SSH Usage on CEP

We use the Secure Shell (ssh) on CEP to connect to different systems. This page explains how this can be used without having to supply a password each time you want to connect to a system.

Generating keys

Linux or OS X

The first thing you need to do is generate an authorisation key using the DSA algorithm, which means you need to do the following once:

```
ssh-keygen -tdsa
cp .ssh/id_dsa.pub .ssh/authorized_keys
```

Use cat or some editor if authorized keys already exists and can't be simply copied. Copy your `.ssh/authorized_keys` to the `$HOME` of each system you want access to. Please make sure you use a passphrase to encrypt your private key, to prevent easy access. When using the instructions below on the ssh-agent, you'll only have to provide it once each time you use the systems.

Windows

TBD probably requires an explanation on installing Putty

Using an SSH-Agent

An ssh-agent is a small program that when you start work is used to unlock the passphrase protected private key you generated above. The ssh-agent will from that point on automatically supply the right answers to any ssh session, if you use `ssh -A` each time you connect to another system.

Detailed information on how to setup ssh agent forwarding can be found here and here.

Linux

The ssh-agent runs in the user's local PC, laptop, or terminal. Authentication data need not be stored on any other machine, and authentication passphrases never go over the network. Also, the connection to the agent is forwarded over SSH remote logins, and the user can thus use the privileges given by the identities anywhere in the network in a secure way.

If you start the ssh-agent it creates a socket in `/tmp` and then generates a few commands on `stdout` which serve to set environmental variables and to tell you which PID the agent has. An example:

```
SSH_AUTH_SOCK=/tmp/ssh-jpIaV4861/agent.4861; export SSH_AUTH_SOCK;
SSH_AGENT_PID=4862; export SSH_AGENT_PID;
echo Agent pid 4862;
```

By 'eval'uating this code, the variables SSH_AUTH_SOCK and SSH_AGENT_PID will be set. You can use the SSH_AGENT_PID, for example, to kill the agent when you log off. The agent itself recognises the variable and commits suicide when you type:

```
ssh-agent -k
```

The SSH_AUTH_SOCK variable is mainly used by the program `ssh-add`, which uses it to determine with which agent to communicate. To get your agent running type:

```
eval `ssh-agent`
ssh-add
```

Please note the back-quotes. If you have bash, you might use the more readable:

```
eval $(ssh-agent)
ssh-add
```

Note that the permissions on the socket file prevent people from accessing your agent - but on a regular Unix system the 'root' user can override these restrictions. Hence, 'root' can set SSH_AUTH_SOCK to your socket and use `ssh-add` to list/add/delete your keys. He can also log in on all of your systems without having to use a password. **Be warned.**

Persistent agent

In theory, you only need to start up the agent once on the host you use to connect to other systems (e.g. your laptop) and be done with it; all requests from all your shells may be handled by the very same agent. However, this requires the proper setting of the environmental variables. Alas, there is no simple way to find out which socket an agent uses. But a little script magic will do the trick. If you use `bash` you can copy the following code into your `.bashrc` to re-use your running agent:

```
# find out how many agents we have running. If more than 1 do nothing,
# if zero, start one up and if 1, re-use it
#
z=0
PA=$(ps -u $USER |awk '$NF=="ssh-agent" { print $1 }' )
for n in $PA
do
   ((z++))
done

# No agent runs for me, so start one:
if [ $z -eq 0 ]
then
   eval $(ssh-agent)
   ssh-add
```

```
fi

# There is an agent for me, so figure out the socketname and set the
variables
# ''manually'':
if [ $z -eq 1 ]
then
   # The socket has been created by the parent process, which has a PID one
   # less than that of the running agent. The PPID is needed to determine
the
   # name of the socket. Alternately you might get the PPID from the process
   # listing.
   #
   q=$PA
   ((q--))

   # Next, we search for the matching socket. There can only be one that has
   # the PPID in it's name.
   #
   candidate=$(ls /tmp/ssh-*/agent* |sed -n '/tmp\/ssh-
.*'$q'\/agent.'$q'$/p')

   # If what we found is a socket, set the environmental variables
   #
   if [ -S "$candidate" ]
   then
      export SSH_AGENT_PID=$PA
      export SSH_AUTH_SOCK=${candidate}
      ssh-add -L >/dev/null 2>&1
      if [ $? -eq 0 ]
      then
        echo "Reusing your existing ssh agent (pid is $PA)"
      else
        unset SSH_AGENT_PID
        unset SSH_AUTH_SOCK
      fi
   fi
fi

# A simple function to allow you to type ''gono <nodename> (as <identity>)''
# which will use ssh-agent forwarding to step right 'through' the
# portal to the end-node
#
gono() {
 if [ $# -eq 3 -a "$2" == "as" ]
 then
   ssh -A -t portal.lofar.eu "ssh -A $3@$1"
 else
   if [ $# -eq 1 ]
   then
     ssh -A -t portal.lofar.eu "ssh -A $1"
```

```
   else
     echo "Syntax error"
     echo "Usage: gono <nodename> as <user>"
   fi
 fi
}
```

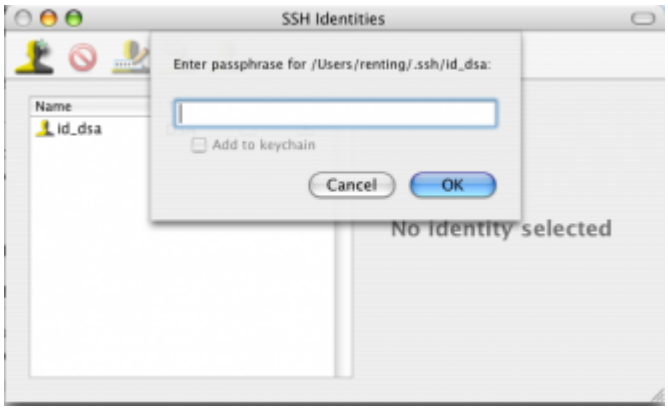
To list the identities (keys) currently known by your `ssh-agent`, you can use:

```
ssh-add -L
```

Note that it is possible to FORCE the name of the socket which `ssh-agent` will use by specifying the `-a` flag. Hence, you might also consider putting the socket for your agent in your HOME directory. You could simplify the script accordingly.

OS X

Install SSH Agent 1.1 and set it to *Open at Login* or use the same commands as on Linux.



Windows

Use Pagent provided by Putty

- TBD