OpenMP Performance

	Time in seconds (NVHPC)				Time in seconds (GNU GCC)			
Serial time	4.907738				6.369754			
Parallel threads	2	4	8	16	2	4	8	16
Parallel time	2.780051	1.447587	0.814226	0.408386	2.968330	1.487720	0.845733	0.440940

Command Line Instructions

OpenMP on CPUs

Batch script + Compile

```
[xsun2@bridges2-login014 openmp]$ cat parall_script
#! /bin/bash
#SBATCH -A see200002p           # specify the project or allocation number
#SBATCH -p RM-shared            # RM-shared partition
#SBATCH -J myjob                # Job name
#SBATCH --mail-user=sunxinyi@udel.edu
#SBATCH --mail-type=ALL

#SBATCH -N 1                    # Number of nodes, not cores (16 cores/node)
#SBATCH -n 16                   # Number of cores requested in total

#SBATCH -t 00:30:00             # set maximum run time of 30 minutes

export OMP_NUM_THREADS=16

./paralle_nvc
./paralle_gcc

[xsun2@bridges2-login014 openmp]$ gcc  mm_p.c -fopenmp -o paralle_gcc
[xsun2@bridges2-login014 openmp]$ module load nvhpc/21.7
[xsun2@bridges2-login014 openmp]$ nvc -acc -gpu=cc70 -Minfo=accel mm_p.c -o paralle_nvc
```

Execution Time(CPUs)

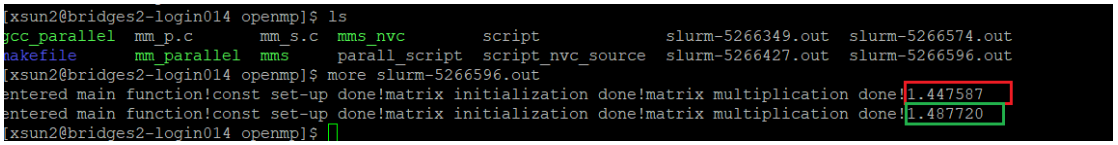
Threads(2)

```
[xsun2@bridges2-login014 openmp]$ more slurm-5266574.out
entered main function!const set-up done!matrix initialization done!matrix multiplication done!2.780051
entered main function!const set-up done!matrix initialization done!matrix multiplication done 2.968330
[xsun2@bridges2-login014 openmp]$ vim parall_script
[xsun2@bridges2-login014 openmp]$
```

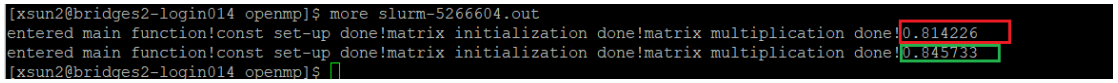
nvc

gcc

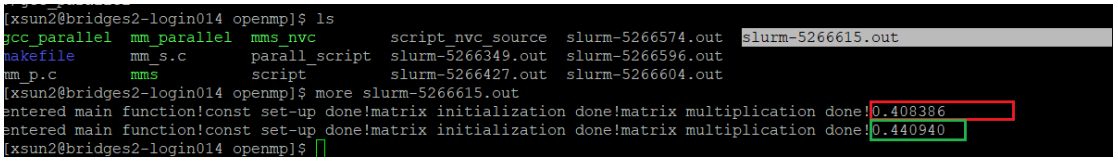
Thread(4)



Thread(8)



Thread(16)



Extra

Execution Time(different matrix size)

	NVHPC			GCC		
Size	**512**	**1024**	**2048**	**512**	**1024**	**2048**
Serial	0.264033	4.907738	66.976535	0.721901	6.369754	53.613831
Parallel	0.260403	0.814226	63.617135	0.120143	0.845733	8.387561