

This document has been last updated on January 2017. Since the release of this document, better alternatives for the different computer components might be on offer.

ContextCapture is a processing software that uses computer resources intensively. This document focuses on the hardware usage and the recommendation to build up fast processing machines.

For the main PC components, we propose 3 different options (low, medium, high), depending on the available budget. Of course, components from different budget categories can be mixed. Beware that the processing power can be drastically cut off by choosing low budget components, though 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. Thus, we can only do some simple recommendations. Please contact Bentley support to help you build more complex architecture if needed.

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 Xeon can have up to 18 cores with various speed and turbo speed. **However, for the same price, a processor i7 is usually faster than a processor Xeon.**

The number of cores is useful in parallel parts, such as AT (Aerotriangulation) part and some parts in the reconstruction step. However, in the reconstruction step, there are many parts running 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 processor of new generation is more efficient than an old one having the same speed.

Recommended CPUs:

Low budget: **Intel Core I7-4770** (300\$)

Medium budget: **Intel Core I7-5820K** (400\$)

High budget: **Intel Core I7-6900K** (1 100\$)



GPU: Graphics Processing Units

ContextCapture takes full advantage of the processing capabilities of the GPU to fasten the reconstruction process. The two main things to look at are the number of cores and the graphics memory. Therefore, we recommend to use gaming graphics cards. Indeed, 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 and SLI configurations.

ContextCapture also **does not support NVidia Tesla cards**.

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

The GPU is not used during the Aerotriangulation step.

Recommended GPUs:

Low budget: **Nvidia GeForce GTX 1060** (300\$)

Medium budget: **Nvidia GeForce GTX 1080** (700\$)

High budget: **Nvidia TITAN X Pascal** (1 600\$)



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 to have at least 32 Gb of RAM, but 64 Gb 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 disks. So, if you are processing project that are too big, it is then recommended to have ContextCapture installed on SSD drive and the project files stored on a large HDD with fast read and write access (e.g. Western Digital HDD 6Tb **WD6001FZWX**).

About the network

ContextCapture has the capabilities to work in a network environment to distribute tasks on different processing machines. Therefore, it is important to have an efficient network to avoid bottleneck and ensure fast data transfer.