

Several tips on how to choose a suitable computer

This document provides more specific information on how to choose a computer that will be suitable for scanning and post-processing of your data with Artec Studio.

On our web-site you can find general requirements, in this document we'll try to cover all of them and provide more detailed explanations. It also contains some tested configurations and some tips and tricks to make your hardware perform as fast as possible.



Visit our website
to find out more
www.artec3d.com

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General requirements for hardware

Processor: I5 or I7 recommended

Memory: 8-12 Gb for Artec Eva / 12-16 Gb for Artec Spider

USB: 1 USB 2.0 port for a regular scanner. To connect several scanners, we recommend using computers with several independent USB 2.0 hosts, or PCI-Express USB 2.0 cards

Video cards: NVIDIA/ATI (except FirePro M6100 FireGL V)

Recommended: NVIDIA GeForce 400 Series or better, at least 1GB of memory.

OS: Windows 7 or Windows 8 - x64

Not supported

(more information can be found below):

- Windows XP
- 32-bit OS
- Intel graphics cards
- FirePro M6100 FireGL V videocard

Not recommended

(more information can be found below):

- Xeon processors marked "for server use"
- SLI configuration
- NVIDIA Quadro series
- AMD processors



Processor



1.1. Recommended processors and microarchitecture

Recommended processors are Intel i5 or Intel i7 ([Nehalem microarchitecture](#) and later). This link may be helpful - [open CPU benchmarks list](#).

1.2. What about Xeon processors?

Generally we do not recommend using Xeon processors as, according to our tests, the scanning speed is lower (9-10 fps on Xeon, when i7 provides 14-15 fps). Xeon processors will work with Artec Studio, but if you want the fastest possible performance, then it is better not to use them.

Note: some Xeons may show good performance. For example, our clients have tested Intel(R) Xeon(R) CPU E5-1650 @3.20GHz - it provides 15 FPS for Artec Eva.

The scheme with Xeons is like this:

- all processor cores calculate very fast
- usually such server machines use a special type of RAM (a combination of 2 technologies - [ECC memory](#) and [Registered memory](#)). This RAM is slower comparing to "usual" machines
- we receive this kind of feedback: the calculating speed is fast, but transferring the results from/to the memory is slow.

As a result, the processors are usually free and the memory is busy.

How to check this from your side:

- 1) download [AIDA64 diagnostic utility](#)
- 2) generate a report on the necessary machine
- 3) investigate 'Memory read' and 'Memory write' sections

Usually you will see strings like:

- Core i7 Extreme 965 3333 MHz Asus P6T Deluxe X58 Triple DDR3-1333 9-9-9-24 CR1 12065 Mb/sec
- Xeon E5450 3000 MHz Asus DSEB-DG i5400 Dual DDR2-667FB 5-5-5-15 3861 Mb/sec

So you find your processor in the list and all processors around is a kind of comparison test. If the speed is too low (comparing to others), then unfortunately there is no possibility to exploit processor better, it is due to hardware.

1.3. What about AMD processors?

We do not recommend AMD processors - in most part of cases you will receive error messages of 'KMP_AFFINITY' and you will not be able to perform 3D scanning on such AMD configuration.

If you are considering the purchase of new computer, we strongly recommend to use Intel instead of AMD.

Multi-sensor bundle support in Artec Studio 9

This document is written in FAQ form and includes all information about multi-sensor bundles (Kinect, Asus, PrimeSense).

Are there any special hardware requirements?

Yes, and this is quite important: every sensor must be plugged into a separate USB controller or into a separate PCI Express card.

So should I use a desktop machine for a bundle? Not a laptop?

Yes, it is better to use a powerful desktop machine.

According to our tests, even a two sensor bundle does not work on laptops.

Can I combine sensors of multiple types?

Yes, this is possible (we used PrimeSense + Asus in one of our tests).

Microsoft states that a maximum of 4 Kinects for Windows or not more than one Kinect for Xbox can be plugged into a single computer at the same time.

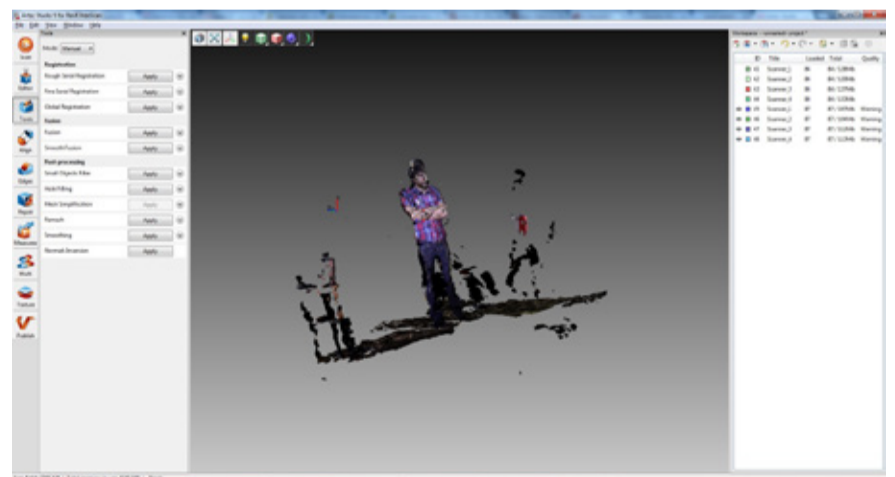
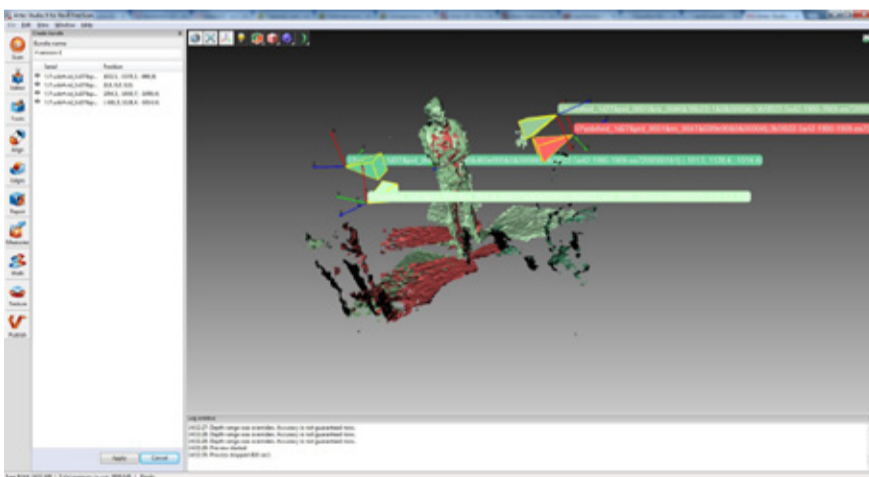
How many sensors can I use at the same time?

We have tried with 8 sensors and they performed well. Please bear in mind the 'separate USB controllers' restriction.

Are there any videos or images showing how this works?

Yes, we have a [sample video](#) (it was recorded on a mobile phone, so the quality is not very high).

Take a look at the pictures illustrating the process in Artec Studio (bundle creation and recorded data): [picture1](#), [picture2](#).



Videocard

4.1. What is supported and what is definitely not supported?

We support NVIDIA/ATI cards.

The recommended card is NVIDIA GeForce 400 Series or better with at least 1GB of memory. This link also may be helpful: [open videocard benchmark test](#)

Please note that we do not support Intel graphics chipsets and recently have found some issues with FirePro M6100 FireGL V (this is also not recommended).

4.2. What about Quadro cards?

Quadro cards are not recommended - we have a lot of clients who work with them (for example, K4000M), but Quadro is a very special type of video cards that differs a lot from standard NVIDIA GPU. We usually recommend using NVIDIA GeForce.

A strong reason to buy a Quadro card is if you plan to use Stereo mode in Artec Studio (please see 4.5. below).

If you do not plan to use Stereo, then it is a good idea to buy GeForce instead of Quadro.

4.3. What about SLI?

We do not support SLI configurations, so if you have a machine with this hardware, we'd recommend disabling one of the cards.

4.4. Do you support laptops with NVIDIA Optimus technology?

Yes, we do. More detailed instructions about the settings can be found below in 6.2.

4.5. Stereo support

In Artec Studio we support stereo mode that renders the model in 3d on stereoscopic displays (3d glasses are needed). To enable this mode, OpenGL Stereo must be supported by the videocard. Currently NVIDIA Quadro professional graphic card family is the only videocards supporting this stereo mode.

4.6. Real-time fusion requirements

[Real-time fusion](#) is a special algorithm that builds the model during the scanning process itself (it uses GPU intensively). If you want to scan in RTF mode, then your videocard should support OpenCL 1.1 and higher.

4.7. GCTest

We have a Graphic Card Test utility that runs a sample texture mapping algorithm and a sample real-time fusion algorithm on your videocard and provides the results. If both algorithms work correctly in GCTest, it means that your videocard supports Artec texture mapping and scanning in real-time fusion mode. You can [download the utility here](#).

Note:

If you are using a computer with a Quadro card, then please find more information about Quadro optimization in p.6.2.

OS



5.1. What is recommended and what is not supported?

- We recommend Windows 7 and Windows 8 - 64-bit.
- Windows XP is not supported.
- NB Starting from Artec Studio 9.2. we do not support 32-bit versions of software.



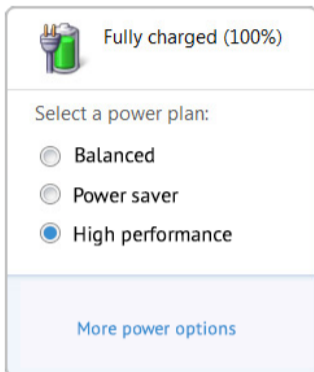
5.2. Do you have a version for MacOS?

We do not currently have a version for MacOS, but there are several clients who install Windows on their Macbooks (as parallel OS via BootCamp or on a virtual machine inside MacOS). Please note that where Windows is installed on a virtual machine on MacOS, the virtual machine will cut out some of the functionality of the videocard, for example, texture mapping and real-time fusion will definitely not work.

Several tips to increase performance

6.1. Desktop machines

- Please make sure that the scanner is plugged into the USB slots on the back side of your computer.
- Make sure that no other devices are connected to the same USB controller
- For better performance and for faster post-processing of large projects please use SSD.



Important: make sure that you have the latest videocard drivers installed on your laptop!

6.2. Laptops

Make sure that your laptop is switched to 'High performance' mode.

This can be done here: *Control Panel* → *Power options* → *High performance*

Experiment with different USB ports: laptop vendors usually connect extra hardware like a touchpad or card reader to one USB controller, so a scanner plugged into the same controller will not show good performance. The idea is to find a port with the best performance and to make sure that no other devices are connected to the same USB controller

If you have a laptop with **NVIDIA Optimus technology** (Intel + NVIDIA videocards), then please follow the instructions below:

- 1) run *Control Panel* → *NVIDIA Control panel*
- 2) select "Manage 3D settings" link
- 3) select "Program settings" tab
- 4) click "Add"
- 5) select Artec Studio executable file (for example: C:\Program Files\Artec\Studio\astudio.exe)
- 6) select "High performance NVIDIA processor" setting

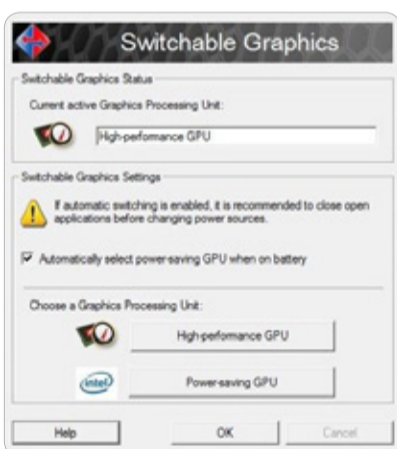
If you have a laptop with an **Intel+ATI videocard**, then please follow the instructions below:

- 1) run Catalyst Center
- 2) switch to 'High Performance GPU'

6.3. Quadro cards

If you have an **NVIDIA Quadro card**, please follow the instructions below:

- 1) run *Control Panel* → *NVIDIA Control Panel*
- 2) find "Threaded Optimization" parameter
- 3) switch its value from AUTO to OFF



Frequently asked questions

7.1. What laptops does Artec use? Can you recommend any particular model?

To give you a hint, here is the list of laptops and tablets that we use ourselves for outdoor scanning and exhibitions:

- Sager (Win7, i7-4700MQ, 32 Gb RAM, NVIDIA GeForce GTX 770M)
- Sager (Win7, i7 3840QM, 32 Gb RAM, NVIDIA GeForce GTX 670 MX)
- Razer Edge Pro gaming tablet (Win8, i7, 8Gb RAM, NVIDIA GT 640M LE)

And here are some models that our clients use:

- Lenovo W520 (Win7, 16 Gb RAM, NVIDIA Quadro 2000M)
- MSI GS70 Stealth (Win8, i7, 16 Gb RAM, NVIDIA GeForce GTX 765M)
- Lenovo IdeaPad Z500 (Win8, i7, 16 Gb RAM, NVIDIA GeForce GT 720M)
- New Razer Blade (Win8.1, i7, 8 Gb RAM, NVIDIA GeForce GTX 870M)
- Dell M6800 (Win7, i7, 32 Gb RAM, NVIDIA Quadro K5100M)

We have extremely positive feedback about Sager and MSI laptops - they are really very powerful and provide excellent performance of Artec Studio.

Also we'd say that everything that suits gamers suits us as well, so you can consider buying a gamer laptop and it will provide excellent performance (please do not forget to check USB 2.0 / USB 3.0 issue before purchasing).

7.2. Can I test your software?

Sure, you can test it. There is a trial version available [on our web-site](#). Please feel free to download and install on any machine to test the performance.

We hope you will enjoy using Artec Studio!

For any questions or comments please
contact support@artec-group.com