DAS-5 Cheatsheet

NB: please do not run, under any circumstances, any compute-intensive work on the frontend (fs1). This is to be used only for compilation and source-code editing. All the real work should happen on the compute nodes which you will get through reservation (see below).

1. Listing available modules

```
[aua400@fs1 ~]$ module avail

------------------------------------------------------------------ /cm/local/modulefiles ------------------------------------------------------------------
cluster-tools/8.0 cmsh              cm-upgrade/8.0    freeipmi/1.5.5    ipmitool/1.8.18   module-git        null              shared
cmd               cm-upgrade/7.2    dot               gcc/6.3.0         lua/5.3.4         module-info       openldap

------------------------------------------------------------------ /cm/shared/modulefiles ------------------------------------------------------------------
acml/gcc/64/5.3.1                   cuDNN/cuda75/6.0.21                 mxnet/cpu/r1.0.0-git
acml/gcc/fma4/5.3.1                 cuDNN/cuda80/5.1.5                  mxnet/gpu/r1.0.0-git
acml/gcc/mp/64/5.3.1                cuDNN/cuda80/5_5.1.5-1              nccl/cuda80/2.1.2
acml/gcc/mp/fma4/5.3.1              cuDNN/cuda80/6.0.21                 nccl/cuda90/2.1.2
acml/gcc-int64/64/5.3.1             cuDNN/cuda80/7.0                    netcdf/gcc/64/4.4.0
acml/gcc-int64/fma4/5.3.1           cuDNN/cuda90/7.1                    netcdf/intel/64/4.4.0
acml/gcc-int64/mp/64/5.3.1          cuDNN/cuda90rc/7.0                  netcdf/open64/64/4.4.0
acml/gcc-int64/mp/fma4/5.3.1        default-environment                 netperf/2.7.0
acml/open64/64/5.3.1                fftw2/openmpi/gcc/64/double/2.1.5   open64/4.5.2.1
acml/open64/fma4/5.3.1              fftw2/openmpi/gcc/64/float/2.1.5    openblas/dynamic/0.2.18
acml/open64/mp/64/5.3.1             fftw2/openmpi/open64/64/double/2.1.5 opencl-amd/2.9.1
```

2. Loading the prun module → lets you reserve nodes

```
[aua400@fs1 ~]$ module load prun
[aua400@fs1 ~]$ module list
Currently Loaded Modulefiles:
  1) gcc/6.3.0       2) slurm/17.02.2   3) prun/default
```

3. Reserving nodes

```
[aua400@fs1 ~]$ preserve -# 2 -t 00:05:00
Reservation number 262252:
        ---queued----
Notice: before reservation start time, node allocation is tentative;
nodes actually allocated may be different.
Check with preserve -long-list when reservation has started.
```

4. Identifying reserved nodes

```
[aua400@fs1 ~]$ preserve -llist
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id      user            start           stop            state   nhosts  hosts
262242  fye             09/15   17:18   09/25   17:19   R       10      node102 node103
262246  ddps2002        09/23   12:34   09/23   12:40   PD      -       -
262247  ddps2002        09/23   13:55   09/23   14:01   PD      -       -
262252  aua400          09/24   17:20   09/24   17:26   R       2       node112 node113
[aua400@fs1 ~]$ preserve -llist | grep aua400
262252  aua400          09/24   17:20   09/24   17:26   R       2       node112 node113
```

5. Connecting to your reserved node

```
[aua400@fs1 ~]$ ssh node112
Warning: Permanently added 'node112,10.141.0.12' (ECDSA) to the list of known hosts.
```

6. Networking

```
[aua400@node112 ~]$ ifconfig | grep inet
Infiniband hardware address can be incorrect! Please read BUGS section in ifconfig(8).
        inet 10.141.0.12  netmask 255.255.0.0  broadcast 10.141.255.255
        inet6 fe80::3a2c:4aff:fe2f:d533  prefixlen 64  scopeid 0x20<link>
        inet 10.149.1.12  netmask 255.255.255.0  broadcast 10.149.1.255
```

The network interface starting with 10.141.* is the ethernet network, capable of 1Gbps.
The network interface starting with 10.149.* is the InfiniBand network, capable of 56Gbps.

Be careful which one you use in your assignments.

7. Storage

```
[aua400@node112 ~]$ df -h
Filesystem                Size  Used Avail Use% Mounted on
/dev/sda1                  32G  5.9G   27G  19% /
devtmpfs                   32G     0   32G   0% /dev
tmpfs                      32G  3.2G   29G  11% /run
tmpfs                      32G  664K   32G   1% /dev/shm
tmpfs                      32G     0   32G   0% /sys/fs/cgroup
/dev/sdb1                  32G   34M   32G   1% /tmp
/dev/sda2                  32G  610M   32G   2% /var
/dev/md0                  7.2T   50G  7.2T   1% /local
10.149.1.254:/var/scratch2  55T  8.8G   55T   1% /var/scratch2
10.149.1.254:/var/scratch   49T  1.7T   47T   4% /var/scratch
master:/cm/shared          537G  152G  386G  29% /cm/shared
10.149.1.254:/home         5.3T   88G  5.2T   2% /home
tmpfs                      6.3G     0  6.3G   0% /run/user/1011
```

/home/$USER, /var/scratch/$USER /var/scratch2/$USER are NFS mounts, mounted on all nodes – frontend + compute nodes. However, NFS is slow and should only be used to store data that is not performance sensitive. You can use these (especially scratch) for larger inputs that will be read.

/local/$USER is the local disk of any node you will connect to. These are faster than NFS and you can, for example, use them as HDFS mountpoints or local data caches.