# SSH

All SBC edge clients can be accessed using SSH. Every authentication type is supported. Our preinstalled edge clients require a "24 hour Mellon certificate" with the principal `building-admins`.

## c1-ssh

The easiest way to SSH into edge clients is by using the tool "c1-ssh". c1-ssh is available precompiled in our APT repository for Debian and Ubuntu. It is just a small wrapper around the systems SSH client and establishes the connection to Sensaru Cloud. Using c1-ssh also has the advantage that you can always trust the connection. You don't get the usual SSH key warning on first connection and don't need to check it. This makes man-in-the-middle attacks on the SSH connection much, much harder.

To connect to an edge client, execute:

```
c1-ssh <user>@<business partner ID>_<economic unit ID>.<property ID>.<administration unit ID>_<sub
ID>_10000
```

The property ID and administration unit ID are optional. The sub ID is usually `1`. `10000` is the client index. This is the default value for SSH and can be changed in `cloudconnect.conf` on the client. So an example command might look like this:

```
c1-ssh root@0604b020-7905-11eb-ad7b-f9e2c6c59018_6261.107.97_1_10000
```

In addition you can pass most SSH parameters to c1-ssh, e. g. to tunnel connections.

### SCP

To copy files you can use c1-scp which comes with c1-ssh.

## OpenSSH

You can also use OpenSSH without "c1-ssh" utilizing the `ProxyCommand` option. In addition to OpenSSH, socat and curl are required

On Ubuntu these can be installed by executing:

```
apt install socat curl
```

Now place the following script in `~/.ssh/sensaru-proxy.sh`:

```
#!/usr/bin/env bash

# Example usage: ssh -o ProxyCommand="~/.ssh/sensaru-proxy.sh %h" -o UserKnownHostsFile=/dev/null
root@2007c641-b994-443e-b827-1748da6d5dd0_1234_1_10000

business_partner_id=$(echo $1 | cut -d '_' -f 1)
device_id=$(echo $1 | cut -d '_' -f 2)
sub_id=$(echo $1 | cut -d '_' -f 3)
client_index=$(echo $1 | cut -d '_' -f 4)

# Get hostname
hostname=$(curl -s "https://edge.sensaru.cloud/?c1pclientindex=${client_index}&c1pbp=$
{business_partner_id}&c1pdeviceid=${device_id}&c1psubid=${sub_id}&c1pproxymode=1&c1pgethost=1")
> /dev/null 2>&1
if [ -z $hostname ]; then
    >&2 echo "Could not determine hostname"
    exit 1
fi

(printf 'GET /?
c1pclientindex=%s&c1pbp=%s&c1pdeviceid=%s&c1psubid=%s&c1pproxymode=1&c1pnohttpresponse=1
HTTP/1.1\r\nConnection: keep-alive\r\n\r\n' $client_index $business_partner_id $device_id $sub_id && cat) |
socat - SSL:$hostname:4027
```

Make this script executable:

```
chmod +x ~/.ssh/sensaru-proxy.sh
```

Add an ssh alias called sssh:

```
echo "alias sssh='ssh -o ProxyCommand=\"~/.ssh/sensaru-proxy.sh %h\" -o StrictHostKeyChecking=no -o
UserKnownHostsFile=/dev/null'" >> ~/.bashrc
```

After a restart of your shell, you can SSH into any SBC edge client using:

```
sssh user@hostname
```

Replace `hostname` with `<business partner ID>_<home client ID>_<sub ID>_<client index>` . As a system
provider or system distributor the hostname can be copied from https://sensaru.cloud in device
management on the edge clients detail page (at the top).

## SCP

Like for SSH add an alias:

```
echo "alias sscp='scp -o ProxyCommand=\"~/.ssh/sensaru-proxy.sh %h\" -o StrictHostKeyChecking=no -o
UserKnownHostsFile=/dev/null'" >> ~/.bashrc
```

SCP can be used the same way:

```
sscp user@hostname:/my-file .
```