# HPC4SA Cluster - General documentation

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## Switch

### Connect using serial connection

On the command prompt, run this command to connect to the switch

screen /dev/ttyS1 9600  
sw1>show switch   
  
 Management Standby Preconfig Plugged-in Switch Code  
SW Status Status Model ID Model ID Status Version  
--- ---------- --------- ------------- ------------- ------------- -----------  
1 Mgmt Sw N4032 N4032 OK 6.2.6.6

Use the key sequence Ctrl-a + Ctrl-d to detach from the screen session. Reattach to the screen session by typing:

screen -r

### Show all sessions

Type screen -list to identify the detached screen session.

screen -list   
 There are screens on:   
 20751.foo\_bar (Detached)

### Attach to an specific session

Get attached to the detached screen session

screen -r 20751.foo\_bar

### Kill a session

Get attached to the detached screen session

screen -r 20751.foo\_bar

Once connected to the session press Ctrl + A then type :quit

### How to enable HTTPS/SSH and disable HTTP/Telnet for switch management

There is an account created with Privilege Level 15. To verify this, use the command:

console#show users accounts

### Connect to the switch via CLI

To enable SSH, enter the following commands:

console> enable  
 console# config  
 console(config)# crypto key generate rsa  
 console(config)# crypto key generate dsa  
 console(config)# ip ssh server  
 To disable telnet, enter: console(config)#no ip telnet server  
 To enable HTTPS, enter the following commands"  
 console(config)# crypto certificate 1 generate key  
 console(config)# ip https certificate 1  
 console(config)# ip http secure-server

### Save configuration

console# copy running-config startup-config

### Backup switch configuration

Start a tftpd server

/usr/sbin/in.tftpd --foreground --create -address 10.1.1.1 -s /tmp

Connect to the switch

screen /dev/ttyS1 9600

Save startup-config or running-config

sw1> enable  
sw1e# config  
copy running-config tftp://10.1.1.1/backup  
copy startup-config tftp://10.1.1.1/backup

## Users management

### Add/remove system Users

Edit this playbook /root/hpca4se-config/ansible/users.yml and add/remove users and groups from the vars section:

vars:  
 hpca4se\_groups: [ 'g\_hpca4se']  
 hpca4se\_users:  
 - "jnavarro"  
 hpca4se\_delete\_users:  
 - "foo"  
 - "bar"

Then, apply the playbook:

source ~/.venv-ansible/bin/activate  
cd /root/hpca4se-config/ansible  
ansible-playbook playbooks/users.yml

By default this playbook add a SSH key (authorized\_key) for all users. Now it is the same key for all users, but a ssh key could be created for every user, so that you will be able to use a custom temporal key as a temporary password:

# Create a SSH key for the `foo`user  
cd /root/hpca4se-config/ansible  
ssh-keygen -t rsa -f playbooks/keys/hpca4se\_foo\_rsa

### Process to add the foo user

# Edit playbook vars and add the foo user to the list  
vim `/root/hpca4se-config/ansible/users.yml  
  
 vars:  
 hpca4se\_groups: [ 'g\_hpca4se']  
 hpca4se\_users:  
 - "jnavarro" # An existing user. Do not remove from list  
 - "foo" # This is the new user  
  
# Apply the playbook:  
source ~/.venv-ansible/bin/activate  
cd /root/hpca4se-config/ansible  
ansible-playbook playbooks/users.yml  
  
# Check user has been created in slurm and in one of the NIS clients  
NEWUSER=foo  
ssh -i ~/.ssh/vm-admin centos@slurm-ohpc "id $NEWUSER"  
uid=1004(foo) gid=1005(foo) groups=1001(g\_hpca4se),1005(foo)  
ssh -i ~/.ssh/vm-admin centos@login01 "id $NEWUSER"  
uid=1004(foo) gid=1005(foo) groups=1001(g\_hpca4se),1005(foo)

### Process to remove the foo user

# Edit playbook vars and remove the foo user from the `hpcsa4se\_users` list   
# and add it to the `hpca4se\_delete\_users`  
vim `/root/hpca4se-config/ansible/users.yml  
  
 vars:  
 hpca4se\_groups: [ 'g\_hpca4se']  
 hpca4se\_users:  
 - "jnavarro"  
 hpca4se\_delete\_users:  
 - "foo" # user to remove  
  
# Apply the playbook:  
source ~/.venv-ansible/bin/activate  
cd /root/hpca4se-config/ansible  
ansible-playbook playbooks/users.yml  
  
# Check user has been removed in slurm and in one of the NIS clients  
DELUSER=foo  
ssh -i ~/.ssh/vm-admin centos@slurm-ohpc "id $DELUSER"  
id: foo: no such user  
ssh -i ~/.ssh/vm-admin centos@login01 "id $DELUSER"  
id: foo: no such user

## OHPC Software management

### Install all OHPC package groups and packages

source ~/.venv-ansible/bin/activate  
cd /root/hpca4se-config/ansible  
ansible-playbook playbooks/ohpc-software.yml

#### Add new packages

Edit either the ohpc\_software\_groups or ohpc\_software\_packages variables and run the playbook again.

# Source and enter into the directory  
source ~/.venv-ansible/bin/activate  
cd /root/hpca4se-config/ansible  
  
# Edit list or group of packages  
vim playbooks/ohpc-software.yml

Edit playbook vars:

vars:  
 ohpc\_software\_groups:  
 - ohpc-autotools  
 - ohpc-io-libs-gnu  
 - ohpc-parallel-libs-gnu  
 - ohpc-parallel-libs-gnu-mpich  
 - ohpc-parallel-libs-gnu-mvapich2  
 - ohpc-parallel-libs-gnu-openmpi  
 - ohpc-perf-tools-gnu # Your new @group  
  
 ohpc\_software\_packages:  
 - valgrind-ohpc  
 - singularity # Your new package

Run the playbook

# Apply the playbook again  
ansible-playbook playbooks/ohpc-software.yml

### OHPC repository, group packages and packages installed by default

vars:  
 ohpc\_package\_url: "http://github.com/openhpc/ohpc/releases/download/v1.3.GA/ohpc-release-1.3-1.el7.x86\_64.rpm"  
 ohpc\_software\_groups:  
 - ohpc-autotools  
 - ohpc-io-libs-gnu  
 - ohpc-parallel-libs-gnu  
 - ohpc-parallel-libs-gnu-mpich  
 - ohpc-parallel-libs-gnu-mvapich2  
 - ohpc-parallel-libs-gnu-openmpi  
 - ohpc-perf-tools-gnu  
 - ohpc-python-libs-gnu  
 - ohpc-runtimes-gnu  
 - ohpc-serial-libs-gnu  
  
 ohpc\_software\_packages:  
 - valgrind-ohpc  
 - singularity  
 - mlocate  
 - lmod-ohpc  
 - lmod-defaults-gnu-mpich-ohpc  
 - lmod-defaults-gnu-openmpi-ohpc

#### How to list packages installed from groups

cat<<-EOF >/tmp/packages   
ohpc-autotools  
ohpc-io-libs-gnu  
ohpc-parallel-libs-gnu  
ohpc-parallel-libs-gnu-mpich  
ohpc-parallel-libs-gnu-mvapich2  
ohpc-parallel-libs-gnu-openmpi  
ohpc-perf-tools-gnu  
ohpc-python-libs-gnu  
ohpc-runtimes-gnu  
ohpc-serial-libs-gnu  
EOF  
  
cat /tmp/packages | xargs yum group info   
 [...]  
  
 Description: OpenHPC parallel library builds for use with GNU compiler toolchain and the OpenMPI runtime  
 Mandatory Packages:  
 +boost-gnu-openmpi-ohpc  
 +fftw-gnu-openmpi-ohpc  
 +hypre-gnu-openmpi-ohpc  
 +mumps-gnu-openmpi-ohpc  
 +petsc-gnu-openmpi-ohpc  
 +scalapack-gnu-openmpi-ohpc  
 +superlu\_dist-gnu-openmpi-ohpc  
 +trilinos-gnu-openmpi-ohpc  
  
Group: ohpc-perf-tools-gnu  
 Group-Id: ohpc-perf-tools-gnu  
 Description: OpenHPC performance tool builds for use with GNU compiler toolchain  
 Mandatory Packages:  
 +imb-gnu-mpich-ohpc  
 +imb-gnu-mvapich2-ohpc  
 +imb-gnu-openmpi-ohpc  
 +mpiP-gnu-mpich-ohpc  
 +mpiP-gnu-mvapich2-ohpc  
 +mpiP-gnu-openmpi-ohpc  
 +papi-ohpc  
 +scalasca-gnu-mpich-ohpc  
 +scalasca-gnu-mvapich2-ohpc  
 +scalasca-gnu-openmpi-ohpc  
 +tau-gnu-mpich-ohpc  
 +tau-gnu-mvapich2-ohpc  
 +tau-gnu-openmpi-ohpc  
  
Group: ohpc-python-libs-gnu  
 Group-Id: ohpc-python-libs-gnu  
 Description: OpenHPC python related library builds for use with GNU compiler toolchain  
 Mandatory Packages:  
 +python-numpy-gnu-ohpc  
 +python-scipy-gnu-mpich-ohpc  
 +python-scipy-gnu-mvapich2-ohpc  
 +python-scipy-gnu-openmpi-ohpc  
   
Group: ohpc-runtimes-gnu  
 Group-Id: ohpc-runtimes-gnu  
 Description: OpenHPC runtimes for use with GNU compiler toolchain  
 Mandatory Packages:  
 +ocr-gnu-ohpc  
  
Group: ohpc-serial-libs-gnu  
 Group-Id: ohpc-serial-libs-gnu  
 Description: OpenHPC serial library builds for use with GNU compiler toolchain  
 Mandatory Packages:  
 +gsl-gnu-ohpc  
 +metis-gnu-ohpc  
 +openblas-gnu-ohpc  
 +superlu-gnu-ohpc