snap.tv

personal television

SYSTEM ADMINISTRATION GUIDE

Version 2.20.0

December 29, 2015

Contents

CHAPTER 1

Introduction

Dear Customer, thank you for selecting SnapTV equipment for your IPTV operation. Please follow this installation manual carefully during installation of your equipment.

1.1 Applicability

This document is applicable to

- SnapTV 360GBPX-E Combo
- SnapTV 360GBPX-E GW Maxi
- SnapTV 360GBPX-E GW Classic
- SnapTV Maxi Express
- SnapTV Mini Streamer
- Software version: 2.20

Some sections are only applicable to some products.

1.2 Target audience

The target audience of this installation manual is personnel who install SnapTV server products. The reader of this manual is required to have a basic command line user experience on Linux and preferably basic knowledge about Linux networking.

For specifics on the SnapTV Linux distribution (Ubuntu 12.04 LTS), the following is a good starting point

- http://community.ubuntu.com/help-information/
- http://help.ubuntu.com/

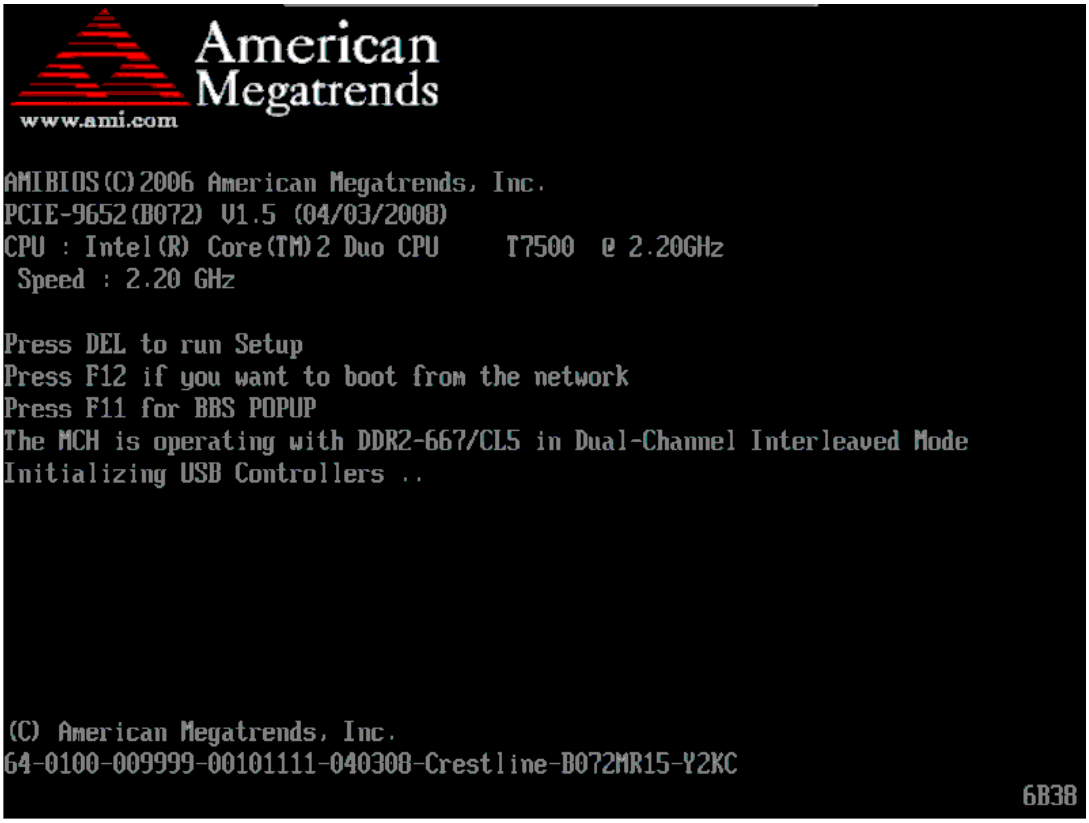
Also, *man* pages are part of the SnapTV Linux distribution whenever you need detailed information on the command syntax of relevant utilities.

CHAPTER 2

Getting started

2.1 First time power up

Connect both power cables to the unit and to 220VAC wall outlets. Switch both switches on the power supplies to the *1* position. Thereafter, switch the unit on by pressing the toggle switch on the front panel.



2.2 Console login

Attach a VGA cable to a monitor and a standard PS/2 or USB keyboard.

You will need to log in to your equipment in order to define network specific information. Enter username *snap* and password as indicated in *Default factory settings* or defined during the installation phase if you installed the software yourself.

Example:

```
localhost login: snap
password: ******
```

If the password is correct, you will have a bash prompt:

```
localhost ~#
```

2.3 Setting new passwords

It's recommended to define new passwords for your product.

2.3.1 Setting new password for the default user (snap)

Example:

```
~# passwd
New UNIX password:
Retype new UNIX password:
passwd: password updated successfully
```

For more details about the passwd command, type *man passwd* at the shell prompt.

2.3.2 Creating admin user for accessing the web interface

In case the current web interface user/password is forgotten, a new user and password can be defined using this command.

Example:

```
~# sudo /opt/snaptv/bin/create_admin_user.pm <username> <password> (<real name>)
Creating user <username> (admin) with password <pasword>
```

2.4 Setting keyboard mapping

Keyboard mappings for the console are stored in the ascii text file /etc/conf.d/keymaps. Use the *nano* text editor to change the value called KEYMAP into a value suitable for you. Valid values for the KEYMAP variables are found in subfolders of /usr/share/keymaps/i386:

```
~# nano /etc/conf.d/keymaps
```

Use the arrow keys to navigate in the file, change the value of the KEYMAP parameter, then save and exit with Ctrl+X → Y → ENTER. In order to change the keyboard mapping without having to do a reboot of your system, use the command-line utility *loadkeys* to load the selected keyboard mapping. If your keryobard mapping is se to no-latin1 , type:

```
~# loadkeys no-latin1
Loading /usr/share/keymaps/i386/qwerty/no-latin1.map.gz
```

2.5 Network configuration

2.5.1 Default settings

Your unit has two network interfaces, named eth0 and eth1 as labeled at the rear of the server.

In a typical configuration, eth1 will be used for external connection, providing Internet access, while eth0 is connected to the local network where the radio and TV channels are to be multicasted.

By default, eth0 has it's IP address set to *10.0.0.5* with netmask set to *255.255.255.0*. eth1 is by default set to get its address, netmask, default gateway and name server using the DHCP protocol.

You may use the *ip address* command to check the IP addressing details associated with each interface.

Example:

```
~# ip address show dev eth0
3: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000
    link/ether 00:18:7d:30:bb:85 brd ff:ff:ff:ff:ff:ff
    inet 10.0.0.5/24 brd 10.0.0.255 scope global eth0
    inet6 fe80::218:7dff:fe30:bb85/64 scope link
       valid_lft forever preferred_lft forever

~# ip address show dev eth1
2: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000
    link/ether 00:18:7d:30:bb:86 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.44/24 brd 192.168.1.255 scope global eth1
    inet6 fe80::218:7dff:fe30:bb86/64 scope link
       valid_lft forever preferred_lft forever

~# ip address
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 16436 qdisc noqueue state UNKNOWN
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000
    link/ether 00:18:7d:30:bb:86 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.44/24 brd 192.168.1.255 scope global eth1
    inet6 fe80::218:7dff:fe30:bb86/64 scope link
       valid_lft forever preferred_lft forever
3: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP qlen 1000
    link/ether 00:18:7d:30:bb:85 brd ff:ff:ff:ff:ff:ff
    inet 10.0.0.5/24 brd 10.0.0.255 scope global eth0
    inet6 fe80::218:7dff:fe30:bb85/64 scope link
       valid_lft forever preferred_lft forever
```

In case the default setup is insufficient for your needs, the following sections describe how to change the configuration. All changes are made by editing */etc/network/interfaces*. More examples for network setup can be found here *https://help.ubuntu.com/12.04/serverguide/network-configuration.html*.

Example: Default content of /etc/network/interfaces:

```
auto lo
iface lo inet loopback

auto eth0
iface eth0 inet static
    address 10.0.0.5
    netmask 255.255.255.0
    up ip route add 224.0.0.0/4 dev eth0

auto eth1
iface eth1 inet dhcp  # This blank configuration will automatically use DHCP for any net
```

Note that no default gateway is assigned to eth0. This is because a default gateway will be assigned to eth1 if eth1 is used to connect to an external network with automatic configuration via DHCP.

2.5.2 Changing network address in /etc/network/interfaces

In the file /etc/network/interfaces, the network interfaces are configured with the format:

```
iface <interface> inet static
    address 10.0.0.5
```

This can, for example, be:

```
iface eth1 inet dhcp
```

or

iface eth1 inet static address 192.168.1.112 netmask 255.255.255.0

Setting the option to dhcp causes the interface to retrieve its IP address, netmask, default gateway address and name server from a DHCP server (if available). In order to manually specify the interface address, use the static syntax in order to replace dhcp with an IP address and netmask.

2.5.3 Changing default route in /etc/network/interfaces

The network routes can be inspected and modified with *ip route*. The 0.0.0.0 *Destination* will be used for any traffic that is not bound for the local networks connected directly to each interface. When sending traffic along the default route, the IP address of a gateway router should be listed in the *Gateway* column.

Example: If you need to assign a default router to eth0, enter the command:

```
localhost ~# ip route add default via x.y.z.w
```

Where you substitute *x.y.z.w* with the IP address of the default gateway.

If you need to delete a default route, use:

```
localhost ~# ip route del default via x.y.z.w
```

And if you assign an explicit default gateway as a part of the boot sequence, add a line in /etc/network/interface in the iface section of your choice (eth0 or eth1)

gateway x.y.z.w

2.5.4 Changing multicast routes in /etc/network/interfaces

Multicast traffic is routed to the interface selected by the multicast route. By default this is eth0. The default multicast route then looks like the following:

```
up ip route add 224.0.0.0/4 dev eth0
```

2.5.5 Checking the routing tables

Use the command *ip route* to check the routing table of your SnapTV gateway.

Example:

```
~# ip route
default via 192.168.1.1 dev eth1  metric 100
10.0.0.0/24 dev eth1  proto kernel  scope link  src 10.0.0.5
192.168.1.0/24 dev eth0  proto kernel  scope link  src 192.168.1.205
224.0.0.0/4 dev eth0  scope link
```

The above is a typical routing table after initial setup from default configuration files. A default gateway has been defined on eth1 by DHCP, at 192.168.1.1. Multicast routing has been defined for eth0.

2.5.6 Assigning NTP server

In order for some of the SnapTV services (notably the Electronic Program Guide (EPG) and nPVR), the system needs to keep accurate time. This is done through the Network Time Protocol. As long as the SnapTV unit has access to the Internet, this will work transparently. Should this option not be available, an NTP server should be made available to the SnapTV unit on the local network. In this case, the following steps must be taken to make the unit aware of the local network NTP server.

- In the file */etc/conf.d/ntp-client* replace *pool.ntp.org* with the address of your local NTP server: NTPCLIENT_OPTS="-s -b -u **pool.ntp.org**" → NTPCLIENT_OPTS="-s -b -u **<LAN ntp address>**"
- In /etc/ntp.conf the value *server pool.ntp.org* must be changed to *server <LAN ntp address>*.

Where <LAN ntp address> is the IP address of the local network NTP server.

2.5.7 Using new network settings

To make new network settings take effect, restart the network interface. For eth0, the command would be:

```
~# sudo ifdown eth0 && sudo ifup eth0
```

2.6 Assigning hostname

Note: If you change the hostname and the new hostname does not have a valid entry in the configured DNS, you have to add an alias for it in the file */etc/hosts*, or the SnapTV web interface will not work.

Use the *nano* editor to modify the line *127.0.0.1 localhost* to something like this (See section *Using the Nano editor* for more help on using nano):: 127.0.0.1 localhost snapreceiver-myhotel01

The hostname is a convenient way of identifying the various SnapTV units in a network. The hostname is always shown in the web interface and at the console, so that one can know which unit is being configured. The server should come with a sensible default hostname based on the order documents, but it is possible to change if the default does not suit you. We recommend using the following syntax for the host name:

```
<unit-type>-<location><number>
E.g.: snapreceiver-myhotel01
```

The hostname is stored in the file */etc/hostname*. The syntax is:

```
<hostname>
E.g.: snapreceiver-myhotel01
```

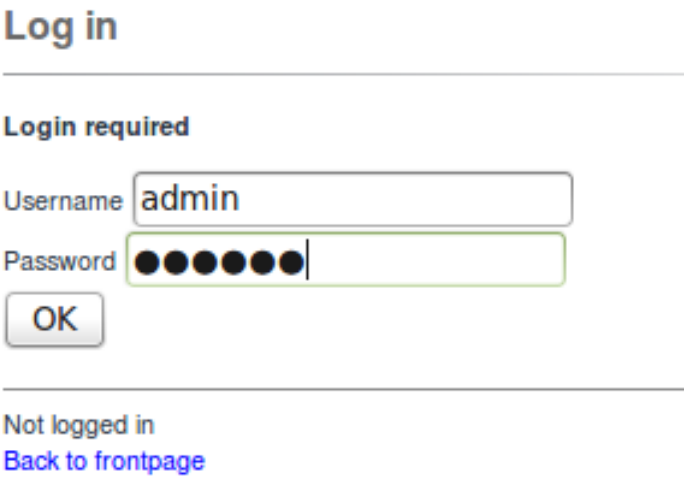
CHAPTER 3

Accessing the web interface

Administration of the SnapTV units is primarily done through the web interface available on the unit. Now that we have done the basics in a terminal window, we can move on and set up the rest of the services. There are still some things that can only be done in a terminal. These are described in chapter 11.

To access the web interface:

Open a web browser from a computer in the network and point it to the IP address of your SnapTV unit. (e.g.: http://10.0.0.5) and log in to the web interface using the username and password from *Default factory settings*, or the password you set during installation. If you changed the password for the admin user as described in *Creating admin user for accessing the web interface*, use this password instead.



3.1 Getting started continued

The first things you want to do in the web interface is the following:

- Setting time zone, see section *Set time zone*
- Configure Host IP, see section *Host IP*

The following chapters describe how you can use the web interface to administer your SnapTV unit.

Software upgrade

4.1 About Software Upgrades

If your system is connected to the Internet, new software updates will be available regularly. We recommend updating the system to the latest version before it is put to use.

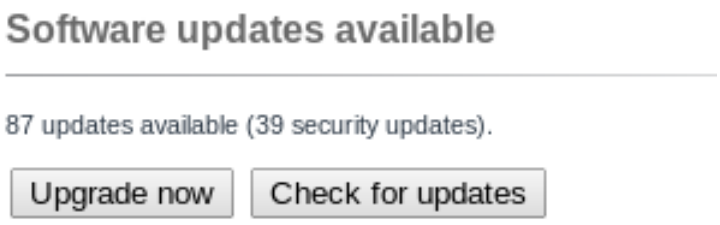
The server operating system is based on Ubuntu 12.04 LTS (Long Term Support) a debian based Linux distribution sponsored by Canonical Ltd. Software updates are downloaded from an online service by SnapTV, while some security patches will be downloaded directly from Canonical servers.

It is recommended to backup your configuration before upgrading your system.

The upgrade will typically take only a few minutes and there is usually no need to reboot the system after the upgrade. You might experience minor disturbances to TV signals, recording and other services during software upgrade.

4.2 Upgrade using Web Interface

- Click on **System information** and **Software upgrade**
- Press the **Check for updates** button
- Press the **Upgrade now** button to upgrade your system



If you get error messages or experience other problems during upgrade, please try upgrading using the terminal or contact SnapTV support.

4.3 Advanced Upgrade Methods

4.3.1 Upgrade using a terminal

The SnapTV server uses a program called apt-get to keep software up to date. Log into the server using ssh or use an attached keyboard and monitor.

First update the list of available updates:

```
~# sudo apt-get update
```

Start the upgrade:

```
~# sudo apt-get dist-upgrade
```

Thats it! Your server should now have the latest software from SnapTV as well as security patches from the Ubuntu community. Rebooting the server is usually not required. If the apt-get output reccomends a reboot or you experience problems you might reboot at convenient time by using the “sudo reboot” command.

4.3.2 Low bandwidth sites

Consider downloading all upgrades before applying them if you have low bandwith or an unstable Internet connection. This way you can perform the actual upgrade in a more controlled manner. This is achieved by adding the –download-only option to the upgrade command like so:

~# sudo apt-get –download-only dist-upgrade

When you are ready to perform the upgrade you run the command again without this option, like so:

~# sudo apt-get dist-upgrade

4.3.3 Clustered system

In general we recommend running the same software version all SnapTV servers in a cluster. Currently each server will download upgrades from the Internet independently. By installing a third-party program called Squid-deb-proxy it is possible to have one of your servers act as a proxy for software upgrades so you don’t have to download upgrades multiple times.

Conceptually, squid-deb-proxy consists of two pieces, a client and a server. The server package is “squid-deb-proxy” and the client package is “squid-deb-proxy-client”.

Select one of your servers with an internet conection to be the upgrade proxy and simply install “squid-deb-proxy” on it:

~# sudo apt-get install squid-deb-proxy

On your other SnapTV servers, install the “squid-deb-proxy-client” package:

~# sudo apt-get install squid-deb-proxy-client

Thats it! All upgrades will now be downloaded once. Note that the “squid-deb-proxy” package is not maintained by SnapTV and it is not included in a standard install.

4.3.4 Upgrading from USB

If your system is completely offline you can upgrade from USB or alternatively perform a clean install. Given an USB install medium, perform the following steps to upgrade a system:

1. Insert USB disk
2. Find device name (lsblk)

The output of lsblk will show all attached disks. The USB drive should be identifiable by its size:

```
NAME                            MAJ:MIN RM   SIZE RO TYPE  MOUNTPOINT
sdf                               8:80   1     2G  0 disk
  sdf1                            8:81   1     2G  0 part
```

We want the device with the *part TYPE*.

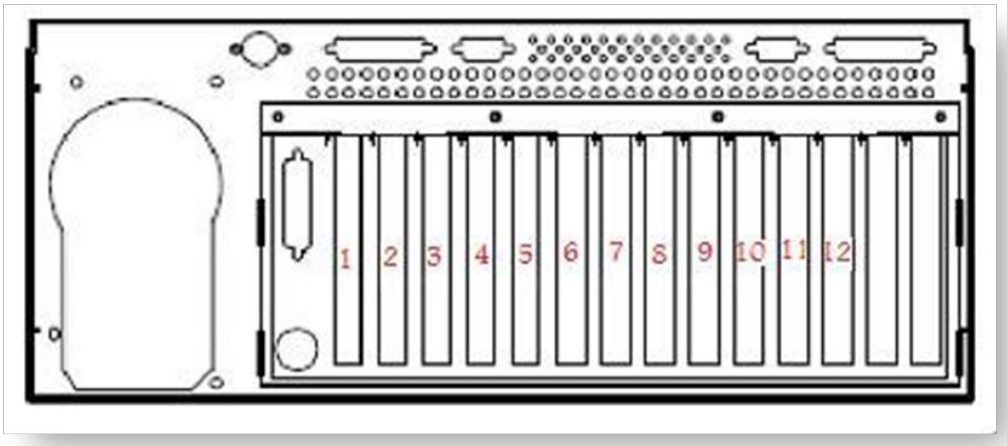
1. mkdir /tmp/iso
2. sudo mount /dev/sdf1 /tmp/iso
3. echo ‘deb file:/tmp/iso precise main extras’ | sudo tee /etc/apt/sources.list.d/local.list
4. sudo apt-get update
5. sudo apt-get dist-upgrade

Manage inputs

In this section we will explain how to connect various input sources and configure them to become TV channels.

5.1 Numbering of the input sources

The input devices will be identified by an port identifier like for instance 9:1 or 5:a-1. The number before the colon is the slot number which has the range 1 to 12. The number or string after the colon distinguishes between multiple functionality of the same slot. dvb-s2-cards have two fully independent ports. They are identified from the bottom of the slot. The slot positions at the back of the cabinet is shown in the figure.



5.2 Satellite connection

Each DVB-S/S2 input card has two standard F connectors. Each input connector can be configured individually with regard to selecting band/polarity and up to four different satellite positions using DiSEqC multiswitches.

5.3 Terrestrial and Cable connection

Each DVB-T/DVB-C input has a standard IEC 169 connector (also called Belling-Lee or TV Aerial Plug). The connector at the top is for antenna input to both DVB-T/DVB-C tuners of the two port input card. The bottom connector is a loop through connector.

5.4 CA modules

All DVB-CI ports will be visible in the input page and identified like x:ci-y, where x is a slot number and y the Common Interface port number within the slot. The CI ports may be accessable from the back of the cabinet or the front of the MAXI cabinet. A CI port can be connected to any transponder. To ease operation, there is a default setup. When tuning a transponder, the nearest neighbour CI is auto connected if available, limited to the same slot or the next slot.

When there is a link between an input transponder and a CI port, an associated CAM will be able to descramble pay TV channels. Most EN 50 221 compatible CA modules may be used, but ask your sales contact for verification whether a given module type works.

Insert your program card into the CAM and then insert the CAM into its port. Note that it may take some time from the channel is first tuned until it works as expected when the program card is new or have been unused for a while.

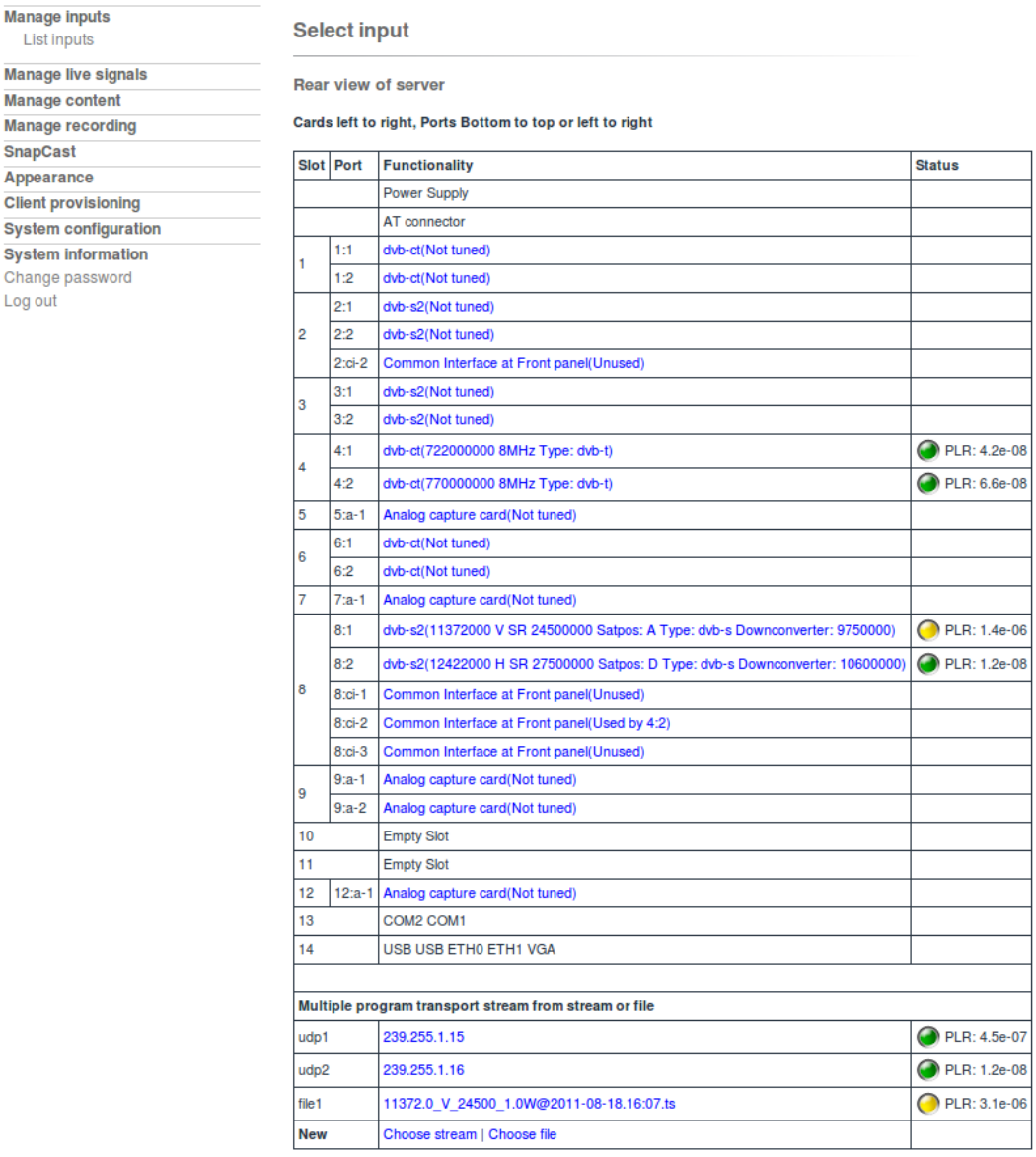
All reconfiguration of transponders to CI ports can be done in via the tuning page.

5.5 Analog sources

Each analog input slot has a number of different connectors, but only one video and one audio can be used at once. The inputs normally available are stereo RCA audio connectors, S-video,

RCA composite video and RF-tuner inputs. The stereo audio connectors are to be used in conjunction with both S-video and composite video input. When using the tuner both video and audio will be received from the RF input. Sometimes two neighboring slots may share one RF connector.

5.6 List inputs



Manage inputs
List inputs
Manage live signals
Manage content
Manage recording
SnapCast
Appearance
Client provisioning
System configuration
System information
Change password
Log out

Select input

Rear view of server

Cards left to right, Ports Bottom to top or left to right

Slot	Port	Functionality	Status
		Power Supply	
		AT connector	
1	1:1	dvb-ct(Not tuned)	
	1:2	dvb-ct(Not tuned)	
2	2:1	dvb-s2(Not tuned)	
	2:2	dvb-s2(Not tuned)	
	2:ci-2	Common Interface at Front panel(Unused)	
3	3:1	dvb-s2(Not tuned)	
	3:2	dvb-s2(Not tuned)	
4	4:1	dvb-ct(722000000 8MHz Type: dvb-t)	PLR: 4.2e-08
	4:2	dvb-ct(770000000 8MHz Type: dvb-t)	PLR: 6.6e-08
5	5:a-1	Analog capture card(Not tuned)	
6	6:1	dvb-ct(Not tuned)	
	6:2	dvb-ct(Not tuned)	
7	7:a-1	Analog capture card(Not tuned)	
8	8:1	dvb-s2(11372000 V SR 24500000 Satpos: A Type: dvb-s Downconverter: 9750000)	PLR: 1.4e-06
	8:2	dvb-s2(12422000 H SR 27500000 Satpos: D Type: dvb-s Downconverter: 10600000)	PLR: 1.2e-08
	8:ci-1	Common Interface at Front panel(Unused)	
	8:ci-2	Common Interface at Front panel(Used by 4:2)	
	8:ci-3	Common Interface at Front panel(Unused)	
9	9:a-1	Analog capture card(Not tuned)	
	9:a-2	Analog capture card(Not tuned)	
10		Empty Slot	
11		Empty Slot	
12	12:a-1	Analog capture card(Not tuned)	
13		COM2 COM1	
14		USB USB ETH0 ETH1 VGA	
Multiple program transport stream from stream or file			
udp1		239.255.1.15	PLR: 4.5e-07
udp2		239.255.1.16	PLR: 1.2e-08
file1		11372.0_V_24500_1.0W@2011-08-18.16:07.ts	PLR: 3.1e-06
New		Choose stream | Choose file	

You are represented with a table of available inputs cards in the server that can be tuned up. You can click on any input, the numbering of the inputs will align with the physical labeling on the rear of your unit. See section *Add channel from input* for how to tune channels from input card.

CHAPTER 6

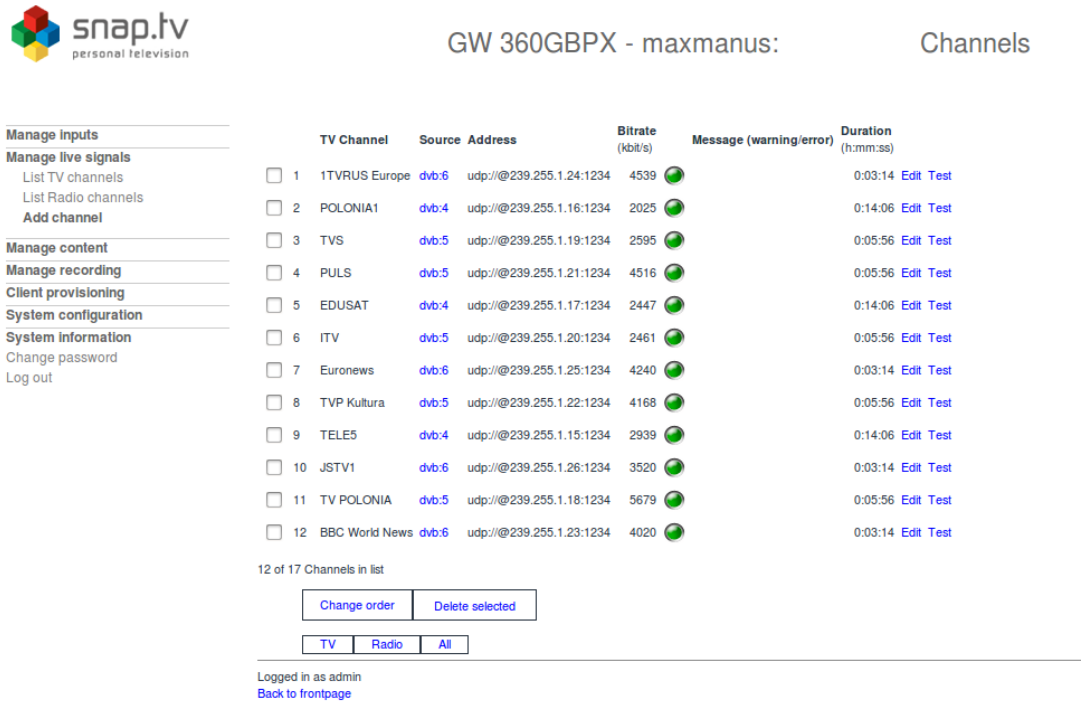
Manage live signals

6.1 List and edit channels

TV and Radio channel can be found on seperate pages.

TV channels can be displayed by clicking in menu **Manage Live signals** → **List TV channels**.

Radio channels can be displayed by clicking in menu **Manage Live signals** → **List Radio channels**.

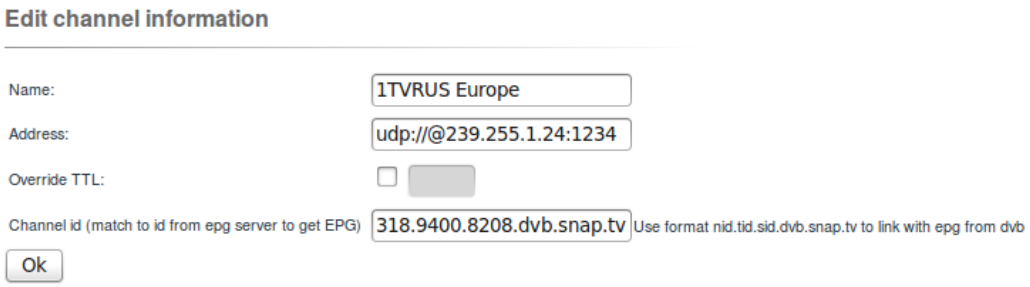


6.1.1 Edit channel

In menu click **Manage Live signals** → **List TV channels** (**List Radio channels**). Press **Edit** for the channel you want to edit.

6.1.2 Edit channel information

If you need to change the channel name, its address, override the TTL for the channel or edit channel ID, you must use this form to do it. Click **OK** to save.

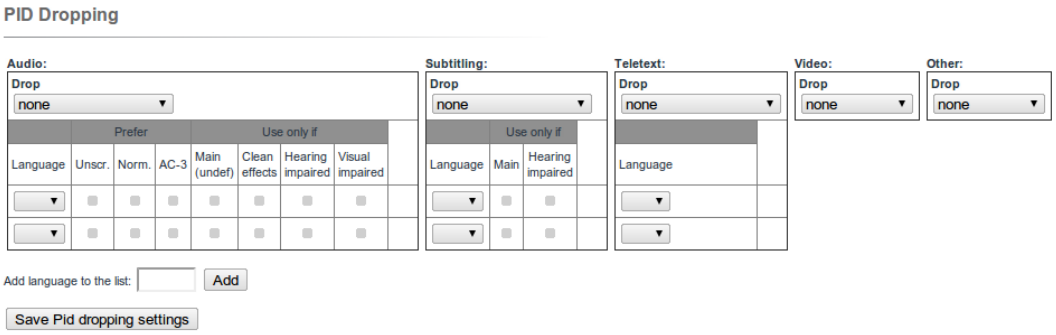


6.1.3 Channel descrambling

Channel descrambling will, if enabled, use a CA module and smart card inserted into the tuner to descramble the channel before multicasting to the internal network.

If disabled, the channel will be multicasted with scrambling intact, requiring descrambling to be done by the end user.

6.1.4 PID Dropping



Language based Pid Dropping

The components to be dropped or kept is based on the language(s) they carry. Components are grouped into 5 groups:

- Audio
- Subtitling

- Teletext
- Video
- Other

For each group several selectins are available. Up to 10 languages can be set up in the “Drop all except filter” (Keep filter) for each component.

The main selection for each group consists of 4 choices: Drop “none - all - all except - all scrambled except”.

Normal (no pid dropping) operation is obtained by setting these to Drop “none”. If Drop “all” is selected, all components of this type is dropped.

If Drop “all except” is selected, the filter below is used to choose which languages should be kept. Same for the selection Drop “all scrambled except”, but here all non-scrambled components are kept regardless of the filter setting.

Each filter line (up to 10) can filter in a language and preferences for the specific component.

The “prefer”-section of the filter takes action if threr are several components containing the same language. In that case the not preferred component is suppressed. The “use only if”-sections is used to suppress or keep components with the given properties.

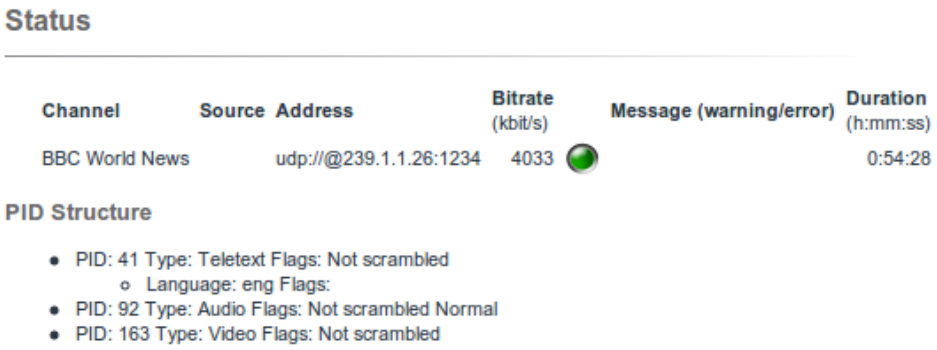
The language drop-down menu will show languages found in the live stream running at the moment. The language “Any” can be used in combination with the prefer section to suppress, say, all audio AC-3 components.

Add language to the list

This item is used add a language code to all the drop-down language selection. This can be usefull if the server setup is done prior to connecting the antenna cables.

Status

Here the current total bitrate and warning/error messages for the live signal after Pid Dropping can be checked.



Pid Structure

Here is a presentation of the kept and dropped components and their properties.

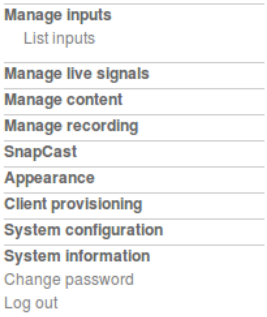
6.1.5 Multicast Monitoring

See section *Monitoring*.

6.2 Add channel from input

Follow these steps to add channels from a physical input of your SnapTV Gateway product.

1. Click **Manage inputs** → **List inputs**. Then you should see a menu looking something like this:



Select input

Rear view of server

Cards left to right, Ports Bottom to top or left to right

Slot	Port	Functionality	Status
		Power Supply	
		AT connector	
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	1:2	dvb-ct(Not tuned)	
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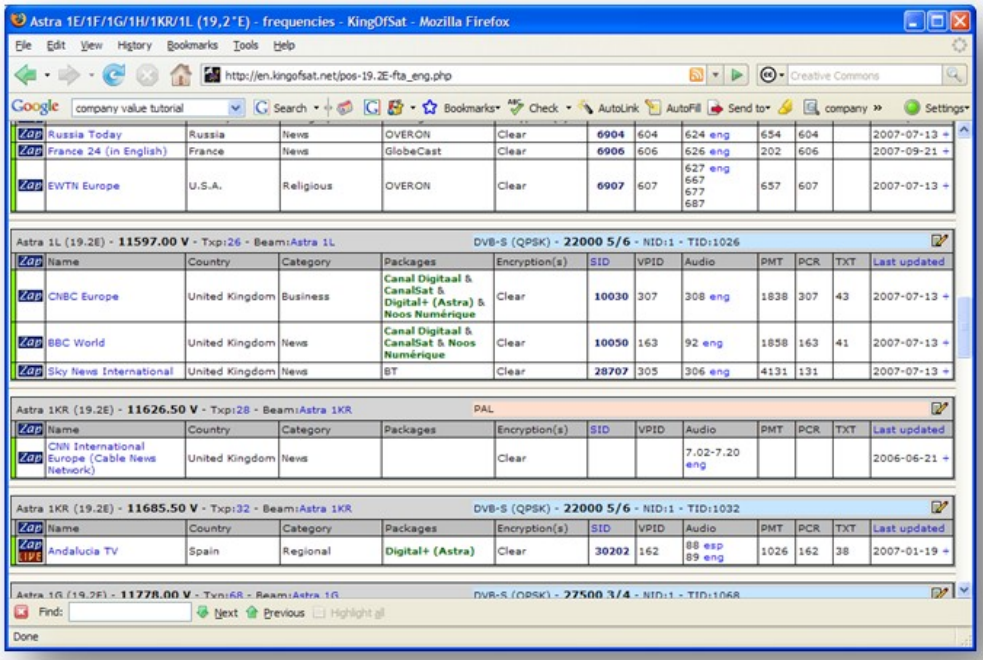
	2:2	dvb-s2(Not tuned)	
	2:ci-2	Common Interface at Front panel(Unused)	
3	3:1	dvb-s2(Not tuned)	
	3:2	dvb-s2(Not tuned)	
4	4:1	dvb-ct(722000000 8MHz Type: dvb-t)	PLR: 4.2e-08
	4:2	dvb-ct(770000000 8MHz Type: dvb-t)	PLR: 6.6e-08
5	5:a-1	Analog capture card(Not tuned)	
6	6:1	dvb-ct(Not tuned)	
	6:2	dvb-ct(Not tuned)	
7	7:a-1	Analog capture card(Not tuned)	
8	8:1	dvb-s2(11372000 V SR 24500000 Satpos: A Type: dvb-s Downconverter: 9750000)	PLR: 1.4e-06
	8:2	dvb-s2(12422000 H SR 27500000 Satpos: D Type: dvb-s Downconverter: 10600000)	PLR: 1.2e-08
	8:ci-1	Common Interface at Front panel(Unused)	
	8:ci-2	Common Interface at Front panel(Used by 4:2)	
	8:ci-3	Common Interface at Front panel(Unused)	
9	9:a-1	Analog capture card(Not tuned)	
	9:a-2	Analog capture card(Not tuned)	
10		Empty Slot	
11		Empty Slot	
12	12:a-1	Analog capture card(Not tuned)	
13		COM2 COM1	
14		USB USB ETH0 ETH1 VGA	
Multiple program transport stream from stream or file			
udp1		239.255.1.15	PLR: 4.5e-07
udp2		239.255.1.16	PLR: 1.2e-08
file1		11372.0_V_24500_1.0W@2011-08-18.16:07.ts	PLR: 3.1e-06
New		Choose stream | Choose file	

2. Now, click on the input to use, the numbering of the inputs will align with the physical labeling on the rear of your unit. See Section *Numbering of the input sources* for more on this.

The next steps will depend on the type of input you have selected.

6.2.1 DVB-S or DVB-S2

1. DVB-S/S2 inputs can tune both DVB-S and DVB-S2 transponders, and detection of S2 or S is automatic.
2. **Enter frequency, symbol rate, polarity and optionally multi-switch position.**
   (http://www.lyngsat.com and http://www.kingofsat.net are good sources of information for satellite channel maps and tuning data). If you go to kingofsat.net and click on *Clear channels from 19.2E* you should be able to find something like this:



3. You decide to add some of the interesting international channels on 11597000 MHz.
4. After clicking *Tune!*, you should get a list of channels at the given transponder, looking something like this:

Tuning succeeded

Transponder info:

- Card: 2
- Tuned to: 12597000 V SR 27500000 Satpos: C Type: dvb-s
  - Frontend Lock: LOCKED
  - Frontend Bit Error Rate: 2.8 e-5
  - Frontend Signal Strength: 21.7
  - Frontend Signal-To-Noice level: 58
- Capturing EPG from this transponder stop

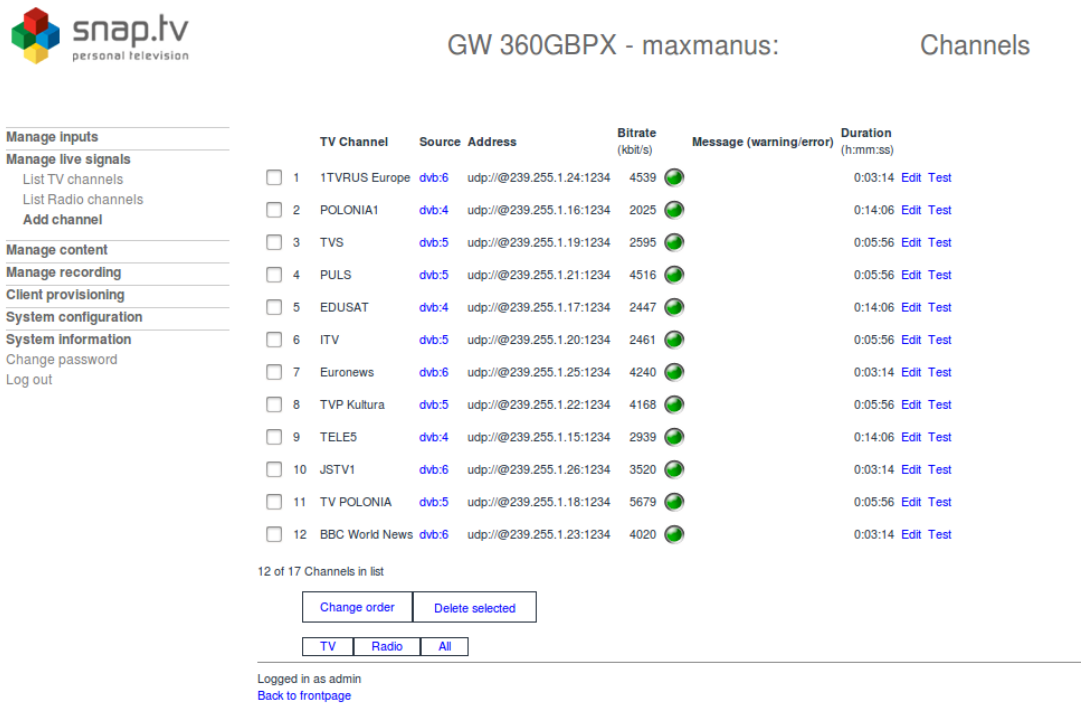
Services found:

- ts id: 9400
- Original Network ID: 318

Service ID	Name	Provider	Address	Type	FTA
8202	ARM_1	Globecast	UDP :	digital television service	yes
8203	BET	Globecast	UDP :	digital television service	yes
8204	BBC World News	Globecast UK	udp://@239.1.1.26:1234	digital television service	yes
8205	RD1_Radio_ARMENIA	Harmonic	UDP :	digital television service	yes
8206	Sonshine TV	Globecast UK	UDP :	digital television service	yes
8207	Sonshine Radio	Globecast UK	UDP :	digital radio sound service	yes
8208	1TVRUS Europe	Globecast	UDP :	digital television service	yes
8209	CNNi	Globecast	UDP :	digital television service	no
8211	Euronews	Globecast	udp://@239.1.1.27:1234	digital television service	yes

5. Enter a multicast address and port for the channels you want to add. You can click on the wand icon to the right to get a suggested value. On closed networks the suggested value will usually be fine.

6. Now click *Add selected channels*. After a few seconds the TV channels will be listed in the web interface and the dot behind each channel should change color from red to green, indicating that “channel status” is OK.



snap.tv personal television

GW 360GBPX - maxmanus: Channels

Manage inputs
Manage live signals
List TV channels
List Radio channels
Add channel
Manage content
Manage recording
Client provisioning
System configuration
System information
Change password
Log out

	TV Channel	Source	Address	Bitrate (kbit/s)	Message (warning/error)	Duration (h:mm:ss)	
1	1TVRUS Europe	dvb:6	udp://@239.255.1.24:1234	4539		0:03:14	Edit Test
2	POLONIA1	dvb:4	udp://@239.255.1.16:1234	2025		0:14:06	Edit Test
3	TVS	dvb:5	udp://@239.255.1.19:1234	2595		0:05:56	Edit Test
4	PULS	dvb:5	udp://@239.255.1.21:1234	4516		0:05:56	Edit Test
5	EDUSAT	dvb:4	udp://@239.255.1.17:1234	2447		0:14:06	Edit Test
6	ITV	dvb:5	udp://@239.255.1.20:1234	2461		0:05:56	Edit Test
7	Euronews	dvb:6	udp://@239.255.1.25:1234	4240		0:03:14	Edit Test
8	TVP Kultura	dvb:5	udp://@239.255.1.22:1234	4168		0:05:56	Edit Test
9	TELE5	dvb:4	udp://@239.255.1.15:1234	2939		0:14:06	Edit Test
10	JSTV1	dvb:6	udp://@239.255.1.26:1234	3520		0:03:14	Edit Test
11	TV POLONIA	dvb:5	udp://@239.255.1.18:1234	5679		0:05:56	Edit Test
12	BBC World News	dvb:6	udp://@239.255.1.23:1234	4020		0:03:14	Edit Test

12 of 17 Channels in list

Change order | Delete selected

TV | Radio | All

Logged in as admin
Back to frontpage

6.2.2 DVB-T and DVB-C

Follow these steps to add channels from a DVB-T or DVB-C transponder:

You will first be asked if the signal to be tuned is DVB-T or DVB-C. Select one and click OK

DVB-T

1. Enter the center frequency for the DVB-T transponder you want to tune.
2. Select the right bandwidth of the transponder. Usually this is 8MHz for UHF transponders (frequency >300MHz) and 7MHz for VHF transponders (frequency <300MHz), but it can change depending on the country and operator.
3. Continue from step 4 in section *DVB-S or DVB-S2*

DVB-C

1. Enter the center frequency for the DVB-C transponder you want to tune.
2. Enter the symbol rate of the transponder.
3. Select the modulation type
4. Continue from step 4 in section *DVB-S or DVB-S2*

6.2.3 Analog Source

Select input connector to use from the “Video source” drop down menu. If more than one of each type is listed it is normally safe to use the first one (e.g. S-Video 1 for the S-Video connector).

1. Enter frequency if using the Tuner input.
2. Enter a name for the new channel
3. Enter the multicast address and port to use. Click on the wand to get a suggestion. This will normally be OK in a closed network.
4. Select service type from the drop down menu. This does not affect the actual streaming which will include video anyway, it only affects whether the channel is listed as TV channel or radio channel in STB.
5. Click OK.

You should now get a channel listing in which the added channel will have a green or red dot behind it. If any of the channels have a red dot behind it, wait a few seconds and press “refresh” in your browser (or click the **Manage live signals** → **List channels** link in the left hand menu).

6.2.4 Multiple program transport stream from stream or file

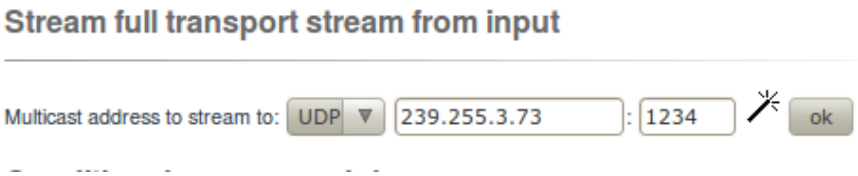
In this section of the “Select input” menu, you can choose an existing mpts source and extract spts (single program transport stream) from it. The source can be a udp stream or a file. The selection is done via Choose stream or Choose file. The streams will be numbered from udp1 to udp16 and from file1 to file4 depending on the type of source you select. The lowest free

value will be used. After selecting source, the list of services will be presented so that you can pick programs from it.

See section *MPTS injection* for how to route mpts traffic across the network.

6.3 Stream full transport stream from input

There is a common feature to all input card where multi program transport stream can be received; it is possible to pass the complete stream through in addition to the single program streams it consist of.



This item is accessible for the dvb-s(2), dvb-t, dvb-c inputs. The default setting is that this feature is not enabled. This is shown by an empty address field. These settings will not affect the selected single program streams which might already be configured. To enable, type an UDP address manually or press the wand icon let the system generate the next available address and press OK. To stop an ongoing streaming, press stop.

6.4 New external multicast

Sometimes you need to combine equipment from SnapTV with equipment from other vendors, or use SnapTV equipment with multicast signal feeds from a third party. To do this you can add an external multicast to the channel list. This channel will not be streamed by the SnapTV equipment, but it will be listed in the clients channel list together with the channels streamed by the SnapTV gateways. It will also be possible to select this channel for recording on an a SnapTV nPVR unit.

1. Click **Manage live signals** → **Add channel** → **External multicast** in the menu.
2. Enter a name for the channel
3. Enter the multicast address and port for the channel. Using the wand is generally not a good idea here, but it can be used if you plan to configure the channel on another streaming platform afterwards, and you want to make sure it does not conflict with the channels streamed by the SnapTV gateways.
4. Select service type *TV* or *Radio* to is only affects which list the channel is placed on in the client.
5. Click OK.

6.5 New looped file channel

The SnapTV Gateway can stream “simulated” channels by looping a stored file. To do this a broadcast quality mpeg2 single program transport stream is needed. The file should have no discontinuities.

1. Click **Manage live signals** → **Add channel** → **New looped file channel**.
2. Select file in the list if you want to use a file already on the server, otherwise select one for upload. You can also fetch a file from a URL by clicking the link at the bottom of the page.
3. Select channel type in the “Type” list.
4. Enter a name for the new channel.
5. Enter the multicast address and port to use. Click on the wand to get a suggestion. This will normally be OK in a closed network.
6. Click OK.

You should now get a channel listing in which the added channel will have a green or red dot behind it.

CHAPTER 7

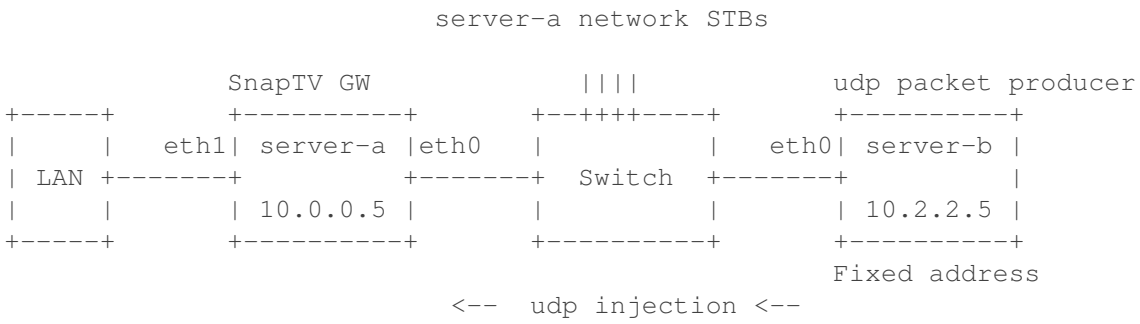
MPTS injection

As described in *Multiple program transport stream from stream or file*, it is possible to receive whole mpts (Multiple Program Transport Streams) from an external source and extract single programs from it.

7.1 MPTS injection into the main multicast network (eth0)

The most straight forward method of injection an mpts into a SnapTV server from any mpts source is to connect the mpts source into the main multicast network and pick the mpts stream up using the "Multiple program transport stream" option in the "Manage inputs" menu. The injected stream address must not be the same as any other stream, and be within the address range set up for multicast traffic, normally 224.0.0.0 to 239.255.255.255.

In this example, server-b is used for producing some udp streams and the goal is that server-a, the SnapTV gateway, shall be able to see them, even if the address of server-b isn't in server-a main address range



If the udp packet produces is set up with a fixed address which isn't in the address ranges of the main network (SnapTV GW and the attached STBs), an additional route have to be set up for that network.

Modified the routing table in server-a:

```
In /etc/network/interfaces add in the eth0 section:
    up ip route add 10.2.2.0/24 dev eth0

AND/OR type this shell command to make the change take immediate effect:

sudo ip r add 10.2.2.0/24 dev eth0
```

After this, udp streams can flow from the udp packet producer (server-b) to the SnapTV GW (server-a)

7.2 MPTS injection into the eth1 network

It is also possible to inject mpts traffic into the eth1 network. If so, the routing table of the server must be adjusted. The address range of the injected mpts stream(s) must not be included in the range set up for eth0.

7.3 MPTS injection between SnapTV servers

Below a more complex setup will be described in full detail. Both the sources and the destinations for the mpts will be SnapTV servers in this example. Even if mpts will flow in both directions between these servers, that normally isn't the case. Please note though that the configuration setup wouldn't change even if just one of the directions were used.

The two SnapTV servers in this example are called *server-a* and *server-b*, and they operate on two separate networks, so they are not clustered using the System Configuration -> Cluster option.

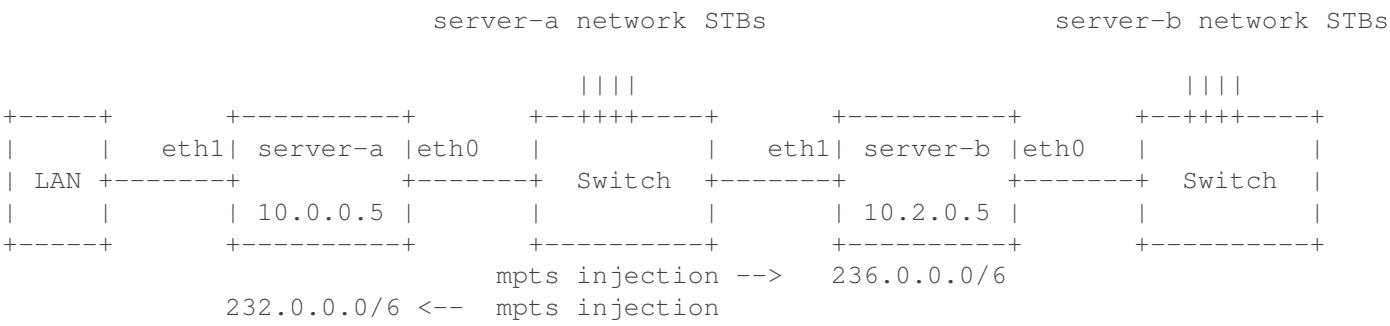
Section *Stream full transport stream from input* explain how mpts is *sent from* a SnapTV server.

The address ranges for the two servers are split logically in three:

```
224.0.0.0/5   internal usage *
232.0.0.0/6   MPTS from server-b to server-a
236.0.0.0/6   MPTS from server-a to server-b

* This range, half the address space, will be independent for the two servers
```

The diagram below show how the servers are connected.



7.3.1 *server-a* (10.0.0.5) setup

Special setup:

All udp streams we wish *server-b* to see is in the range from 236.0.0.0 to 239.255.255.255

Normal (unmodified) routing table:

```
$ ip r
default via 192.168.1.1 dev eth1  metric 100
10.0.0.0/24 dev eth0  proto kernel  scope link  src 10.0.0.5
192.168.1.0/24 dev eth1  proto kernel  scope link  src 192.168.1.205
224.0.0.0/4 dev eth0  scope link
```

Example:

- generates an mpts stream udp://@239.255.1.16 (which could be ment for *server-b*)
- generates spts streams udp://@231.255.1.* (which will be used by the *server-a* network STBs)

server-a PIMD server

Start the PIMD server (System configuration - Network - Multicast)

Internet access

Internet access setup on the *server-a* server for internet access for all 10.0.0.0-clients

```
sudo iptables -t nat -A POSTROUTING -s 10.0.0.0/24 -j MASQUERADE
Use "sudo nano /proc/sys/net/ipv4/ip_forward" and alter content from "0" to "1"

AND (for permanent setup)

put these two lines into /etc/rc.local above the exit 0 (last) line

iptables -t nat -A POSTROUTING -s 10.0.0.0/24 -j MASQUERADE
echo "1" > /proc/sys/net/ipv4/ip_forward
```

Set a valid DNS server address via admin IF System Config - Network - DHCP

7.3.2 *server-b* (10.2.0.5) setup

Special setup:

All udp streams we wish to be seen by the STBs is in the range 228.0.0.0 to 231.255.255.255
All udp streams we wish to be seen by *server-a* is in the range 232.0.0.0 to 235.255.255.255

Modified routing table:

```
$ ip r
default via 10.0.0.5 dev eth1  metric 100
10.0.0.0/24 dev eth1  proto kernel  scope link  src 10.0.0.57
10.2.0.0/24 dev eth0  proto kernel  scope link  src 10.2.0.5
224.0.0.0/5 dev eth0  scope link
232.0.0.0/6 dev eth1  scope link


In /etc/network/interfaces modify to
    up ip route add 224.0.0.0/5 dev eth0
    (half the range set mask from 4 to 5
     - the independent ranges)
    up ip route add 232.0.0.0/6 dev eth1
```

```
    (in the eth1 section)

AND/OR

sudo ip r del 224.0.0.0/4 dev eth0
sudo ip r add 224.0.0.0/5 dev eth0
sudo ip r add 232.0.0.0/6 dev eth1
```

The change in routing config is that the multicast range is set to half the original range Addresses 224.0.0.0 to 231.255.255.255 will be routed to eth0 as usual Addresses 232.0.0.0 to 235.255.255.255 will be routed to eth1 to be picked up by *server-a* Addresses 236.0.0.0 to 239.255.255.255 are not specified. udp-streams within this range can thus be received on eth1.

Example:

- receives an mpts stream udp://@239.255.1.16 via eth1
- extracts from udp://@239.255.1.16 and generates spts streams udp://@231.255.1.* (to eth0) These will be used by the *server-b* network STBs

server-b Admin IF access

Admin if can be accessed from LAN via a tunnel through *server-a*

server-b software upgrade

Since *server-a* is set up to route internet traffic to 10.0.0.0-clients, software upgrade on *server-b* will work.

server-b PIMD server

Start the PIMD server (System configuration - Network - Multicast)

7.3.3 Last words

Please note that the above division into three areas is done mainly because it makes the address setting a bit easier to trace. The two highest areas can be combined into one area. The area specified at *server-b* to be directed to eth1 will be the only area where *server-a* can see mpts traffic from *server-b*. *server-b* however, can see traffic from *server-a* both in this area and in other areas not specified as being used for eth0 in *server-b*. Take care, though, so you don't create collisions between mpts packets in the area which is common to the two servers.

CHAPTER 8

Manage content

8.1 VoD

This section is about the deprecated VoD (Video on Demand) system, which is used with the "legacy" portal. For systems running the newer "Up" as the STB user interface, this is replaced by *Media Catalog*.

8.1.1 How to enable VoD

1. Enter the web interface
2. Go to **Manage content** → **VoD**
3. Click **Enable here** under **VoD Host**
4. Go to **System Configuration** → **Content Provisioning Server**
5. Click **Use with VoD** and select **Enable here**

8.1.2 Getting VoD Content from SnapCast

If your system has an internet connection you can subscribe to VoDs and other content from the SnapCast service. By subscribing to SnapCast channels you can keep your VoD library up to date automatically. Contact SnapTV support (support@snap.tv) or SnapTV sales (sales@snap.tv) if you want to try out SnapCast. Please see *SnapCast* for details about setting up SnapCast

8.1.3 How to add VoD Content

- Add some categories
- Click **Launch upload form** under **Upload VoD Content**

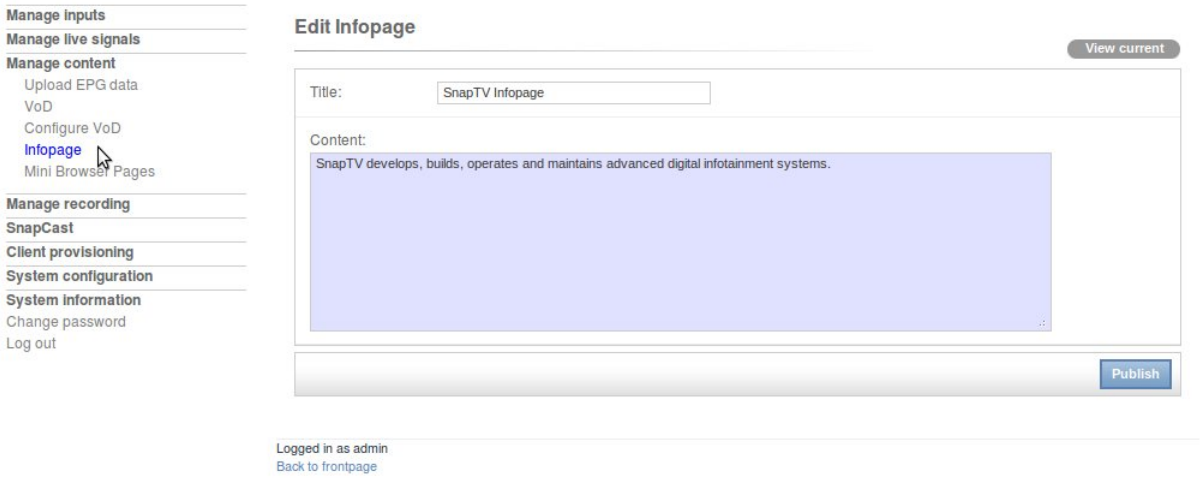
Content requires at least a title and a main feature (movie) file. This file must be single-program MPEG-TS. You also need to select at least one category, under which the content will be shown to clients. You can queue multiple VoD uploads that will be automatically uploaded in sequence.

After uploading VoD content, there will be a delay of some minutes while the file is indexed and processed, after which it will be displayed on a green background in the **Available** section

of the VoD menu in the web interface.' Editing content after it has been uploaded is done by clicking on the title in the **Available** menu.

8.2 Infopage

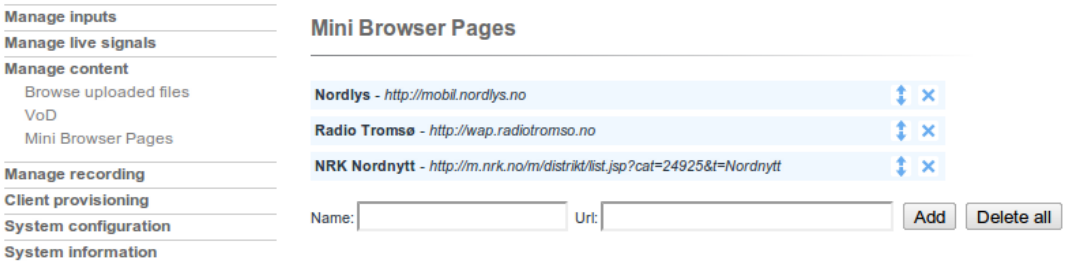
With Infopage component you are able to create simple html page that can be displayed in SnapTV Portal. Enter infopage title and content. Infopage content field can contain simple HTML tags.



To use that page as Infopage in portal set following url under **System configuration -> Portal -> Servers -> Info URL**:

http://[SERVER_IP]/infopage/

8.3 Mini Browser Pages



To see this browser in the portal, you must first enable the Content server in the webinterface. Read more about how to do that here: *Mini browser server*.

8.3.1 Add pages

- In the *Mini Browser Pages* section in the web interface, enter a **Name** and **Url** in the fields beneath the of pages.
- Click the **Add** button to add the new entry to the list.

8.3.2 Reorder pages

Drag and drop each entry in the list by using the *opposite arrows* button behind each entry in the list. Click and drag the entry to the new position of choice.

8.3.3 Remove pages

- To delete all entries in the list of pages, you can click the **Delete all** button next to **Add**.
- To delete a single entry, click the **X** behind the list entry you want to remove.

CHAPTER 9

Manage recording

To use the Network PVR functionality you need a nPVR ISRV-1234A or a nPVR GHI-480 with some configured channels. Usually this is done by combining the nPVR unit with one or more GW 360GBPX units in a cluster and setting up some channels from these units (see chapters *DHCP* and *Add channel from input*). It is also possible to add "external multicast" channels directly to the nPVR units channel list (see section *New external multicast*). When you have some channels in your channel list you can configure recording of the channels.

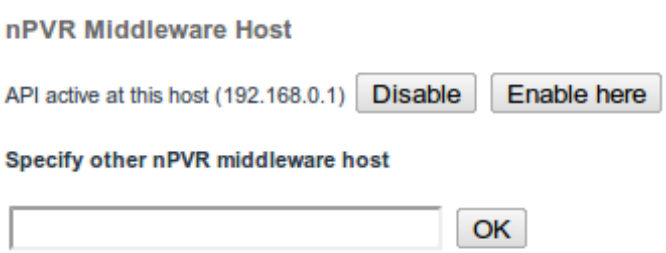
NOTE: It is important that the EPG and nPVR servers have the correct time zone configured and have precise clocks. Please complete sections *Assigning NTP server* and *Set time zone* before continuing.

9.1 Configure Recorder Manager

In order to get recordings, you must first enable the service, which is called: *nPVR Manager Host*.

To enable/disable the server software use the following steps:

1. Open a browser to the web interface of your unit
2. Go to **Manage recording** → **nPVR Manager** in the left menu
3. Click on **Enable here** / **Disable** to turn on/off the service.
4. Go to **System Configuration** → **Content Provisioning Server**
5. Click **Use with nPVR** and select **Enable here**

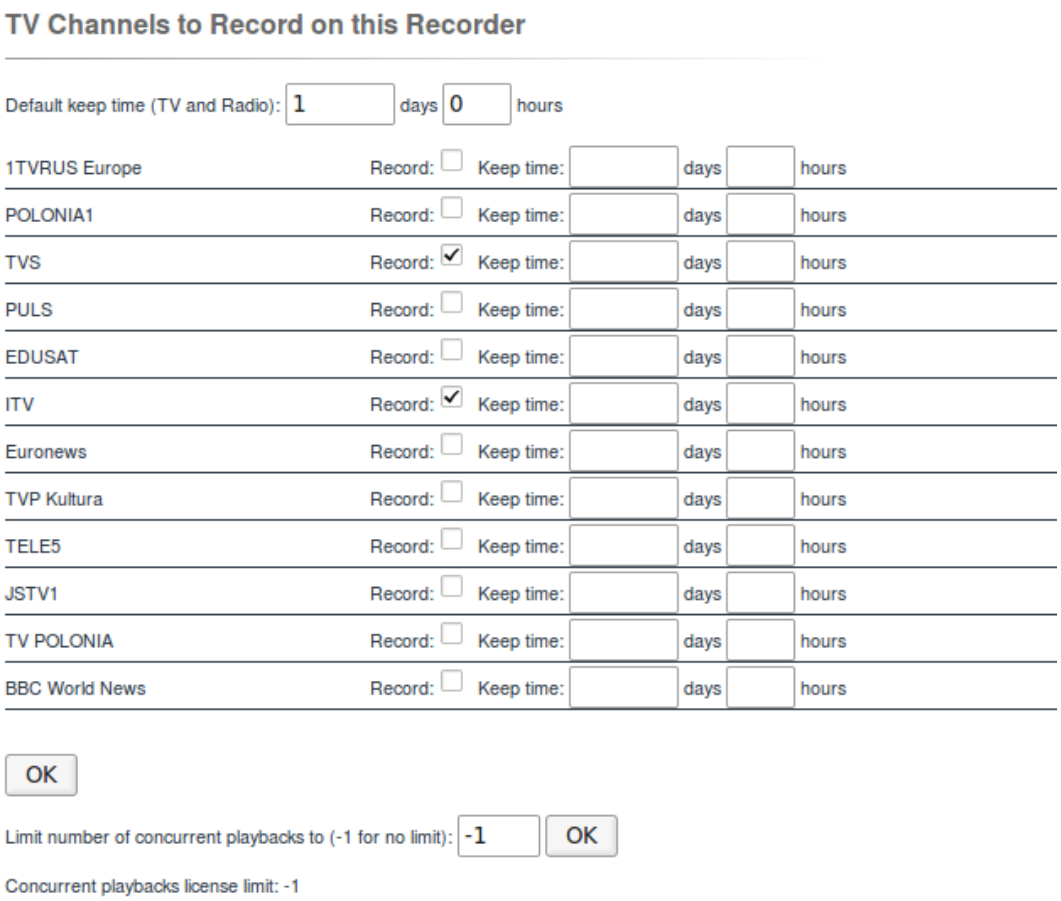


If you already have a nPVR Manager service running on a different SnapTV server, you can point to it by entering its IP address under the *Specify other nPVR Manager host* heading below and click **OK**.

9.2 Configure recording of TV and Radio channels

Use the following steps to start recording:

1. Open a browser to the web interface of your unit
2. Click on **Manage recording** → **TV channels** (or **Radio channels**) in the left hand menu
3. Check the channels you want to record in the list
4. Press **OK**



The recorder should now start storing the multicast from these channels to disk. The recorder will use EPG info for the channel to record one file per program. If no EPG data is available the channel the nPVR unit will record one hour per file. These will be presented as “Timed recording” in the STB menu. If there is EPG data available for the channel but no current program, the nPVR unit will not record anything until the next program starts, according to the EPG.

The nPVR unit will record all selected channels all the time. Continously, the unit will continuously remove recordings older than the time set in web interface, unless the recording has been tagged. When configuring recording you should make sure that you don’t record so many channels that you run out of disk space. Also note that the maximum number of simultaneous playbacks the unit is capable of will decrease when the number of recorded channels increases. You may need to take this into consideration when selecting channels to record.

If you want to limit the number of clients playing a recording simultaneously, you can enter a value other than **-1** in the textbox here, and save using the **OK** button. This is not the number

of viewers for a single recording, but a limitation for the sum of viewers in total. Can be useful if you experience heavy server load caused by too many viewers at the same time.

The license can have a limit for concurrent playbacks, which is printed below.

9.2.1 nPVR modes

The nPVR system can operate in several different modes, according to operators' needs. The current mode of operation is controlled by the checkboxes under the *Specify mode for Recordings* header.

- Shared recordings is a free-for-all mode where all operator-enabled recordings are made available to all users.
- Personal recordings enables the tagging system, where users can mark programs as their private recordings that are only visible to that user. This system can also be used in conjunction with the on-demand recorder property, where tagging a program will trigger recording of the relevant channel. In most cases, this will be used together with the UAO or PMS systems.
- If none of the options are enabled, the system can still be configured to record channels, but will not provide the recorded programs to users. This can be useful for system integrators who do not wish to use the standard SnapTV software stack.

The different options can be enabled at the same time to give users both a set of operator-controlled recordings and the possibility to select programs for longer storage or on-demand recording of other channels.

CHAPTER 10

Media Catalog

This section is about the Media Catalog system, which replaces *VoD* when using “Up” as the STB user interface.

10.1 How to enable Media Catalog

1. Enter the web interface
2. Go to **System Configuration** → **Media Catalog**
3. Click **Enable here**

10.2 How to migrate existing movies from legacy VoD

If you’re upgrading a system with existing VoD content to Up and the newer Media Catalog, the movies can be migrated very easily:

1. Go to **Manage Content** → **Configure VoD**
2. Click the **Migrate** button

After migration is complete, the legacy VoD system can be disabled from the same page, if not using the legacy portal.

Note: The legacy VoD system doesn’t include the rich meta-data that can be shown in Up. Movies migrated this way will be possible to play, but will be missing some of the images and information in the Movies menu.

10.3 How to import movies from disk

The system can import movies from external disk, delivered by SnapTV via mail.

1. Connect the disk to an available USB input (on the **server**)
2. Enter the web interface
3. Go to **Media catalog** → **Import movie disk**

4. Select the disk from the dropdown list (if the disk is not found, check the connection, and reload the admin page)
5. Click the import button

10.4 How to manually upload movies

This describes how to upload local video files, which are added as movies in the media catalog. All that is required is the video file that contains the main movie feature, an optional video file containing the trailer, and a URL for downloading metadata from TMDb. It is assumed that the server has access to the internet.

1. Enter the web interface
2. Go to **Media catalog** → **Upload movie**
3. Use the browse buttons to select local files to upload for the main feature, and optionally for the trailer.
4. (optional) Paste a TMDb URL into the first text field. A link is provided in the page for searching TMDb for the correct URL.
5. Click the Upload button

Warning: Make sure not to close the page or do anything that interrupts the upload while the upload progress bar is shown. You will be automatically redirected to the edit page, where the information about the uploaded movie can be updated manually, if needed.

10.5 How to delete movies

To delete a movie from the catalog:

1. Enter the web interface
2. Go to **Media catalog** → **List movies**
3. Find the movie and click **Delete** in the right column
4. Confirm deletion on the next page

The movie will be deleted immediately from the harddrive, and users won't be able to watch it anymore. If someone is currently watching the movie, or tries to watch it immediately after it's been deleted, they will get an error.

10.6 How to edit metadata

It's possible to edit the metadata for any movie in the catalog (whether it's uploaded, or imported from a distribution disk). From the movie list (**Media catalog** → **List movies**), click the **Edit** button to edit information manually, or click the **Update** button to automatically download the latest information from the TMDb website, including images and statistics.

Note: The information that can be edited manually is currently quite limited, compared to what

can be downloaded from TMDb.

Note: The “Update” functionality is currently only possible if a TMDb URL was specified when the movie was originally imported/uploaded.

Note: When using the “update” functionality, any manually entered information can be overwritten.

CHAPTER 11

Content Provisioning Server

In order to provide end-user access to content such as nPVR or VoD, the SnapTV software stack uses the Content Provisioning Server which can provide selective access to services based on user subscriptions and other metadata.

The Content Provisioning Server will automatically make use of any enabled authentication or asset providers, such as the UAO, that have been enabled in the cluster.

Unless free-for-all access has been enabled and user authentication has been disabled, users will not have access to any assets that are not granted by an asset provider. Some asset providers may also provide options for purchasing assets in-band.

To enable/disable the Content Provisioning Server use the following steps:

1. Open a browser to the web interface of your unit
2. Go to **System configuration** → **Content Provisioning Server** in the left menu
3. Select any combination of "Use with [system]" checkboxes
4. Click on **Save and enable here** / **Disable** to turn on/off the service.

Ticking the checkboxes and clicking **Save and enable here** will enable client access to that system. If a checkbox hasn't been ticked, clients will not be able to use that system and it will be disabled in the SnapTV Portal.

11.1 Options

The behaviour of the CPS can be modified through the checkboxes under **Options**:

- Allow unauthenticated users

  If this is checked, the CPS will allow all clients to access the system. If unchecked, clients must be registered in the UAO.

  Note that even if unauthenticated users are allowed, they will not have access to any services unless the corresponding free for all option has been enabled.

- Live channels free for all

  If this is checked, all clients will have access to all live channels.

- VoD free for all

If this is checked, all clients that can access the VoD system can access all content stored in it.

If this is not checked, clients must be explicitly granted access to VoD content by an asset provider, such as the UAO or an in-band payment system.

- nPVR free for all

  If this is checked, all clients will have access to a (nearly) unlimited ammount of recording quota. The quota is used to determine if a user can pin programs for storage.

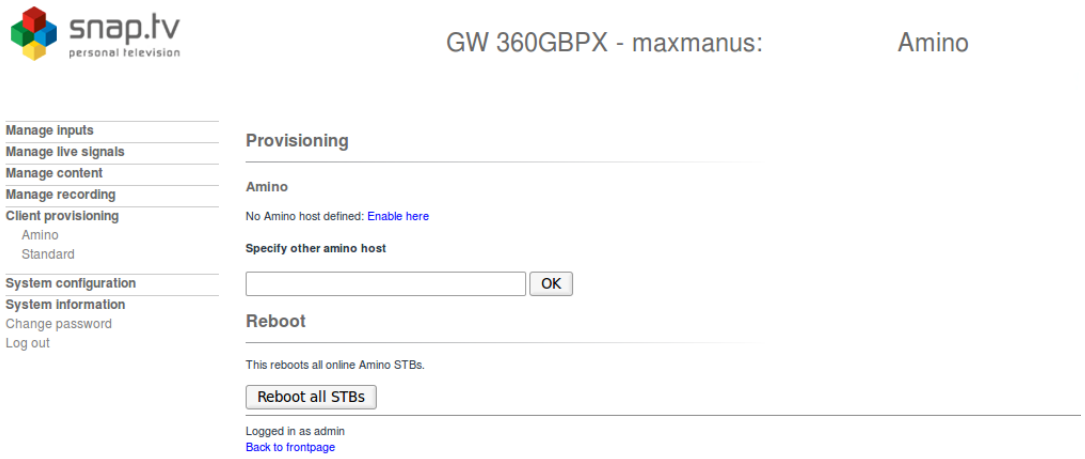
CHAPTER 12

Client provisioning

12.1 Amino

The Amino STBs get their software image and settings from a multicast service called bootcast. In order to avoid conflicting bootcasts when several SnapTV products are present in the network, the unit which is to run bootcast must be explicitly instructed to do so.

In the web interface, click **Client provisioning** → **Amino** to bring up a configuration menu like this:



Here you can instruct the gateway you are currently logged into to be the bootcast server by clicking the **Enable here** link under the **Amino** heading. If you have more than one SnapTV gateway in a group (see section *DHCP*) you can alternatively enter the IP address of another SnapTV gateway to act as bootcast server under **Specify other amino host** and press the **OK** button next to it.

The bootcast system is now operational and will provide Amino STB's with up-to-date software and configuration, requiring no further interaction.

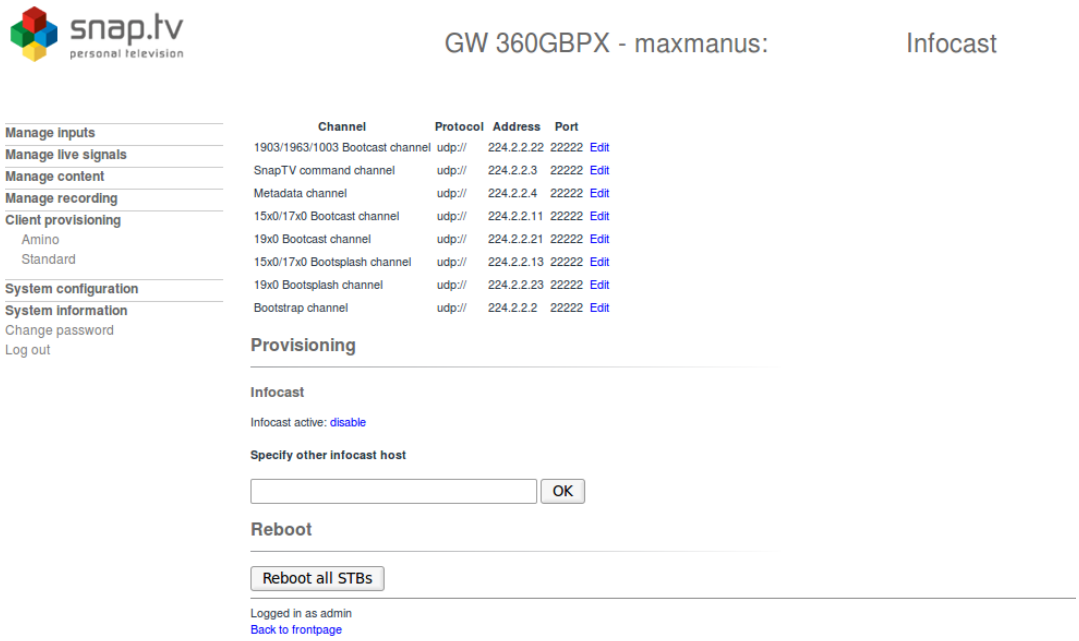
The settings for the bootcast server are located in /etc/mcastbootd.conf. If you change any of the addresses in that file the matching changes must also be done in /etc/dhcp/snaptv/99_amino.dhcpd.conf.

12.1.1 Reboot all STBs

Press the **Reboot all STBs** button and press OK in the confirmation dialog to reboot all STBs connected to the same network as the gateway.

12.2 Standard

Boot images and software configuration is delivered from the SNAPTV GW 360GBPX-E to connected Motorola STB's by the multicast based infocast service. In order to avoid conflicting infocasts when several SnapTV products are present in the network, the unit which is to run infocast must be explicitly instructed to do so. In the web interface, click **Client provisioning** → **Standard** to bring up a configuration menu like this:



Here you can instruct the gateway your are currently logged into to be the Infocast server by clicking the **Enable here** link under the **Infocast** heading. If you have more than one SnapTV gateway in a group (see section *DHCP*) you can alternatively enter the IP address of another SnapTV gateway to act as Infocast server under **Specify other infocast host** and press the OK button next to it.

The infocast system is now operational and will provide STB's with up-to-date software and configuration, requiring no further interaction.

At this point you should connect a Motorola STB to you network and watch it start. If everything is properly set up, it should display a range of circular symbols that will gradually change color to green, after which the SnapTV logo appears. After this, the STB will display *channel 1*, which will be black until you have added some TV channels.

12.2.1 Reboot all STBs

Press the **Reboot all STBs** button and press **OK** in the confirmation dialog to reboot all STBs connected to the same network as the gateway.

NOTE: Reboot all STBs button can be found on administration page of gateway where Infocast is defined.

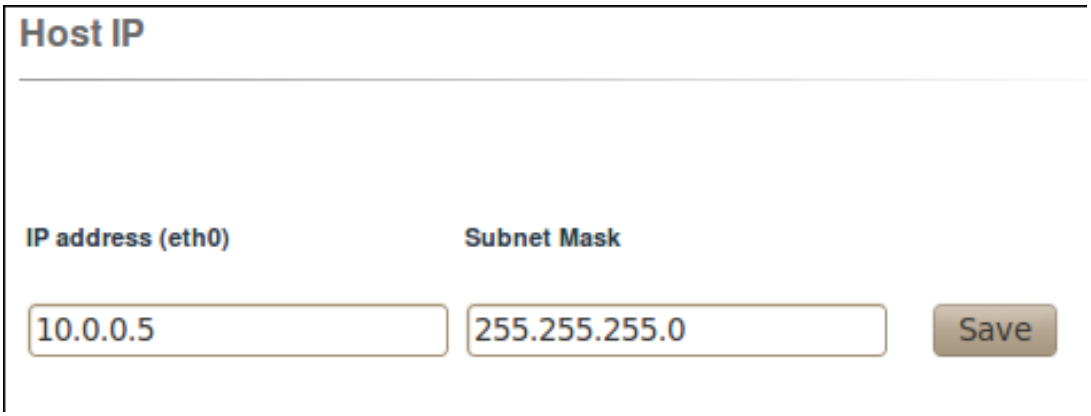
System configuration

13.1 Network

13.1.1 Host IP

Warning: If you change the IP address you have to do a *Configuration remap* afterwards. Also remeber that the STBs will not receive new network settings until the end of the lease time and a reboot of the STBs might be necessary.

The default setup for IP addresses of the server for the eth0 interface is address 10.0.0.5 and Subnet Mask 255.255.255.0.



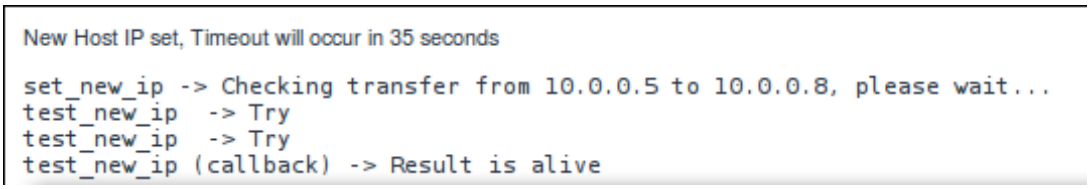
This can be reconfigured via the Host IP page.

Note: Several tests of the new address takes place. The requested new address is rejected if in use, rejected if set to the broadcast address (all unmasked bits set) or the network address (all unmasked bits cleared). You will be warned if the address/mask overlaps a reserved address area. You will be warned if the DHCP server is active. It is recommended to disable the *DHCP* server since the parameters must be changes manually before it can work correctly under the new Host IP.

Browsing the server via eth0 and change to an address within the same subnet (e.g. going from 10.0.0.5 to 10.0.0.8):

The new address is enabled, with a timeout set to 45 seconds after which the original address will be restored if the new address is not confirmed. You have to authenticate to the server with

its new address and press the confirmation button to make the new IP address permanent. If this is not done within the timeout period, the server will be set up with the original address again and you might need to set this address manually in your browser address field to regain contact with the server.



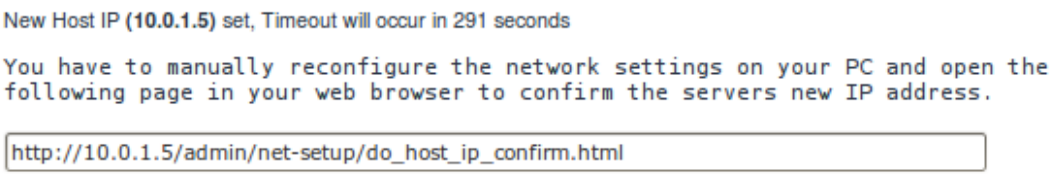
Browsing the server via eth0 and change to an address in another subnet (e.g. going from 10.0.0.5/24 to 10.0.1.5/24):

A popup confirmation is presented with the text: *You can't be automatically transfered to this address since it is on another subnet, so that must be done manually. Continue anyway? (Yes/No)*

If answering yes, a new popup will appear: *Please specify at timeout in seconds (60 to 600) after which the Host IP address will be set back to the current value.*

You have to manualy change the IP address of the client (your PC) and set an address in the same subnet as the server before contact can be re-established. Set the timout to a value high enough to make these changes.

This information will appear on the screen:

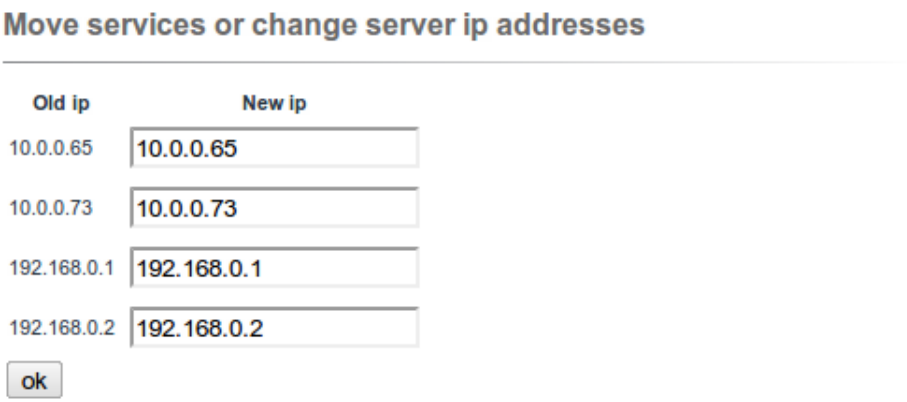


Browsing the server via eth1:

If you are connected to the server via eth1 you will not loose your connection when changing in the IP address for eth0, and the new address settings will be saved without the need of any further confirmation.

13.1.2 Configuration remap

Configuration remap **have to be used** if you have changed the IP address on a gateway or if you wish to move all services to another gateway.



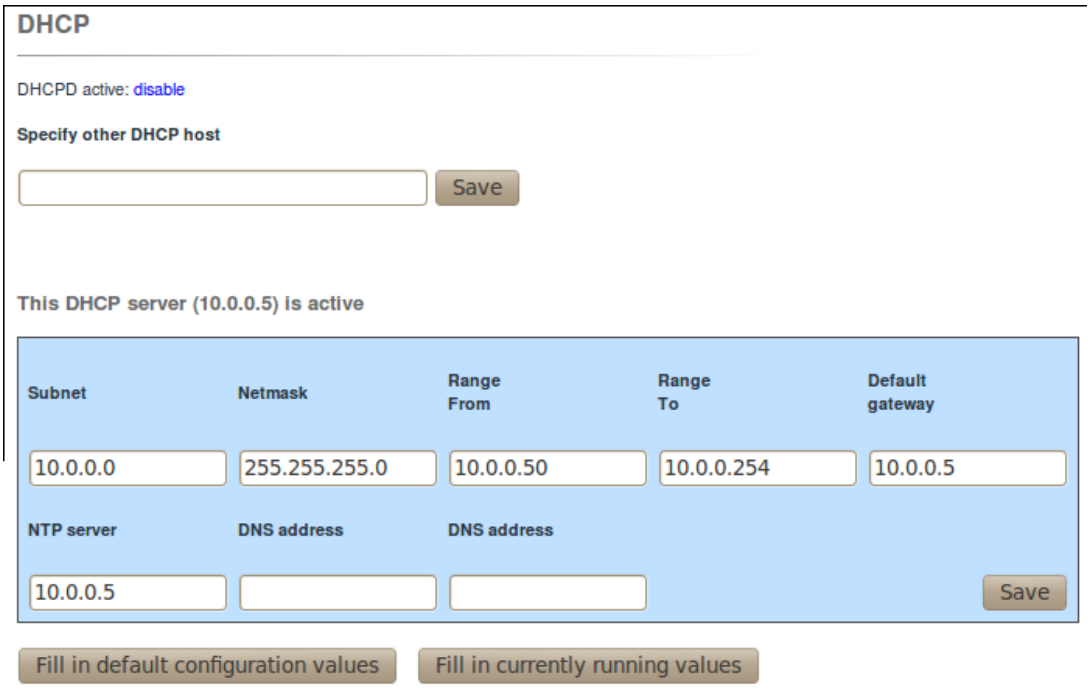
13.1.3 DHCP

In order for STB's to recevie network settings, a DHCP server must be present in the local network, and the gateway can function as a DHCP server.

The DHCP server is started by clicking **System configuration** → **Network** → **DHCP** → **Enable here**.

Note: Before enabling the DHCP server, make sure that the settings are correct. Especially after having changed the Host IP, the settings must be changed accordingly. The "Fill in default configuration values" button will adjust the content according to the current Host IP address. In this way, correct configuration values can be pre enabled before the "Enable here" button is pressed.

You can specify a different DHCP host if you already have one running in your network.



The DCHP configuration can be altered in the *This DCHP server* menu.

The values which can be set are:

- Subnet
- Netmask
- Range
- Default gateway
- NTP server: Network Time Protocol server IP address. This is required for the set-top boxes to have the correct time. Normally, this is the same as the DHCP server.
- DNS address (up to two)

There are two buttons which can alter the setting without saving them:

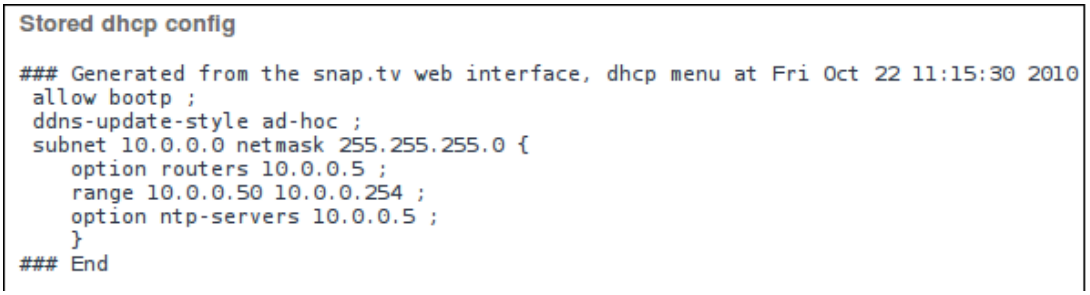
- Default configuration values
- Current running values

The default configuration values is set up according to the current host IP address.

Several sanity checks are performed on the settings before they are accepted.

- Subnet: Wrong values are not accepted
- Netmask: A Netmask different from the Host IP Subnet Mask will produce a warning
- Range: Range values outside the possible range according to the Subnet and Netmask are not accepted

A printout of the stored DHCP config can be seen at the bottom of the page.



13.1.4 Multicast

Note: For multicast to function properly in your network, it is vital that there is an active IGMP querier in the network. If the querier is not present, end user devices will be flooded with more traffic than they can handle and will not function properly.

An IGMP querier can often be enabled in your networking equipment. If not, you can enable the PIMD service on a gateway, which will perform the same function.

- To turn on/off this service, check the box and click OK.

Default multicast ttl can be useful if you route the multicast traffic, then enter the number of steps allowed in the text form.

13.2 Cluster

Sometimes it is needed to run several SnapTV servers together on a single site. These can be grouped into a cluster. The cluster has a shared configuration file so that you can have a single channel list with channels originating from one or more servers. You can also combine these with nPVR and VoD servers.

To create a cluster start with two servers that has completed the initial configuration steps. If any more configuration than the initial steps has been done on the servers, the cluster will keep the configuration from the server that has had the most changes to its configuration. The configuration from the other server will be lost (not including the initial steps).

Before starting be sure the servers have got different IP addresses on the eth0 interfaces (see section *Network configuration*), and that only one (if any) server is connected to the external connection via eth1.

The remaining configuration is now done using the web interface.

To create the cluster, follow these steps:

1. Click **System configuration** → **Cluster** in the left hand menu of the first server.
2. Note the Hostname, Identifier and Fingerprint.
3. Go to the next server and find the hostname of the first server in the list of *New servers*.
4. Check that these values match the noted values, if they don't match there is something wrong. Contact support@snap.tv.
5. If the fingerprint match, click the *Accept* button.
6. Repeat the same procedure in the opposite direction.

The servers are now authenticated to share each other's configuration. Each server should show the other server under "Peered/known Servers" with hostname, Identifier fingerprint and a configuration version. The format of the line is:

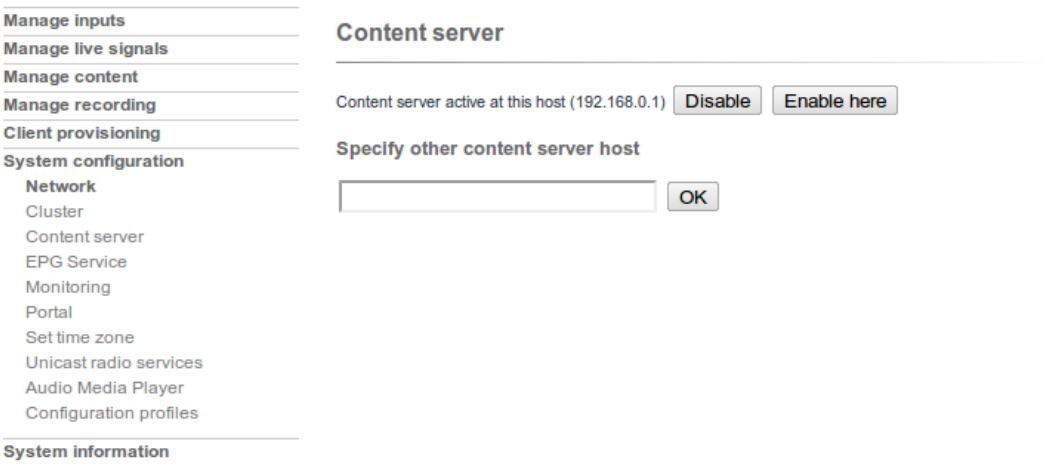
```
<hostname> (<Identifier>) (<Configuration version>): <Fingerprint>
```

Check that the *Local version* matches the local version shown under "Crypto". If they are the same value on all servers, the cluster is working correctly.

To add a new server to the cluster, just select one server in the existing cluster. Then follow the above steps with this server and the new server. The selected server will share its trust in the new server with the other servers in the cluster. Likewise, the new server will inherit the selected server's trust in the rest of the cluster. Afterwards, each server should list all other servers with hostname, Identifier, fingerprint and configuration version.

Still the local version number should be the same for all the servers.

13.3 Mini browser server



This is the service providing the mini browser option to the portal. To enable the service

1. Click on “System configuration” and the “Mini Browser server” in the left hand menu
2. Click **Enable here** to start the service
3. Watch the icon appear in the portal a few seconds later
4. To turn off, click **Disable** button

When you have enabled it, go to “Mini Browser Pages” under the “Manage content” menu in the sidebar. Read more about adding pages to the browser in *Mini Browser Pages*.

If you already have a mini browser server up and running in your network, can specify it in the dialog box and click OK. If you are in a cluster it will automatically find it.

13.4 EPG service

To deliver Electronic Program Guide to set-top boxes (and other clients), you will need to configure an EPG server.

Note: It is important that the EPG Server has the correct time zone configured and has a precise clock. Please complete section *Set time zone* and *Assigning NTP server* before continuing.

To enable the EPG service click on **System configuration** → **EPG Service** and click the checkbox that appears.

The EPG server will keep the EPG data some time after the programs are completed to answer queries like “what was on yesterday at noon”. Select the maximum number of days and hours to store EPG after the programs are completed. Then click the “OK” button.

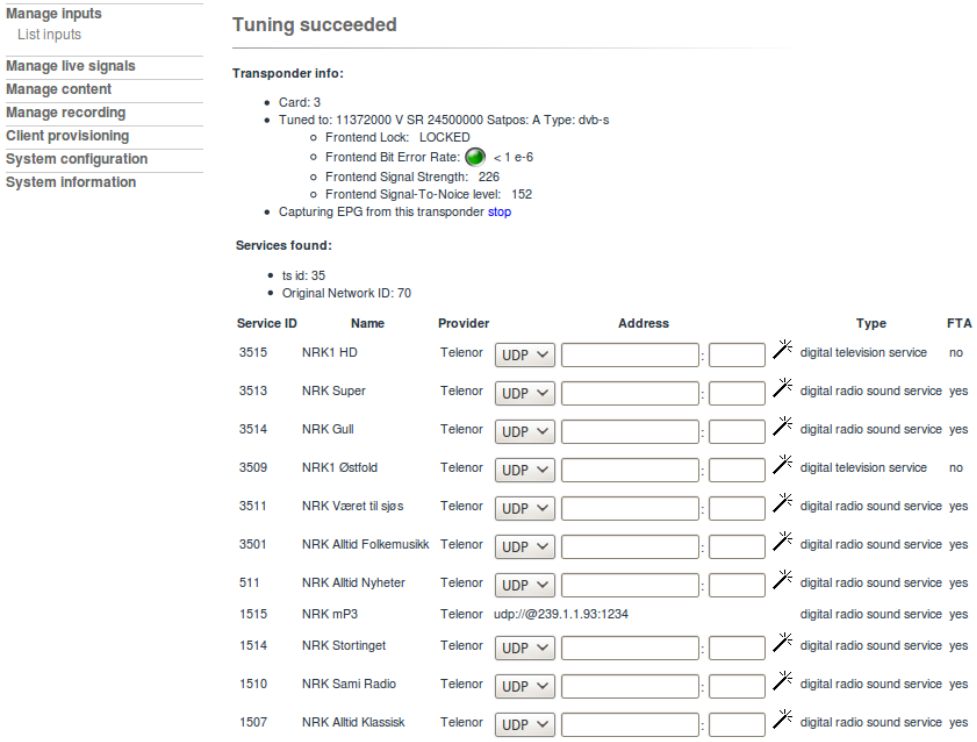
Note: If you have a cluster/head-end system with more than one SnapTV gateway, only one should be configured as EPG server.

What you have done so far is only to enable the Electronic Program Guide service as such; you have not yet defined the sources of data for the service. The SnapTV system supports aggregation of EPG data from the *Event Information Tables (EIT)* that are embedded in the

DVB transport streams, and import from XMLTV. However if you need to import data from XMLTV, contact technical support as there is currently no integrated support for it in the web interface.

You enable EIT aggregation on a per transponder basis in the DVB card page.

1. Click **Manage inputs** → **List inputs** in the menu
2. Select a tuned DVB input from the list (see *Add channel from input*)
3. Click the “Start” button after “Not capturing EPG from this transponder.



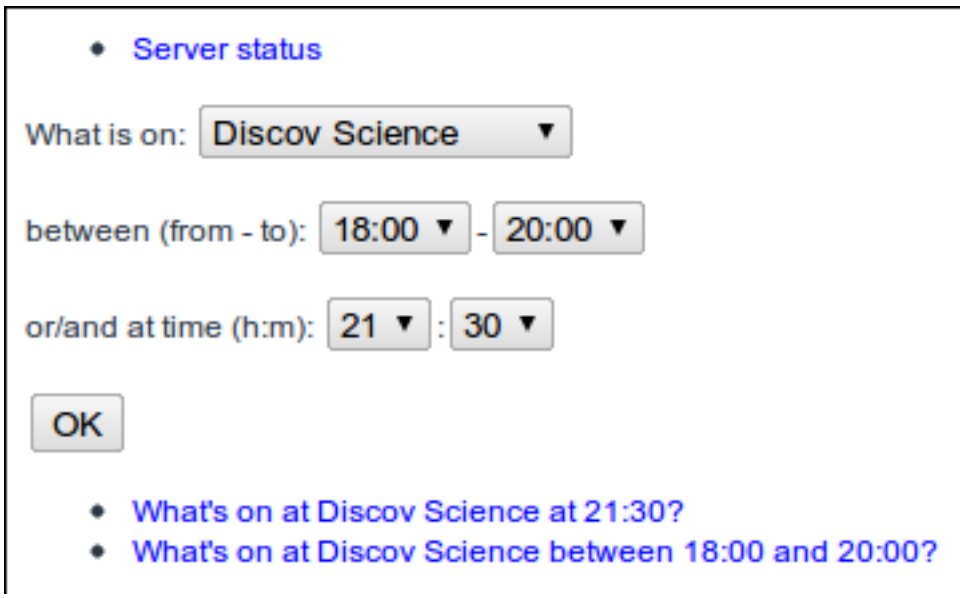
If you at a later point want to disable EPG capture from this transponder you can click the *stop* link after *Capturing EPG from this transponder*.

After a short time (up to 30 minutes) EPG data will start to appear (you may force an EPG read refresh by putting the STB in and out of standby).

13.4.1 Browse EPG data

To test if the server is running and capturing EPG data click **System configuration** → **EPG Service -> Browse EPG data**. Select a channel and click OK. You don’t have to select a time span. Now you can view what’s currently on the selected channel or what has been shown a few hours back in time.

You can also view EPG data for a selected time span between 00:00 and 23:00 or a specific time, e.g. 20:30, using the drop down boxes.



13.5 Monitoring

With your SnapTV comes the feature to monitor different services. For instance can EPG data for a specific channel be monitored and send e-mail notification when something is wrong. Through the web interface, you can turn on monitoring for different services in your SnapTV unit. Each of them will be explained in this chapter. For each service you can choose between three levels of monitoring:

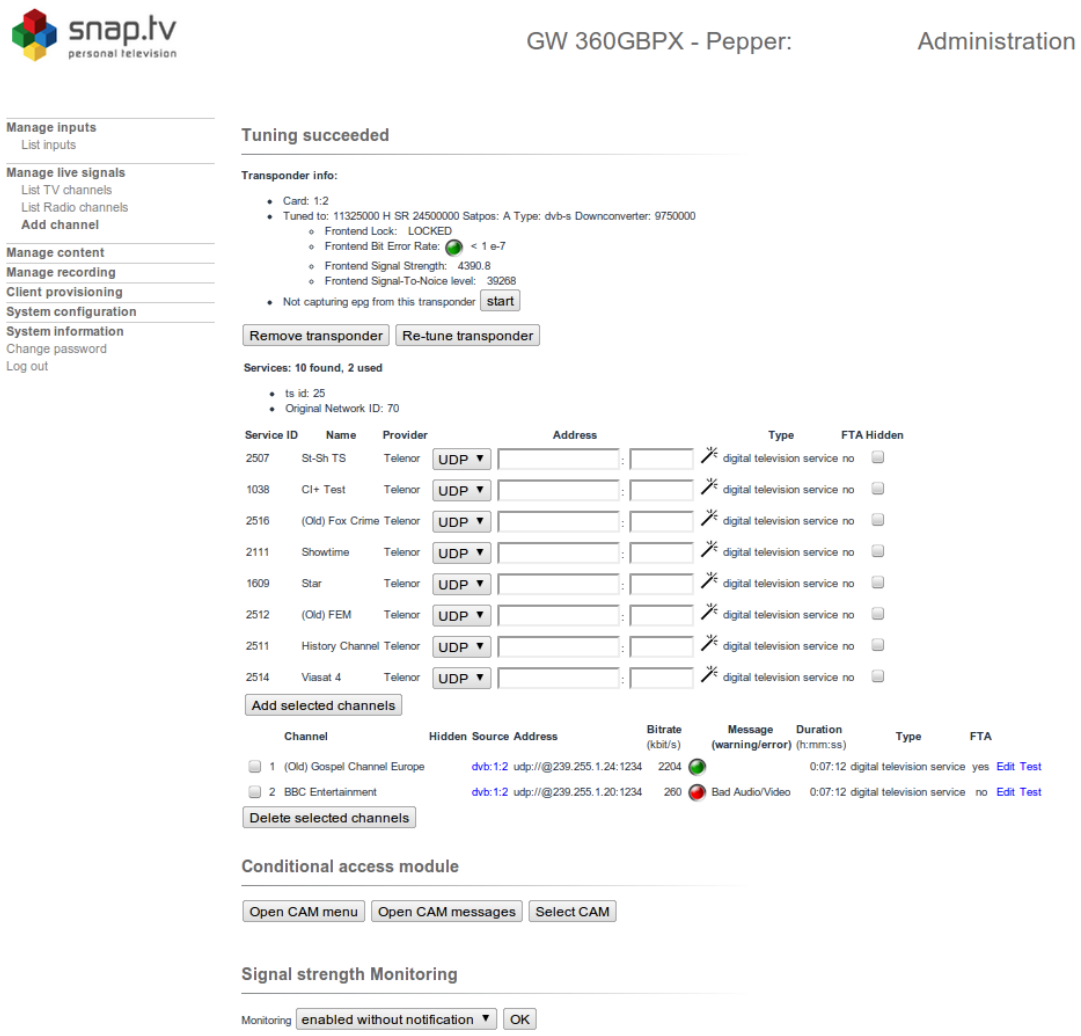
- Enabled: Enable monitoring for a service and get notification by e-mail, sent to registered e-mail address.
- Enabled without notification: Enable monitoring for a service, but leave out email notifications. You still get to look at nice graphs at monitoring.snap.tv
- Disabled: Disable monitoring for this service.

13.5.1 Host monitoring

Go to **System configuration** → **Monitoring** and turn on monitoring for you server by clicking the drop down menu and then click the OK button.

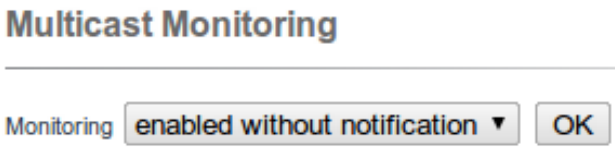
13.5.2 Signal strength monitoring

Go to **Manage inputs** → **List inputs**, then click on a tuned transponder to see tuning information. Below channels tuned, just above Conditional access module, you will see a header Signal strength Monitoring. Click the drop down menu to choose your level of monitoring. Click OK button.



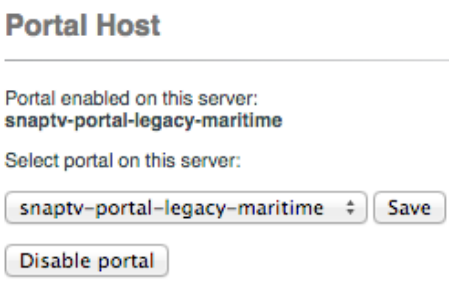
13.5.3 Multicast monitoring

To always be sure that a channel is multicasting, click **Manage live signals** → **List channels**. Choose a channel to monitor and click Edit behind the channel. You are presented with a page with channel information and at the bottom of the page you can turn on/off Multicast Monitoring for the channel.



13.6 Portal

To enable this service go to **System configuration** → **Portal** → **Host Setup**. Select a portal type and click *Save and enable here*. This should result in a screen similar to this:



The following portals can be available:

snaptv-portal-legacy-maritime The default portal with most functionality, installed by default. See *Legacy portal configuration* for configuration options.

up The minimalistic portal that currently supports TV, Radio and EPG. More features will be available over time. See *Installing Up* for install instructions.

If your servers are clustered (See section *DHCP*) you can see the running Portal Host IP address.

13.6.1 Installing Up

Note: Requires VIP1003 or VIP1113 set-top boxes.

Read about using the terminal in the *Working in a text-based console* section. Installing up requires that http://apt.snap.tv is reachable from the server that shall be running up.

Update the available system packages with:

```
# sudo apt-get update
```

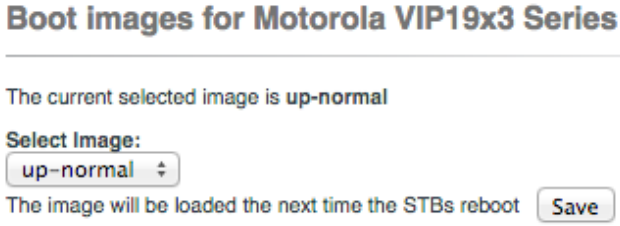
Install set-top box firmware for up:

```
# sudo apt-get install snaptv-motorola-kreatv4
```

and then install up:

```
# sudo apt-get install snaptv-up
```

For VIP-1003, activate provisiong from **Client provisioning** → **Motorola Boot Images** → **VIP19x3**. Select the image **up-normal**:



For VIP-1113, activate provisiong from **Client provisioning** → **Motorola Boot Images** → **VIP28x3**. Select the image **normal**:

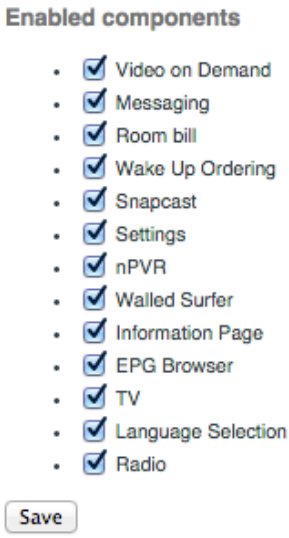
Finally, enable up as described in *Portal*.

13.6.2 Legacy portal configuration

Setup

Go to **System configuration** → **Portal** → **Legacy** → **Setup**.

Enable Components

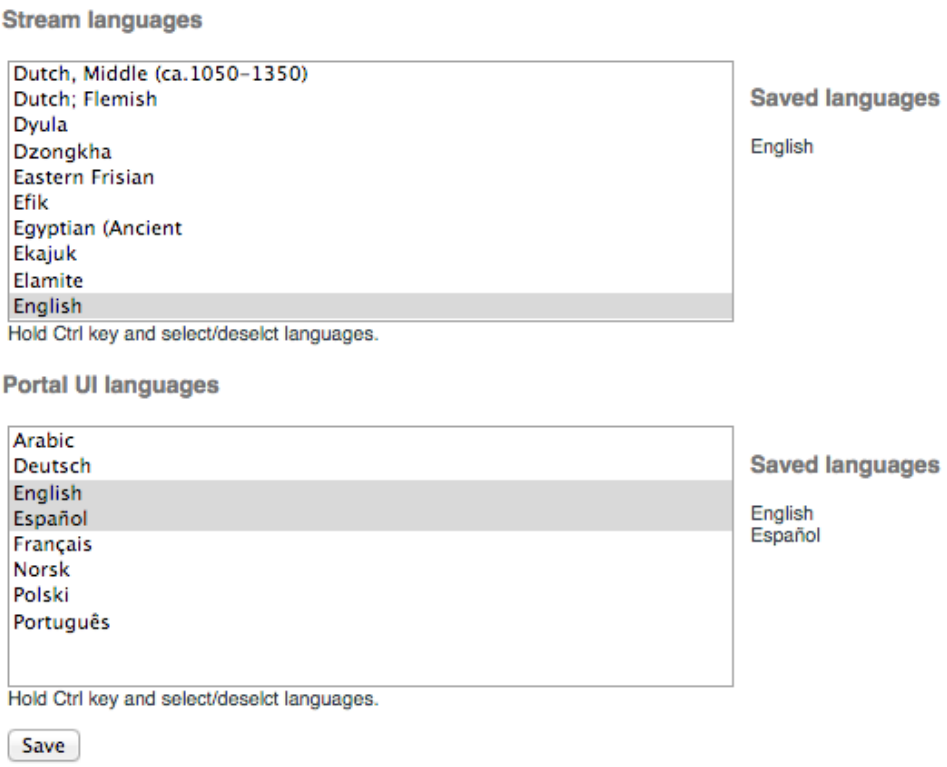


All installed portal components are by default enabled as long as the required resource is available in the system. For instance, the VoD menu icon in the portal is available if there is a VoD server, and it has at least one available movie.

The **Enable Components** page allows the administrator to override the default setting, and force particular components *not* to appear in the portal menu, even if the service is available.

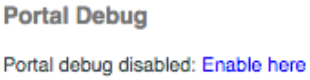
Note: Deselecting a component will only remove it from the *menu*, e.g. if "EPG browser" is deselected, it is not available in the main menu, but can still be accessed from the green button in the TV component.

Languages



Configure languages that will be available in media streams and user interface.

Portal Debug

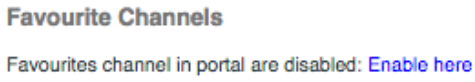


Sometimes you want to debug a bit to get some techical feedback on what is going on in the running client. That could be on one or many motorola boxes, for example. Enabling **Port debug** will make the clients log to the server, to a file located at */tmp/panelpc.log*. By using the following command on the server, you can watch the logging simultaneously, as it happens:

```
# tail -f /tmp/panelpc.log
```

Read more about using the terminal in the *Working in a text-based console* section.

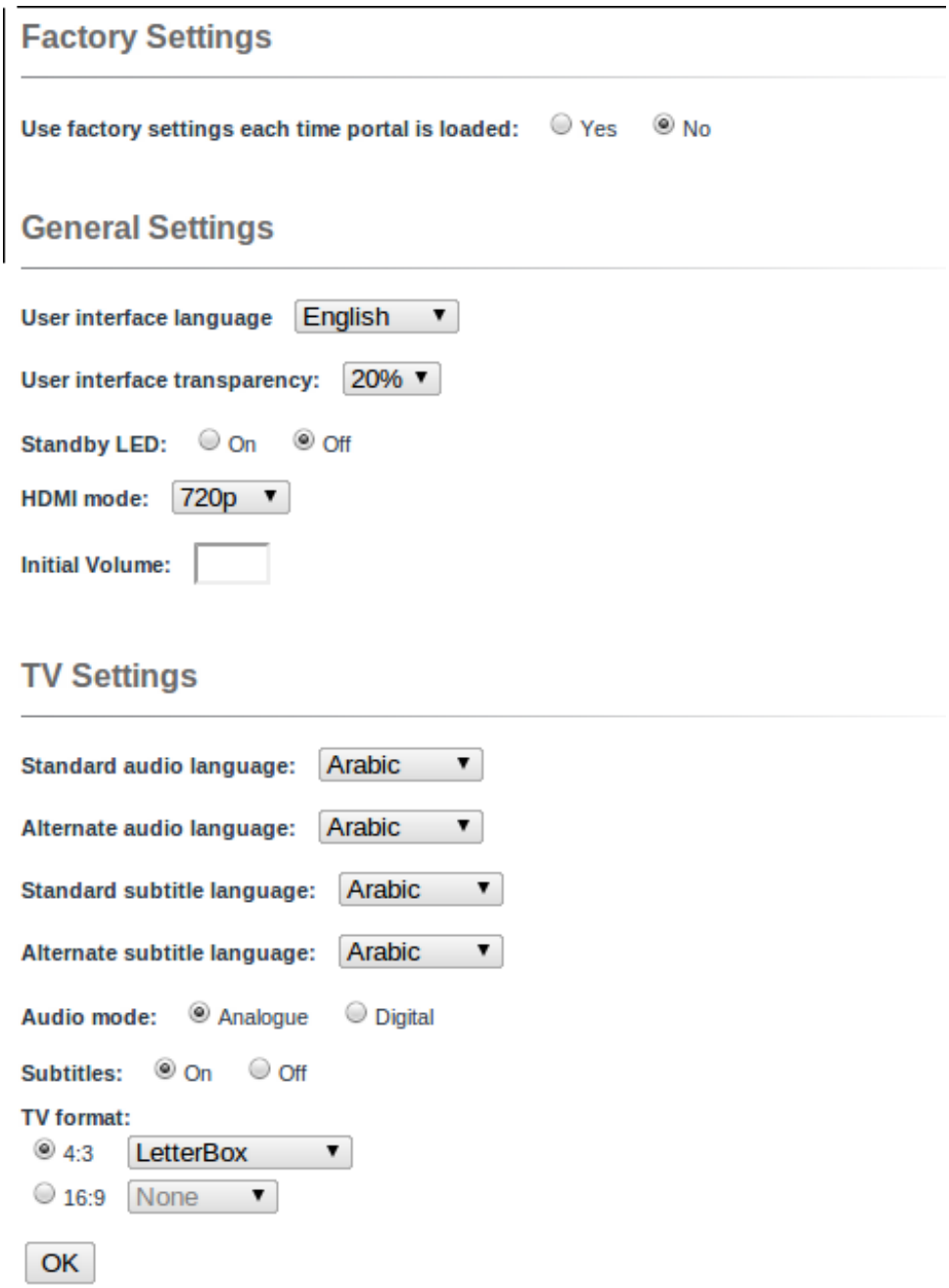
Favourite Channels



By default favoure channels functionality is disabled in portal. If you want to allow users to create their personalized channel lists on STBs click **Enable here** on **Favourite Channels** section.

Factory settings

Go to **System configuration** → **Portal** → **Legacy** → **Factory Settings**.



Factory settings is used to set up default setting for the set-top boxes (STB).

In some portal versions it is possible to alter some or all of these settings locally at each STB. This menu is used for setting the default values globally for all STBs.

Changing a parameter in the factory settings page will take immediate effect in all the STBs. An exception here is if the STB user already changed this parameter locally; then this parameter (for this STB) will be locked to the value set by the STB user. The locks might be released on the next reboot.

Note: Factory settings have the following limitations on Amino STBs:

- The chosen TV format under factory settings in the administration interface is not used. The factory settings for Aminos are always 16:9, using the “pillar box” conversion method for 4:3 video.

- When enabling the option “Use factory settings each time the portal is loaded”, the default TV format 16:9 is applied each time the portal is loaded, regardless of the chosen values.
- TV format settings in the portal menu on the STB are available. However, when HD output is enabled (HDMI Mode is either 1080i or 720p) the TV format is always 16:9, and selecting 4:3 has no effect.

Use factory settings each time portal is loaded. Factory settings will always be used when booting a STB without settings (a new box).

If set to “Yes”: Each time the STB portal is loaded, the local settings locks decribed above are released and the factory settings are used. This is the recommended setting in Hotel systems.

If set to “No”: Settings which has been changed (touched) by the local STB user will never be overridden.

User interface language Select what language is used on the text displayed in the portal.

User interface transparency Select the transparency of the user interface in the portal.

Standby LED If set to “On” the led lamp in front of the STB will be red when the STB is in standby mode. If set to “Off” the led will be turned off. When turned on the led will light green.

HDMI mode Select the HDMI mode.

Initial Volume Set the initial volume (between 0 - 100) to use when powering on the STB. If you control the volume on the TV’s this can be set to 100.

Standard audio language What audio language to use as standard if a TV channel broadcasts more than one audio language.

Alternate audio language If the standard audo language is not available, this will, if available, be used instead.

Standard subtitle language What subtitle language to use as standard if the TV channel broadcast subtitles in more than one language.

Alernate subtitle language If the standard subtitle language is not available, this will, if available, be used instead.

Audio mode If you connect additional sound equipment to the STB, set the output mode to “Digital” if you use coax or TOSLINK.

Subtitles Determines if subtitles, if available, is shown or not.

TV format What format to use on the TV’s.

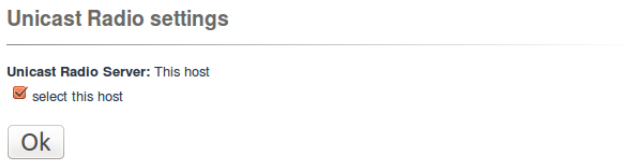
If all TVs attached to all the STBs are in 4:3 format, the correct selection is **4:3 Letterbox**

If all TVs attached to all the STBs are in 16:9 format, you should either select **16:9 None** or **16:9 Pillar Box**. The difference is how 4:3 content will be displayed: If set to **16:9 None** the whole 16:9 screen will be used. If set to **16:9 Pillar Box**, there will be black vertical stripes to the left and right.

13.7 Set time zone

1. Click **System configuration** → **Set time zone**.
2. Select your country and press the *Set* button.
3. If your country spans several time zones you will be presented with a list. Select one and press “OK”.

13.8 Unicast radio services



Unicast radio services starts a DLNA server and enables unicast playout of radio. This provides DLNA and UPnP capable devices with a list of URLs pointing to the unicast radio services so that they can play radio channels over http.

Controlling the list of radio services is done in parallel with the setup of multicast radio. Hence, the list found in **Manage live signals** → **List Radio channels** is the list of unicast radio services too. Sort order of unicast radio services however can’t be changed.

To enable this service click **System configuration** → **Unicast radio services**, check the check-box called *select this host* and click *OK*.

If another server in a cluster of many servers is set up to process the radio services, the address of that server will be shown in this menu.

The service relies on receiving the radio streams via UDP packets from the source gateway. All streams are transcoded into MP3 format on the server where the service runs. The transcoding requires some resources, so the service shouldn’t be set up with a lot of channels on a server which is heavily loaded in the first place.

It is possible to skip the transcoding part and hence avoid CPU load. The audio format sent to the media player then will be MP2 usually, and there are many media players capable of decoding this format. To select, add the attribute transcode=”false” to the channel tag of every radio channel that you don’t want to be transcoded. Example: *<channel transcode=”false”>*. See **System configuration** → **Configuration profiles**.

13.9 Manage administrators

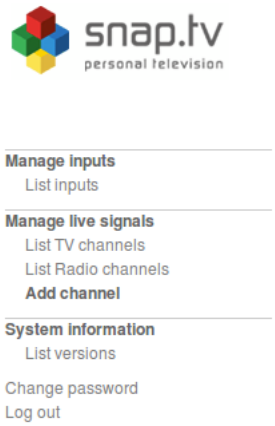
Define and maintain administrator users and give them restricted access to the web interface.

13.9.1 Creating new users

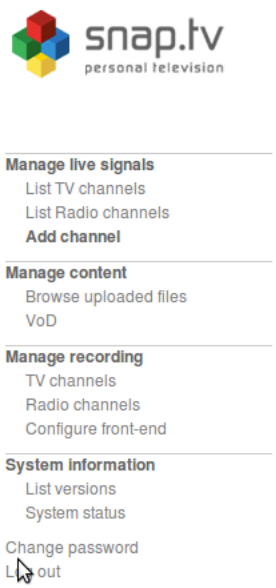
Three different roles are defined:

- channel_admin
- content_admin
- admin

The channel_admin and content_admin roles have got access to parts of the system only.



The channel_admin can set up input cards and looped file channels.

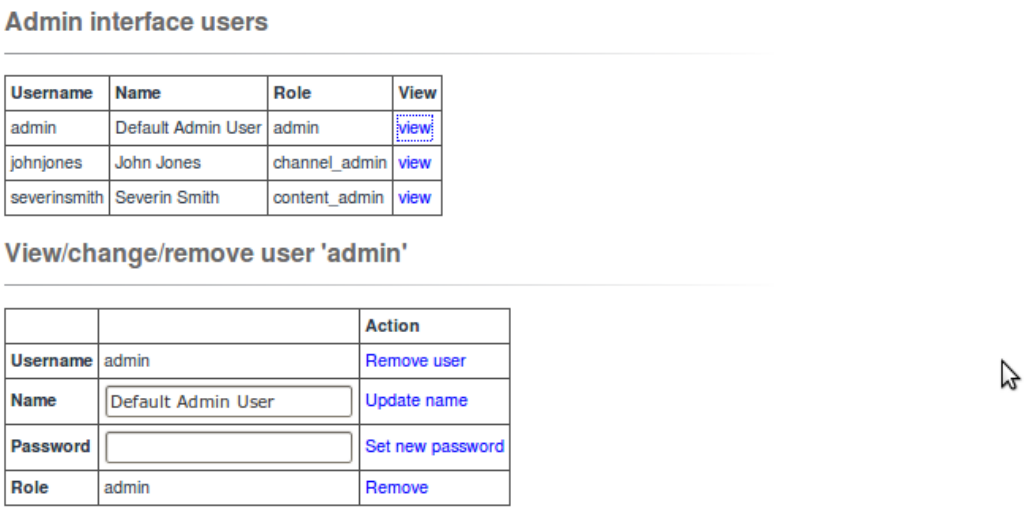


The content_admin can manage recordings and VoDs, monitor live channels and set up looped file channels.

The admin role has access to all parts of the system.

A new user can be created by filling in the form at **System configuration** → **Manage administrators**. The Username must be at least 3 characters and the Password at least 6. If no Name is filled in, the Username will be copied to the Name field.

13.9.2 Maintain users



A table gives an overview of all created users. By pressing the view link of a user, details about this user are shown and can be altered. The user can be removed, the Name can be changed, the password can be overwritten by a new and the role can be changed.

13.10 Configuration profiles

You can now save your configuration to different profiles.

Use the following steps to create a configuration profile for you unit:

- Open **System configuration** → **Configuration profiles** from the menu.
- Browse down to the Configuration profiles section.
- Choose a name for your current config.
- Click the *Save* button.

The profile will

To restore a profile and overwrite the current profile, select a profile from the drop-down box and click **Restore**.

13.11 Setting up SSL

In the left hand menu choose the option Manage SSL. Press the enable button to turn on SSL authentication.

Note that upon turning on SSL authentication, your browser is likely to give you a security violation. This results from the browser not being aware of default certificate that SnapTV has self signed. You can either except the certificate by overriding the violation and downloading the certificate or upload a trusted certificate.

If you would like to generate a new Certificate Signing Request (CSR) please fill in the appropriate X.509 attributes of the certificate. This is done by filling in the two empty fields labelled Common Name and Organisation and pressing Generate. Once the CSR has been generated press the Sign button to self sign it and upload it.

If you have no attention of sending this CSR to a third party vendor for authentication then this isn't necessary as we already provide a self signed certificate. But if you are considering signing your certificate through a third party Certificate Authority then you can upload the issued signed certificate by the authority in the text area provided and pressing upload.

13.12 Piwik Analytics Server

If installed, the admin interface will have a page called "Piwik Analytics Server", where this feature can be enabled. Analytics is currently enabled for the *Anywhere web application* only.

To enable analytics, first click the "Enable here" button in the configuration page. When enabled, the page will show a link to the Piwik page. The first time the page is opened, it will run a configuration wizard. The wizard will ask for MySQL username, password and name of database. All three must be entered exactly as "piwik". Continue to enter a site name and

email address, and the main application should appear when the wizard is complete.

When this is done, data should start to appear for every time the Anywhere application is being used.

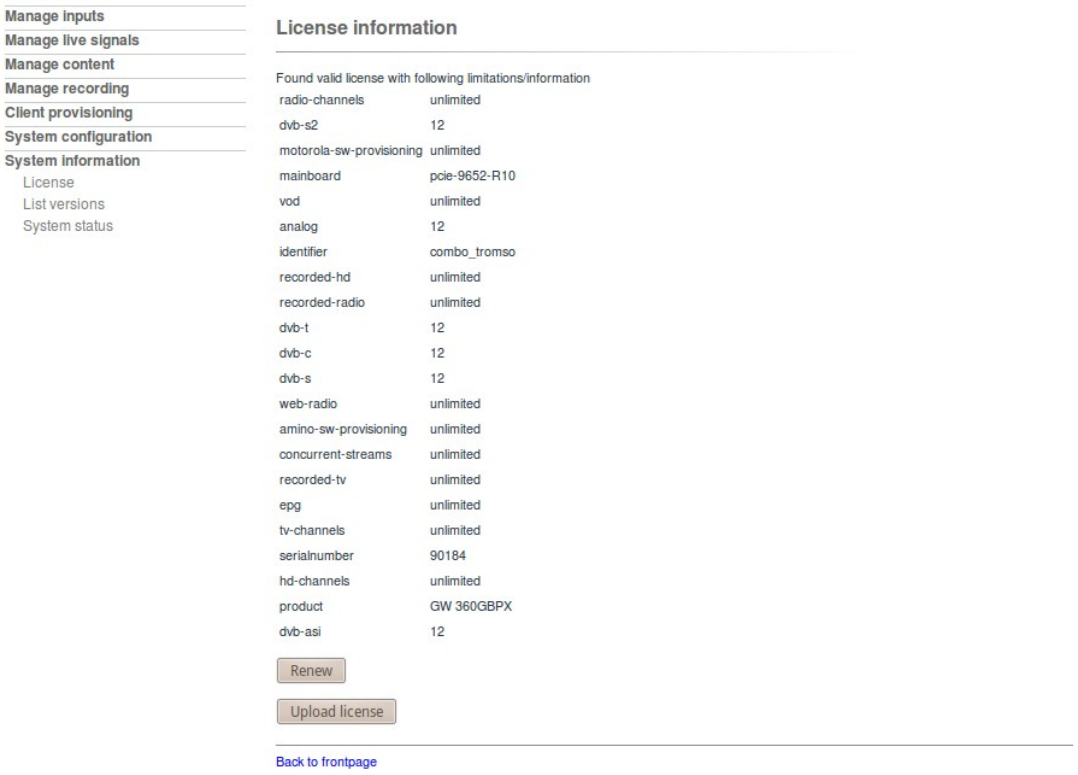
Note: The Piwik Analytics Server is provided by a package called *snaptv-piwik-setup*, which depends on *piwik* and *mysql-server*. If this is installed from a terminal, the mysql package will ask you to enter a password for the root user. Do not enter a password, but instead just hit escape and let the installation continue. The *snaptv-piwik-setup* package will set a root password, and add the “piwik” user afterwords.

System information

14.1 License

To list your license information click **System information** → **License** in the menu.

To renew your license, you simply need to click the “Renew” button found at the same page, underneath the license information. See image below.



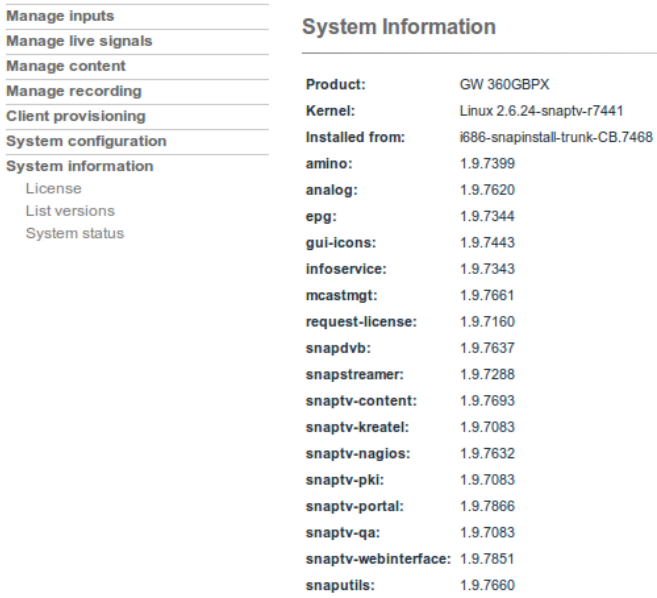
If you have no internet connection or if license request fails you could click “Try again” or download the license by clicking the “Get offline license request” button. Then send this file it to support@snap.tv which enters it into the license system and returns a license file that you can upload manually.

When you have the license stored on our computer, you can upload your license by clicking the “Upload license” button found in the same page. Do the following:

- Click “Upload license”

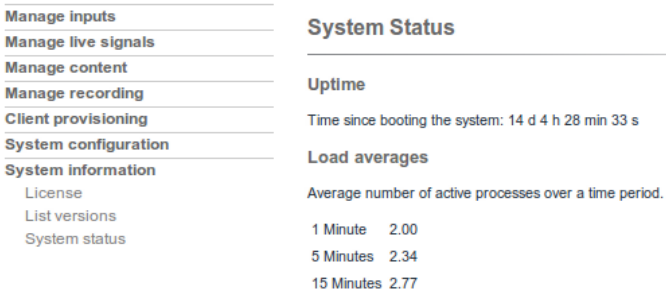
- Choose a file from your computer
- Press the “Upload” button

14.2 List versions



This is a list of the versions of the installed software in your SnapTV unit.

14.3 System status



Follow these steps to see the system information for your SnapTV unit.

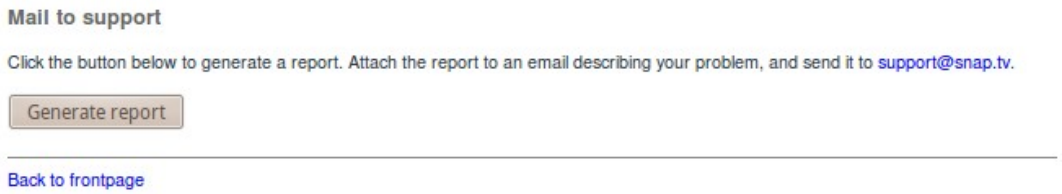
1. Click System information -> System status in the menu

2. Scroll down to see information for all the following areas:
    - Uptime
    - Load averages
    - CPU Usage
    - Disk space
    - Memory usage
    - Network usage
    - Sensors
    - Services
    - Network interface configuration
    - Kernel IP routing table
    - Mail to support (see section *Mail to support* below for more information)

You should see updated information (some realtime) for all areas.

14.3.1 Mail to support

When you are experiencing a problem with your server, and you don't know what is causing the problem, you should contact support at SnapTV. Do this is by clicking **System information** → **System status** in the left menu and at the bottom of the screen you will see a section called Mail to support.



By clicking the button named "Generate report" the server will call a program to gather important status and logfiles about your server and collect them in a compressed package. This file is downloaded and should be included in an e-mail to support@snap.tv. It is also preferred that you click the e-mail link in the "Mail to support" section, which sets the e-mail subject if you have configured a e-mail client on you computer.

CHAPTER 15

User and Asset Organizer

There are two versions of the UAO available - standard and legacy. This document describes the standard version.

The standard version is recommended in nearly all cases. The two exceptions where the legacy UAO must be used is when

- Using the legacy portal with messages
- Using the legacy portal with VoD

15.1 Installation

The SnapTV Users and Assets Organizer is contained in the package snaptv-uao-api. Like other optional packages it can be installed using the apt-get command.

```
$ sudo apt-get install snaptv-uao-api
```

15.2 Getting Started

If you have used older versions of the UAO, you will find that the core concepts are the same, but that the interface has been made much simpler. There are less things to worry about and fewer steps required to make it work.

In addition, the UAO can now integrate with external services for automatic provisioning of users and assets. This is used when offering services for purchase, since the payment processing system then can automatically update the UAO on demand.

For use cases where the operator wants to manually configure users and their assets, the admin interface provides a few simple steps to make this work.

15.3 Products

There are currently three product types available:

- Master Product
- Channel Pack

- Recorder Access

All products have the same basic properties: A name, an optional comment and a free for all checkbox. If the free for all checkbox is checked, this product automatically becomes available to all registered users and you do not have to assign it to users.

Master products are used to gather several products into one asignable unit. It can include any number of channels, channel packs or recorder access products..

A channel pack can include any number of channels. In addition, a channel pack has an auto add channels option. When checked, this option will cause the channel pack to automatically include all channels in the system.

Recorder access products allow users with access to them to allocate storage on available nPVR servers. Each recorder access product contains a number of hours that add up to the total ammount of time a user is allowed to pin.

15.4 Users

Users can have any number of client devices (CPEs) and any number of products their client devices can access. Users are identified by their comment field and, optionally, an external id. The external id is primarily used when integrating with external payment processors,

Once a client device has been created for a user, that device can register itself with UAO and start accessing the products assigned to the user. User, client device and asset registration takes effect immediately, although end user interfaces, such as up, might have a delay before they check for new assets.

15.5 Client devices

There are two distinct methods for registering and activating client devices:

- Activation Codes
- Audo activation

Both methods can be used interchangably and at the same time and there is no reconfiguration necessary to switch between them.

The activation code mechanism is useful when you do not have or does not care about the exact number and detailed description of all client devices in the network. Activation codes can either be enterred manually when editing the user or created automatically under the *Batch generate* menu.

The batch generation menu allows you to select a user and a number of codes to create. Each code represents a single client device and can then be entered by an end user to activate their client device. Once the code is entered, the client device is registered as belonging to the user for whom the code was generated and will receive access to all the user's assets.

Using this method means that a large number of activation codes can be pre-generated and that client devices can be replaced at any time without requiring any further system configuration.

The auto activation mechanism requires you to register the MAC addres and serial number of all client devices to be used in the system in the UAO. When client devices start, they will

attempt to register themselves using their MAC and serial number. If the pair matches a device registered in the UAO, the client device will become associated with the corresponding user and receive access to all the user's assets.

To reduce the ammount of work required to use this mechanism, the UAO admin interface provides a *Batch import* option that allows you to upload a CSV file containing the required information.

The format of the file is:

```
User comment,MAC,serial number,master product name
```

E.g.:

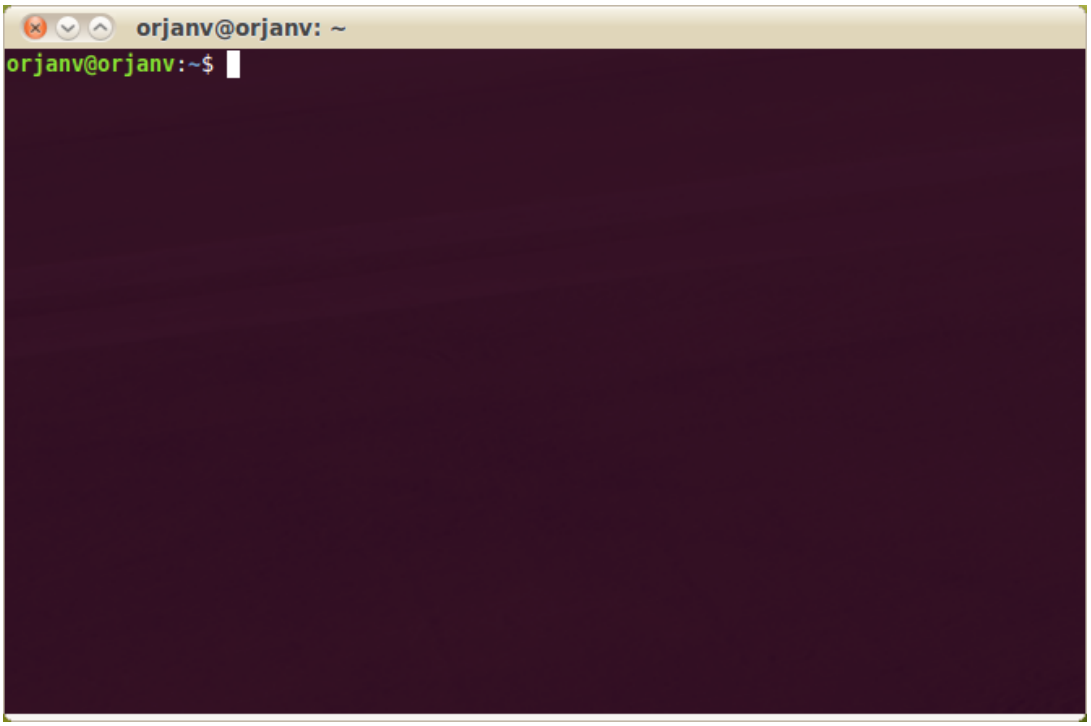
```
user1,00:00:fa:1a:fe:10,123,Basic
user1,00:00:fa:1a:fe:11,124,Basic
user2,00:00:fa:1a:fe:12,125,Basic
```

The master product is optional. If specified, it must match the name of an existing master product.

CHAPTER 16

Console: Advanced configuration

16.1 Working in a text-based console



A console is a text-only way of doing tasks. Often referred to as CLI and often used by programmers and system administrators, in engineering and scientific environments, and by technically advanced computer users.

Linux and OS X have remote shell clients installed by default. If you're working from Microsoft Windows, PuTTY is a popular remote shell client that can be used to open a connection to the SnapTV server. Download it at http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

16.2 Using the Nano editor

Nano is a small, free and friendly editor for unix-like operating systems.

All key sequences in nano are entered using the keyboard. nano is a "modeless" editor. All

keys, with the exception of Control and Meta key sequences, will enter text into the file being edited.

The two lines at the bottom of the screen inside the Nano editor show some of the more commonly used functions in the editor. Here are a few of them listed:

Table 16.1: The most basic use of Nano

Command	Keyboard shortcut
Save	CTRL + O
Save & Exit	CTRL + X → Y → ENTER
Cancel	CTRL + C
Search	CTRL + W
Search & Replace	CTRL + W + R
Page Up	CTRL + Y
Page Down	CTRL + V

16.3 EPG: Importing XMLTV data into the SnapTV EPG server Configuring the gateway for using an XMLTV EPG source

The SnapTV EPG server comes with support for importing data in XMLTV format.

It does not, at the moment, contain support for mapping the channel id's used by a particular XMLTV source to the internal channel id's used by the SnapTV Gateway.

This means that before importing XMLTV data, the channel id in the gateway configuration must be modified to match the wanted channel id from the input data, plus the string '.xmltv.snap.tv'.

16.3.1 Example

Given the following XMLTV fragment:

```
<tv source-info-name="Radio Times" generator-info-name="XMLTV"
        generatorinfo-url="http://xmltv.org/wiki/">
<channel id="scotland.bbc1.bbc.co.uk">
<display-name>BBC1 Scotland</display-name>
<display-name>BBC One Scotland</display-name>
<icon src="http://www.lyngsat-logo.com/logo/tv/bb/bbc1.jpg" />
</channel>
</tv>
```

The corresponding entry in the gateway configuration must be modified so the value of the id tag matches the value of the id attribute on the channel tag in the XMLTV data:

```
<snapconfig>
<tvChannels>
<channel>
<address>udp://@239.0.0.16:1234</address>
<name>BBC1 Scotland</name>
<id>scotland.bbc1.bbc.co.uk.xmltv.snap.tv</id>
<pvr>
<host>10.10.0.3</host>
<card>/dev/video5</card>
<input>2</input>
```

```
</pvr>
</channel>
</tvChannels>
</snapconfig>
```

16.4 EPG: Importing XMLTV data

To import a file containing XMLTV data:

- Log into the gateway
- Copy or download the XMLTV file
- Run the following commands, replacing /PATH/TO/YOUR/XMLTV_FILE with the actual path to the XMLTV file:

```
~$ cd /opt/snaptv/epg
~$ perl -MLibSnap::EPG -e 'LibSnap::EPG::cleanup()'
~$ perl -MLibSnap::EPG -e 'LibSnap::EPG::xmltv_loadfile("/PATH/TO/YOUR/XMLTV_FILE")'
```

Note: The EPG database currently requires the "lang" attribute to be present for both "title" and "description" elements. This command might be necessary to insert the attribute for all title elements:

```
~$ sed -i -e 's/<title>/<title lang="en">/g' XMLTV_FILE
```

16.5 Resetting the System Passwords

To reset system console password you need to reboot the gateway with monitor and keyboard connected. When the GRUB menu shows press 'e' on the keyboard to edit boot options. Three lines will appear. Select the line starting with "kernel" and press 'e'. At the end of the line type the following::

```
real_init=/bin/busybox init_opts=sh
```

Make sure there is a space between 'real_init' and any existing options. Press enter when finished typing and then press 'b' to boot with the new options. when the bootup is completed you should get a shell with no password required. Enter the following commands:

```
~ # mount -n -o remount,rw /
~ # passwd
New password:
Retype new password:
passwd: password updated successfully
~ # mount -n -o remount,ro /
```

Now reboot by pressing the reset button on the chassis, or holding the power button in for 4 seconds.

CHAPTER 17

AMT - Active Management Technology

17.1 Overview

Intel (R) AMT (Active Management Technology) is a remote control technology, which is integrated into the hardware component of PC based on Intel (R) vPro (TM) platform. Traditional remote control solutions could control a computer only if the computer's operating system was running and configured. Intel (R) AMT (Active Management Technology) removes this limitation and allows the control of a remote computer that is turned off, has no operating system installed or if its operating system hangs. Such functionality is provided by a special add-on processor on the motherboard that can handle incoming network requests for many useful tasks. Even if the computer is turned off, the add-on processor will work on stand-by power provided the computer's power cord is plugged in.

17.2 Connection

The AMT hardware is tied to the ethernet connector labeled eth1. The default setup of eth1 is DHCP so when connected to a network with a DHCP server, any PC in this network can gain access to the AMT functionality

17.3 Tools for accessing AMT from a PC in the network

There are several tools which serves different purposes

17.3.1 Finding the AMT enabled servers

The IP address of the server which was given to it by the DHCP server is the same for normal access and AMT access. If not known, an IP address scan of the active AMT port can be performed from any PC in the network. If the server can be accessed normally via a web browser, the IP can be shown in the System Information -> System status page. If not, a tool for port scanning can be used

A PC with Ubuntu Linux

```
nmap -p16992 192.168.1.*
```

(IP range must be set according to the DHCP range of the particular network). Servers with AMT will respond with port 16992 open.

17.3.2 Restricted access

For all accesses to the AMT system a user name and password is required. The default user / password set up before shipping is

```
User:     admin
Password: !thAx06!
```

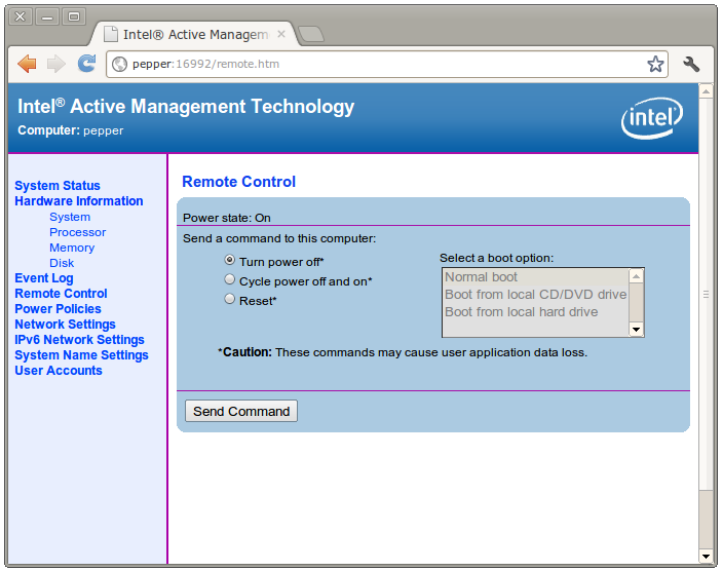
17.3.3 Web access

The AMT firmware communicates through a standard browser on port 16992. Simply enter the IP address (or server name) with the port number attached

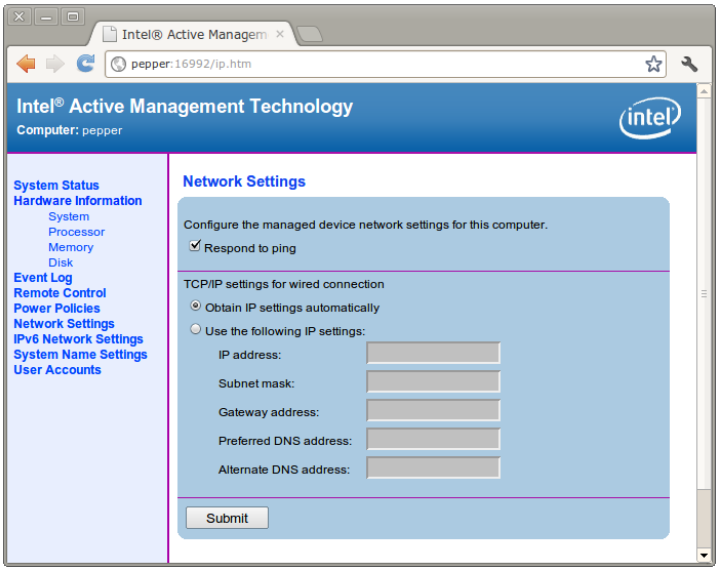
```
http://192.168.1.22:16992
http://my-license:16992
```

Enter correct user amd password in the logon dialogue.

Here you can check the status of the server, turn on and off power, and change some AMT Bios settings.



Network settings



Note that under “Network Settings” you can change the IP address for the AMT interface. This will not affect the settings of the shared eth1 port settings for normal operation traffic. The default setting is “Obtain IP settings automatically” which means obtain settings via the DHCP server. In some environments it is more convinient to set up a fixed IP address.

17.3.4 Access via the linux tool ‘amttool’

```
AMT_PASSWORD='<password>' amttool <IP or Server Name>
```

This tool communicates on port 16992 and a subset of the commands and status replies compared to the Web access tool is available.

```
~ $ AMT_PASSWORD='!thAx06!' amttool pepper
### AMT info on machine 'pepper' ###
AMT version:  8.0.0
Hostname:     pepper.local
Powerstate:   S0
Remote Control Capabilities:
    IanaOemNumber                   157
    OemDefinedCapabilities          IDER SOL
    SpecialCommandsSupported        PXE-boot HD-boot cd-boot
    SystemCapabilitiesSupported     powercycle powerdown powerup reset
    SystemFirmwareCapabilities      f821
```

17.3.5 Access via the linux tool ‘amtterm’

```
AMT_PASSWORD='<password>' amtterm <IP or Server Name>
```

Make sure that amtterm release 1.3 or higher is installed.

This tool connects to the server (using ip port 16994) over a virtual serial port (SOL or Serial Over LAN). During bootup and poweroff sequences of the server the console messages are redirected here.

```
~ $ AMT_PASSWORD='!thAx06!' amtterm pepper
amtterm: NONE -> CONNECT (connection to host)
ipv4 pepper.snap.tv [192.168.1.71] 16994 open
amtterm: CONNECT -> INIT (redirection initialization)
amtterm: INIT -> AUTH (session authentication)
amtterm: AUTH -> INIT_SOL (serial-over-lan initialization)
amtterm: INIT_SOL -> RUN_SOL (serial-over-lan active)
serial-over-lan redirection ok
connected now, use ^] to escape


This is pepper.unknown_domain (Linux x86_64 3.1.6_p0001001300000001-snaptv) 11:07:30

pepper login: root
Password:
Last login: Mon Jun 18 10:57:05 CEST 2012 from oslo-gw.snap.tv on pts/1
root@pepper ~ #
```

17.3.6 Access via the linux tool 'gamt'

```
AMT_PASSWORD='<password>' gamt <IP or Server name>
```

Same as amtterm, but wrapped in a graphical environment. There are issues in Release 1.2 which makes the communication drop during powerup and powerdown.

17.3.7 Access via the Windows tool 'Radmin Viewer 3.4'

With this tool all information available at a local console directly connected to the server will be available via Serial Over LAN. However the tool can't connect to the server without interrupting the current operation and starting from scratch.

Preparations

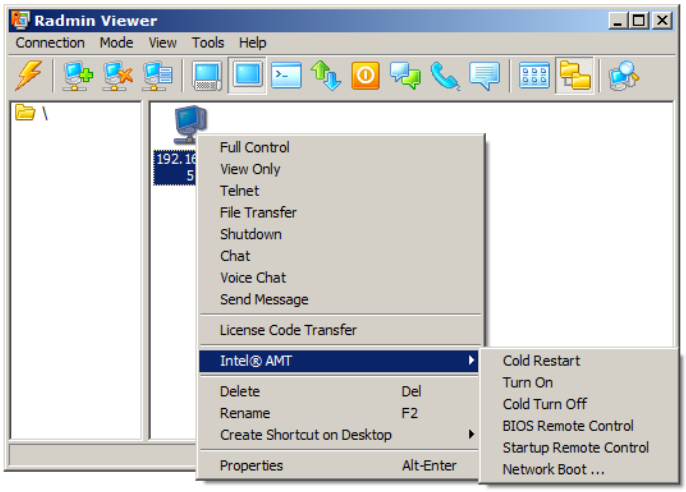
In order for the connect mechanism to work with Radmin, the AMT IP address should be set up to a fixed adress. See section *Network settings* for how to set static IP address.

Setup new connection

Under the Connection tab, select "New connection..." and set up the fixed IP adress and also the name of the server.

Select a session type and start

Right click the newly created connection icon and select one of the Intel (R) AMT options.



17.3.8 Access via tunnel

All the above tools can be accessed via a tunnel in situations where the target equipment is not reachable from the network you want to log in from. If the port number selected for the tunnel is the same as the target port number, the syntax when logging on is basically the same as before. However if another port number is chosen for the tunnel the syntax for correct number is as follows,

Example: From your local linux machine you can log onto a machine in the same network as the target AMT enabled server.

17.3.9 AMT Setup

A total reconfiguration of AMT can be done, starting with resetting the AMT settings, including password via the BIOS

Boot up the server with a local console connected (USB keyboard and VGA monitor)

Enter BIOS by typing DEL

Under the Advanced tab

```
AMT Configuration    [Enabled]
Un-Configure ME      [Enabled]
```

(set Un-Configure ME to Enabled)

Exit, and then when booting up enter AMT BIOS by typing Ctrl^P

```
Continue unconfigure [Y/N] Y
```

Then the system will reboot again, and again enter AMT BIOS by typing Ctrl^P

First time login requires that you type the default password, which is ‘admin’ and set a new password. If the new password is rejected, the most likely reason is that it is too simple. Try another which contains Upper and Lower case letters numbers and special characters. An example:

```
!thAx06!
```

Here a minimum of settings are described to get you back to the configuration which was activated from the factory

```
> Intel (R) AMT Configuration
    > SOL/IDER/KVM
        Legacy Redirect Mode <Enabled>
> Network Setup
    > Intel (R) ME Network Name Settings
        Host Name   <same as license name>
        Domain Name local
> TCP/IP Settings
    > Wired LAN IPV4 Configuration
        > DHCP mode <Enabled>
Activate Network access             (enable)
```

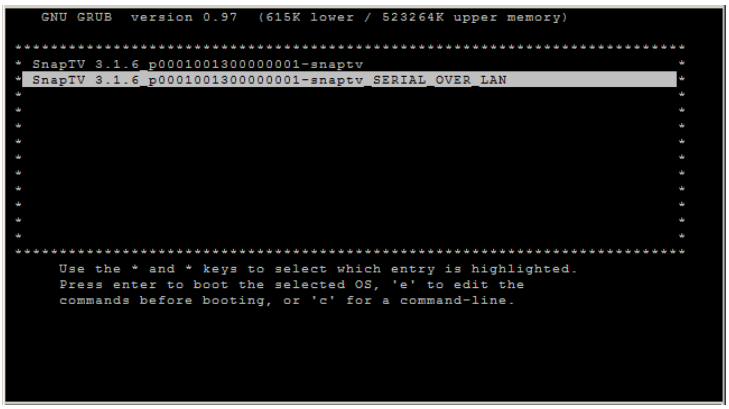
Note: You may want to reconfigure TCP/IP Settings into a fixed IP address instead of DHCP. In DHCP mode, the network address of the AMT interface is the same at the IP for normal access. In manual setup mode, the AMT address is fixed to the settings of this menu, while the normal access address is still DHCP enabled. See section *Network configuration*.

The “Network Setup” and “TDP/IP Settings” can be manipulated via the web interface later. See section *Network settings*

NOTE: If the IP setting in normal mode is set to a fixed IP address, the AMT setup should be a fixed address too. The AMT address might be set to the same address as the normal mode address.

17.3.10 Boot menu setup

In the linux boot menu there will be two lines for entering the same software. The default one is for Serial Over LAN enabled access. When booting up, the boot console messages are routed to a PC which is connected via LAN where one of the tools explained above is running and connected. The menu item above is for normal boot without Serial Over LAN so that the boot console messages are directed to the locally hooked up VGA monitor.



CHAPTER 18

PAGA Mute

The PAGA Mute is an advanced feature that enables you to immediately and temporarily mute all Set Top Boxes in your installation on reception of an electrical signal. This is intended for usage in environments where there is a requirement for TV sets to be muted during public announcements.

Usage of the PAGA Mute feature requires either a network based dedicated I/O switch, or a special serial cable to operate. It is also possible to use both methods simultaneously.

18.1 Network based I/O switch

18.1.1 Configuration of the IO box

For the IO box to generate the correct signal, DI0 and DIGND must be short-circuited during normal operation. When the Mute feature is required, the short-cicruit must be broken.

When the SnapTV gateway has been configured to connect to the IO box, PAGA Mute will automatically mute all connected Set Top Boxes for as long as the short-circuit is broken.

18.1.2 Configuring the gateway

The gateway must be configured with the following, under “System configuration” and “PAGA Mute”:

- The IP address of the IO box
- The timeout in seconds for each status query to the IO box (typically 5 seconds)
- The number of retries if the status queries time out (typically 5)
- The interval between each status check in seconds

The interval between each status check will affect how quickly the system responds to the external signal. We recommend that you set this to 1, delaying propagation of the signal as little as possible.

In addition, the “enable” check-box under “Network based I/O switch” must be checked.

18.2 Serial cable

18.2.1 Connecting to an external switch

PAGA mute can be enabled by connecting an external device directly to the serial port of the SnapTV gateway. It does not require the device to have a serial port, but requires a special serial cable that can be connected to a switch such as a relay.

This requires a direct wire between the external device and the gateway. If this is not practical, use the network based approach.

18.2.2 Configuring the gateway

The gateway must be configured similar to the network based configuration. The serial port must be selected, and the interval between each check (in seconds, typically 1 second).

In addition, the “enable” check-box under “Serial cable” must be checked.

CHAPTER 19

UPS Shutdown

19.1 Serial cable

19.1.1 Connecting to the UPS

UPS shutdown can be enabled by connecting the UPS directly to the serial port of the SnapTV gateway. It does not require the UPS to have a serial port, but requires a special serial cable that can be connected to a relay or switch on the UPS.

This requires a direct wire between the UPS and the gateway.

19.1.2 Configuring the gateway

The gateway configuration is very similar to the PAGA mute configuration described in the previous section. It is found under **System configuration** → **UPS Shutdown** in the admin interface. The serial port must be selected, and the interval between each check (in seconds, typically 1 second).

In addition, the “enable” check-box under “Serial cable” must be checked.

CHAPTER 20

Audio Media Player

20.1 Play radio channels on your Audio Media Player

When enabling the Unicast Radio services it is possible to play radio channels using DLNA or UPnP compliant Audio Media players.

Setting up via the web interface:

1. Enable *Unicast radio services*.
2. Add some radio channels, see *Add channel from input*.

Operating the Audio Media player:

1. Attach your Audio Media player to the same network as the gateway and power it up.
2. Make sure the device is connected to the server, this normally happens automatically when turning power on. If not connected, make sure that the correct network is selected, normally Wired (if the device has got a wireless option).
3. Attach speakers or a headset if there is no internal speaker in the device.
4. Navigate to the Shared Media option. This is where you find the SnapTV DLNA service, and inside you will find the list of radio channels.
5. Select a channel and start listening.

CHAPTER 21

SnapCast

SnapCast is your window to the internet. Install SnapCast to fetch updated content - podcasts, videos and news feeds - and provide it to your users.

SnapCast is installed along with other SnapTV software, as part of the *content server* packages.

The Snapcast system consists of the software module described here (Gateway module) and a SnapTV central repository where the content is downloaded from (Repository module). The central repository module has several ways of collecting the actual content. The Gateway have to be registered in the central repository and subscription(s) to content must be set up in order for the gateway to “see” content on the central repository.

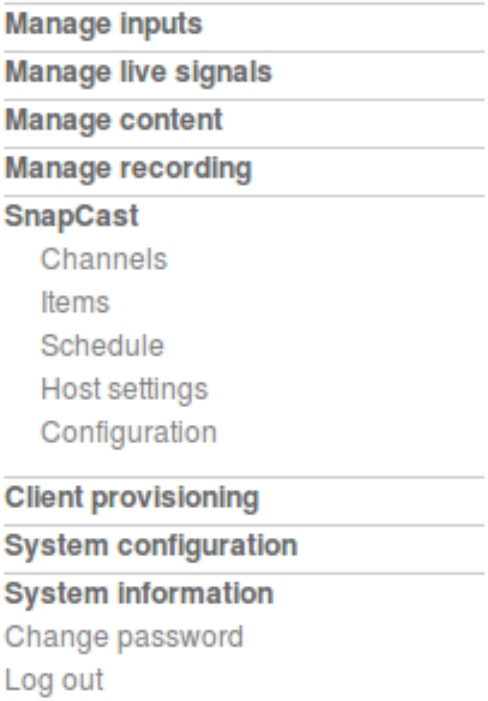
For a description of how to subscribe to content from the central repository please see (putt in referanse?)

The scope of this chapter is to explain the SnapCast menu in the SnapTV Gateway interface.

21.1 SnapCast administration pages

SnapCast is integrated into the SnapTV Gateway administration interface, together with the administrative pages for other SnapTV services.

When you navigate into the SnapCast menu, you will see five items:



Before using these pages, SnapCast must be enabled on the server.

21.2 Enabling SnapCast

To subscribe to channels and download media from repository it is required to enable SnapCast service on a gateway.

If there are several gateways clustered, it is recomended to enable the SnapCast service on a content server (nPVR). It is also required that the SnapCast and VoD services will be enabled on the same server

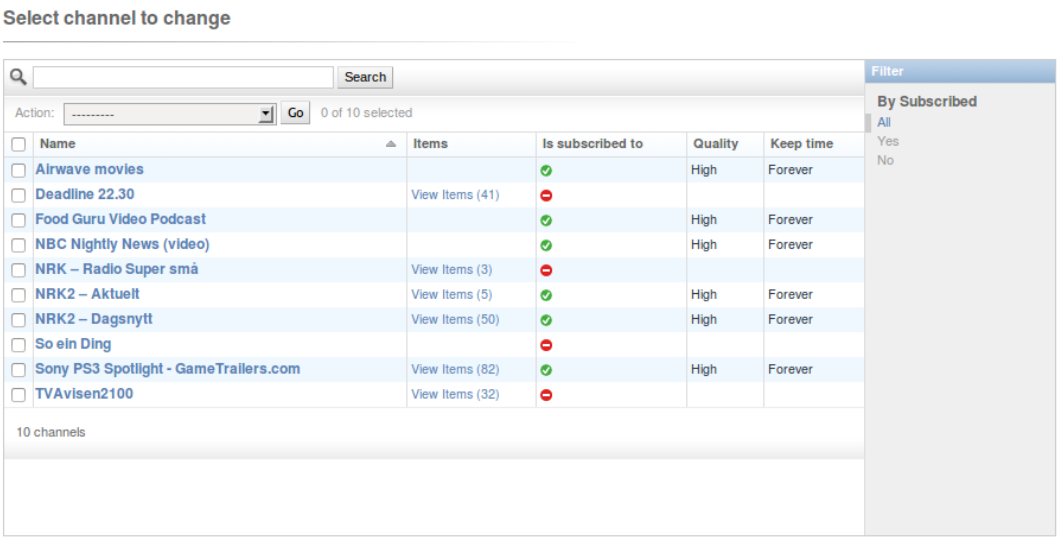
To enable SnapCast service open **Host settings** page and click on **Enable here**.

Note: Starting SnapCast services takes a moment. Once started, the administrative pages become available. After that, it typically takes about five minutes before channels appear, and several additional minutes while synchronizing item listings for each channel.

21.3 Channels

Content in SnapCast is organized in *channels*. After your SnapCast server has finished synchronizing with the SnapCast repository, you will be able to see a list of available channels. If you would like to have additional channels in the list, such as the Video on Demand channel, please contact your SnapTV representative.

The channels menu is where you decide which channels you want to subscribe to. You can click on the channel name so show additional information about the channel, or in the items column to see a list of current items:



There are three additional columns in the table:

Is subscribed to Shows whether the channel is selected for subscription.

Subscribing to a channel means that items (audio and video files) are automatically downloaded from the online repository. When enabling a subscription, all existing items are scheduled for downloading, and new items that become available will be downloaded automatically.

Items that are downloaded by a subscription are automatically removed after a configurable *keep time*.

Note: It's possible to download individual items from a channel without subscribing. A subscription is not required in order to download and make content available on the gateway. In fact, when using "offline sync", typically the channel should *not* be subscribed to.

Note: Do not confuse subscription with anything related to payment. Subscription is merely an "auto-download" feature.

Quality This defines the quality for the media files that will be downloaded as part of a subscription. Use low quality when you want to get the feeds fast (e.g. newscasts) or if your connections is slow.

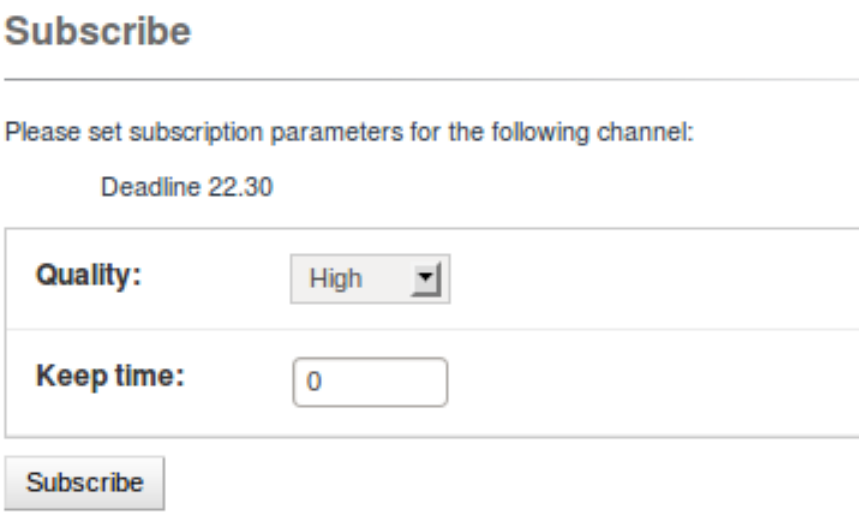
Keep time How many days since publication date the videos should be kept on disk before they get deleted, if the channel is subscribed to.

Historically, if a channel was marked as a VoD (Video on Demand) channel, then the videos would show up under the VoD menu on the portal. However, in newer applications, such as SnapTV Anywhere, VoD content and other content are available in a single user interface. The VoD mark is only used to distinguish how the content is presented to the user.

21.3.1 Choosing which channels you want to subscribe to

Subscribing to channel will cause all media for that channel being downloaded automatically.

When you want to subscribe to one or more channels, you mark the channels using the checkbox on the left side of the channel and use the “Subscribe to selected channels” action in the action menu. Click on **Go** button and you will be redirected to subscription setup page.



Enter choosen media *quality* and *keep time* and create a subscription. *Keep time* is denoted in days and the value *0* represents forever. The effect of *keep time* is that the items will be deleted a fixed period after they were published.

21.3.2 Unsubscribe channel

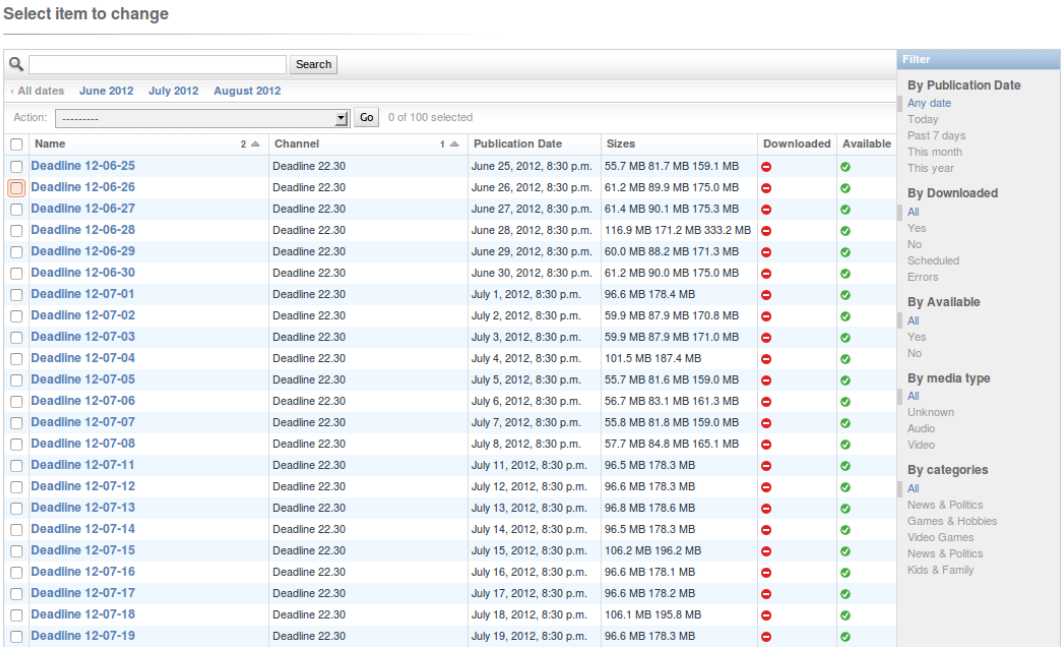
If you unsubscribe channel select in in channels page, select action **Unsubscribe selected channels** and press **Go** button.

21.4 Items

Each item represents a video or audio file that can be played by a user in the SnapTV Portal or SnapTV Anywhere application.

The items page lists all items that exists in SnapCast. There are similar pages that list items for individual channels, available from the channel list. For each item you can see it if is available (meaning that it exists in the central repository) and if it is downloaded. You can also download single items by marking them and choosing the “Schedule items for download” action in the dropdown box.

If an item is currently being downloaded, or if it’s currently in the download queue, the Downloaded column will show a progress bar instead of the usual red or green icon.



Items can also be imported from an attached disk, see *Offline import*.

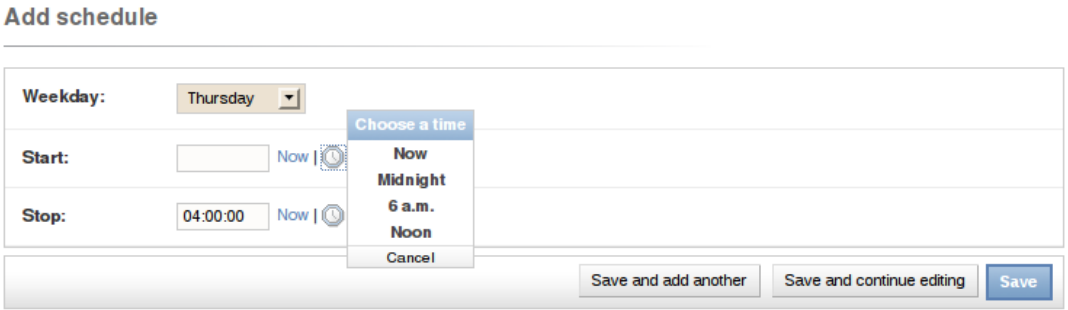
Full disk In the event that the Gateway's disk has filled up, you'll need to clean it out by deleting old items. This can either be done by lowering the keep time via the *subscribe to* procedure of the various channels or by deleting single items in the items list using the "Delete local item" action. Note that deleting local copies have a permanent effect only if the channel is set to *unsubscribed*, see (putt inn referanse?)

21.5 Schedule

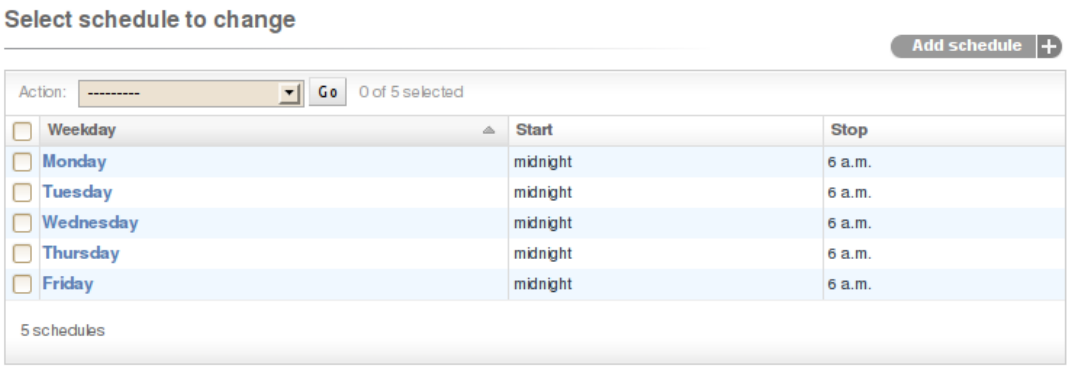
If there is no schedule set, then SnapCast will try to download any items in the download queue when they are added.

If you want to reserve bandwidth for other applications at certain times of a given day, then you need to define a schedule for when SnapCast can download items for that day. This is done by adding timeslots to the schedule list.

Each slot defines a start and end time for a given day of the week. Thus if you want SnapCast to download movies between 8pm and 4am, you need to create two slots per weekday. One for 20:00 to 23:59 and another 00:00 to 04:00.



For instance, if you want SnapCast to only download content between midnight and 6am on weekdays, you should define a schedule with a slot for each weekday, like this:



Since this schedule contains no timeslots for Saturday and Sunday, there are no restrictions on when SnapCast can download content during weekends.

21.6 Configuration

Available configuration options for the SnapCast service:

Metadata sync interval How often the SnapCast Gateway should synchronize updated *meta-data* from the SnapCast repository. Meta-data in this case means information about available channels and items.

Download directory (read only) The local file-system directory where all SnapCast content is stored. This can not be changed from the configuration page, but is only informational.

21.7 Offline import

For low bandwidth sites, an alternative method for downloading content between the SnapCast repository and the SnapCast gateway exists. With this method, content is copied from the repository onto a portable disk, which is shipped to the site, and attached to the gateway. The gateway can then import content, as if it was downloaded from the repository.

This describes the steps to import content from a prepared content disk, at an offline (or low bandwidth) site:

1. Connect the content disk to the gateway that runs SnapCast. Mount it under the root file system, and make note of the mount point. It should normally be a subdirectory of either `/mnt` or `/media`.
2. From a terminal (or an SSH shell), run the following command:

   ```
   snapcast-gw-manage attach_media /path/to/mounted-media-disk
   ```

   The output of the command should be something like “Successfully registered ‘count’ items from ‘count’ channels for offline sync”.
3. Open the gateway web admin interface, and open the items page (see *Items*)
4. On the right hand side of the page, under “By available on attached media” select “Yes”.
5. The list now shows the available content on the disk. You can click the check box to the left of the column headings to select all items, or make any selection from the list.
6. In the “Action” drop-down, select “Import from offline media”, then click the “Go” button.

You should get a response saying that the content is being imported. Watch the progress in the web page, and make sure the disk stays connected until all imported items are completed.

When the process is completed, run the following command before unmounting the disk:

```
snapcast-gw-manage detach_media
```

This will clear the “available on attached media” status, and hand over the items to the normal SnapCast cleanup and maintenance routines.

Note: Typically when using offline import, the channel should *not* be subscribed to (see *Channels*)

CHAPTER 22

Anywhere web application

An application called “SnapTV Anywhere” is included that allows content access (movies and news clips) from standard web browsers. Both desktop and embedded browsers on smartphones and tablets are supported.

The application is part of *SnapCast*, and is enabled whenever SnapCast is enabled. When enabled, the application is accessed by pointing a browser to `http://server-address/anywhere/`.

CHAPTER 23

Backup and Restore

Depending on how your server or cluster of servers are set up there might be different parts of the system you want to backup. SnapTV specific configuration is stored in a plain xml file and can be downloaded and restored using the web interface. Most general Linux settings, like network and dhcp settings, are not part of this configuration but usually resides in various text files in the /etc folder. The subsystems for user management, VoD and recordings uses a postgres database and can be backed up and restored using postgres commands.

If you have a high speed connection to server suitable for storing backups you can transfer the content via your network to your backup server. Otherwise you might want to connect an external USB drive. If you require regular backups for disaster recovery you might want to look closer at backup tools like 'duplicity'. For the sake of simplicity we will use simple file copying in this guide. You must adapt the examples to your environment.

See also:

https://help.ubuntu.com/community/Mount/USB and https://help.ubuntu.com/community/DuplicityBackupHowt

23.1 SnapTV Configuration

SnapTV specific configuration is stored in a single XML file. This file is automatically synchronized between servers in a cluster. Backup of the configuration is only a matter of backing up this one file. The system will automatically notice any changes to this file and changes will take effect immediately.

The configuration file might have different schema between different versions. We recommend using an XML aware merging tool when applying a configuration file from a different version.

23.1.1 Using the web interface

Use the web interface and download current configuration from "System Configuration" -> "Configuration Profiles". In this same interface you can also upload and restore previous configurations.

23.1.2 Using the terminal

The configuration is stored in /opt/snaptv/etc/snaptv-base/snapconfig.xml. Any changes to this file will immediately take effect.

23.1.3 Clustered systems

If you have several servers in a cluster, they synchronize their configuration file. If there is a conflict the configuration file from the server with the highest “Local version” will be chosen. You can find the local version in “System configuration” -> “Cluster”.

23.2 Local Databases

Several of the subsystems store data in a local PostgreSQL database. There are several ways to take regular backups of PostgreSQL databases. In this guide we will use the SQL Dump method. The idea behind this dump method is to generate a text file with SQL commands that, when fed back to the server, will recreate the database in the same state as it was at the time of the dump. PostgreSQL provides the utility ‘pg_dump’ for this purpose.

See also:

http://www.postgresql.org/docs/9.1/static/backup.html

23.2.1 Database migrations

When a SnapTV service that uses a database is started the system will automatically migrate the database if necessary, i.e. if the database structure has changed. This works only when restoring a database from an older or the same version as the current database. As long as you are moving to the same or a newer version of the SnapTV server software you shold be fine.

This example shows how to find the version of the VoD database. In this specific database the version is ‘6’, hence you can restore a database from other systems with version 6 or less.

```
~$ sudo -u postgres psql -d snapvod

snapvod=# SELECT version from migrate_version;
version
---------
    6
(1 row)

snapvod=# \q
```

23.3 UAO Backup and Restore

Please see the *Backup and restore database* section in the UAO documentation.

23.4 VoD Backup and Restore

23.4.1 Backup the VoD database and content

The VoD service uses a database named ‘snapvod’. The following command will create a dump (backup) of the VoD database:

```
sudo -u postgres pg_dump -Fc snapvod > ~/snapvod-dump
```

Copy the database dump to your backup location:

```
scp ~/snapvod-dump user@mybackupserver:/my-backup-folder/
```

The VoD content (movies) are stored as normal files in the directory '/opt/snaptv/rec/vod'

To copy all VoD's to a folder on a remote server you can use scp like so:

```
scp -r /opt/snaptv/rec/vod user@mybackupserver:/my-backup-folder
```

23.4.2 Restore the VoD database and content

First stop the VoD service:

```
sudo stop snaptv-vod
```

Then restore the database:

```
sudo -u PostgreSQL pg_restore -d snapvod --clean --single-transaction ~/snapvod.dump
```

Restore VoD content by copying a previous backup of VoD folder back to /opt/snaptv/rec/vod:

```
sudo scp -rf user@mybackupserver:/my-backup-folder/vod/* /opt/snaptv/rec/vod/
```

Start the VoD service:

```
sudo start snaptv-vod
```

23.5 Backup and Restore of nPVR

Recordings usually take alot of disk space. If you need to backup continuous recordings you might want to consider setting up a parallel nPVR server to duplicate recordings.

23.5.1 Backup the nPVR database and content

The nPVR data is stored in a PostgreSQL database named 'npvr'. The following command will create a dump (backup) of the npvr database and put it on a USB drive:

```
sudo -u postgres pg_dump -Fc npvr > /media/usb/npvr-dump
```

The recorded content are stored as normal files in the directory '/opt/snaptv/rec/'. There should be subfolder per day of recorded TV.

To backup all recordings from 2014 to a mounted USB drive:

```
cp -r /opt/snaptv/rec/2014-* /media/usb/
```

23.5.2 Restoring an nPVR backup

First stop the nPVR service:

```
sudo stop snaptv-npvr
```

Then restore the database:

```
sudo -u postgres pg_restore -d npvr --clean --single-transaction /media/usb/npvr.dump
```

Restore nPVR content by copying a previous backup of recordings folder back to /opt/snaptv/rec/:

```
sudo cp -rf /media/usb/2014-* /opt/snaptv/rec/
```

Start the nPVR service:

```
sudo start snaptv-npvr
```

23.6 Network settings and other configuration

Linux configuration is stored various files under the directory '/etc'.

For most systems it makes sense to backup networks settings as well as the dhcp configuration.

DHCP server configuration is stored in the following file:

```
/etc/dhcp/snaptv/00_snaptv.dhcpd.conf
```

Network interfaces are defined in this file:

```
/etc/network/interfaces
```

We recommend using the web interface to re-enter the network and dhcp configuration instead of restoring these files. However, backups of these files are very useful as a reference for how the network was set up previously.

Note: Linux configuration files are not compatible between version 1 and version 2 of the SnapTV server software.

23.7 Upgrading from version 1 to 2

If you are migrating data and content from a server running version 1 to a server running version 2 the procedure is similar. Generation 1 of the SnapTV server software was based on a Linux distribution called "Gentoo" while generation 2 is based on "Ubuntu". Some commands will therefore differ a bit. For instance, on a Ubuntu server you will have to prefix commands with 'sudo' if they require administrative privileges.

23.7.1 Database backup and restore on version 1

Database backup on Gentoo servers:

```
pg_dump -U postgres -Fc snapvod > ~/snapvod-dump
```

Database restore on Gentoo servers:

```
pg_restore -U -d snapvod --clean --single-transaction ~/snapvod-dump
```

CHAPTER 24

Troubleshooting

24.1 Getting started with Hardware issues

24.1.1 Hard Disk

Products with the Storage Kit option included have hardware raid. Use command line tool to check status of raid.

Run following command to have information about hard disks *tw_cli /c0 show*:

```
Unit  UnitType  Status         %RCmpl  %V/I/M  Stripe  Size(GB)  Cache  AVrfy
------------------------------------------------------------------------------
u0    RAID-5    OK             -       -       256K    2793.94   RiW    ON

VPort Status         Unit Size      Type  Phy Encl-Slot    Model
------------------------------------------------------------------------------
p0    OK             u0   931.51 GB SAS   0   -            SEAGATE ST31000424SS
p1    OK             u0   931.51 GB SAS   1   -            SEAGATE ST31000424SS
p2    OK             u0   931.51 GB SAS   2   -            SEAGATE ST31000424SS
p3    OK             u0   931.51 GB SAS   3   -            SEAGATE ST31000424SS

Name  OnlineState  BBUReady  Status    Volt     Temp     Hours  LastCapTest
---------------------------------------------------------------------------
bbu   On           Yes       OK        OK       OK       122    xx-xxx-xxxx
```

If status for u0 is **DEGRADED** it means one (or in case of RAID-6 up to two) disk(s) have failed.

If status for u0 is **OK** then the raid is in working order. Status **VERIFYING** or **INITIALIZING** does not mean anything is wrong but the raid controller is currently performing a task that affects performance.

The **%Rcmpl column** will give a progress indicator in this case. It is recommended to check the status of the raid after such operations have completed. If status for u0 is **DEGRADED** it means one (or in case of RAID-6 up to two) disk(s) have failed.

One (or more) of the disks listed as p0-p15 should then have not **OK** status. This could be **DEGRADED** which means the raid controller has detected a fault on this disk and has stopped using it or **MISSING** which means the disk has been physically removed, is completely dead or has a faulty connector.

Take note of which port is marked as problematic. The port number (p0-p15) should match numbers marked on the disk bays in front. Take note of all the serial numbers of the healthy drives and (if possible) the serial number of the faulty disk.

Now, if at all possible shut the server down before proceeding. It is possible to hot swap drives, but the risk of catastrophic failure if accidentally disconnecting a wrong drive is very large.

Remove the drive in the tray marked with a number matching the port number of the missing/faulty drive according to the controller.

If you were able to get the serial number of the faulty drive, check this against the serial number written on the removed drive, otherwise check that the removed drive does not have the serial number of one of the healthy drives.

Insert a new healthy drive in the tray where the faulty drive was removed. The new drive should have at least the size of the removed drive and should ideally be the same make and model.

Power on the system again, When the system is up and running, checks status of the raid again. If the status is **REBUILDING** then the new drive was detected and a rebuild was started automatically.

Performance of the raid will be poor while the rebuild is in progress. The **%Rcmpl column** will give a progress indicator. If the rebuild does not start automatically you can start it manually by running:

```
# tw_cli /c0/u0 start rebuild disk=pX
```

where X is the port number of the replaced drive.

If the drive is not detected (should only happen when hot swapping) run:

```
# tw_cli /c0 rescan
```

to force the controller to look for new drives.

In the end check with *tw_cli /c0 show* if all the disk are **OK**!

24.1.2 Power Supply

SnapTV Gateways comes with redundant power supply. This is a power supply that actually includes two (or more) units within it, each of which is capable of powering the entire system by itself. If for some reason there is a failure in one of the units, the other one will seamlessly take over to prevent the loss of power to the server. You can usually even replace the damaged unit without taking the machine down. This is called hot swapping.

If a problem supply becomes defect, the system will start beeping. You can find out the defect power supply by looking at the LED's on the backside of power supply.

After that completely Power off the system. Check if that power supply is properly connected. Start the gateway and if you still hear the beeping sound then contact support@snap.tv to order the replacement power supply for that specific system.

To replace the the faulty power supply with new:

1. Unplug the power cable from faulty power supply.
2. Pull the module towards you by using the small handle behind.
3. Push the new power supply onto the same position.
4. Plug in the power cable to turn it on again.

The server will stop beeping if the new power supply is properly installed and if it is working fine.

24.1.3 LAN Ports

SnapTV system comes with two Ethernet interfaces. The system is designed to use (eth0) for all video streaming in and out of the box. The secondary Ethernet interface (eth1) is for auxiliary administration access only.

You may use the *ip address* command to check the IP addressing details associated with each interface.

In case of a faulty Ethernet interface the system will either stop streaming or the streaming quality will become poor:

1. First of all check if your network configurations are correct.
2. Check the cable if it is not connected with a bad patch cable, or the cable is not properly connected or the eth0 is dying.
3. Run *ethtool eth0* to confirm the bitrate:

```
# ethtool eth0
Settings for eth0:
        Supported ports: [ TP ]
        Supported link modes:   10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Supported pause frame use: No
        Supports auto-negotiation: Yes
        Advertised link modes:  10baseT/Half 10baseT/Full
                                100baseT/Half 100baseT/Full
                                1000baseT/Full
        Advertised pause frame use: No
        Advertised auto-negotiation: Yes
        Speed: 1000Mb/s
        Duplex: Full
        Port: Twisted Pair
        PHYAD: 1
        Transceiver: internal
        Auto-negotiation: on
        MDI-X: off
        Supports Wake-on: pumbg
        Wake-on: g
        Current message level: 0x00000001 (1)
                               drv
        Link detected: yes
```

In case of a faulty Ethernet interface the complete main board needs to be replaced due to built-in Ethernet ports:

1. Unplug the power cable and all other cables on the back of the box and remove the system cover.
2. Label all the connections that attach to the motherboard and remove them one by one. Do not remove the cables entirely, just the ends that attach to the motherboard.
3. Remove all the plug-in cards, memory modules, and anything else that prohibits the motherboard from being removed.
4. Remove the old board and replace with the new unit, making sure it's securely positioned and fastened with the standoffs and screws provided.

5. Reinstall the cards and attach all the cables that were removed previously. Reference the documentation that comes with the new motherboard to ensure proper connections. Don't assume they are the same as what was on the old board.
6. Replace the cover and reattach all the cables and the power connector.
7. Login to the system.
8. Remove the old system database file:

   ```
   # rm /etc/udev/rules.d/70-persistent-net.rules
   ```

9. Reboot the system:

   ```
   # reboot
   ```

10. Renter the license file:

    ```
    /opt/snaptv/bin/request_license.sh <License Identifier>
    ```

11. Reboot the system again to apply changes:

    ```
    # reboot
    ```

24.2 Getting started with Software issues

24.2.1 Channel Down Issues

This section will describe how to find and fix the problem related to down channels.

1. First of all check the signal cable and signal strength.
2. Click **Test** in front of the channel to check the Channel statistics.
3. And then click on the input card to see the transponder info:

   Transponder info:

   - Card: 1:1
   - **Tuned to: Tuned to: 11372000 V SR 24500000 Satpos: A Type: dvb-s Downconverter: 97**
     - Frontend Lock: LOCKED
     - Packet Loss Ratio: 3.9e-09
   - Not capturing epg from this transponder

   Services found:

   - ts id: 35
   - Original Network ID: 70

Try restarting DVB card by pressing the button **Re-tune Transponder**.

There are different drivers for different type of cards:

```
Digital Devices dvb-s2/dvb-ct = ddbridge
Hauppauge AV =  cx23885
```

You can check the card type by running *lspci –v*

Following is an example about how to restart driver for the analog Hauppauge card:

```
snapreceiver # /etc/init.d/vlc stop

 * Stopping VLC Streaming Server ...

snapreceiver ~ # rmmod cx23885
snapreceiver ~ # modprobe cx23885
snapreceiver ~ # /etc/init.d/vlc start

 * Starting VLC Streaming Server ...                    [ ok ]
```

Type *initctl list | grep snaptv* to check if all the services are up and running again.

24.2.2 Descrambling issues

It might be a problem with subscription status if the status color of the channel is yellow and the massage (warning/error) says **Bad Audio/Video**

Verify if the correct cam module and smart card is being used for that specific channel.

It may take some time from the channel is first tuned until it works as expected when the program card is new or haven't been used for a while.

To verify the Subscription status Enter the input card with cam module.

1. Click on the *Open CAM Menu* to see the subscription status.
2. Click on the *Open CAM Massages* to see the error massages.
3. See above how to re-tune the transponder, this will include restarting the CAM.
4. If the CAM repeatedly stops descrambling, it is possible to turn on automatic re-tuning. See below how to do this.

Automatic re-tuning

To turn on/off automatic re-tuning, the configuration have to be edited manually. The configuration is found in the left hand menu *System configuration - Configuration Profiles*. In the Edit configuration window, find the <dvb>-tag which has the correct <card>-tag and <ci-card>-tag (corresponding to the card:port you want to set up). Change the <auto-retune>-tag to the desired value (on or off) and press ok. Confirm that setting to on is registered by finding the message *Auto re-tune on bad audio/video is turned on (This feature can be changed manually in 'Configuration profiles')* in the tuning page for this card.

24.2.3 EPG/Clock out of sync

EPG/Clock out of sync issues are main cause of recording delays and wrong EPG data. Run *date* to confirm if the system time is correct:

```
# date
Thu May 20 15:39:02 CEST 2010
```

NTPCLIENT_OPTS="-b -u pool.ntp.org" in */etc/conf.d/ntp-client* must be changed to **NTPCLIENT_OPTS="-b -u <LAN ntp address>"**

server pool.ntp.org in */etc/ntp.conf* must be changed to **server <LAN ntp address>** where *<LAN ntp address>* is the IP address of the local network NTP server.

24.2.4 License issues

SnapTV system provides a unique license identifier to each installation depends on the Hardware available in that specific system.

License needs to be updated upon software and hardware changes in the system. For e.g. installing an extra DVB card or purchasing the VOD application requires a license update.

To renew your license, you simply need to click the **Renew** button available under the *License menu* in the web interface or run:

```
# /opt/snaptv/bin/request_license.sh <License>
```

Use **Get offline license request** button to request a offline license file in case no internet connectivity.

You can upload your offline license sent by support@snap.tv by clicking the **Upload license** button found in the same page.

24.2.5 Take backup of the system configuration before updating

System configuration can be downloaded through two ways to have as a backup in case of software updates and clean installations.

Through Web interface:

1. Select System Configuration and then Configuration profile.
2. Save the configuration by using Download configuration.

Use same menu to upload the backup configuration.

Through Console:

1. Take backup of the following files:

```
/opt/snaptv/etc/snaptv-base/snapconfig.xml
/opt/snaptv/etc/snaptv-base/hostconfig.xml
```

To save server configuration take backup of the following file:

```
/etc/init.d/conf.d/net
```

To save dhcp configuration take backup of the following file:

```
/etc/dhcp/snaptv/00_snaptv.dhcpd.conf
```

To restore the system just copy these configuration files back to the same location where they copied from.

24.3 Getting started with Network issues

24.3.1 Suggested Network Switch Configuration

The typical network related problems are often related to the network switch configuration in use. Switches should have the following features enabled:

- IGMP Snooping
- IGMP Queries

To control the flow of multicast traffic in a layer 2 network, **IGMP Snooping** must be enabled on all switches and there need to be a **IGMP Querier** in the network. Note that due to reverse path filtering, the IGMP querier must have an IP address in the subnet used by the multicast interface.

On some switches you can turn on IGMP querying in the settings, others will automatically enabled a querier if no other queriers are detected in the network. Some switches enabled querying when **PIM-SM** is enabled and no other queriers are detected.

If the switch does not support IGMP querying, a SnapTV server can provide the IGMP querier by enabling **PIMD Server** in its admin interface.

Missing configuration of IGMP snooping can cause symptoms such as all multicast channels getting broadcasted on all switch ports, causing STBs to become unable to display any content.. Missing configuration of an IGMP querier can cause multicast streams to stop getting sent to a STB a short while after the STB starts playing them.

A standard definition MPEG2 TV channel uses between 3 and 8 mbit per second. High definition MPEG4 TV channels can use up to 16mbps. Traffic on a switch port that connects an STB at significantly higher bit rates than this is a symptom of a multicast misconfiguration.

24.3.2 Remote access & monitoring

For service & monitoring we need the Gateway/nPVR to have outgoing TCP access to port 8080 (used for backup) and port 5667 (used for monitoring) on monitoring.snap.tv (currently 178.79.128.204).

For remote access we need incoming access to port 22 on the gateway/nPVR. If access needs to be restricted to a specific address then porter.snap.tv (currently 178.79.176.32) can be used as a trusted source.

CHAPTER 25

Default factory settings

Default system login info after installation is as following.

Default IP Address: **10.0.0.5**

Console Login:

```
Username: snap
Password: thax06
```

Web interface Login:

```
Username: admin
Password: thax06
```

Intel Active Management Technology (AMT) login:

```
Username: admin
Password: !thaX06!
```

CHAPTER 26

Legacy User And Asset Organizer

26.1 Installation

The SnapTV Users and Assets Organizer is contained in the package snaptv-uao. Like other optional packages it can be installed using the apt-get command.

```
$ sudo apt-get install snaptv-uao
```

26.2 Getting Started

When installed on a gateway, the Organizer will function in *single-site* mode, where it will be added into the normal admin interface of the gateway and automatically integrate with the gateway's services.

From gateway admin interface you will be able to manage users, create and manage products and send messages to users.

Basicaly typical chain of actions in order to allow customer use offered and purchased products you will have to:

- *Create a user*
- *Register customers CPE (customer premises equipment)*
- *Create product*
- *Enable product on same site as customer*
- *Assign product to customer*

This guide explains how to perform all listed above actions and more.

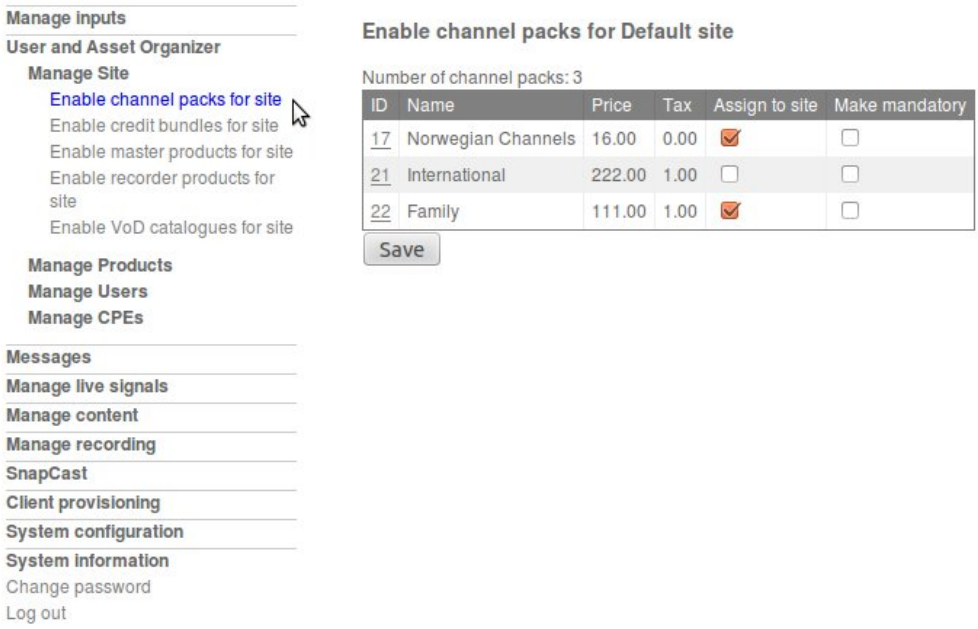
26.3 Manage Site

26.3.1 Default site

Please note that even though it is possible to edit the default site that is created automatically in the Organizer, it is very important to let it keep its orginial name. If the name of the default site is changed, the Organizer will stop functioning.

26.3.2 Enable and disable products on site

Organizer gives a convenient way for quick enabling and disabling existing products on site. Open *Enable product on site* page in **User and Asset Organizer -> Manage Site** menu. For example **Enable channel packs for site**.



You can see list of all created channel packs. By clicking on relevant checkboxes you can enable or disable channel pack product on Default site.

You can also make it mandatory or not.

After you are done click on *Save* button.

In the same way you can manage enabling and disabling Recorder Products, VoD Catalogues and Master Products.

Note: When clicking on *ID* link you can open product edit form.

26.3.3 Batch Importing User and CPE data

The batch import interface allows operators to import large datasets containing customer and CPE information into the database.

The importer will create new users and CPEs as it encounters them and will update information for already existing users.

Any users that are present in the database but not mentioned in the imported file will become deactivated. It is therefore important that the imported file always contains the *full* list of users at the site in question.

Data format

Data to be imported must be formatted as Comma Separated Values (CSV). CSV can be created from all common spreadsheet programs. For the import script to work, it is very important that the data file contains the correct values:

The first row must consist of a header, with the following values:

- ID
- First name
- Last name
- Address
- City
- Zip
- Email
- Phone
- CPE MAC
- CPE Serial

The header names must be given exactly as described above. ID refers to the customers external ID. This value should never change for a customer, since the system then will create a new customer.

If a customer has several CPEs, the customers information (particularly including ID) can be replicated on several rows with different CPE MAC and CPE Serial values.

Example

:: ID,First name,Last name,Address,City,Zip,Email,Phone,CPE MAC,CPE serial
1,John,Doe,"Some Street 1","New York",12345,john@example.com,5551234567,00:02:9b:a1:af:e1,MB1
1,John,Doe,"Some Street 1","New York",12345,john@example.com,5551234567,00:02:9b:de:ad:b2,MB1
2,Jane,Doe,"Some Street 1","New York",12345,jane@example.com,5551234568,00:02:9b:ba:ba:ba,MB1

26.4 User management

Admin Interface allows to create users (customers), view their information and edit it as well as assign products to them.

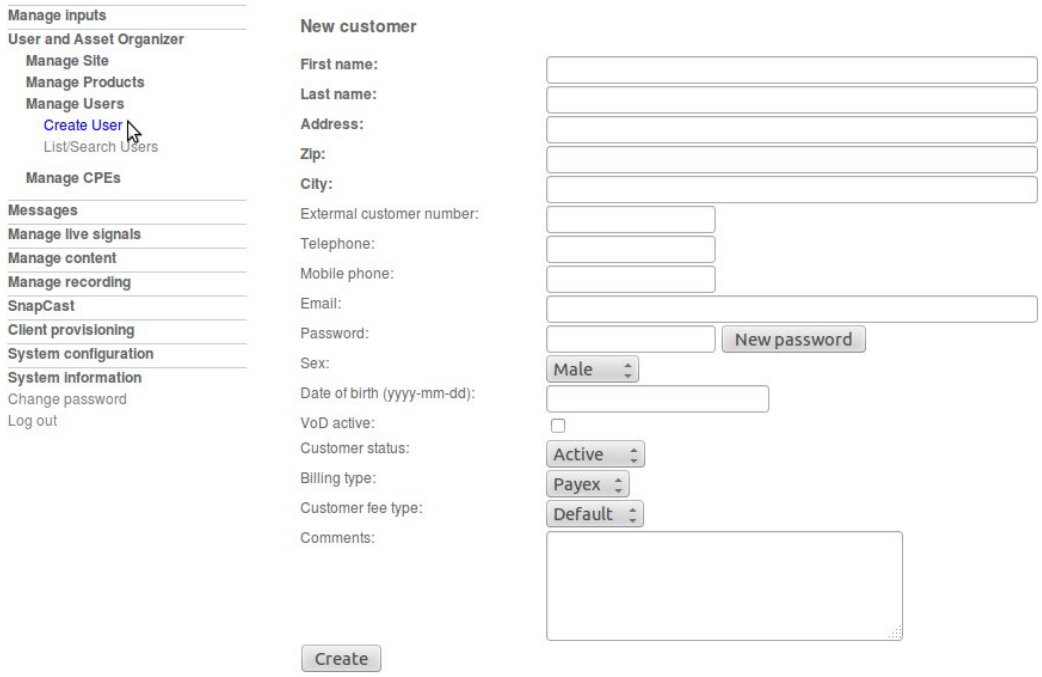
Use management interface is available from **User and Asset Organizer -> Manage Users** menu.

Note: Words *user* and *customer* are equivalent in UAO user management admin interface.

Note: All user personal information displayed on images is fictional.

26.4.1 Create new user

To create new customer open from menu **Create User** page. You will be presented with customer creation form.



Provide required customer information.

Setting *Email* and *Password* will allow customer to log into Funshop. With *New password* button you can generate random password.

Customer can have three different statuses:

- `Active` represents active customer in system who can use assigned products and purchase new.
- `Blocked` represents customers who have been denied access to products, for example becasue of not paying.
- `Inactive` represents user that are no longer customers.

If customer is registered in some external billing or tracking system it is possible to provide customer's id registered there as an'*xternal id*.

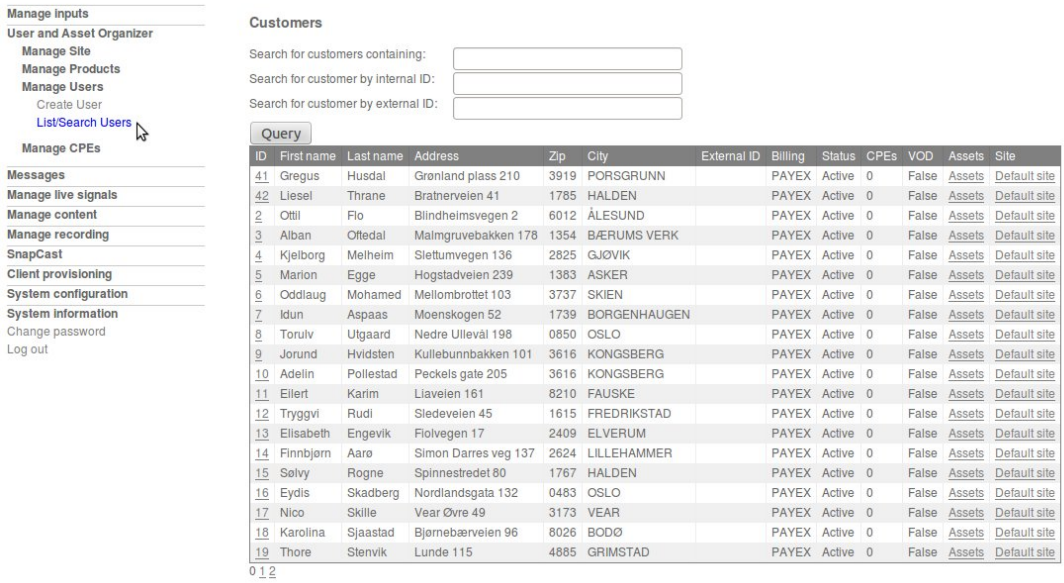
Note: *VoD active* field is obsolete. Does not need to be set.

Complete customer creation by clicking on *Create* button.

26.4.2 List and search users

In Admin Interface it is possible to list all created customers as well as search for specific one.

In order to list of serach for a customer open **List/Search Users** page from menu. List of all users will be displayed devided on pages with 20 customers per page. Pages are displayed



Searching for customers

You have three options of making customer queries:

- `Search for customers containing` this option will query all users having entered value in any of their field except ID
- `Search for customer by internal ID` this option will search for user with given internal id
- `Search for customer by external ID` this option will search for user with given id of external billing or tracking system

Accessing relevant pages

Customer list view not olny presents most usefull information but also allows for quick access cusomer management pages. You can:

- Display customer summary by clicking on users *ID* link.
- Display cusomer assest page by cklicking on *Assets* link.
- Display customer's site management page by clicking on *Site* link.

26.4.3 Edit user

Editing user information, deleting user and managing user asstets and CPEs is accessible from user summary page. To access that page you have to click on *ID* link on *List/Search User* page.

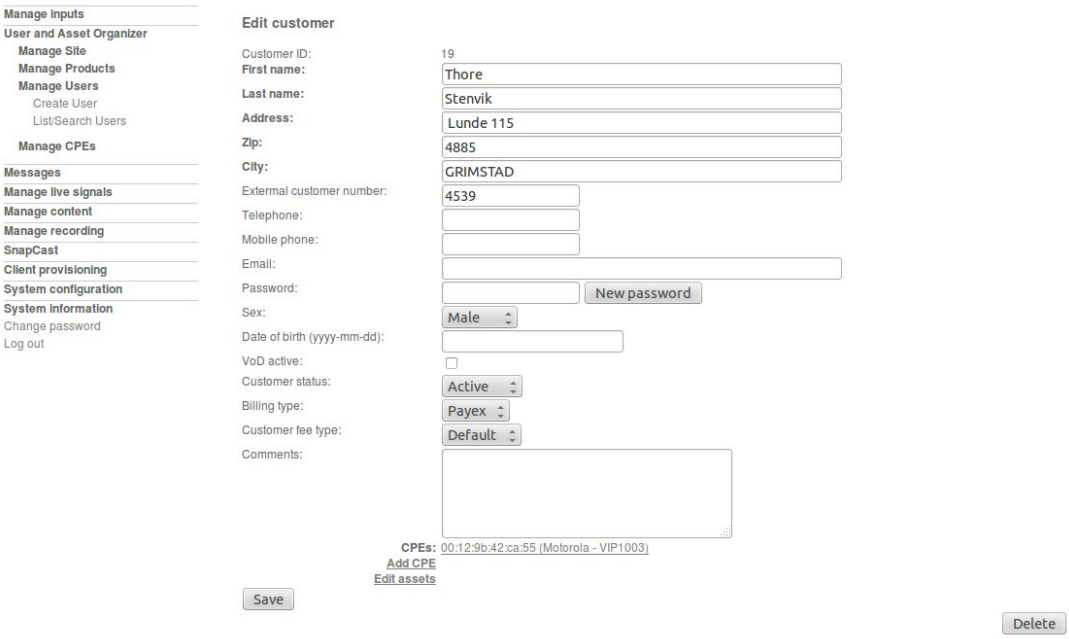
User summary page shows all relevant user information such as personal information, payments and registered CPEs.

Delete user

To delete customer simplay click on *Delete* button. You will be asked to confirm deletion.

Edit user information

If you wish to edit user information click on *Edit User* link. You will be presented with edition form.



Simply edit any of the information and save changes.

From that page you are able to delete user too as well as access assets edit page and add new CPE page.

26.5 Manage CPEs (customer premises equipment)

In order to allow customer to use purchased producuts specific CPE has to be assigned to customer. Admin interfaces allows to register CPEs and assign them to customer and managing CPE types.

CPEs management interface is available from **User and Asset Organizer -> Manage CPEs** menu.

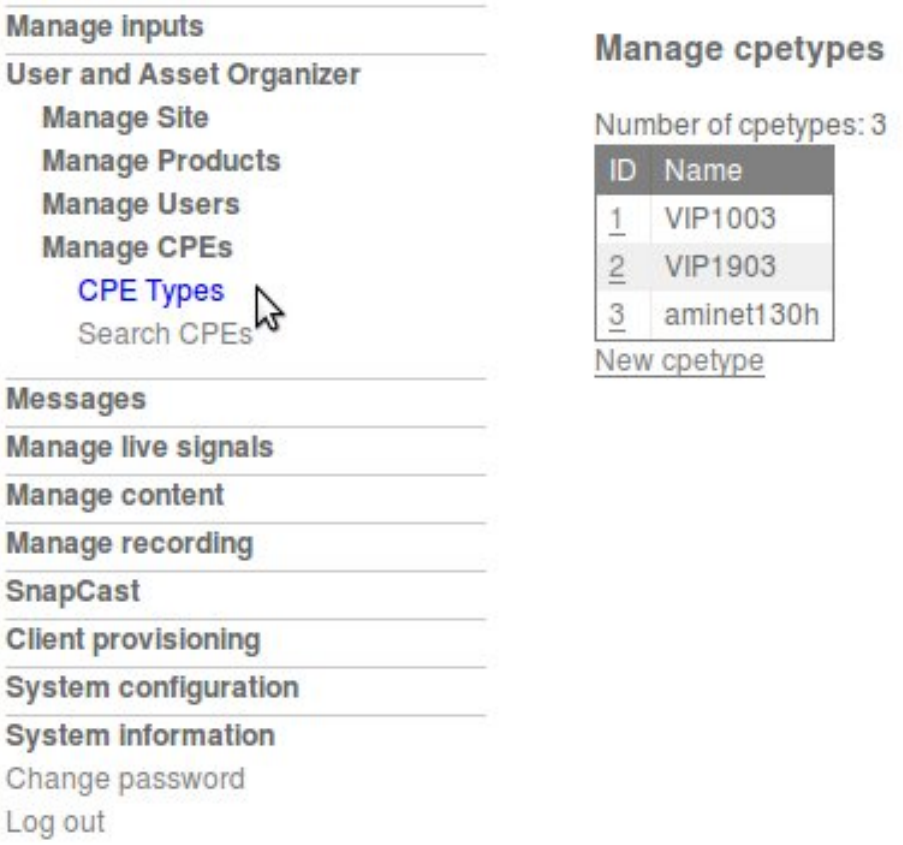
However registering new CPEs is done from user management interface.

26.5.1 Manage CPE Types

CPE type defines what kind of device registered equipment is, so before any CPE can be registered the type of that CPE must be registered.

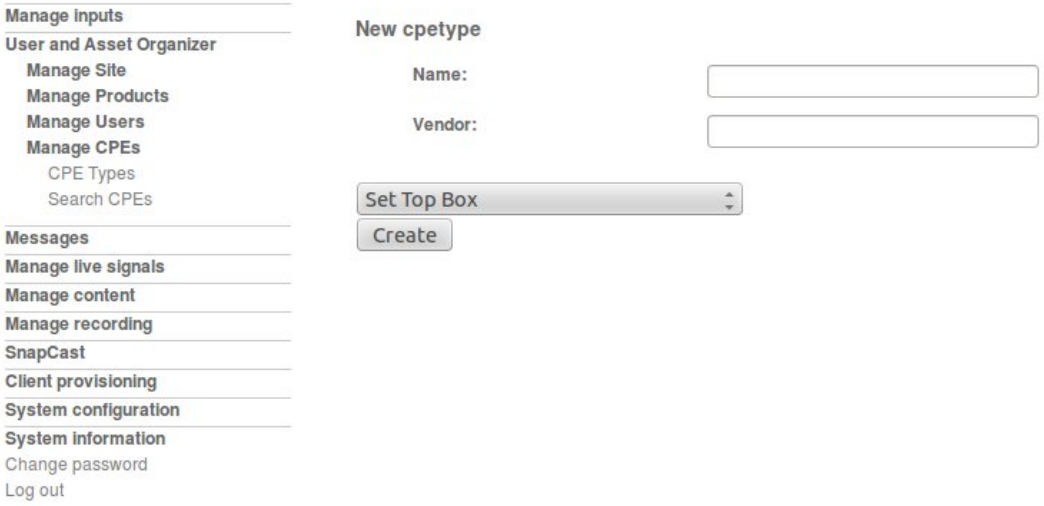
Add new CPE type

By opening **CPE Types** page from menu you will be presented with list of defined types. If any type was defined list will be of course empty.



Click on *New cpetype* to access new CPE creation form. Enter the name and vendor of the CPE in the form. Make sure to use proper spelling and capitalization as the name and vendor

is used during client authentication. You have to also select what kind of device type it is a set-top-box or other.



Here are examples of CPE types that currently are being supported.

The Motorola VIP1003 box

- Name: VIP1003
- Vendor: Motorola

The Motorola VIP1903 box

- Name: VIP1903
- Vendor: Motorola

The Motorola VIP1910 box

- Name: VIP1910-9
- Vendor: Motorola

The Amino 130H box

- Name: aminet130h
- Vendor: Amino Communications Ltd

The Amino Ax4x box

- Name: Ax4x
- Vendor: Amino Communications Ltd

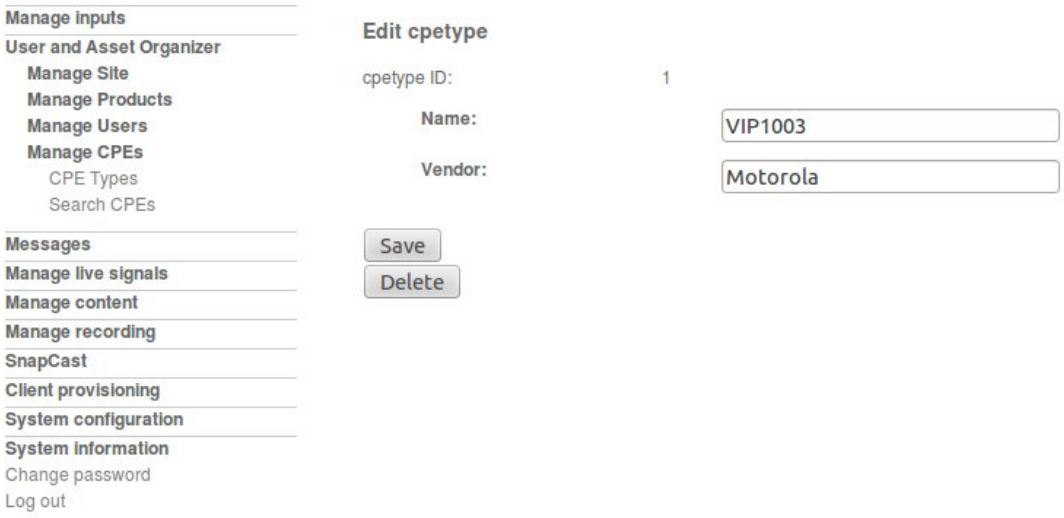
For those types select *Set Top Box* in the drop down box.

Click on *Create* button to complete adding new CPE type.

Edit and delete CPE type

You can edit registered CPE types and delete it if needed. To do that open **CPE Types** page and click on ID link next to CPE type you wish to edit. You will see CPE type information page.

Click on *Edit* to open edition form.



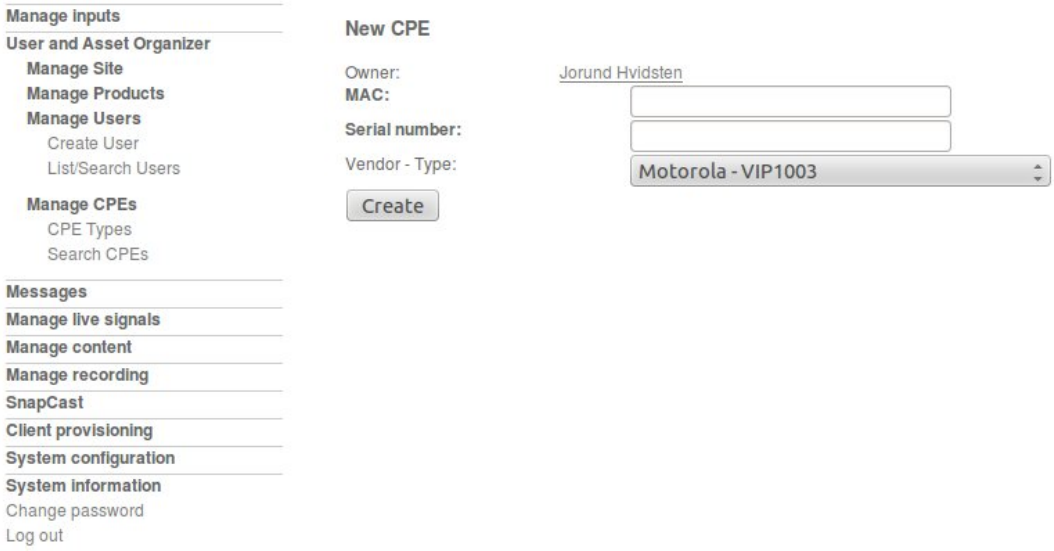
You can edit any information and save changes.

To delete CPE type simply click on *Delete* button and confirm operation.

26.5.2 Assign CPE to Customer

Registering CPEs for specific customer it is done in customer management interface. To add new CPE *open customer summary page* by clicking on wanted customer ID on **Manage Users -> List/Search Users** page.

Click on *Add CPE* link. You will see creation form.

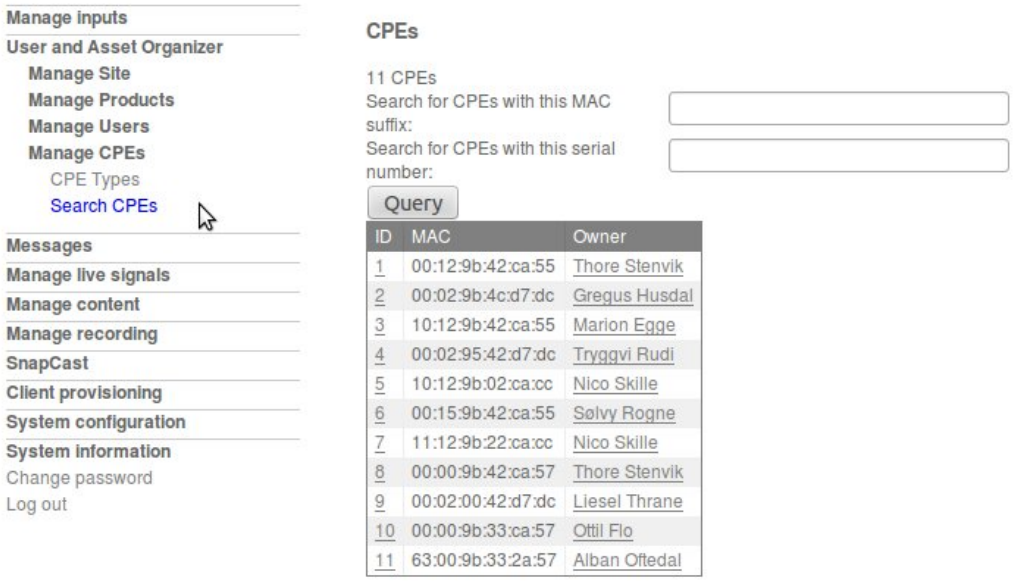


Provide correct MAC address, device serial number and select correct CPE Type. Complete operation by clicking on *Create* button.

Added CPE will be visible on customer summary page.

26.5.3 Search for CPE

To search for specific CPE open **Search CPEs** page from menu. You will see list of existing CPEs and search fields.



You have two options of making CPE queries:

- `Search for CPEs with this MAC suffix` search for CPEs that MAC address ends with given set of characters, for example *00:00:9b:92:54:57*, you can search for *54:57* or *9b:92:54:57*
- `Search for CPEs with this serial number` search for those CPEs that contain given characters in their serial number

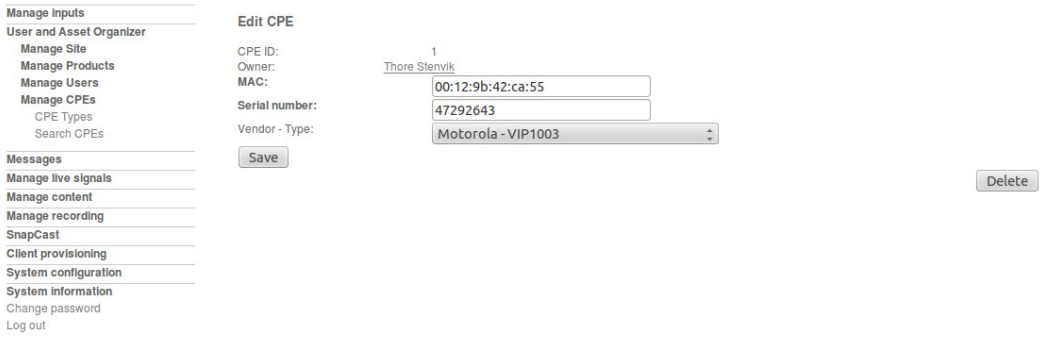
This view allows you to access following pages:

- CPE edit page by clicking on ID link
- Customer summary page by clicking on Owner link

Note: If you want to display all assinged to specific customer CPEs you have to *open customer summary page*.

26.5.4 Edit and delete CPE

CPE edit page can be accessed from Search for CPE page by clicking on ID link of wanted to edit CPE. You will presented with edition form.



Edit CPE and save changes.

You can delete CPE by clicking on *Delete* button and confirming operation.

You can also edit and delete CPE from customer summary view. This page you can access in few ways:

- from Search for CPE page by clicking on *Owner* link
- from *List/Search Users* page by clicking on *ID* link of customer

On customer summary page all belonging to customer CPEs are listed.

In that view you can easly delete CPE by clicking on *Delete* button.

To open edit page click on MAC address of listed CPE. You will see CPE summary page. Click on *Edit* link to access CPE edition page.

26.6 Product management

The Organizer allows to create and manage following products:

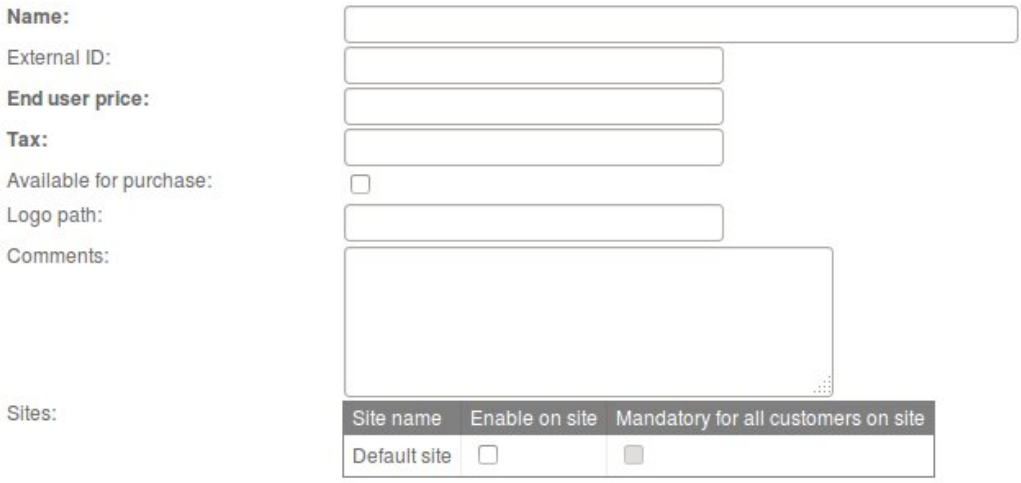
- Channel Pack product - set of TV and Radio channels
- Recorder Product - allows user to record and store private recordings
- VoD Catalogue - set of movies
- Master Product - set of created Channel Packs, Recorder Products and VoD Catalogues

Product management interface is available from **User and Asset Organizer -> Manage Products** menu.

26.6.1 Products creation and edition form

All products have common set of information that you need to provide in in order to create or edit product. In this paragraph common section of product create/edit form will be described in order to not duplicate infomation in relevant product paragrafs. Product specific form fields and options are described in relevant product paragrafs.

Common from for all products:



It is required to provide at least product *Name*, *End user price* and *Tax*. If product should be free or not taxed it is enough to set price and tax value to 0.

Product must be marked as *Available for purchase* if customers should be able to buy the product through a self-care interface.

External ID is used in case product is registered in external system.

Logo path is a path to uploaded product logo image.

Before a product can be assigned to any users it must be enabled for the site of that user. To do that click on *Enable on site* checkbox next to *Default site* in *Site* section.

Mandatory for all customers on site will make product mandatory to all users on site.

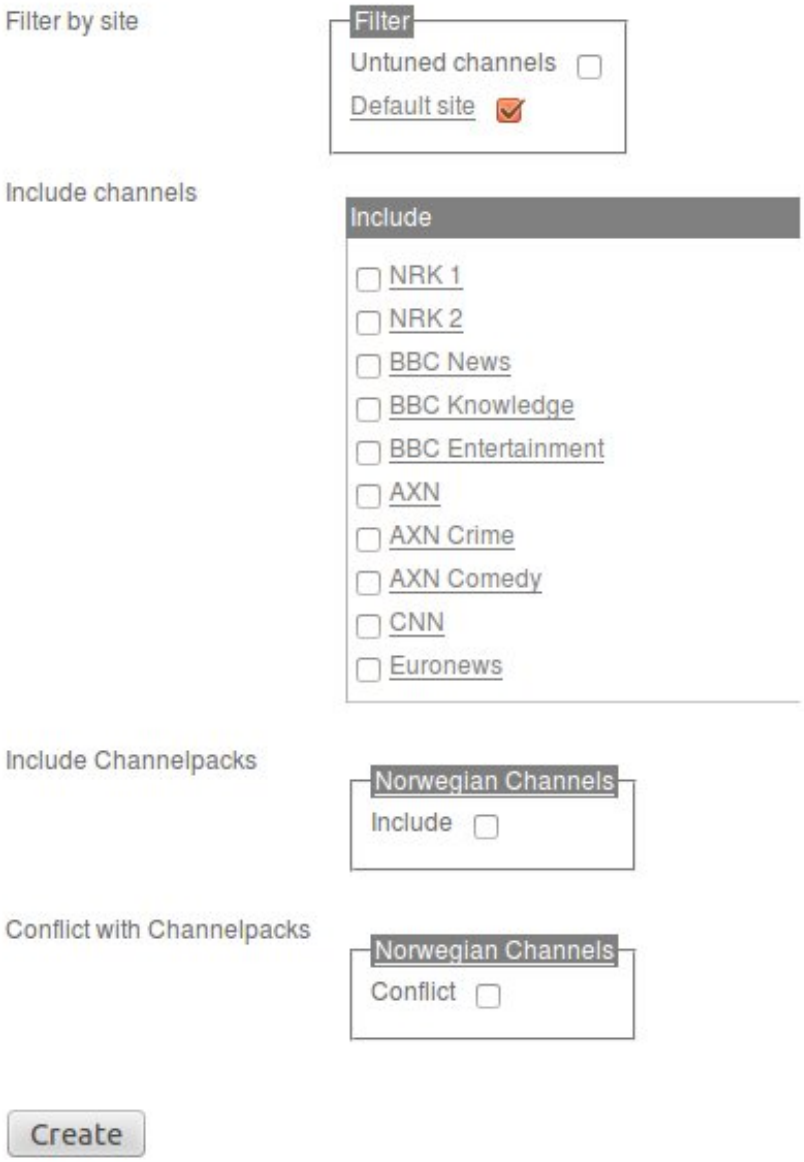
26.6.2 Channel Packs

Channel Packs are containg choosen set of Radio and TV channels. It is possible to to include in one Channel Pack other existing Channel Pack product.

Create Channel Packs

To create Channel Pack open **Create Channel Packs** from menu. You will be presented with product creation form as described in Products creation and edition form paragraph.

Channel Pack product creation form in addition gives possibility to include channels:



In *Include channels* you can see all existing channels. By marking checkboxes you select channel that will be included in the pack.

With *Filter by site* options you can filter channel list and display channels enabled on specific sites.

It is possible to include other existing Channel Packs by marking their checkboxes under *Include Channelpacks*.

Note: *Conflict with Channelpacks* is not being used at the moment.

Edit, delete Channel Packs

Open **Manage Channel Pack** from menu and see Edit, delete products paragraph.

26.6.3 Recorder Product

Recorder products provive users with access to them a number of hours added to their recording quota. When personal recordings are available on the site, a user can record and store programs but no more than their current quota allows.

Create Recorder Product

To create Recorder Product open **Create Recorder Product** from menu. You will be presented with product creation form as described in Products creation and edition form paragraph.

Recorder Product in addition has *Hours* field that represents customer recording quota. That field limit amout of hours customer can record and store as private recording.

Confirm product creation with save button.

Edit, delete Recorder Product

Open **Manage Recorder Product** from menu and see Edit, delete products paragraph.

26.6.4 VoD Catalogues

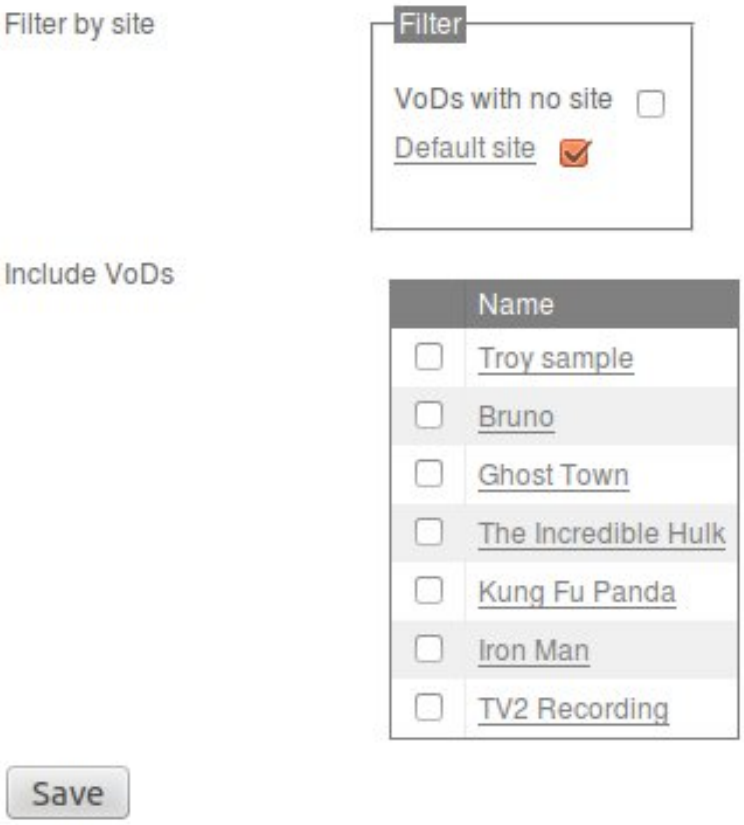
The VoD support in the Organizer allows conditional access to content uploaded to the VoD server. As content is added to the VoD server, the Organizer will automatically be updated, showing the available content in Organizer.

VoD Catalogues are collections of VoDs, available for purchase as a single product. To include a VoD in a catalogue, either select the catalogue when uploading the content or edit the VoD catalogue in the Organizer and tick the checkbox associated with the wanted content.

Create VoD Catalogue

To create VoD Catalogue open **Create VoD Catalogue** from menu. You will be presented with product creation form as described in Products creation and edition form paragraph.

VoD Catalogue creation from in addition gives possibility to include movies:



In *Include VoDs* you can see all existing in Organizer movies. By marking checkboxes you select movie that will be included in the pack.

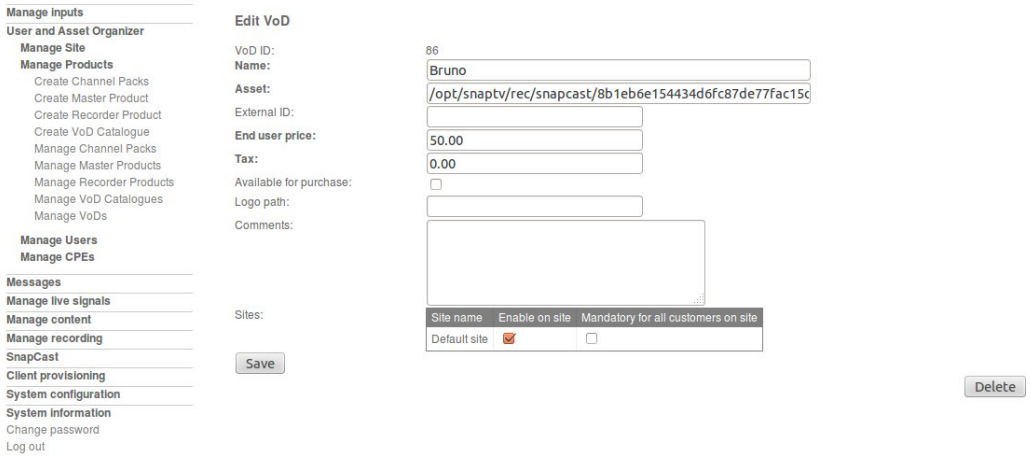
With *Filter by site* options you can filter movies list and display movies enabled on specific sites.

Manage VoDs

You can view all existing in Organizer movies by opening **Manage VoDs** page from menu.

Edit, delete VoD in Organizer

From Manage VoDs page it is possible to access VoD edit form by clicking on *ID* link.



VoD edit form is simialr as Products creation and edition form. Additional field here is *Asset* which is a path to media file.

To delete VoD click on *Delete* button and confirm operation.

Note: VoD deleted from Organizer is not deleted from VoD database.

Edit, delete VoD Catalogues

Open **Manage VoD Catalogues** from menu and see Edit, delete products paragraph.

26.6.5 Master Products

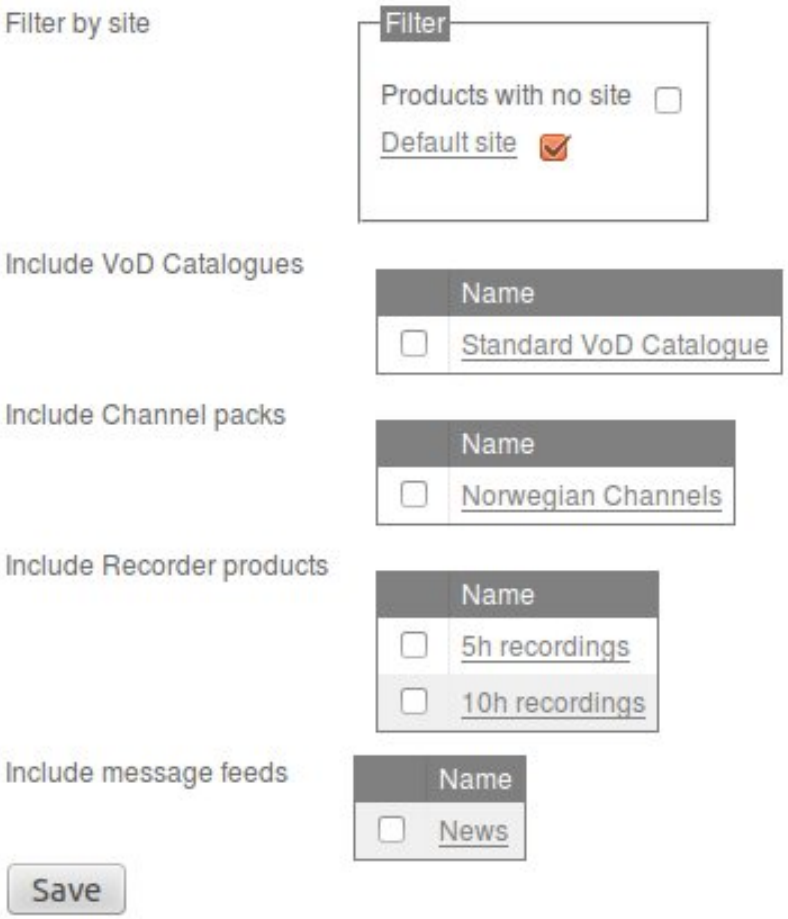
Master products are logical groupings of other resources in the Organizer, such as channel packs and recorder access.

When a users purchases this master product, they will then get access to all the included products.

Create Master Product

To create Master Product open **Create Master Product** page from menu. You will be presented with product creation form as described in Products creation and edition form paragraph.

When creating, the menu will contain lists of the other products defined in the Organizer, allong with message feeds, with the possibility of including these in the master product.



To include products in Master Product simply click on relevant checkboxes.

With *Filter by site* options you can filter product list and display those enabled on specific sites.

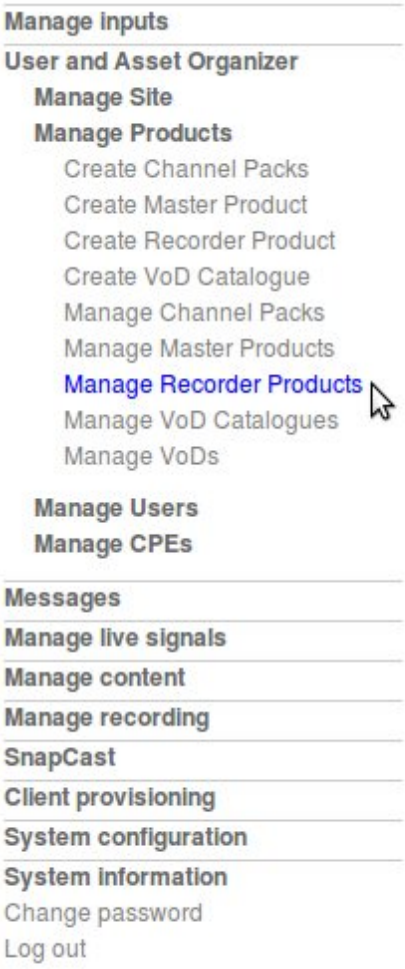
Edit, delete Master Product

Open **Manage Master Products** from menu and see Edit, delete products paragraph.

26.6.6 Edit, delete products

Editing and deleting products in Organizer is done in similar way for all kinds of prdoucts. This paragraph descirbes this common procedure for editing and deleting projects.

You need to access manage product page from menu, for example **Manage Recorder Products**. You will be presented with list of all created products in our example, all Recorder Products.



Click on the *ID* link of product you wish to edit or delete. Product summary page will be shown.

Click on *Edit* link to open product edition form. You can edit any information you wish and save changes.

See Products creation and edition form and in addition relevant product paragraph about product creation to get form field descriptions.

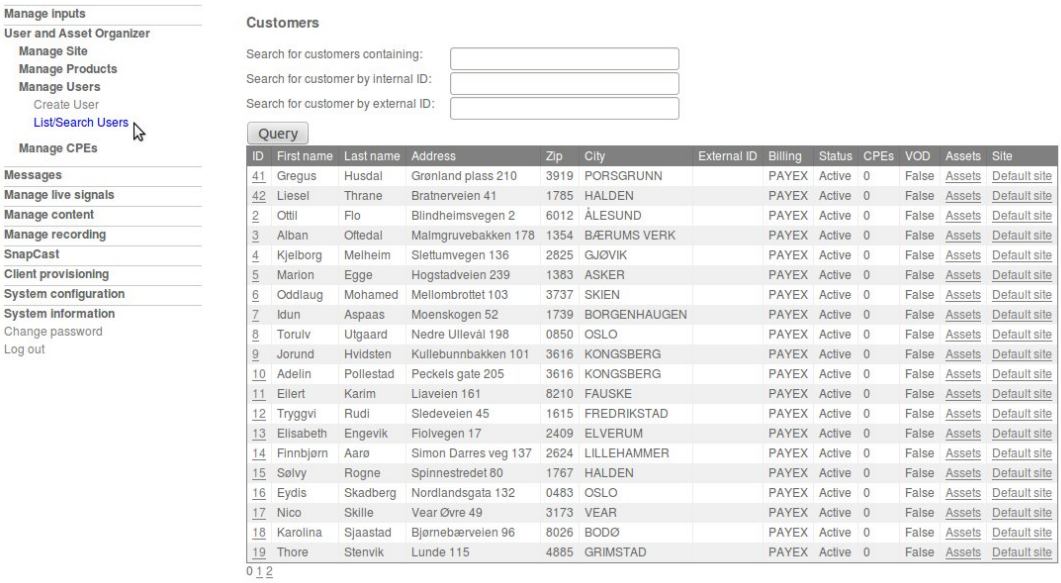
To delete product simply press *Delete* button and confirm operation.

26.7 Edit assets

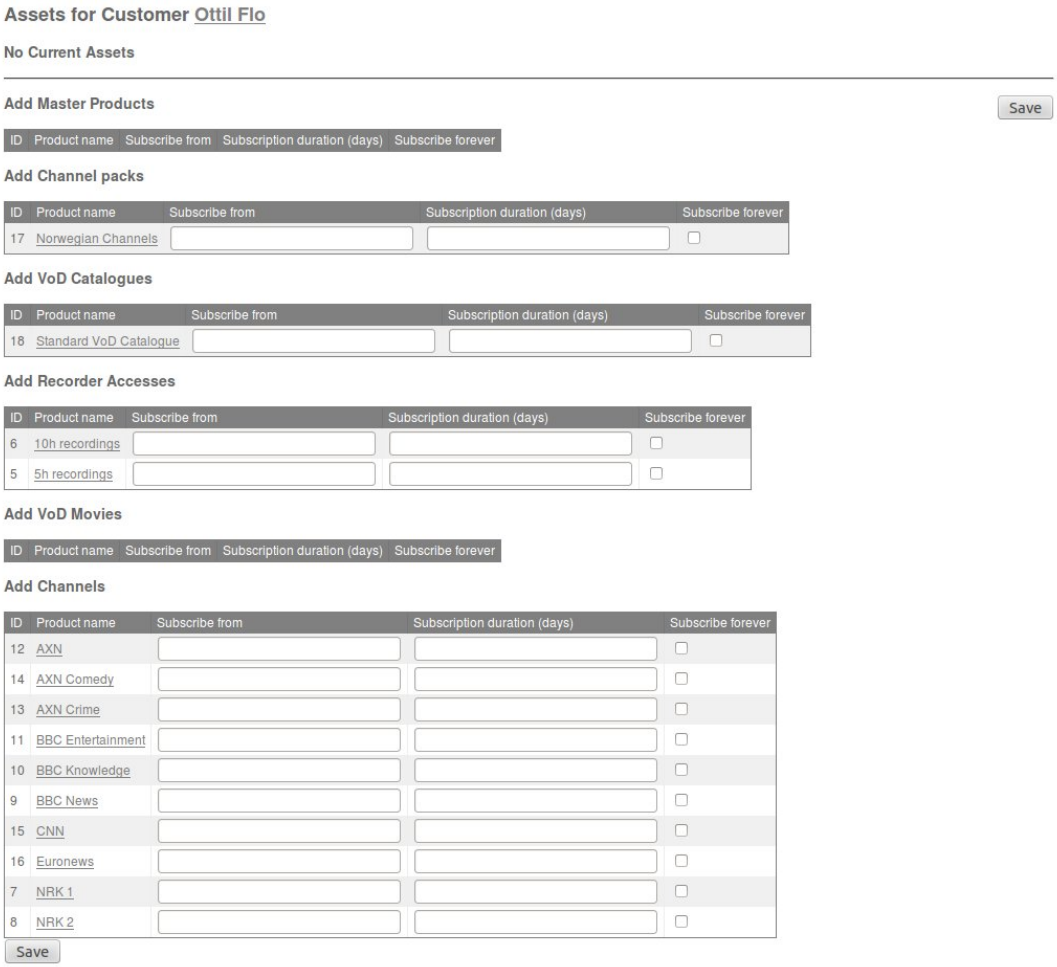
The Organizer allows to manualy assign products to customer and also delete them from customer assets.

26.7.1 Assign products to customer

To assign product to customer you need to *open customer summary page*. Open **Manage Users -> List/Search Users** page from menu.



You need to find user you wish to assign products to. Click on customers *Assets* link. You will see page with listed created products, channels and VoDs lists, so you are able to assign to customer not only Channel Packs or VoD Catalogues but also single channels and movies.



Note: Assets page can be also accessed from customer summary page - click on *Edit assets*

link.

To assign a product you need to create subscription. subscription can exprire after specific amount of days or do not have any time limits.

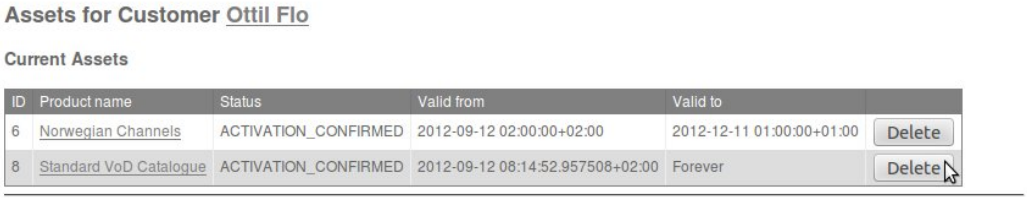
To create product subscription that will exprire you need to provide date when subscription starts and how many days should ve active.

To create product subscription without any expiry date simply click on *Subscribe forever* checkbox.

After choosen kind of subscription was set click on *Save* button. The page should reload and the channel packs listed on top as “ACTIVATION REQUESTED”. Reloading the page after a few seconds should show the status as “ACTIVATION CONFIRMED”. The customer now has access to the product.

26.7.2 Delete a product subscription

To delete product subscription open customer assets page as it is described in Assign products to customer paragraph and click on *Delete* button next to subscription you wish to delete on *Current Assets* list.



26.8 Messaging

The messaging system provides both non-intrusive and intrusive messaging directly to the TV screen of the end users. Messages can be sent to single users or to groups.

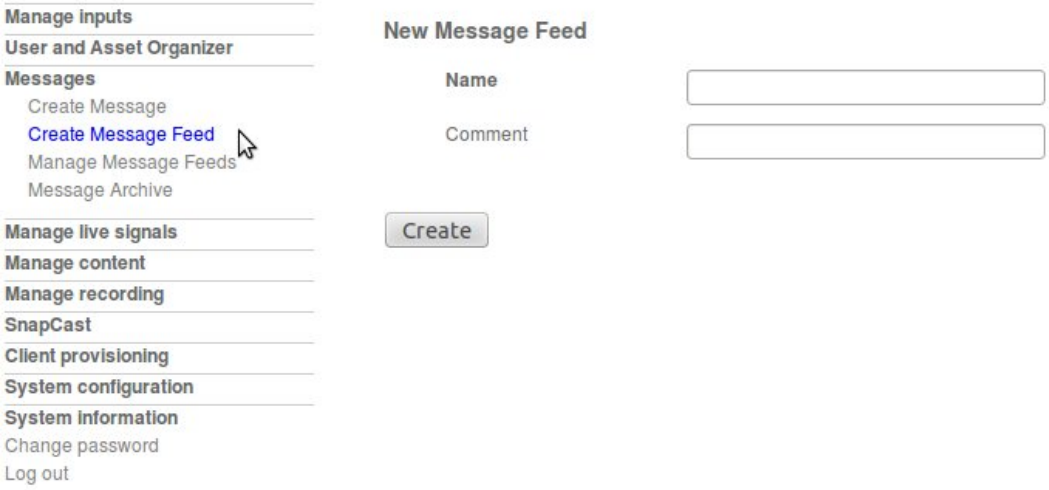
Messages admin interface is available from **Messages** menu.

26.8.1 Message Feeds

A message feed is a grouping feature that allows administrators to send messages to groups of users.

Create Message Feed

Open **Create Message Feed** page from menu and you will be presented with creation form.



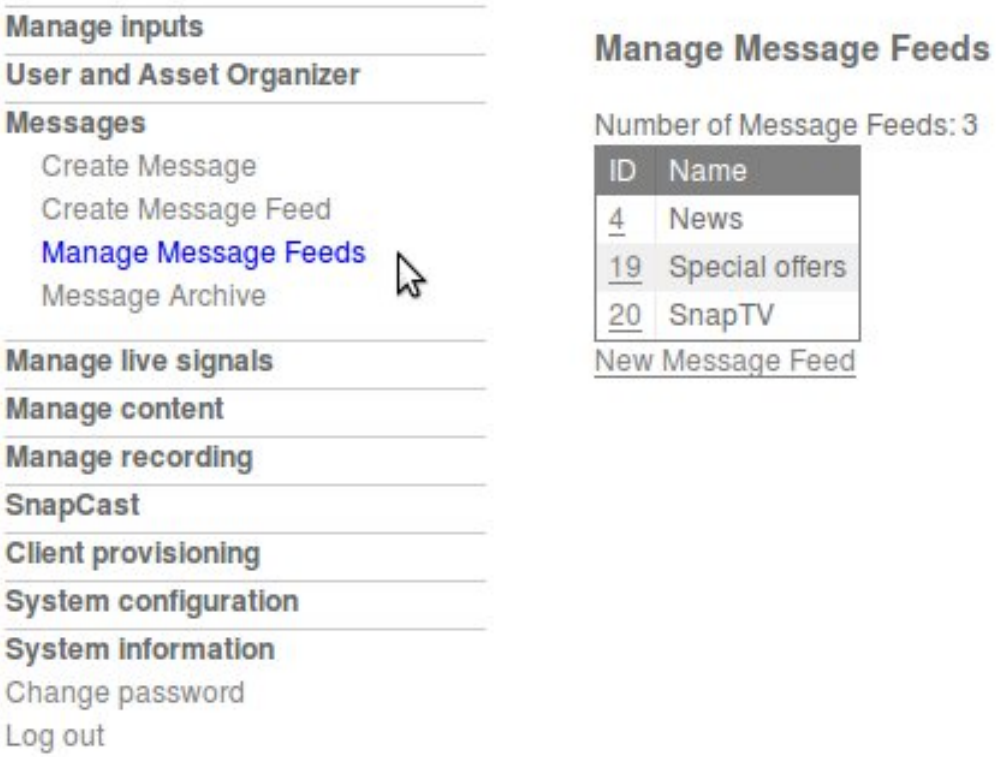
Users are assigned to message feeds by including the message feed in master products. This is done in the edit master product page by selecting the checkbox associated with the wanted feed under “include message feeds”.

All users with access to the master product at the time a message is sent will recieve messages to that feed.

Edit, delete Message Feeds

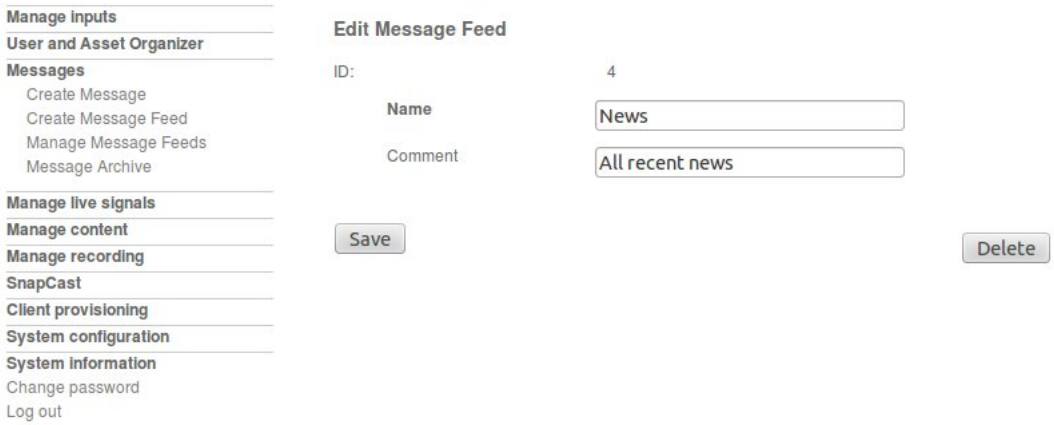
It is possible to list all created Message Feeds, edit them and also delete.

Open **Manage Message Feeds** page from menu. You will be presented with list of all created feeds. From that page you can access also Message Feed creation form by clicking on *New Message Feed*.



Click on *ID* of feed you wish to edit. Page with Message Feed information will be shown.

Click on *Edit* link to display Message Feed edition form.

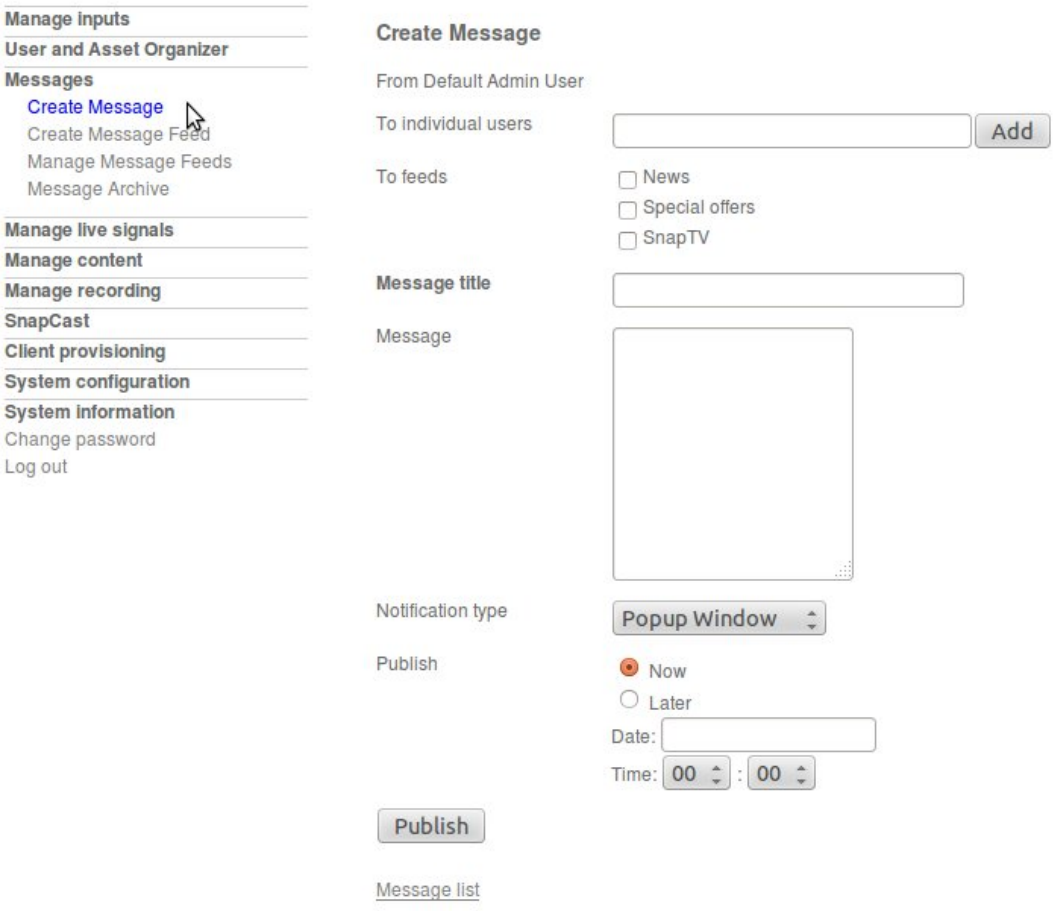


You can edit any information and save changes.

To delete Message Feed simply click on *Delete* button.

26.8.2 Sending Messages

To send a message open **Create Message** page from menu. You will see Message creation form.



To add individual users, start typing the user's name in the *To individual users* text box, select the correct user from the dropdown box when it appears and press *Add*.

To add message feeds, select their checkbox under *To feeds*.

You can choose the way portal user is notified about new message by selecting wanted option in *Notification type*. There are three options.

- `Popup window` - this option will display message in portal popup window so customer can read it immediately
- `Notification icon` - this option will display in portal small icon in the upper corner notifying user that received new message
- `No notification` - this option will not display anything in portal that would indicate that new message was send. New message will be listed in Message Browser in portal.

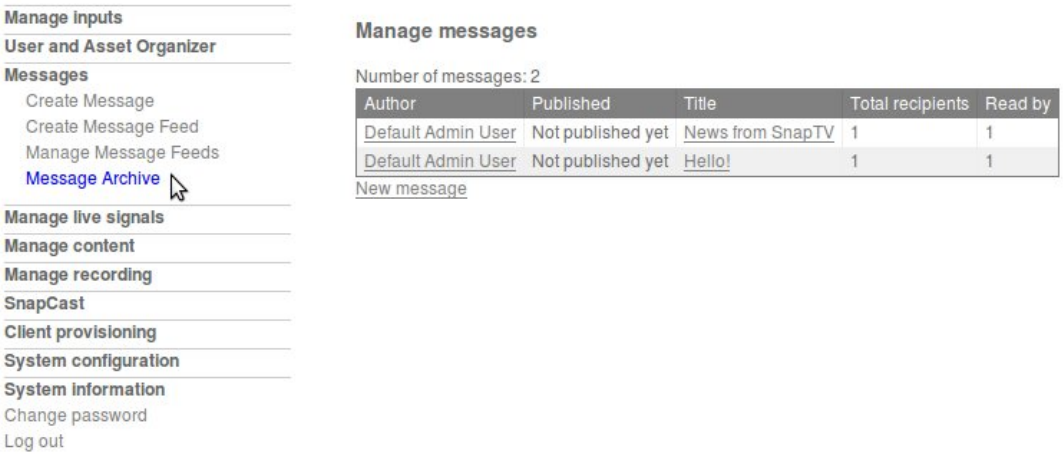
Click on *Publish* button to send message.

26.8.3 Delaying messages

When sending messages to message feeds, the delivery can be delayed by chosing a later date or time. Note that messages sent directly to single users cannot be delayed and will be delivered immediately.

Message Archive

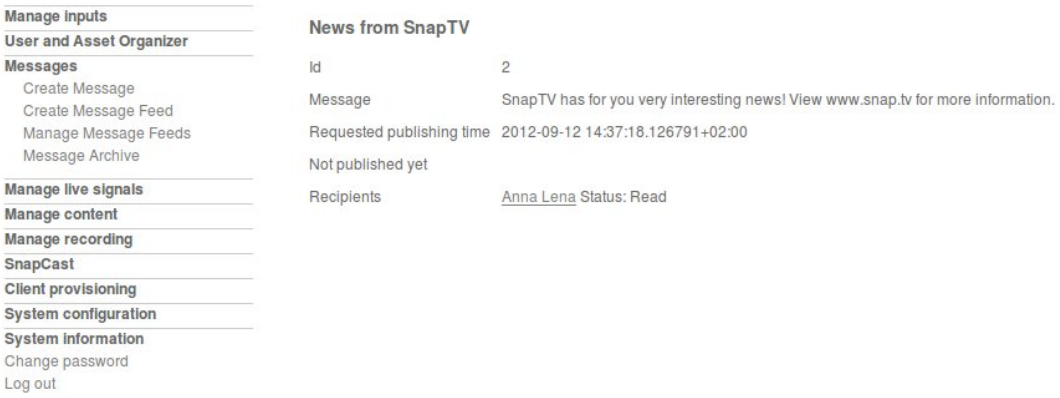
You can view all previously send message by opening **Message Archive** page from menu.



This page display all send messages. You can see who send message, it's delivery status, title, amount of recipients and if it was read by user.

Note: You can create new message from *Message Archive* page by clicking on *New message* link.

By clicking on *Title* link you can display more detailed information.



26.9 Instant Message Delivery

For immediate message delivery to work efficiently, the UAO server needs to be able to find out where to publish messages so that they are delivered to the clients.

There are two ways this can be achieved. First, if UAO is installed on a SnapTV gateway on the same site as the STB portal server, it will automatically detect this, and publish messages via the portal server.

However, if running UAO on a central server, and one or more site connects to it remotely, it requires manual configuration as explained in the following section.

26.9.1 Manual configuration for off-site UAO server

Manual configuration of message publishing is stored in the file `/opt/snaptv/etc/sms/config.xml` on the UAO server. The file typically contains something like this be default:

```
<sms>
  <db>
    <connector>postgresql://sms@localhost/sms</connector>
  </db>
</sms>
```

To configure one single publish URL for all messages, add it like this:

```
<sms>
    <db>
        <connector>postgresql://sms@localhost/sms</connector>
    </db>
    <messages>
        <publish_url>http://10.0.0.5/publish</publish_url>
    </messages>
</sms>
```

The URL must point to the IP address of the STB portal server, followed by `/publish`. If the portal server IP address is not reachable, this must be handled externally, for instance by setting up an SSH tunnel.

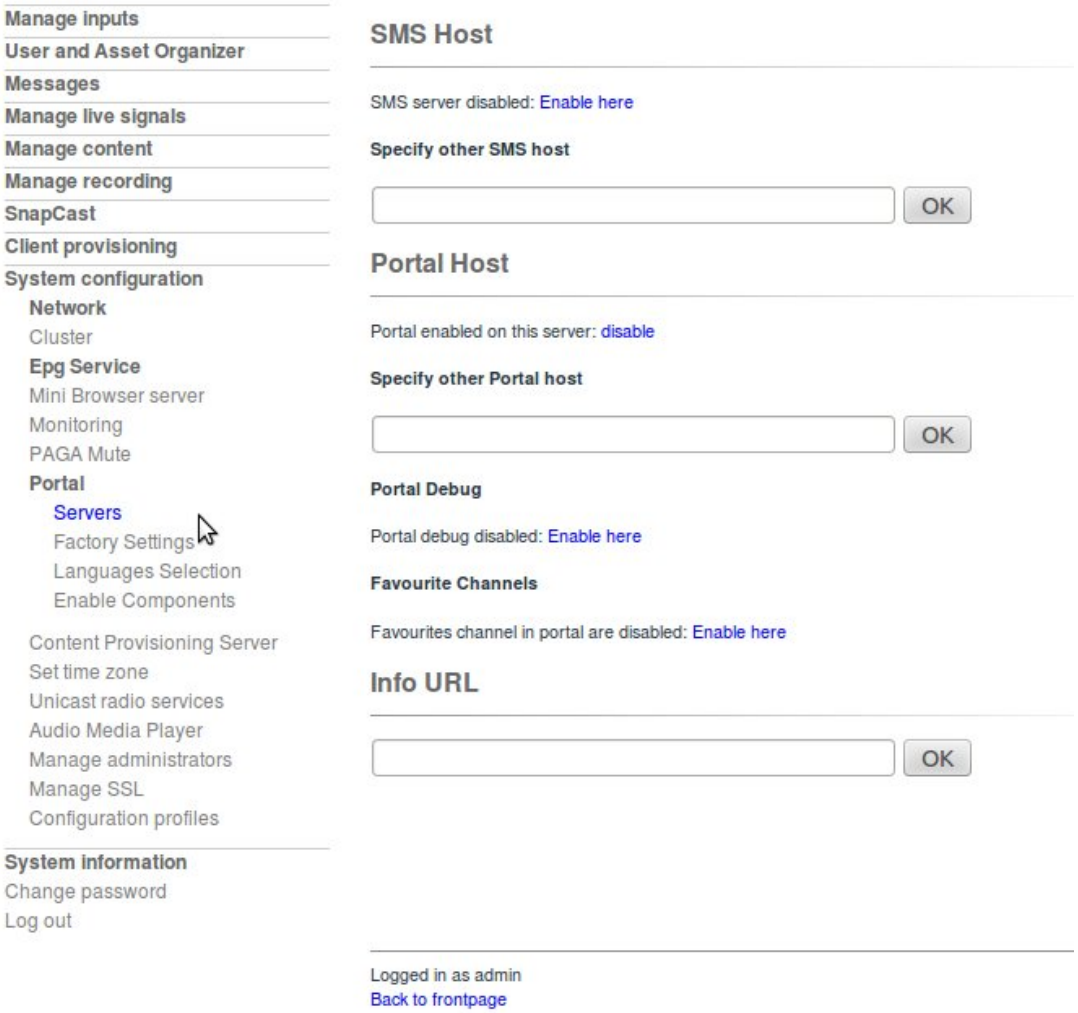
Multiple publish URLs can be configured by adding a prefix that must match the site name. The list is read from the top until a matching prefix is found for the site name:

```
<sms>
    <db>
        <connector>postgresql://sms@localhost/sms</connector>
    </db>
    <messages>
        <publish_url site-prefix='foo'>http://foo_site/publish</publish_url>
        <publish_url>http://default_site/publish</publish_url>
    </messages>
</sms>
```

In this example, messages to users at site “foo” and “foobar” are sent to `foo_site`, but messages to users at other sites, such as “bar” or “fo” are sent to `default_site`.

26.10 Configuring Portal to use the organizer

By default the portal gives all channels to everyone, to make it look up personal channel lists you need to tell it where the organizer is running. Log on to the admin interface of the portal server. Open **System configuration -> Portal -> Servers** page.



If the portal and the asset and user organizer is running on the same server you can click on *Enable here* under *SMS Host*. Otherwise enter the IP address of the server where the

organizer is running in the *Specify other SMS host* text box and click OK.

26.11 Backup and restore database

When the system is being reinstalled or updated it is important to make backup copy of the UAO database to not loose data and be able to restore database.

26.11.1 Backup database

To backup the existing UAO database, login to the server terminal and run the following command::

```
sudo -u postgres pg_dump --format t uao > uao_backup.tar
```

This command will create uao_backup.tar file that should be stored in a safe place.

26.11.2 Restore database

To restore Organizer database, run the following commands in the server terminal::

```
sudo stop snaptv-uao
sudo -u postgres pg_restore --clean --dbname uao --single-transaction uao_backup.tar
sudo start snaptv-uao
```

This will stop all processes accessing the database, import the backup and then restart the stopped processes, using the newly imported database.

CHAPTER 27

Final Notes

Well, that's it. If you made it this far, you are up and running with an IPTV service. Now proceed to add the remaining channels - we hope you make a good fortune out of it and want to thank you for selecting SnapTV!

Regards, the SnapTV TEAM.

- support@snap.tv
- http://www.snap.tv

CHAPTER 28

Indices and tables

- *genindex*
- *search*