NVIDIA Profiling Tools

ATPESC, August 11, 2021

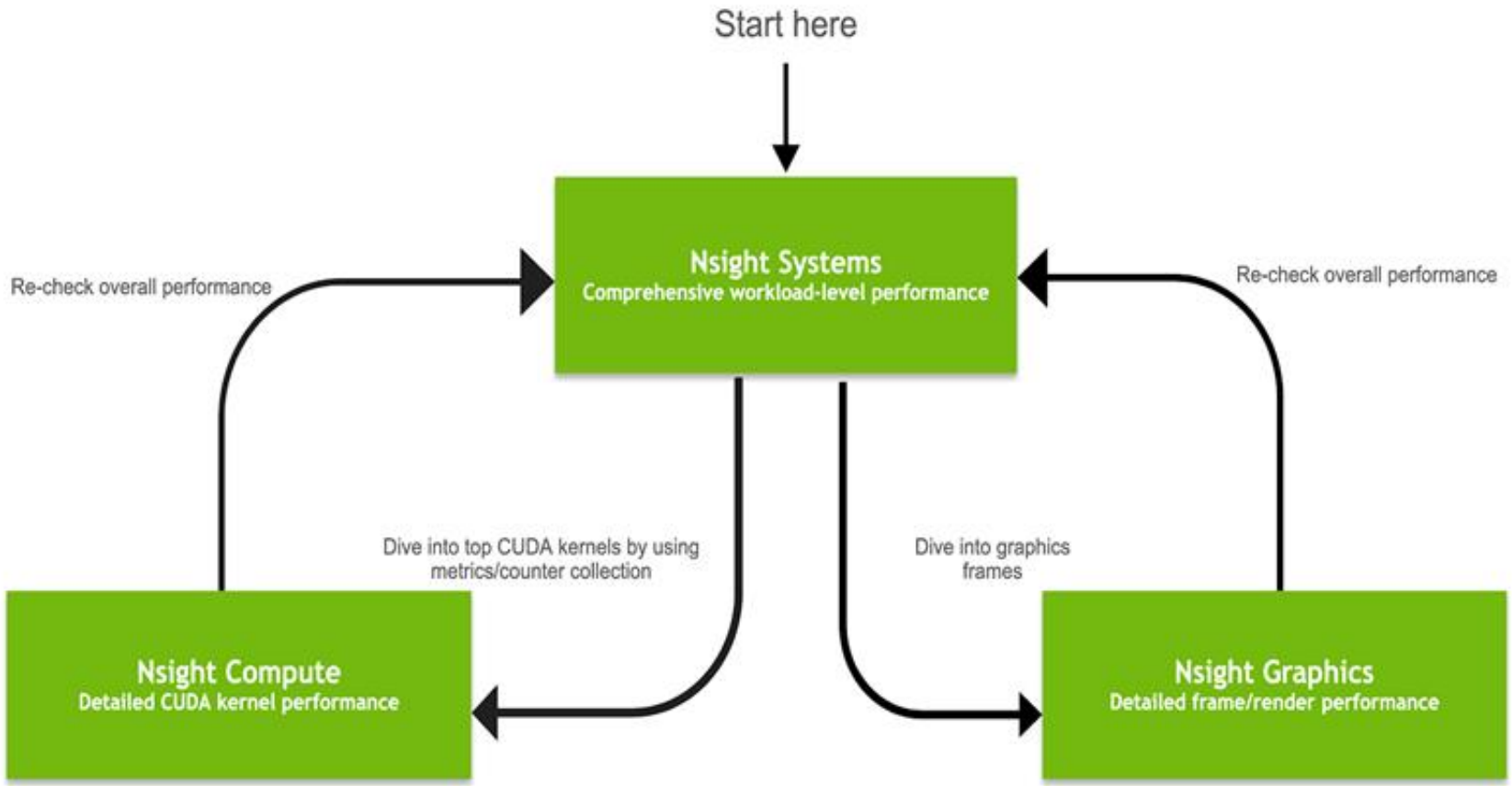
Nsight Product Family

Workflow

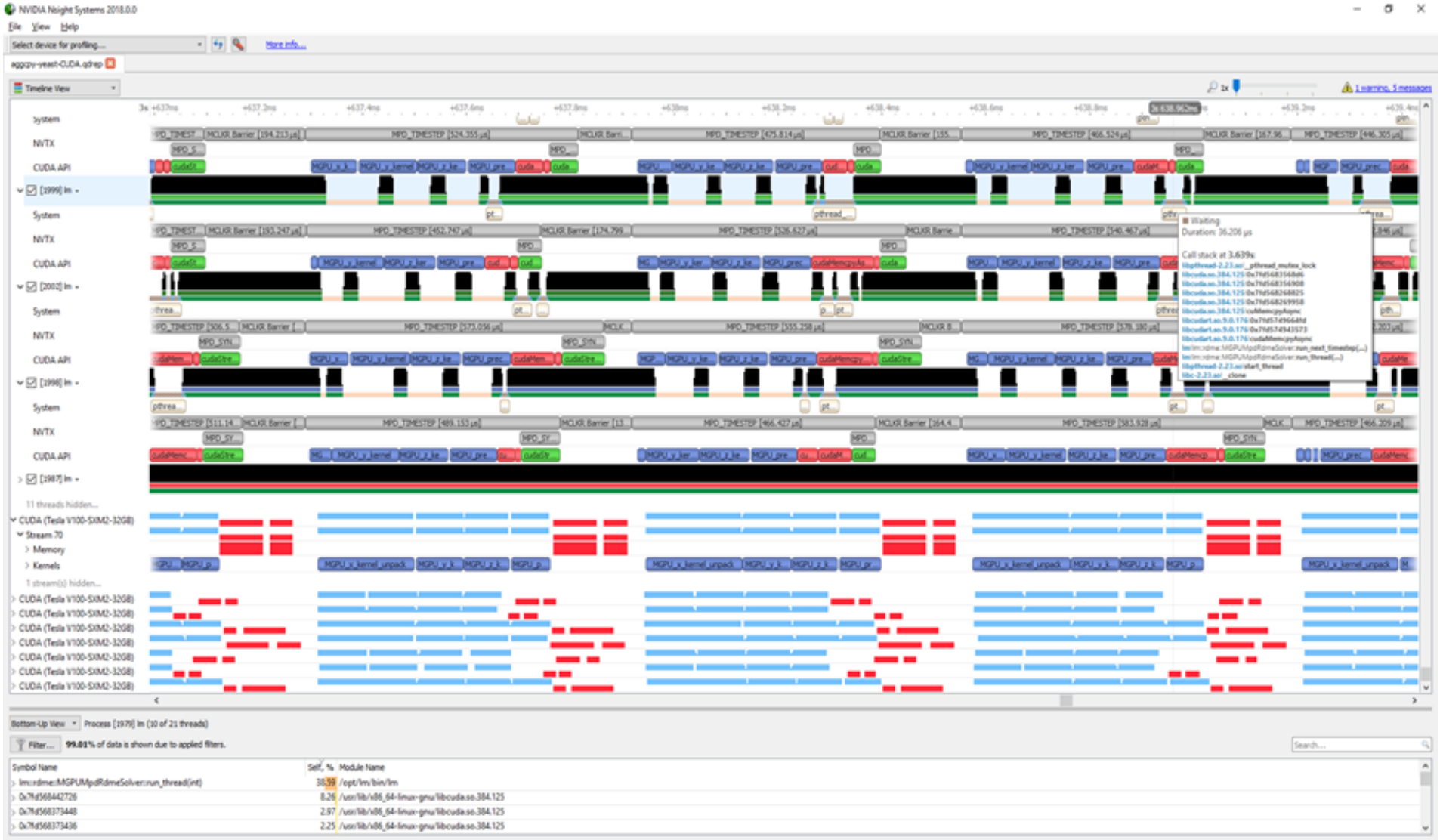
Nsight Systems -
Analyze application algorithm system-wide

Nsight Compute -
Debug/optimize CUDA kernel

Nsight Graphics -
Debug/optimize graphics workloads



NSIGHT SYSTEMS



COLLECT A PROFILE WITH NSIGHT SYSTEMS

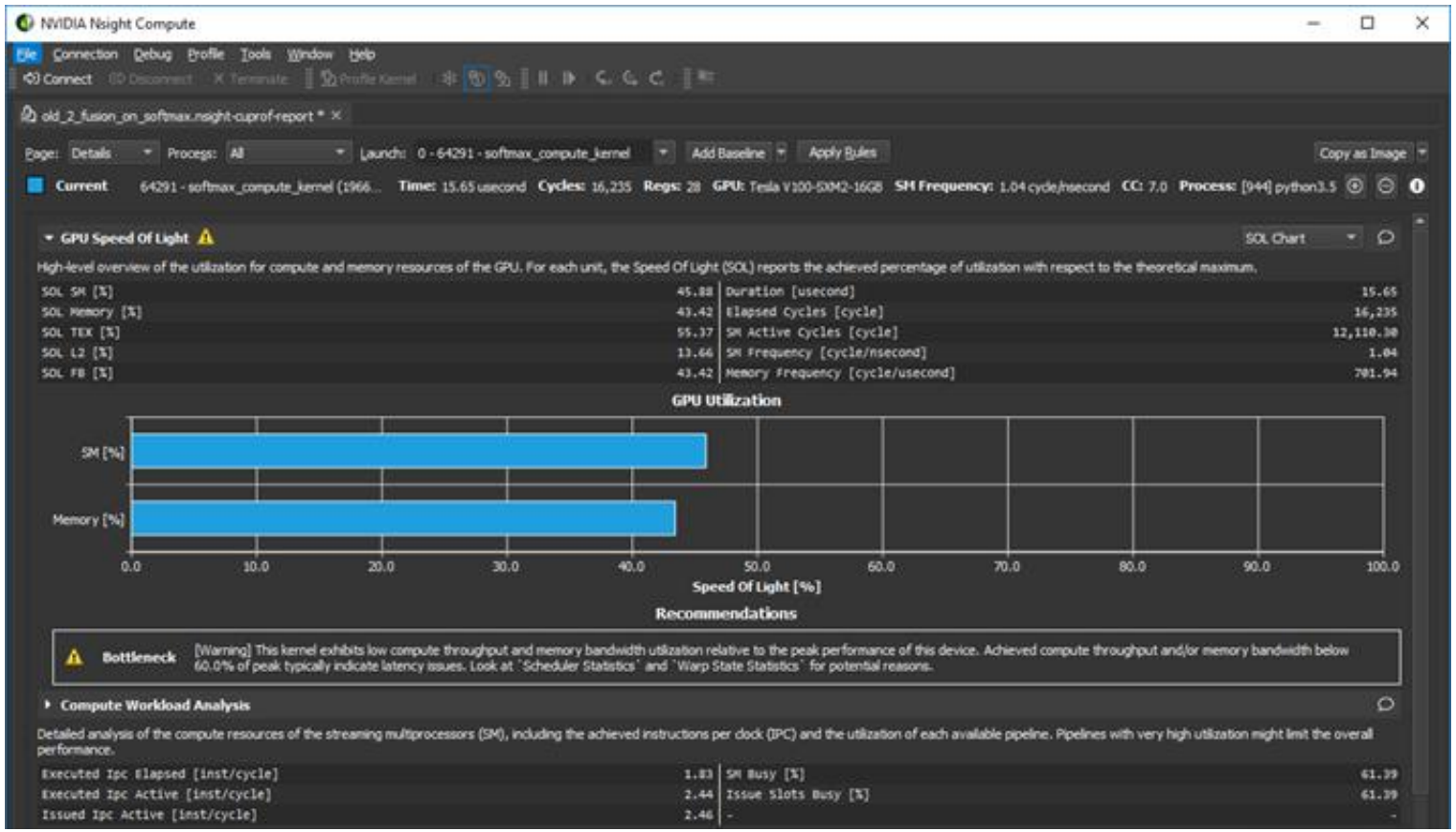
```
$ nsys profile –o report --stats=true ./myapp.exe
```

Generated file: `report.qdrep;` open for viewing in the Nsight Systems UI

Can be done inside a container if the container has `nsys`:

```
$ mpirun -n 4 singularity run --nv -B $CONTAINER_IMG nsys
profile python train.py
```

NSIGHT COMPUTE



CUDA Kernel profiler

Targeted metric sections for various performance aspects

Customizable data collection and presentation (tables, charts, …)

UI and Command Line

Python-based rules for guided analysis (or post-processing)

KERNEL PROFILES WITH NSIGHT COMPUTE

```
$ ncu –k mykernel –o report ./myapp.exe
```

Generated file: `report.ncu-rep;` open for viewing in the Nsight Compute UI

(Without the –k option, Nsight Compute will profile everything and take a long time!)

PROFILING RESOURCES

Nsight Systems, Nsight Compute product pages

NVIDIA Developer Blog: NVTX

NVIDIA Developer Blog: Transitioning from nvprof to nsys

NVIDIA Developer Blog: Using Nsight Compute to Inspect Your Kernels

OLCF Training, March 2020: Nsight Compute, Nsight Systems

DLProf: tools for understanding DL models, particularly tensor core usage


NVIDIA