

## ANSYS MAPDL

**ANSYS Multiphysics** software offers a comprehensive product solution for both multiphysics and single-physics analysis. The product includes structural, thermal, fluid and both high- and low-frequency electromagnetic analysis. The product also contains solutions for both direct and sequentially coupled physics problems including direct coupled-field elements and the ANSYS multi-field solver.

To run ANSYS MAPDL in batch mode you can utilize/modify the default mapdl.pbs script and execute it via the qsub command.

```
#!/bin/bash
#PBS -l nodes=2:ppn=24
#PBS -q qprod
#PBS -N ANSYS-Project
#PBS -A OPEN-0-0

#! Mail to user when job terminate or abort
#PBS -m ae

#!change the working directory (default is home directory)
#cd <working directory> (working directory must exists)
WORK_DIR="/scratch/work/user/$USER"
cd $WORK_DIR

echo Running on host `hostname`
echo Time is `date`
echo Directory is `pwd`
echo This jobs runs on the following processors:
echo `cat $PBS_NODEFILE`

module load ANSYS/16.1

#### Set number of processors per host listing
procs_per_host=24
#### Create host list
hl=""
for host in `cat $PBS_NODEFILE`
do
    if [ "$hl" = "" ]
    then hl="$host:$procs_per_host"
    else hl="{hl}:$host:$procs_per_host"
    fi
done
```

```
echo Machines: $hl
```

```
# prevent ANSYS from attempting to use scif0 interface
export MPI_IC_ORDER="UDAPL"
```

```
#-i input.dat includes the input of analysis in APDL format
#-o file.out is output file from ansys where all text outputs will be redirected
#-p the name of license feature (aa_r=ANSYS Academic Research, ane3fl=Multiphysics(commercial),
ansys161 -b -dis -usessh -p aa_r -i input.dat -o file.out -machines "$hl" -dir $WORK_DIR
```

Header of the PBS file (above) is common and description can be find on this site. SVS FEM recommends to utilize sources by keywords: nodes, ppn. These keywords allows to address directly the number of nodes (computers) and cores (ppn) which will be utilized in the job. Also the rest of code assumes such structure of allocated resources.

Working directory has to be created before sending pbs job into the queue. Input file should be in working directory or full path to input file has to be specified. Input file has to be defined by common APDL file which is attached to the ansys solver via parameter -i

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