



With the release of **Rocky 4**, you can now use two or more **Graphic Processing Units** (GPUs) to process your simulations. But not just any GPU card will do. Before you invest in new hardware, see below for important guidelines and recommendations.

Which GPU cards are recommended for use with Rocky?

Rocky has been tested and verified using the cards identified on our [System Requirements](#) page, which includes all of the following:

- **GPU computing cards:** [Tesla K40](#), [Tesla K80](#), [Tesla P100](#) and [Tesla V100](#).
- **GPU gaming cards:** [GTX 980](#), [GTX 1080](#), [Titan](#), [Titan Black](#), [Titan Z](#), and [Quadro GP100](#).

For best results, use only one of the recommended GPU cards during Rocky processing.

I already have other (non-recommended) Nvidia GPU cards with at least 4 GB of memory and a **CUDA** compute capability of at least 2.0. Won't these existing cards work just as well as the recommended ones?

Different GPU cards can have an order of magnitude difference in performance, which is why we have recommended only the cards that will have the best performance on Rocky. Just because Rocky appears to run fine on a non-recommended GPU card does not mean that it is actually helping the processing performance. And if it isn't helping the performance, then there is no point to running your simulations on GPUs.

To see for yourself the huge range of performance differences, visit the links for the two card types below and review the "Processing Power / Double Precision" columns of the spec tables provided:

- Nvidia Tesla: https://en.wikipedia.org/wiki/Nvidia_Tesla
- Nvidia GeForce: https://en.wikipedia.org/wiki/List_of_Nvidia_graphics_processing_units

If I want to run cases using primarily spherical particles, what GPU specifications should I consider? What about when running non-round cases?

- When running non-round cases, choosing a GPU with **double-precision performance** should be your primary focus.
- When running round cases, choosing a GPU with a **higher memory bandwidth** will get you better results in your processing.

Assuming I use a recommended GPU card, how many more times faster can I expect my simulations to run?

Compared to a CPU with 8 cores, adding even one GTX 980 has been shown to speed-up the processing time 5 fold; add in three P100s and what was once a 3-day simulation can be completed in just over an hour. But it all depends upon what you are simulating, how large your case is, and how much budget you have. See [Rocky 4 with Multi-GPU: Which Hardware is Best for You?](#) for benchmarks and speed-up comparisons.