

Login to Ascent

To log into the system, open a terminal of your choice. You should have received the username for your XCAMS account via email if you applied to get access to project GEN147 by the deadline.

To log into Ascent type the following command:

```
ssh <username>@login1.ascent.olcf.ornl.gov
```

You will be prompted for a password, which should be the one you set up when you created your XCAMS account.

We recommend using `tmux` or `screen` to keep your session active in case of connectivity issues.

Setting up the SPEC ACCEL suite

- 1) After successful login, you will be in your home directory.
- 2) Set the tutorial files variable:

```
export TUTFILES=/gpfs/wolf/stf007/world-shared/vgv/sc20tut
```
- 3) Change the directory:

```
cd $MEMBERWORK/gen147
```
- 4) Create a new directory to install the benchmark suite:

```
mkdir accel && cd accel
```
- 5) To install the spec suite into your scratch space, please run the following command:

```
$TUTFILES/accel/install.sh -d $PWD
```
- 6) You will be prompted if the source and destination directory are correct. The destination directory should look something like this:

```
Installing TO /gpfs/wolf/scratch/<username>/gen147/accel
```

Type 'yes' if you want to proceed hit return.

- 7) We provided a configuration file to help you get started. Copy it into your install `config` directory:

```
. shrc  
cp $TUTFILES/accel/configs/* ./config/  
cd ..  
cp $TUTFILES/accel/scripts/* .
```

Running SPEC Accel

- 1) Run a portion of the OpenACC suite on GPU:

- a. Check runspec command in jobscript `accel-pgi.sh`:

```
runspec --config=ascent-pgi.cfg --iterations 1 --action run
353 370
```
 - b. Submit your job:

```
bsub accel-pgi.sh
```
- 2) Run full SPEC OpenACC suite, ref workload:

```
runspec --config=ascent-pgi --tune=base --size=ref openacc
```
 - 3) You can check published SPEC OpenACC results at <https://www.spec.org/accel/results>
 - 4) A SPEC OpenACC run generates the raw file `*.rsf` and report in chosen format. You can reformat the report from `*.rsf` using `rawformat` command:

```
rawformat --output_format=rsf,txt,pdf --flagsurl=path/to/flag.xml
```

Setting up the HPC 2021 benchmark suite

- 1) Set the tutorial files variable:

```
export TUTFILES=/gpfs/wolf/stf007/world-shared/vgv/sc20tut
```
- 2) Change the directory:

```
cd $MEMBERWORK/gen147
```
- 3) Create a new directory to install the benchmark suite:

```
mkdir hpc2021 && cd hpc2021
```
- 4) To install the SPEC suite into your scratch space, please run the following command:

```
$TUTFILES/hpc/install.sh -d $PWD
```

You will be prompted if the source and destination directory are correct. The destination directory should look something like this:

```
Installing TO /gpfs/wolf/scratch/<username>/gen147/hpc2021
```

Type 'yes' if you want to proceed hit return.

We provided a configuration file to help you get started. Copy it into your install `config` directory:

```
. shrc
cp $TUTFILES/hpc/configs/* ./config
cd ..
cp $TUTFILES/hpc/scripts/* .
```

Running SPEC HPC2021

1) Run two benchmarks of the HPC2021 suite on GPU using MPI+OpenMP Target:

a. Check runspec command in jobscript `hpc-xl.sh`:

```
runspec --config=ascent-xl.cfg --iterations 1 --ranks=12 --  
threads=1 --pmodel=ompacc --action run 618 635
```

b. Submit your job:

```
bsub hpc-xl.sh
```

2) Run the same two benchmarks of the HPC2021 suite on GPU using MPI+OpenACC:

a. Check runspec command in jobscript `hpc-pgi.sh`:

```
runspec --config=ascent-pgi.cfg --iterations 1 --ranks=12 --threads=1  
--pmodel=acc --action run 618 635
```

b. Submit your job:

```
bsub hpc-pgi.sh
```

3) Run full SPEC HPC 2021 suite, small problem size using one of the above parallel programming models:

```
runspec --config=ascent-xl.cfg --iterations 1 --ranks=12 --  
threads=1 -pmodel=ompacc --action run small
```

```
runspec --config=ascent-pgi.cfg --iterations 1 --ranks=12 --  
threads=1 -pmodel=acc --action run small
```

4) Review the results and log files.