



# CUDA Occupancy Calculator

*Release 12.1*

**NVIDIA**

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The CUDA Occupancy Calculator allows you to compute the multiprocessor occupancy of a GPU by a given CUDA kernel.

[Deprecated] Excel based Occupancy Calculator is deprecated. Occupancy calculator is available in [Nsight Compute](#). Please refer to [Nsight Compute Occupancy Calculator](#) documentation for more details on usage.



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# Chapter 1. Overview

The CUDA Occupancy Calculator allows you to compute the multiprocessor occupancy of a GPU by a given CUDA kernel. The multiprocessor occupancy is the ratio of active warps to the maximum number of warps supported on a multiprocessor of the GPU. Each multiprocessor on the device has a set of N registers available for use by CUDA program threads. These registers are a shared resource that are allocated among the thread blocks executing on a multiprocessor.

The CUDA compiler attempts to minimize register usage to maximize the number of thread blocks that can be active in the machine simultaneously. If a program tries to launch a kernel for which the registers used per thread times the thread block size is greater than N, the launch will fail.

Click [CUDA Occupancy Calculator](#) [XLS] to download the spreadsheet.





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# Chapter 2. Notices

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