Installation of the target web-server

The *target web-server* is based on Ubuntu 14.04.5 LTS, has a public IP address and runs both a SSH and HTTP service. Both services are protected by a local IP firewall and an application firewall. As looking at a static html page may not be that sexy we have installed an *emby media server* capable of serving 4 different movies: two analog clocks (with sound), *Seven red lines* from Youtube and a seven second movie of a cartoon rabbit coming out of a hole.

The pre-requisite is Ubuntu 14.04.5 LTS with an ssh server installed.

1. How to Install the media server emby on top of NGINX

This is a documented procedure for the installation of **emby** a media streaming server used as a target for the DEiC Distributed Denial of Service Project. The media server hosts a number of interesting videos, among one 12 hour long video of a analog clock with hands. The purpose of the installation is to demonstrate a service under attack.

Notice that the following commands require root privileges.

Start by installing an Ubuntu 14.01 LTS server with an SSH daemon. Reboot and install patches:

```
apt-get -y update
apt-get -y dist-upgrade
```

Reboot if required.

Install the local developed packages from SSI:

- `cmod_1.1-2.deb` : modules (not essential)
- `dailybuandupdate_1.6-1.deb` : automated patch and backup. Patches are installed on a daily basis, the host reboots if required.
- `grouproot_1.2-1.deb` : shared administrator environment (not essential)

Next install NGINX:

```
apt-get -y install nginx
```

Then install the emby media server:

```
apt-key adv --keyserver keyserver.ubuntu.com --recv-keys  0A506F712A7D8A28

echo 'deb http://download.opensuse.org/repositories/home:/emby/xUbuntu_14.04/
 /' \
    > /etc/apt/sources.list.d/emby-server.list
apt-get -y update
apt-get -y install emby-server
```

You may have to start it manually:

```
service emby-server start
```

The emby server is now running on TCP port 8096.

Next configure NGINX to proxy port 80 to port 8096:

```
test -f /etc/nginx/sites-available/default.org || {
    /bin/cp -v  /etc/nginx/sites-available/default  \
            /etc/nginx/sites-available/default.org
}

cat << 'EOF' > /etc/nginx/sites-available/default
#
# emby as default server
#
server {
    listen 80 default_server;
    listen [::]:80 default_server ipv6only=on;

    root /usr/share/nginx/html;
    index index.html index.htm;

    # Make site accessible from http://localhost/
    server_name localhost;

    location / {
        proxy_pass http://127.0.0.1:8096;
    }
}
# HTTPS server
#
#server {
#   listen 443;
#   server_name localhost;
#
#   root html;
#   index index.html index.htm;
#
#   ssl on;
#   ssl_certificate cert.pem;
#   ssl_certificate_key cert.key;
#
#   ssl_session_timeout 5m;
#
#   ssl_protocols SSLv3 TLSv1 TLSv1.1 TLSv1.2;
#   ssl_ciphers "HIGH:!aNULL:!MD5 or HIGH:!aNULL:!MD5:!3DES";
#   ssl_prefer_server_ciphers on;
#
#   location / {
#       proxy_pass http://127.0.0.1:8096;
#   }
#}
EOF
```

Then reload the nginx configuration:

```
nginx -s reload
```

The emby server is now running on TCP port 80.

2. Local host security

The server has to be secured. As everything has been installed as packages and all patches will be applied on a daily basis we just need to apply general IP address filtering and brute force login mitigation. The installation and configuration of a host-based intrusion detection system is outside the scope of this document. See e.g. OSSEC.

2.1. IP filtering

Enable the build in ufw IP firewall - the commands may block your access:

```
ufw enable
ufw default deny incoming
ufw default allow outgoing
```

Then open for *forskningsnet* addresses:

```
for CIDR in 95.128.24.0/21 130.225.0.0/16 130.226.0.0/16 192.38.0.0/17 185.1.5
7.0/24
do
    ufw allow from ${CIDR}  to any port 22
    ufw allow from ${CIDR}  to any port 80
    ufw allow from ${CIDR}  to any port 443
done
```

And check the rules has been enabled:

```
ufw status numbered
```

A comprehensive introduction to *ufw rules* on Ubuntu 14 is available at digitalocean.

2.2. Application firewall

While the *ufw* rules limits access to *forskningsnet addresses*, it doesn't prevent brute force attacks.

fail2ban is an intrusion prevention software framework that protects computer servers from brute-force attacks. Written in the Python programming language, it is able to run on POSIX systems that have an interface to a packet-control system or firewall installed locally, for example, iptables or TCP Wrapper. It may be installed with:

```
apt-get -y install fail2ban
```

And an configuration for the emby media server added with:

```
cat << EOF > /etc/fail2ban/filter.d/emby.conf
# Fail2Ban filter for emby

[INCLUDES]

# Read common prefixes. If any customizations available -- read them from
# common.local
before = common.conf

[Definition]

_daemon = emby-server

failregex = Info HttpServer: HTTP Response 401 to <HOST>.*authenticatebyname
            Info HttpServer: HTTP Response 500 to <HOST>.*mediabrowser/Users/N
one

ignoreregex =

# Invalid username or password entered
# DEV Notes:
#
#  Matching on http 401 with a trailing url including 'authenticatebyname' to
catch incorrect passwords
#  Matching on http 500 with a trailing url including 'mediabrowser/Users/None
' to catch incorrect usernames
#
# From: https://emby.media/community/index.php?/topic/31362-fail2ban-custom-em
by-filter/
EOF
```

The configuration is enabled by adding a section to `/etc/fail2ban/jail.local` which may or may not exist already.

```
test -f /etc/fail2ban/jail.local.org || {
    /bin/cp /etc/fail2ban/jail.local /etc/fail2ban/jail.local.org
}
touch /etc/fail2ban/jail.local.org

(
    cat /etc/fail2ban/jail.local.org > /etc/fail2ban/jail.local
cat << EOF >> /etc/fail2ban/jail.local
[emby]
enabled  = true
port     = 8096
filter   = emby
logpath  = /var/lib/emby-server/logs/server-*.txt
maxretry = 2
EOF
)
```

Finally the service has to be reloaded:

```
service fai2ban reload
```

3. Emby configuration

The configuration is done through the Web-UI, but requires data to be added in advance.

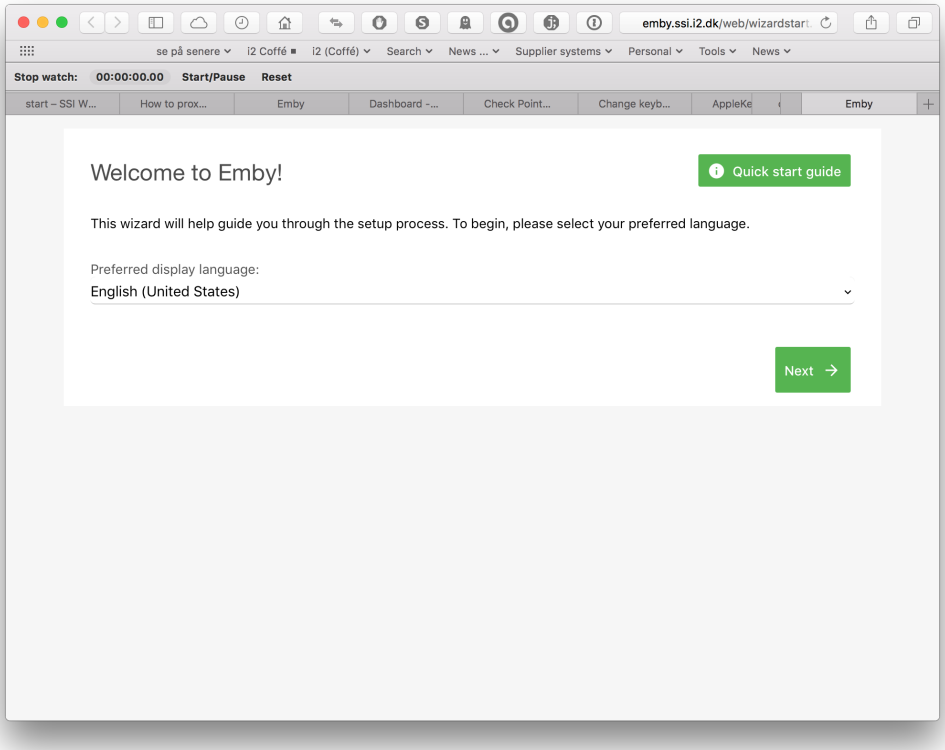
3.1. Data - lots of clocks but no cats

mkdir -p /home/media/Movies

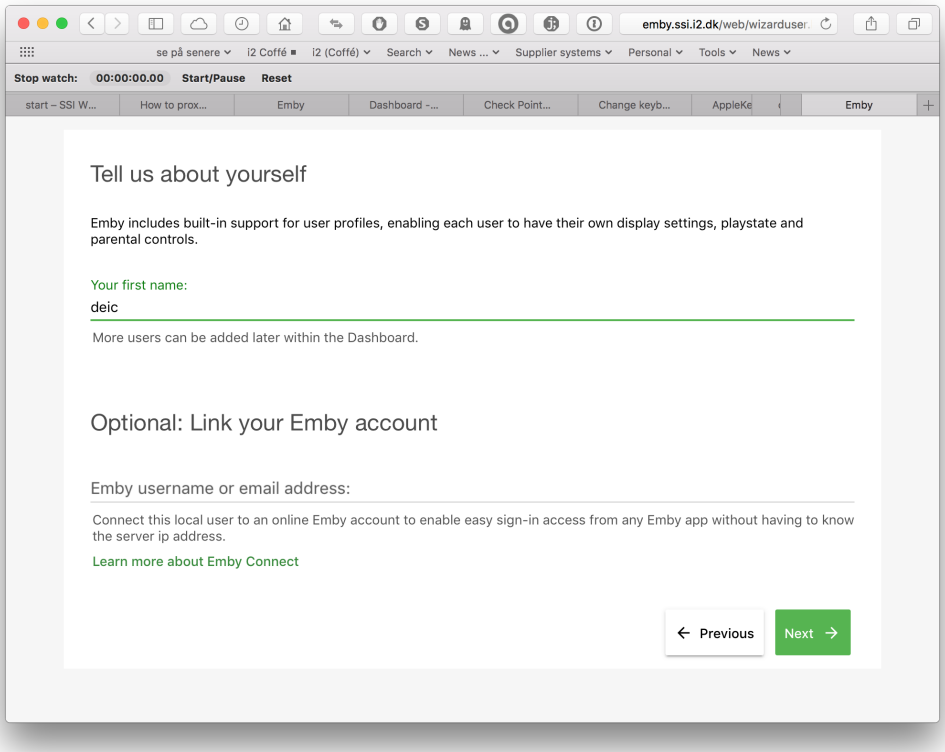
Upload relevant information from /lan/ssi/shared/docs/emby-test-data

3.2. Configuration

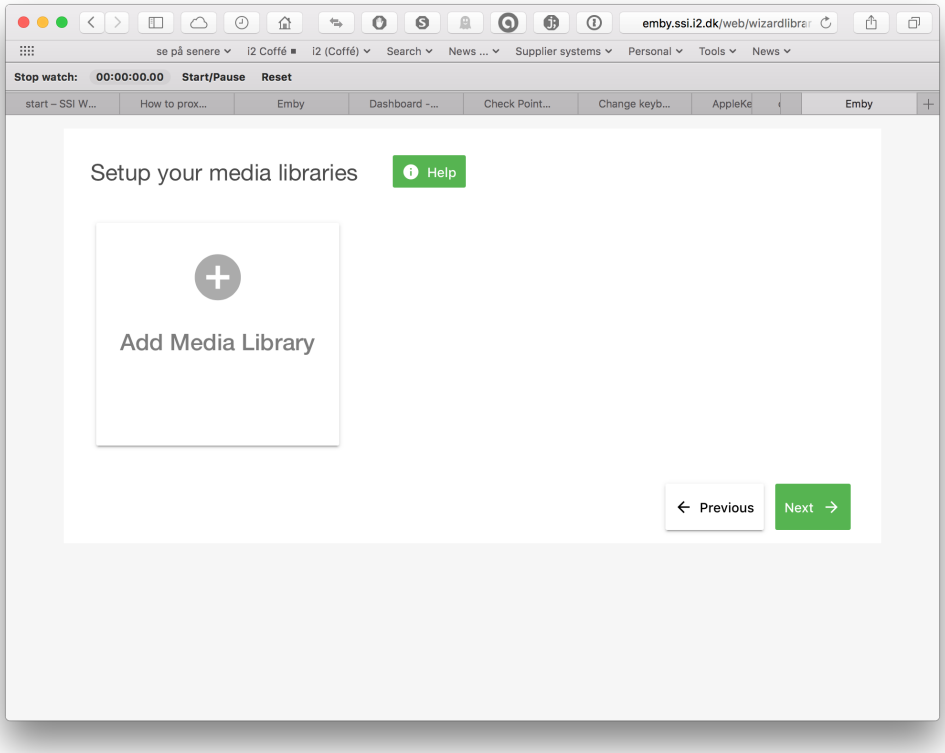
The goal is to have one user - deic - and manual login with username and password on the main web page and no anonymous data collection. The Web-UI configuration is done this way; select language



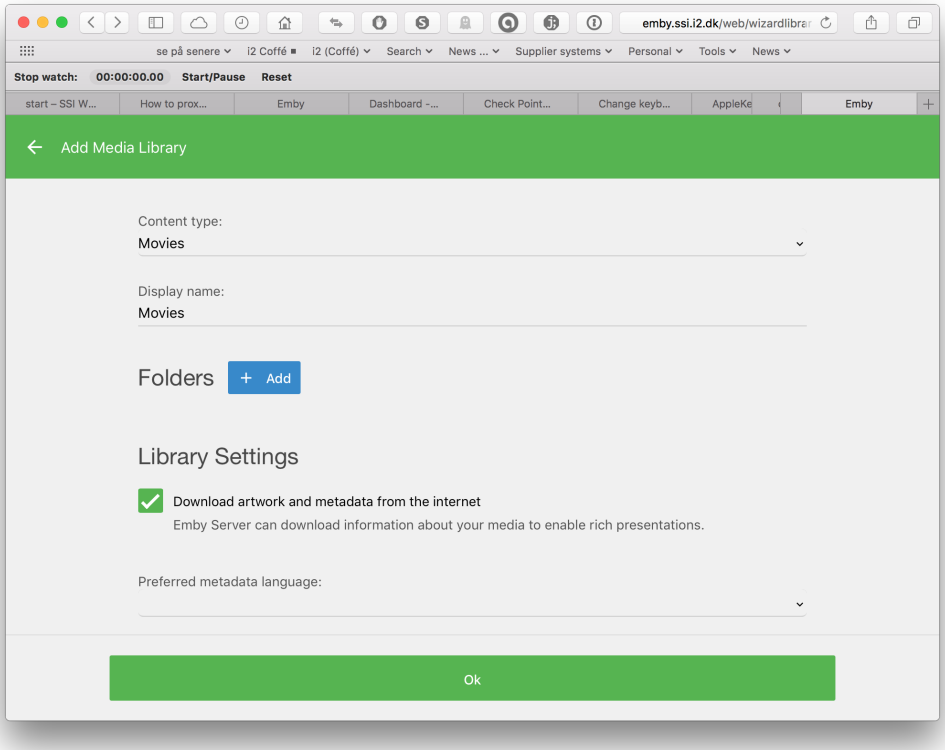
well come



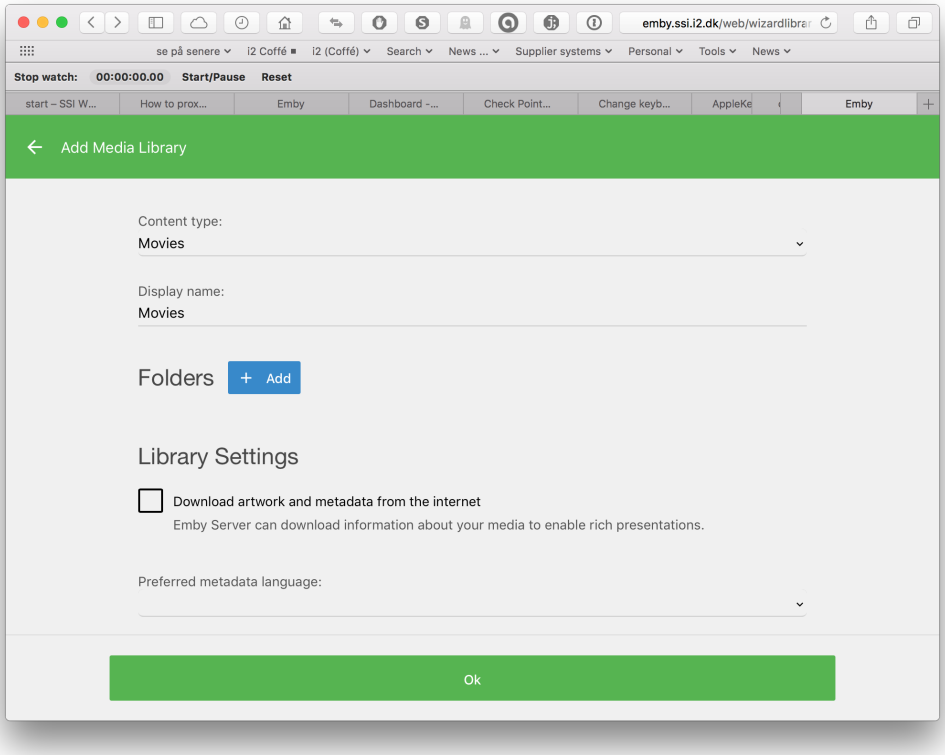
create a user



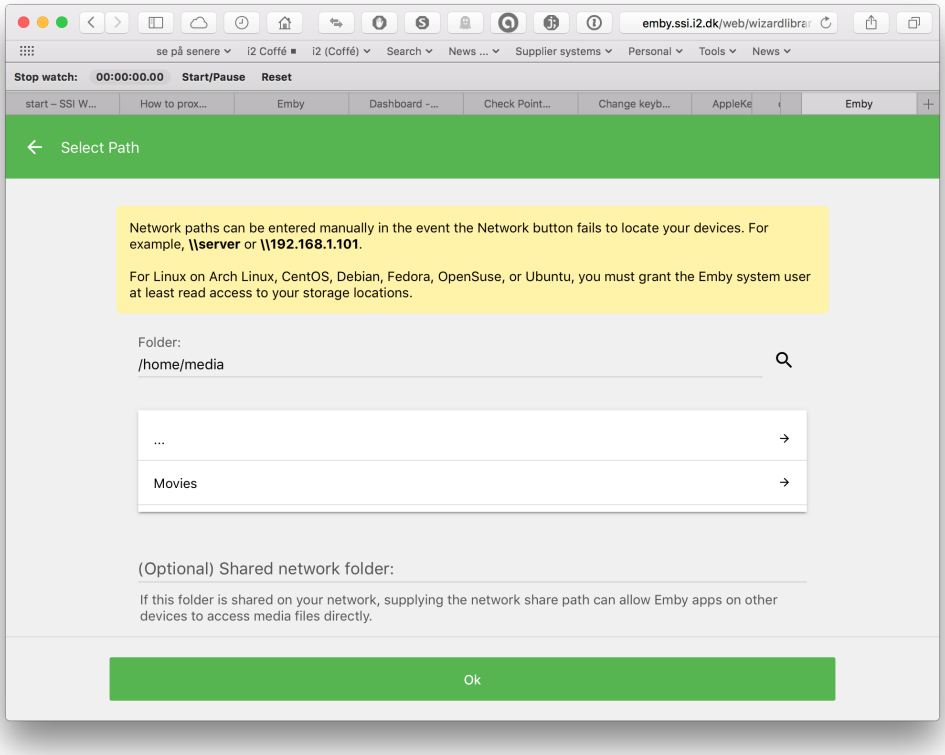
add media libraries - Movies



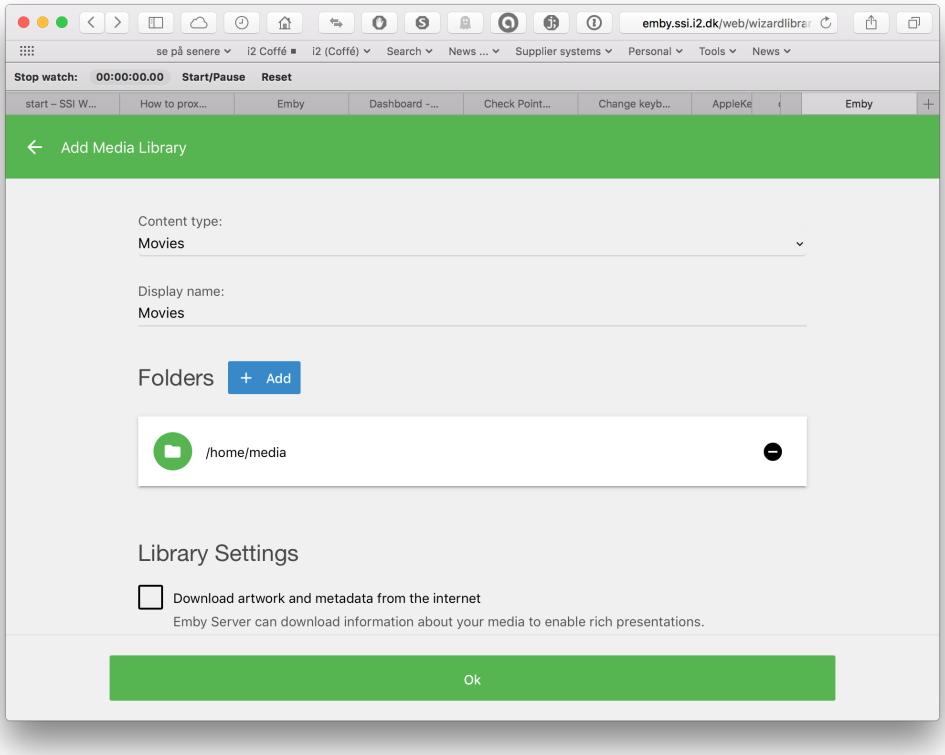
select folders



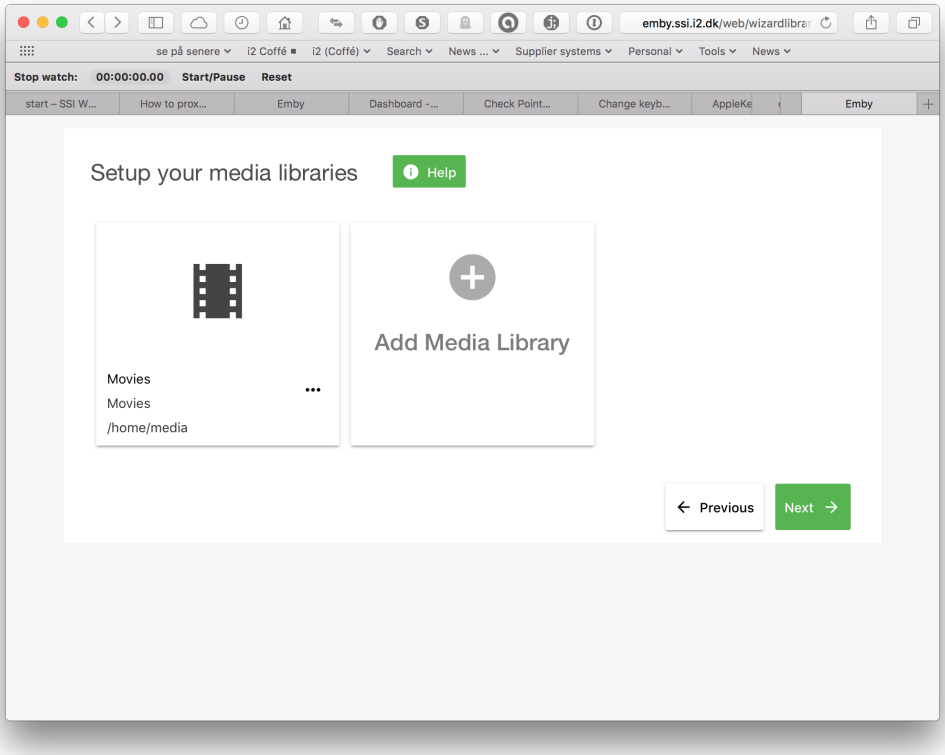
Add - and don't download information from the Internet



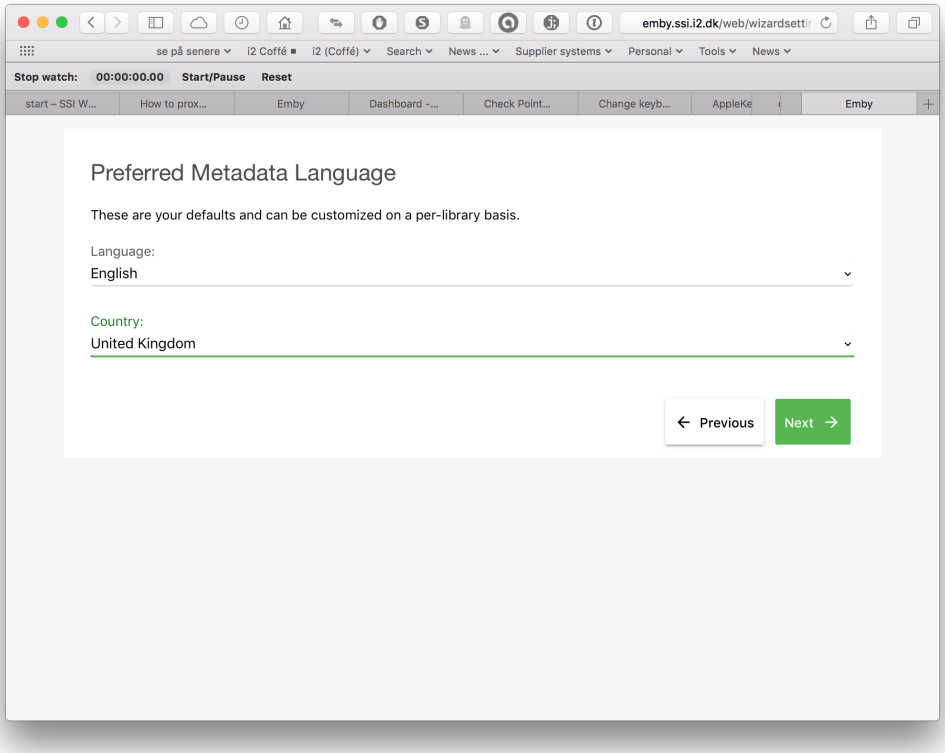
Local filesystem navigation



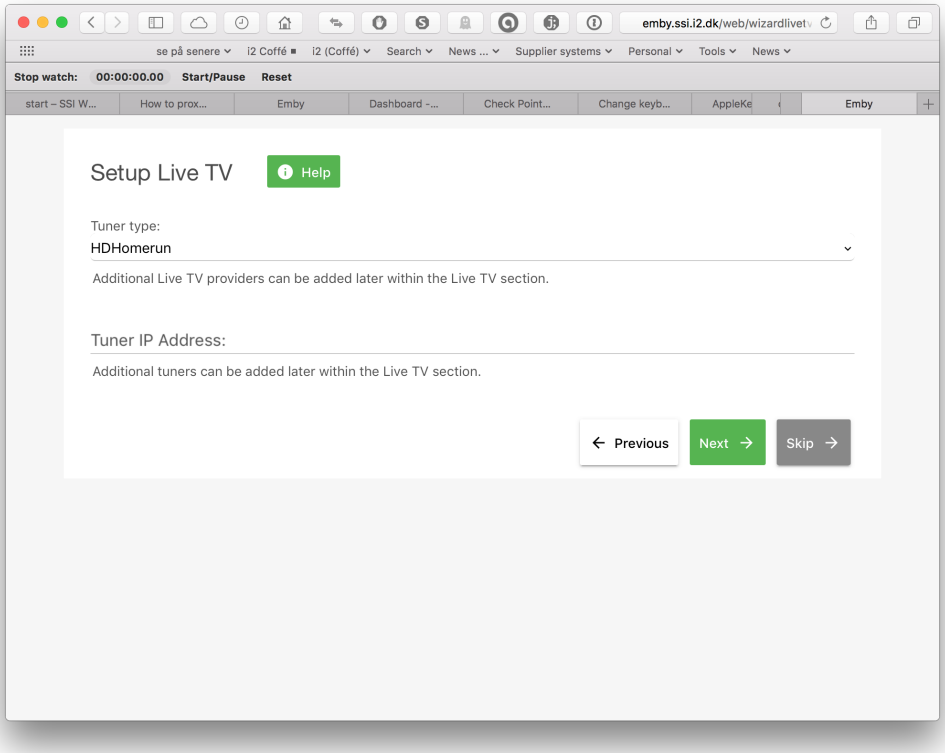
click ok



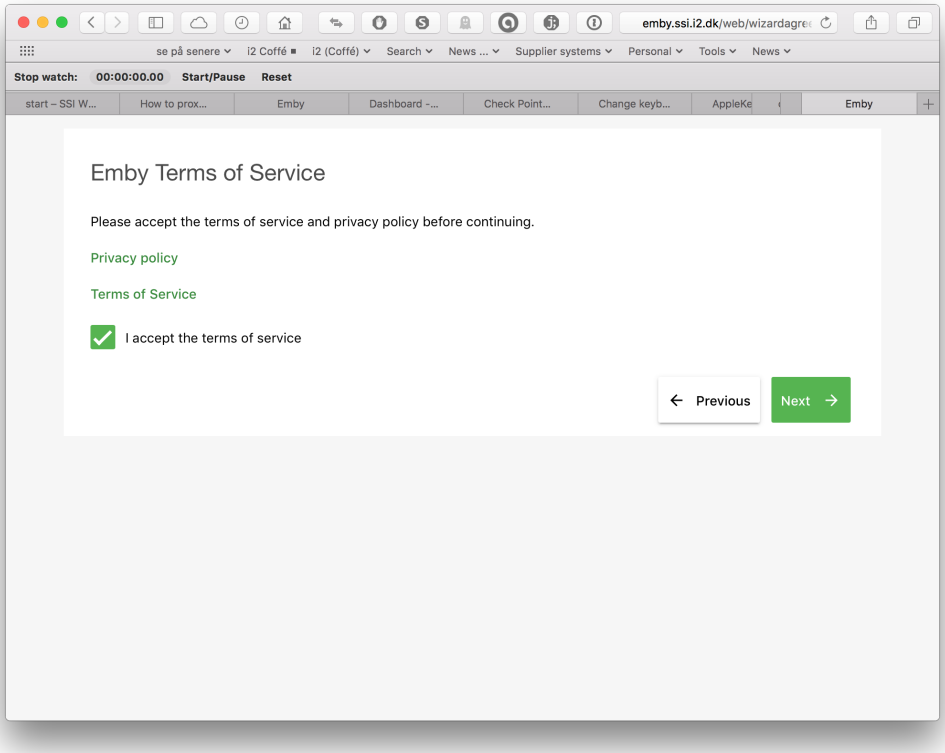
Next



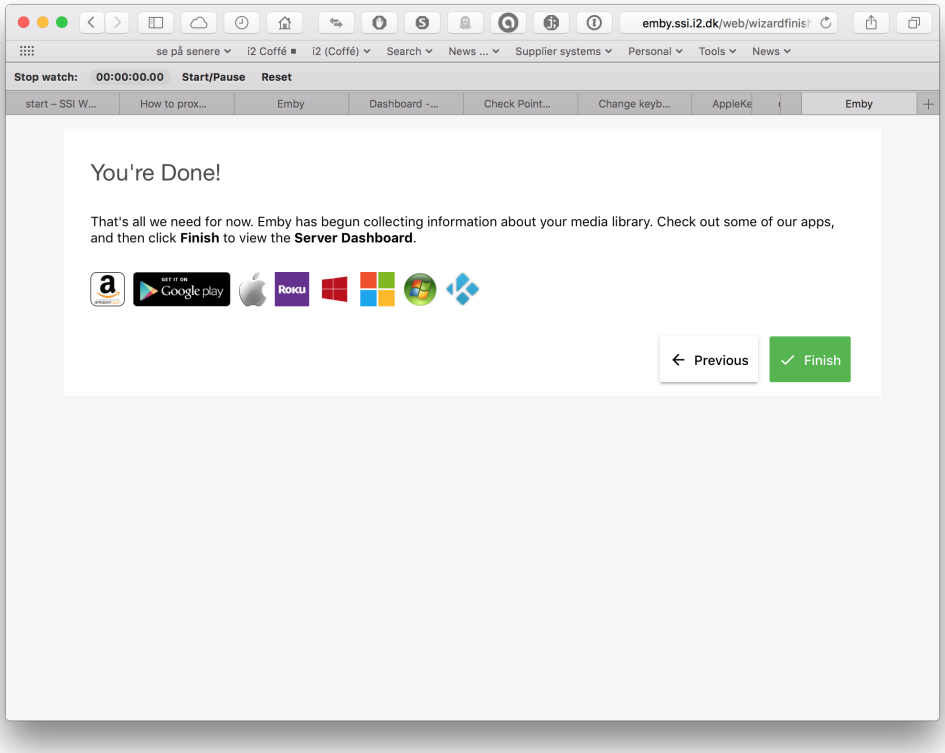
Select Language



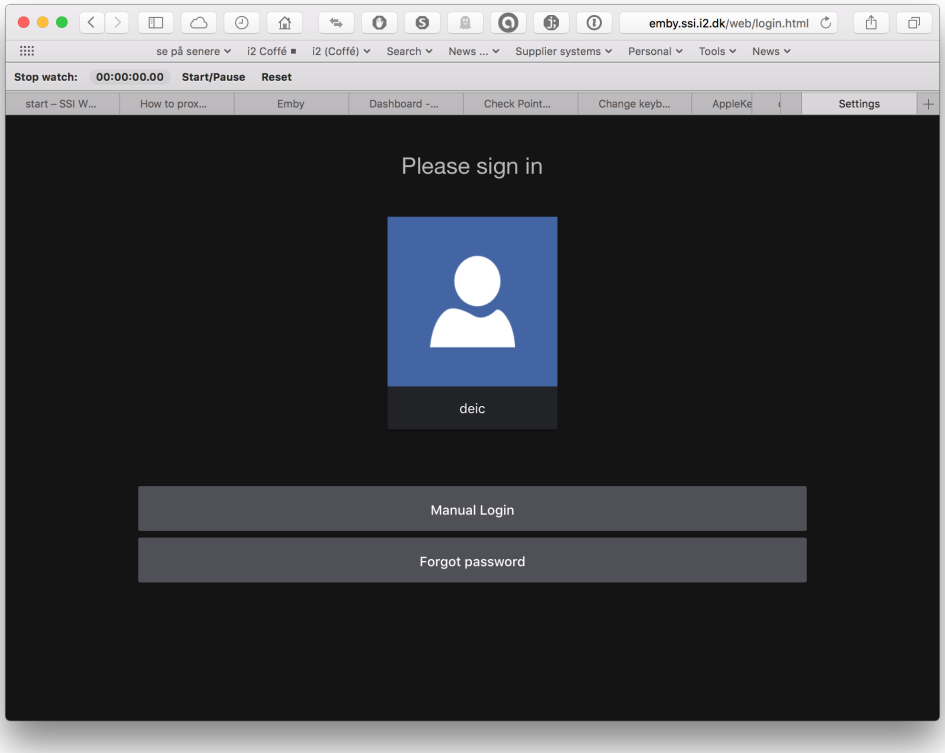
Disable Live TV



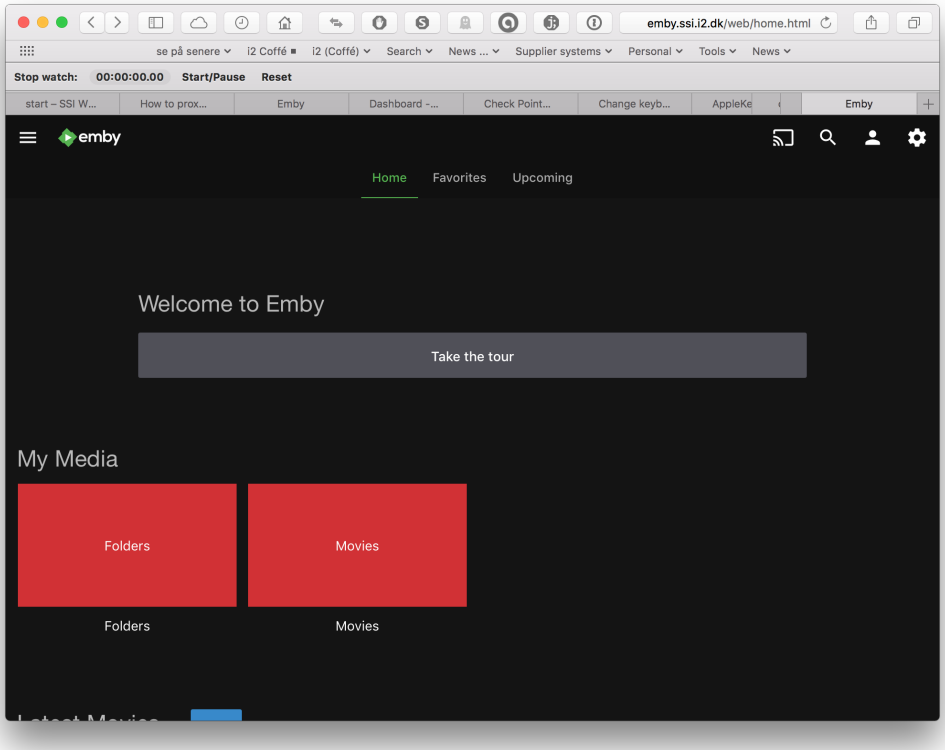
Accept Terms of Service



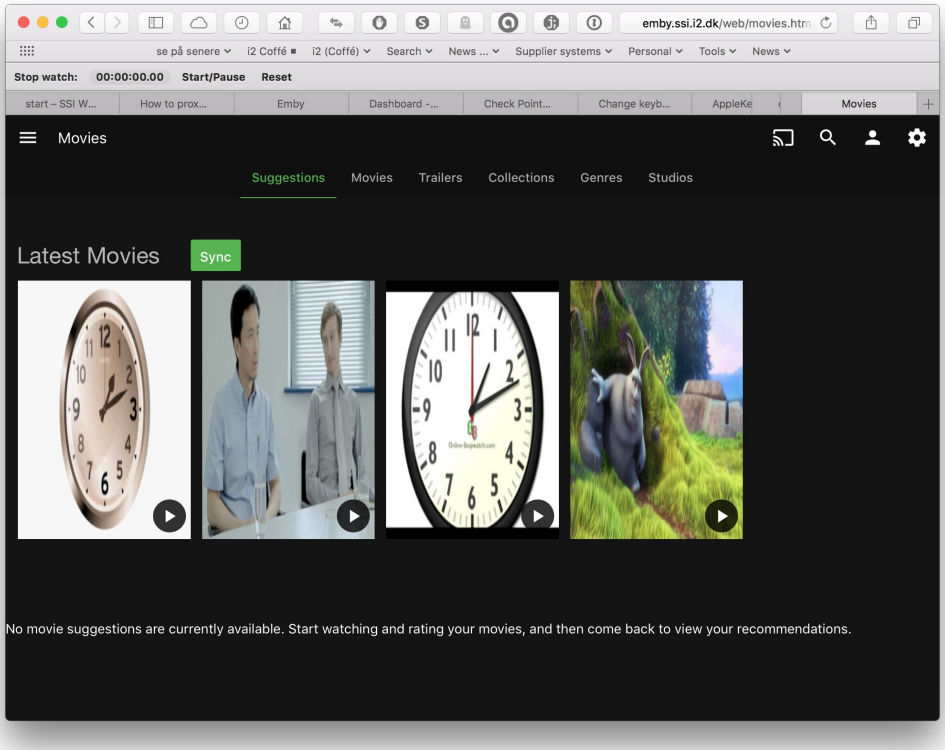
Finish



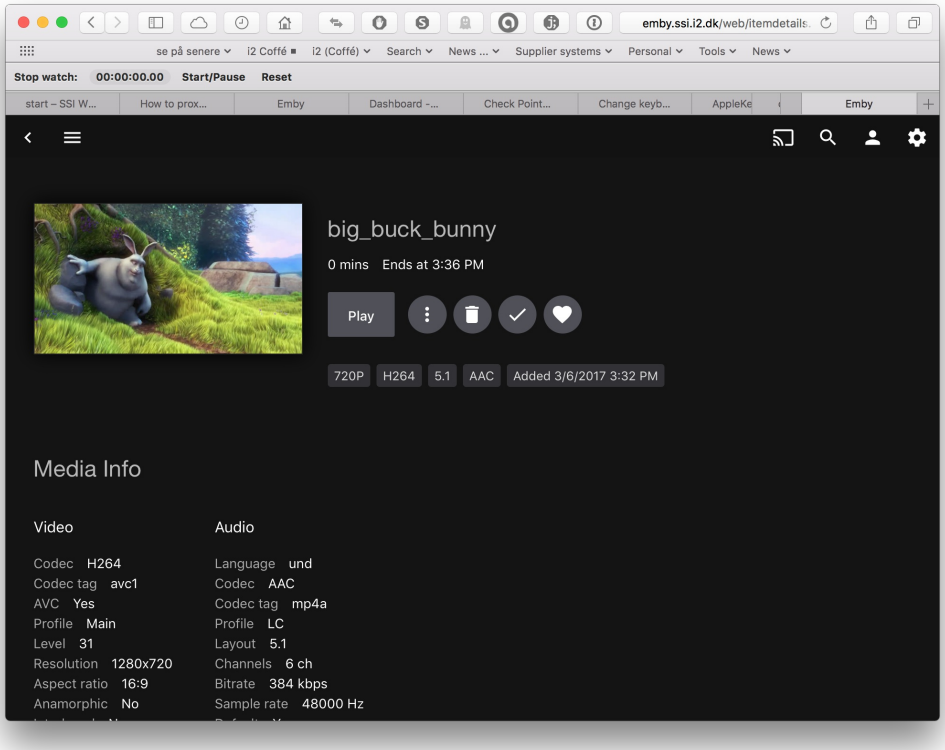
Sign in



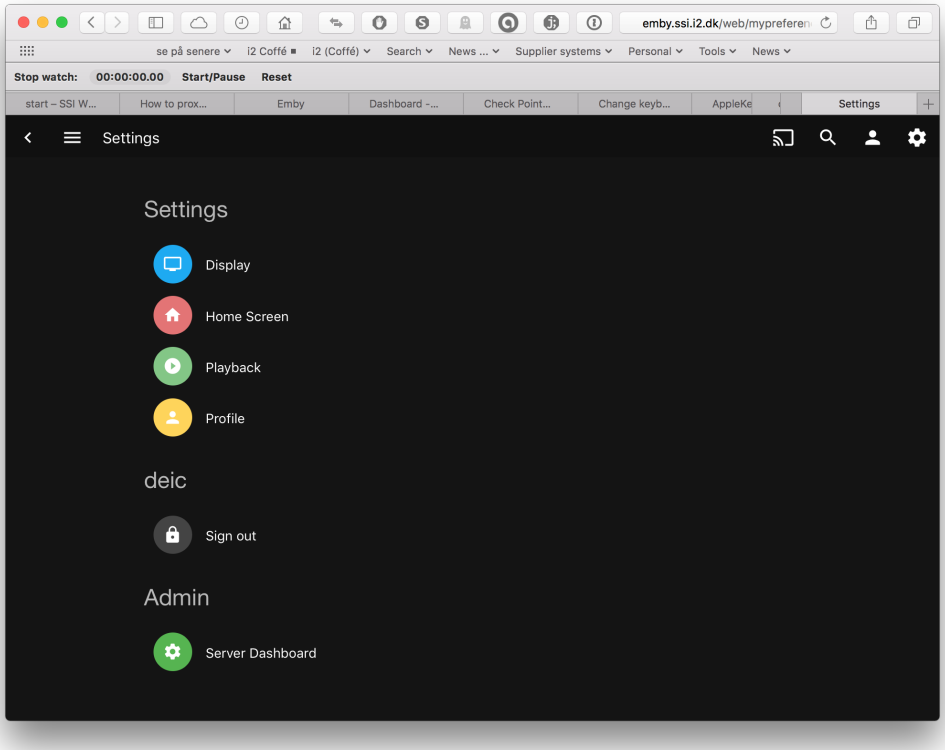
Check movies



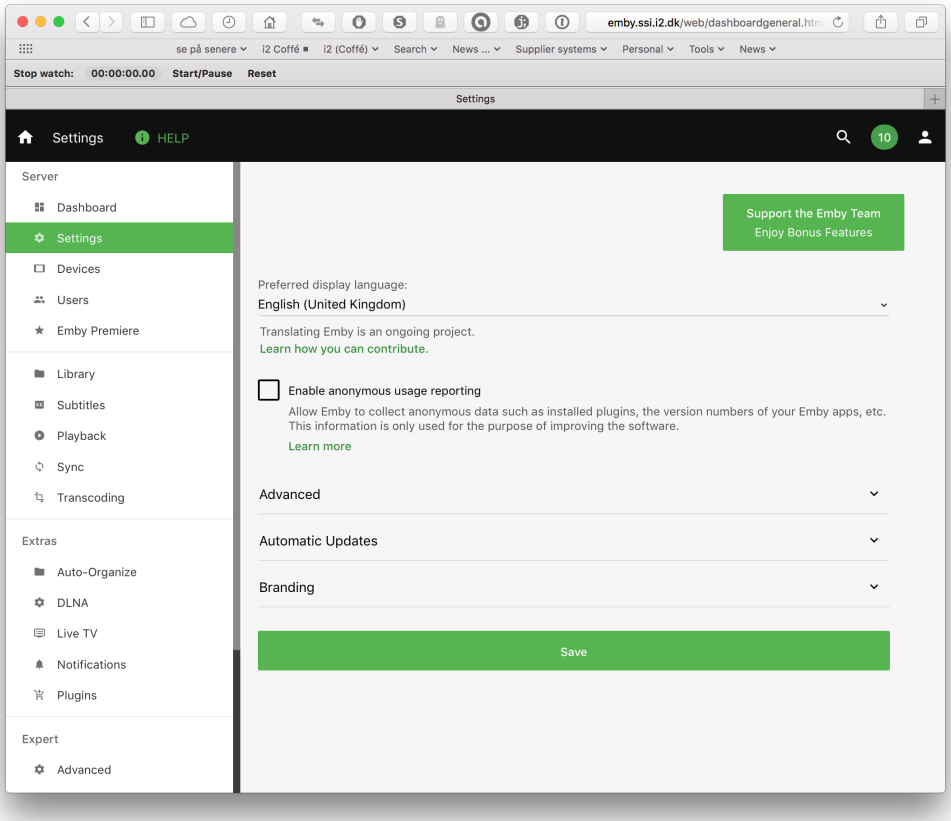
Select movie



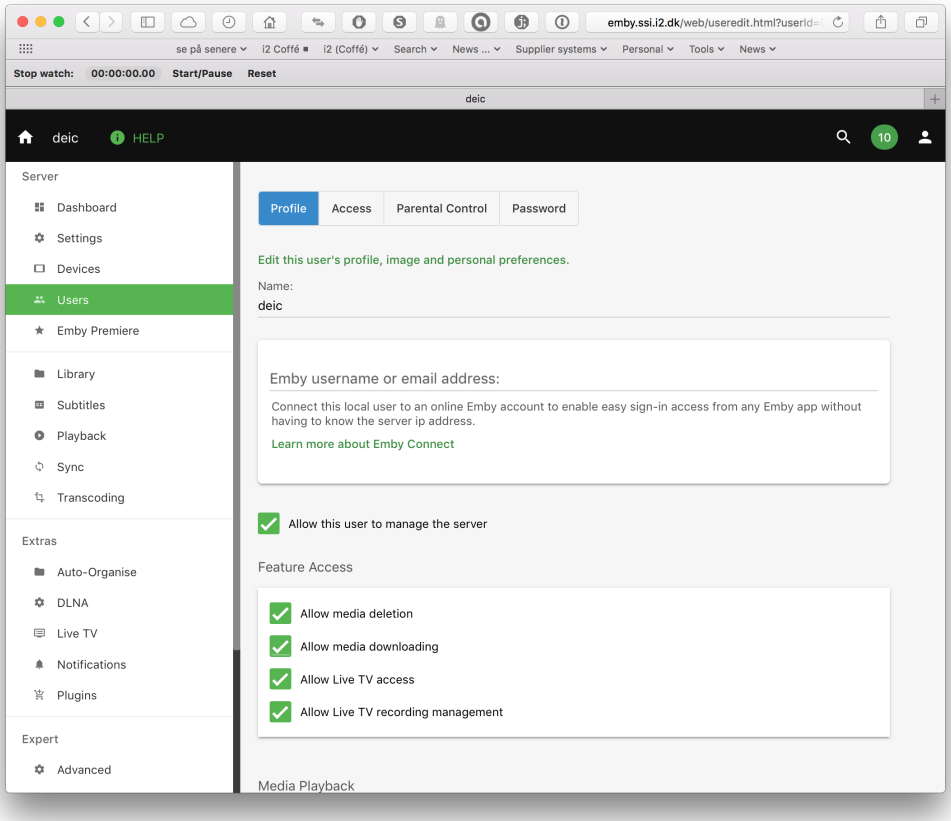
Play shortest movie



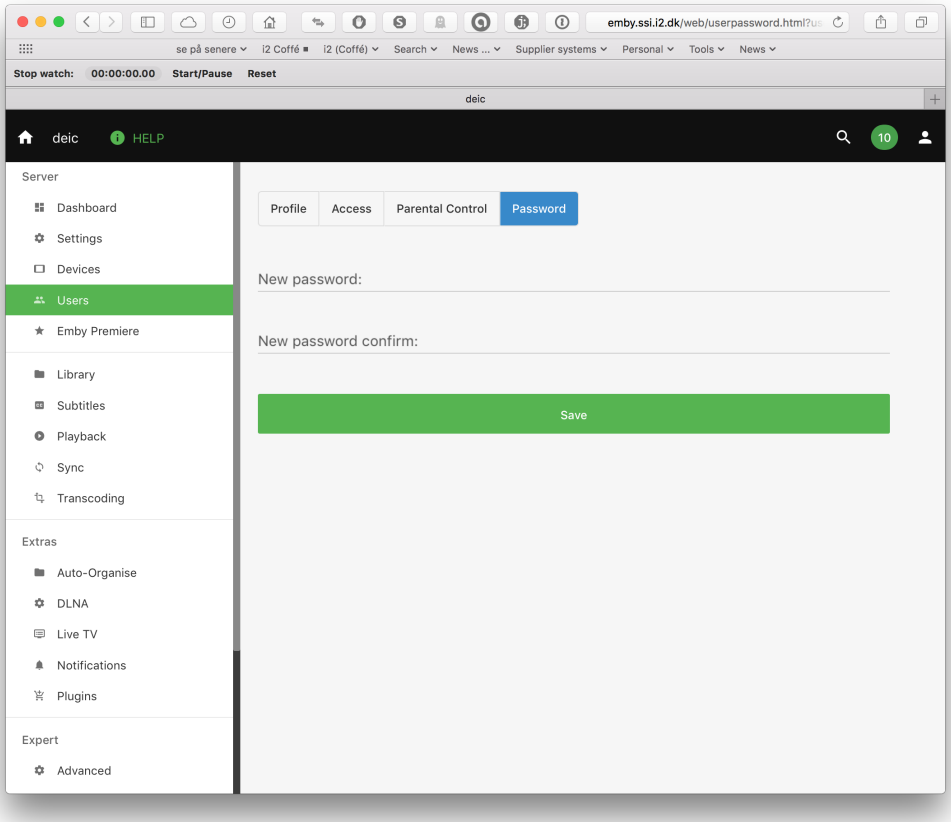
Select settings (top right corner)



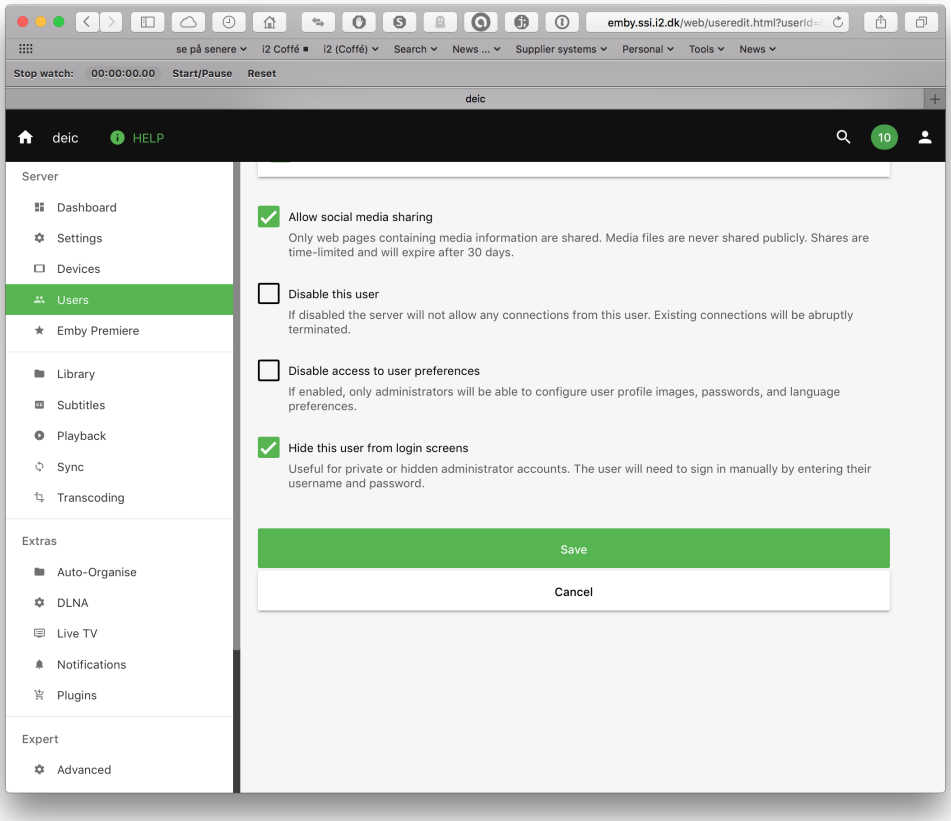
Disable anonymous usage reporting



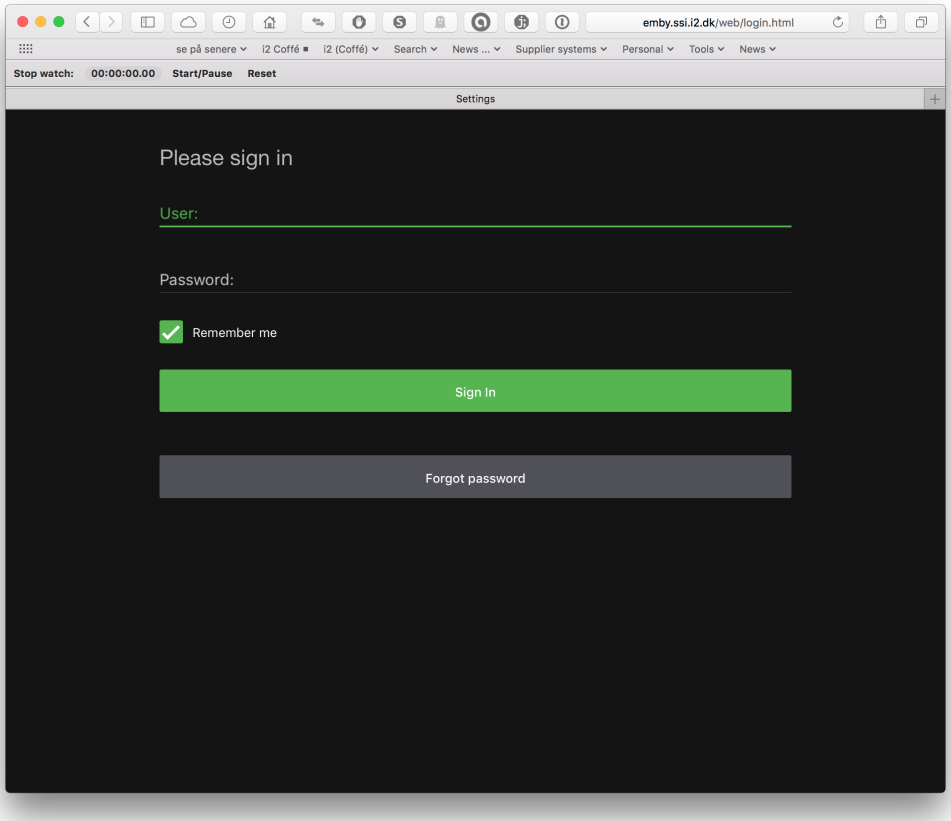
Users->deic



Set password (1qazxsw2)



scroll down and disable from login screen then sign out



check login screen

That should be it, we now have a media server suitable for target testing.

——- cover page generator