of the GPU to accelerate the reconstruction process. The two main things to look at are the number of cores and the graphics memory. Therefore, we recommend the use of gaming graphics cards. In fact, for the same technology, the same number of cores and memory, gaming cards are much cheaper than the professional cards.

It is important to note that ContextCapture cannot take advantage of multiple graphic cards setup with SLI configurations.

ContextCapture also **does not support NVidia Tesla cards**. With the exception of the Tesla M60 these do not support OpenGL

Though ContextCapture can use Intel and AMD graphics card as well, we recommend using NVidia GPUs.

The GPU is not used during the Aerotriangulation step.

Recommended GPUs:

Low budget: **Nvidia GeForce GTX 1060**

Medium budget: **Nvidia GeForce GTX 1080**

High budget: **Nvidia TITAN RTX**

About the RAM

The amount of available RAM is important when dealing with large projects. It is particularly used at the AT stage when aligning many photos and at the reconstruction stage, when trying to process big tiles.

We recommend that you have at least 32 Gb of RAM, but 64 Gb or more will be needed when processing several thousands of photos.

At the reconstruction stage, a good amount of RAM will be required if trying to process large tiles. However, it is not optimal to try to adjust the tile size to reach the maximum available RAM because the processing speed also depends of the graphics card memory.

Low budget: **32Gb of RAM**

Medium budget: **64 Gb of RAM**

High budget: **128+ Gb of RAM** (requires Xeon processors. Only interesting when processing ultra large blocks of photos).

About the Hard Disk(s)

The overall performance of ContextCapture can be affected by the read/write access time to the disk. Using SSD drives is recommended for fast processing. However, ContextCapture project files can quickly fill up your diskspace. Therefore, if you are processing any large project large, it is then recommended that ContextCapture is installed on an SSD drive and the project files stored on a large HDD with fast read and write access (e.g. Western Digital HDD 6Tb **WD6003FZWX**).

About the Network

ContextCapture has the capabilities to work in a network environment to distribute tasks to multiple machines for processing. It is important to have an efficient network to avoid bottlenecks and ensure fast data transfer.