Web Interface guide

HTI-404

REF. 3864

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1. INTRODUCTION

This document explains how to perform the installation of a headend based on HTI-404 modules.

The document describes how the headend is configured. For that, initially the physical mounting is described. After that, it explains how to connect the user pc to the headend through IKUSI HEADEND DISCOVERY application. Finally, all the menu options of the web interface are described.

To ensure the correct use and installation of the headend, it is necessary to read the user manuals and the installation manuals of the modules included in their own packages.

1.1 General safety instructions

Read all of this user manual carefully before plugging in the unit.

Always have these instructions to hand during installation.

Follow all of the instructions and safety notices regarding unit handling.

Danger of death or injury

This safety notice indicates a possible danger for the life and health of people. Not following these instructions may lead to serious consequences to health and may even cause fatal injuries.

Do not install the unit during an electrical storm. This could lead to electrostatic discharge from lightning.

Do not open the unit. There is a risk of electrostatic discharge.

Risk of damage to the unit

This safety notice indicates a possible dangerous situation. Not following these instructions may lead to the unit being damaged.

The unit must be appropriately ventilated. Install the unit in a dust-free location. Do not place the unit in a location where the ventilation slots are covered or blocked. Install the unit in a location with at least 20 cm around it free of other objects.

Do not expose the unit to rain or moisture. Install the equipment in a dry location with no infiltration or condensation of water. Should a liquid enter the unit, disconnect it immediately from the mains.

Keep the unit away from flammable objects, candles and anything that may cause a fire.

Connect the unit to an easily accessible power socket. In the event of an emergency, it will then be possible to quickly unplug the unit.

Do not expose the unit to sources of heat (sun, heating, etc.).

Handling the inside of the unit is forbidden

This notice forbids any work that may affect the working order of the unit or its warranty

Do not dispose of as urban waste

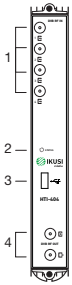
This type of notice indicates that the unit must not be disposed of as unselected urban waste.

NOTE: This type of notice is a note containing applicable advice and useful information for optimum use of the unit.

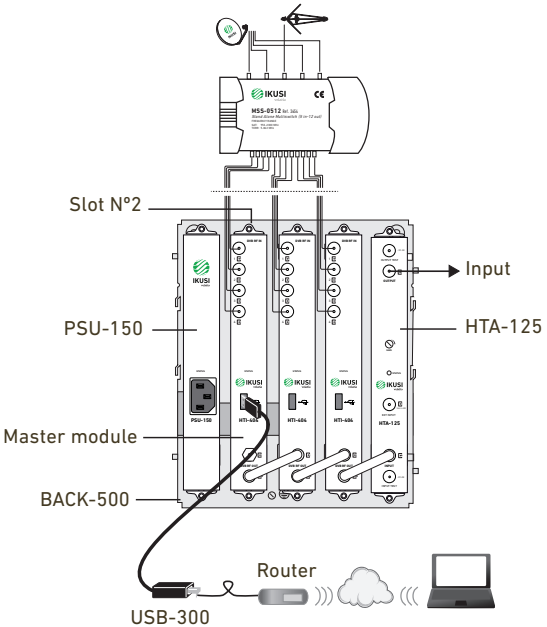
1.2 Installation enviroment recommendations

- The headend is for indoor use only.
- Do not plug in the headend in moist rooms.
- Never operate the headend immediately after moving it from a cold location to a hot location. When the device is exposed to such a change in temperature, moisture may condense on the crucial internal parts.
- The device must have sufficient ventilation and may not be covered.
- Protect the device against direct sunlight, heat, intense temperature fluctuations and moisture. Do not place the device in the vicinity of heaters or air conditioners.
- Do not allow liquids to enter into the device. Turn off the device and disconnect it from the main supply if liquids or foreign substances end up inside the device.
- If the device gets too hot or emits smoke, shut it down immediately and unplug the power cable. Arrange for your device to be investigated by a technical service centre.
- Under the following conditions, a layer of moisture can appear inside the device which can lead to malfunctions:
  - □ if the device is moved from a cold to a warm area;
  - □ after a cold room is heated;
  - □ when this device is placed in a damp room.
- The device should not be used in a very dusty or saline environment. Dust or salt particles and other foreign objects may damage the device.
- Do not expose the device to extreme vibrations. It may damage the internal components.

1.3 Description of the module HTI-404



1 Input (DVB-T/T2/S/S2/C)
2 Control LED
3 Management port (USB)
4 DVB-T/DVB-C output coupling loop



2. HEADEND CONNECTION

The instructions for connecting the headend are described in detail in the guide that is provided with the HTI module. Also, that guide can be downloaded from our web page www.ikusi.tv.

Briefly, the steps to follow are:

- Insert the HTI modules and the PSU-150 power supply in the BACK-500 base-plate. One of the HTI modules must be inserted in the slot 2 of the base-plate (master module).
- Connect the different cables from the multiswitch to the module inputs.
- Connect the pc to the USB port of the master module, located in the slot 2 of the base-plate, with a USB-ethernet adapter.

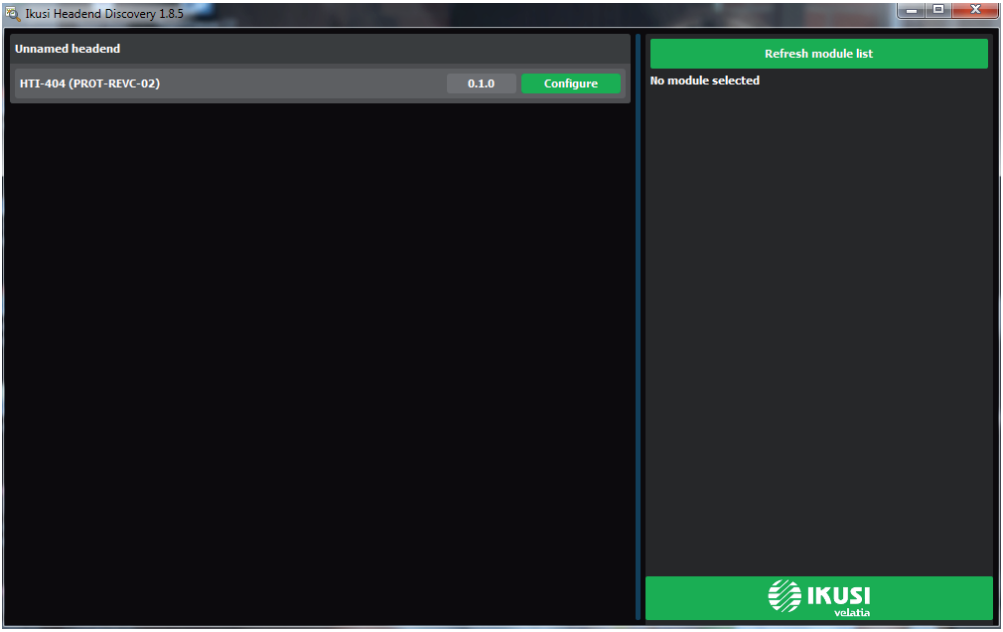
NOTE: It is recommended to use USB-ethernet adapters based on AX88179 or AX88772 chipsets

3. COMMUNICATION WITH THE HEADEND

HTI is configured through a web page generated by the own headend. Use IKUSI HEADEND DISCOVERY application to access this web page without modifying manually the network configuration of your pc. You can download the IKUSI HEADEND DISCOVERY aplication from www.ikusi.tv web page.

NOTE: You must use IKUSI HEADEND DISCOVERY version 1.8.5 or higher

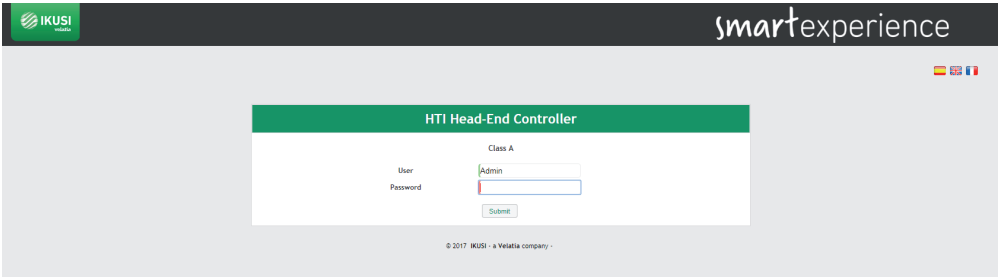
Open IKUSI HEADEND DISCOVERY application (the network card IPV6 protocol will be automatically enabled or permission will be requested to do so).



The window will show the name of the connected master module. Push Configure button and the web browser of the PC will open automatically, showing the access page of the headend.

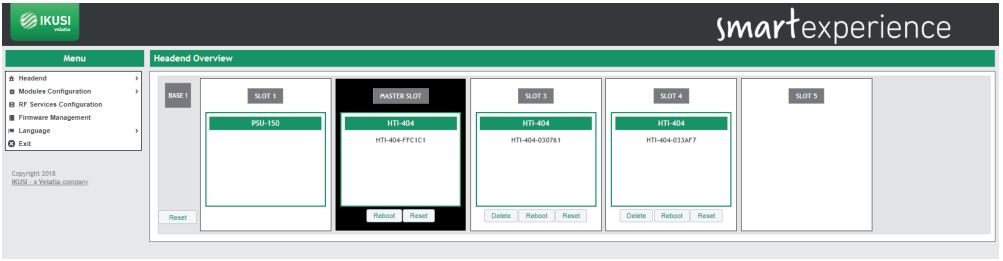
NOTE: HTI web interface uses https protocol. It is likely that your browser doesn't recognize the security certificate generated by the HTI. To continue configuring the module without problems, add the security exception requested by your browser in a permanent way.

NOTE: It is recommended to use Mozilla Firefox or Google Chrome as browser.



By default, the language of the web interface is the same than the one used by the browser. If you want to change it, choose in icon the flag related with the desired language.

Enter the folowing data, User: Admin Password: admin. Push Submit button. The main screen of the configuration interface will open, from where you can configure the headend, as described in the next section.



4. WEB INTERFACE

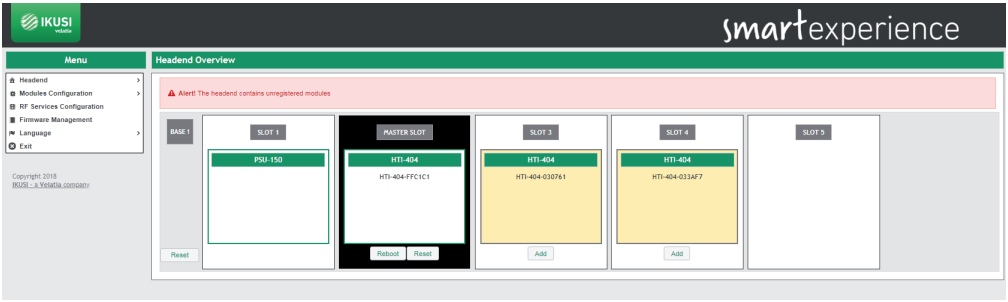
The web interface of the HTI allows to configure the headend, as well as to show status information of the modules. The following sections describe each of the menu options available.

4.1 Headend

Headend menu, through a series of submenus, allows to display status information and to configure the global parameters.

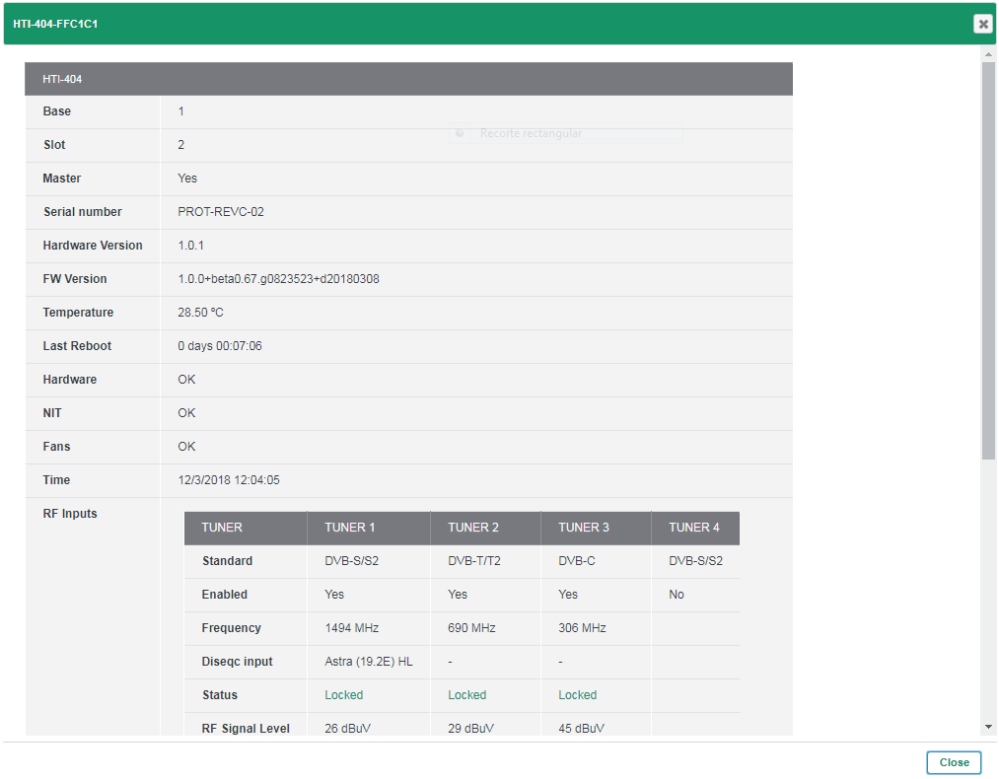
4.1.1 Overview

It is the menu that appears by default when entering the headend. The user can access this menu at any time. To do this, go to Headend → Overview. A screen as the following one will be displayed:



This screen shows the whole headend schematically. The essential information of each module inserted in the base-plate is displayed. The master module always corresponds with the module inserted in slot 2, and it appears in white on black background. The remaining modules appear on white background.

When selecting a specific module, a window with status information and alarms in detail will open.

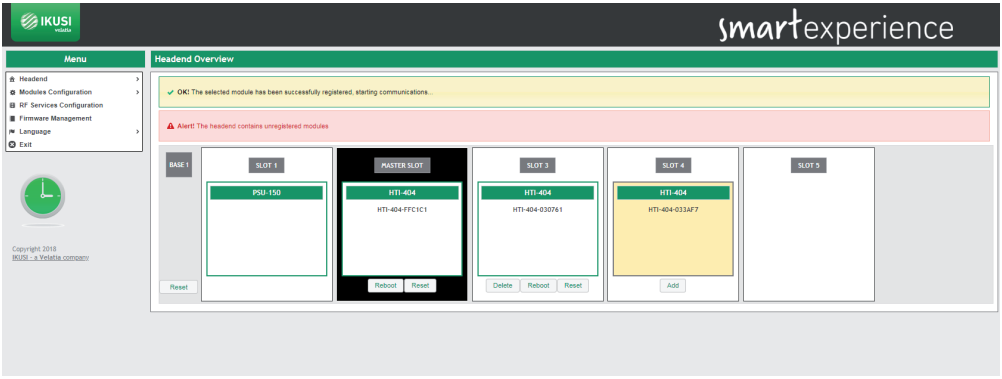


In addition, through a series of buttons you can perform the following actions:

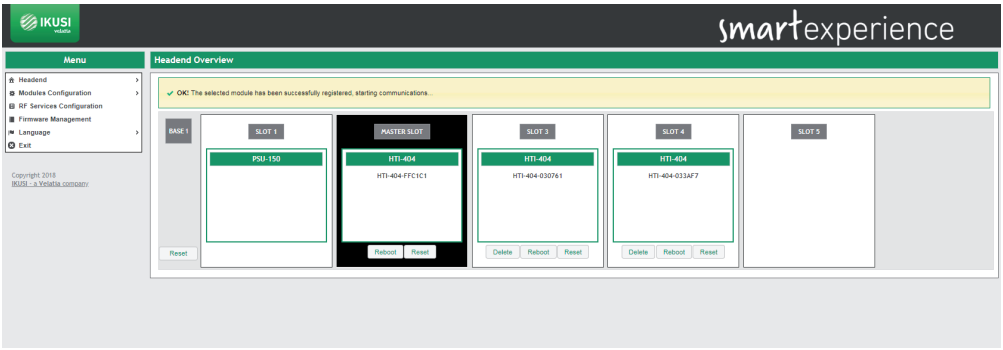
- To register a module.
- To unregister a module.
- To clone settings from an old module to a new one.
- To reboot a module.
- To reset a module with its default settings.
- To reset all modules of a headend, loading their default settings.

4.1.1.1 Registering process

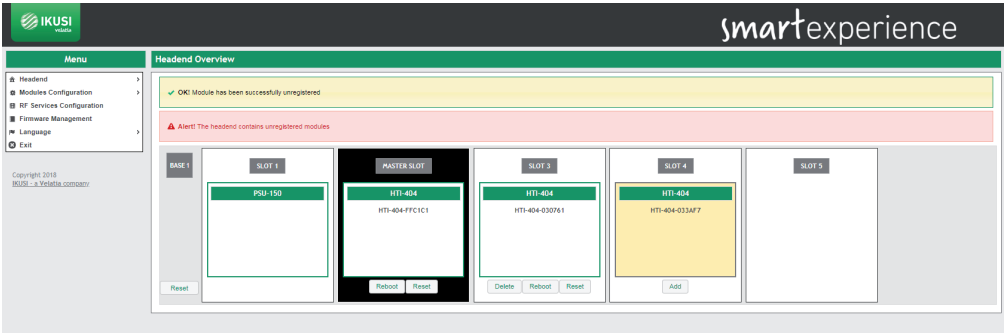
The headend only allows to configure those modules that have been registered previously. The unregistered equipments are shown in yellow on white background. By default, no module except the one inserted in slot 2 (master slot) is registered. To register a module that has been detected by the master module simply push Add button of that module. The background color change to white indicating that the module has been properly registered.



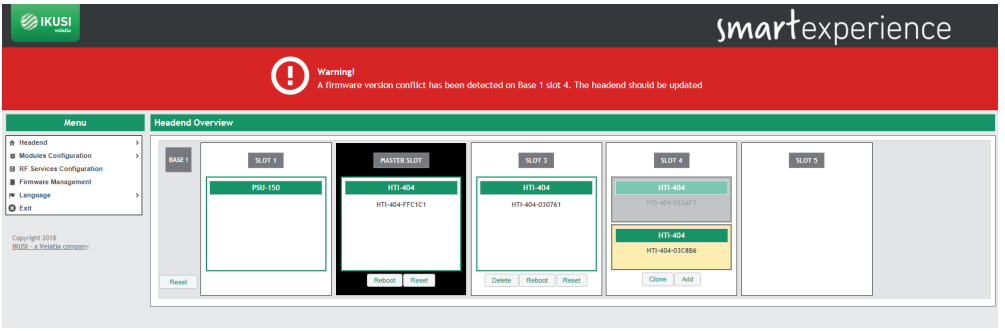
Repeat the registration process with all modules you want to include in the headend.



If, for any reason, you want to unregister a module of the headend, you must push the Delete button. The module will be displayed in yellow background, indicating that has been unregistered correctly.

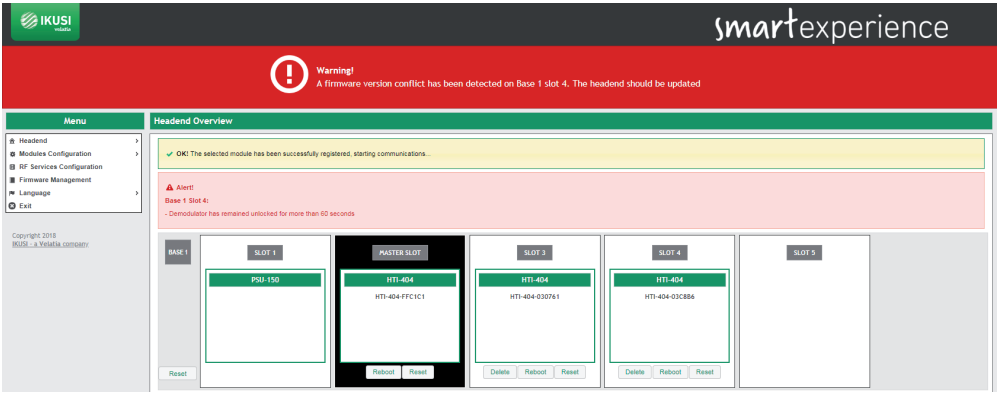


The registration process is different if it is the result of replacing a module (for example, due to failure). In that case, when placing a new module in the position of one that had been already registered by the headend, the user can choose between to add it without modifying the configuration of the module or to copy the configuration of the module that was previously registered in that slot. In the following example, starting from the previous headend with 3 HTIs, all registered, the HTI of slot 4 has been replaced with a new HTI:



A module with two possible configurations is displayed: one in grey background, corresponding to the previous module that was already registered in the headend, and another one in yellow background, corresponding to the configuration of the new module pending registration.

If you want to copy the settings from the previous module, push Clone button. If, instead, you only want to register the new module without copying the previous configuration, push Add button. In both cases, as result a screen will be displayed where the module appears as registered.



4.1.1.2 Reboot and reset

The user can reboot a specific module. To do this, you must push Reboot button of that module.

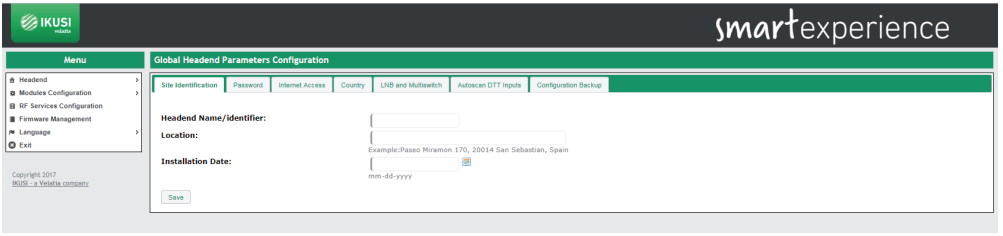
On the other hand, if you just want to load the default settings of the module, just as it comes from the factory, you must use Reset button. If you want to load the default settings of a specific module, push Reset button of that module. However, if you want to load the default settings on all modules of the headend, you can do it pushing Reset button associated with the Base.

In both cases, a warning message indicating that the module will return to its default settings will be displayed. Press OK if you understand the consequences of this action and you agree.

NOTE: In the case of resetting the master module, slave devices will be unegistered.

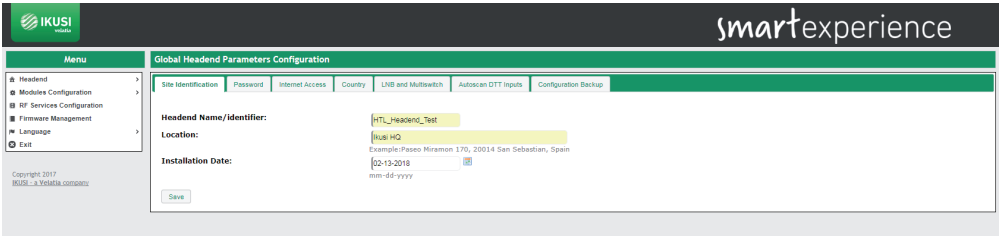
4.1.2 General configuration

This menu displays several tabs that allow to set global parameters of the headend. To access this menu, go to Headend → General Configuration. A window as the following one will open:



4.1.2.1 Site identification

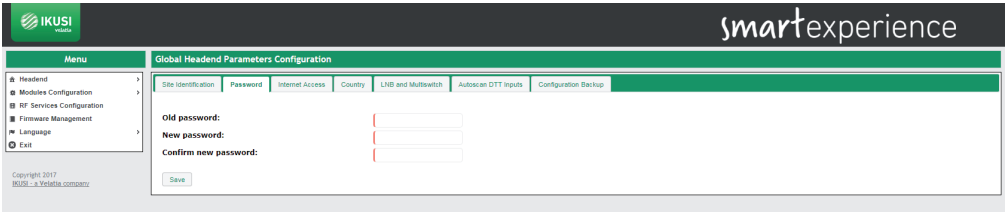
Select the Site Identification tab. In this screen you can introduce information about the headend to distinguish this particular headend with respect to others. This information will appear in the installation report.



Introduce the headend name (or ID) and the facility location (free text). You can also specify the date on which the installation was performed. Push Save button to save the data.

4.1.2.2 Password

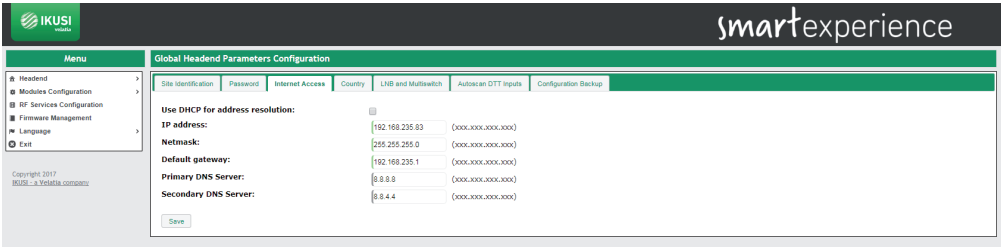
To change the password of the headend, select the Password tab.



Follow the instructions on the screen to make the change of the password (enter the old password, enter the new password and confirm the new password) . Finally, push the Save button.

4.1.2.3 Internet access

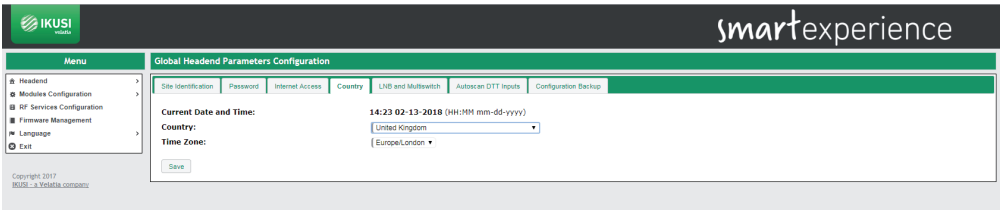
If you want to access to the headend through internet, you must set previously the connectivity parameters of the headend. To do that, select the Internet Access tab.



Select Use DHCP for address resolution option if the network settings will be automatically provided by a DHCP server. Otherwise, unselect this option and manually enter the settings (IP address, Netmask, Default gateway, Primary DNS Server, Secondary DNS Server). Consult network manager to get those parameters. Push Save button to save the changes.

4.1.2.4 Country

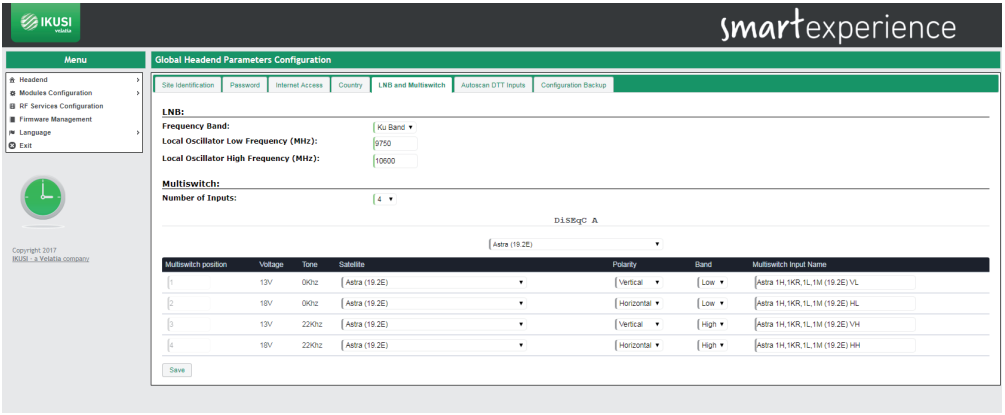
To set the local time and customize certain parameters related to the specific country regulations (LCN, NIT, etc.) select the Country tab.



In this screen you can select the date and current time, time zone and the country in which the headend is installed. To save the changes push the Save button.

4.1.2.5 LNB and multiswitch

Select the LNB and Multiswitch tab to configure the parameters related with the used satellite installation.



In the LNB area, set the parameters of the LNB that you are using (frequency band, local oscillator frequency for low polarity and local oscillator frequency for high polarity).

In the Multiswitch area you can describe how is the Multiswitch that is being used. To do that, introduce the number of inputs of the multiswitch (in the case there isn't multiswitch, select 0). For each of the inputs, defined by its position and grouped in fours, you must identify which polarity is (Vertical or Horizontal) and in which band is transmitted (Low or High). The headend proposes a name for that input as a combination of the satellite name, polarity and band. This name can be edited.

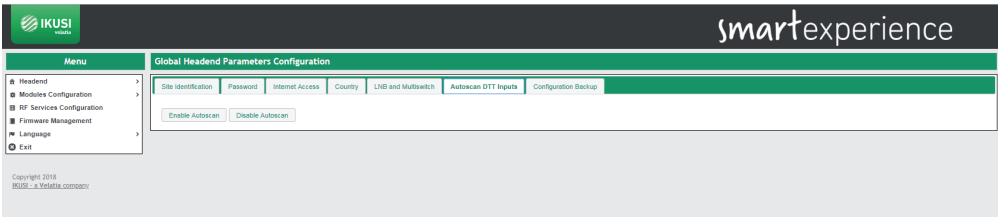
Push the Save button to save the changes.

4.1.2.6 Autoscan DTT inputs

The Autoscan DTT Inputs tab allows to enable/disable automatic scanning of DTT inputs in case of a change in the frequency plan.

Thus, if Autoscan is enabled, when a frequency change is done in a DTT signal that was tuned previously, the HTI will lose sync and will launch a scan of the inputs, in order to search the new frequency of the signal (identified with the same TS_ID and SID values).

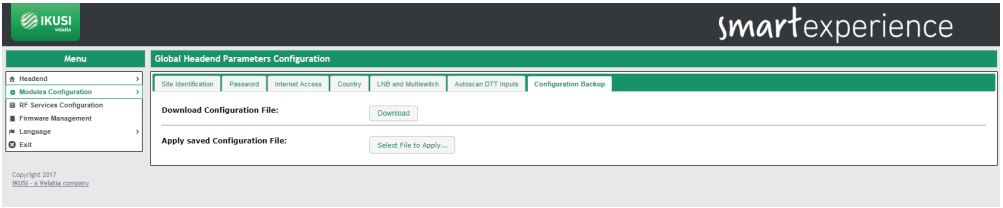
If the Autoscan is disabled, when a change in the frequency plan happens, the HTI must be reconfigured manually.



To enable the Autoscan of DTT inputs, push Enable Autoscan button. To disable it, push Disable Autoscan button. By default, the Autoscan is enabled.

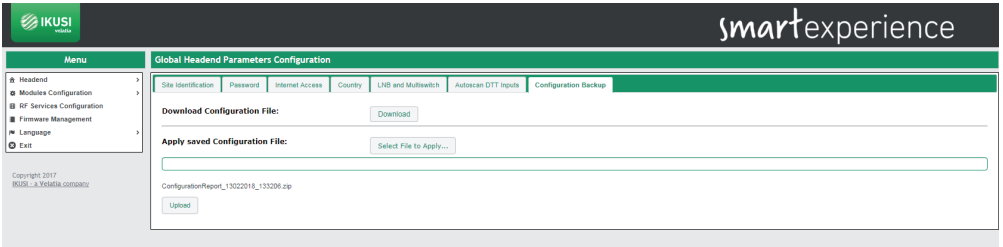
4.1.2.7 Configuration backup

The Configuration Backup tab is used to download or upload a copy of the complete configuration of the headend. Thus, you can replicate the configuration of a headend over another one (or over the same one, if, for any mishandling, it reaches to an undesired state).

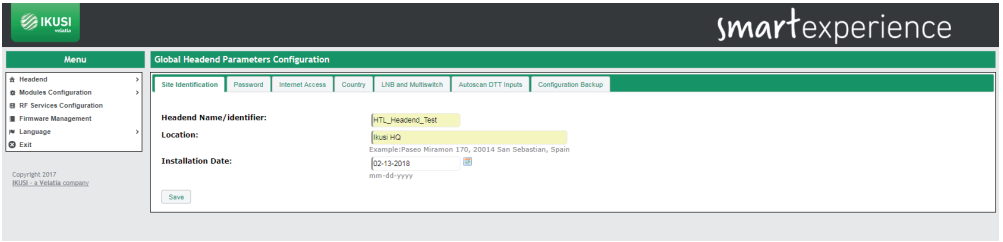


To download a file with the current configuration of the headend, push the Download button.

To apply a configuration previously stored, first choose the file pushing Select File to Apply button.



After that, push Upload button. A message will appear, indicating configuration is being applied. After some seconds, the configuration will have been applied and the browser will redirect you to the Site identification screen.

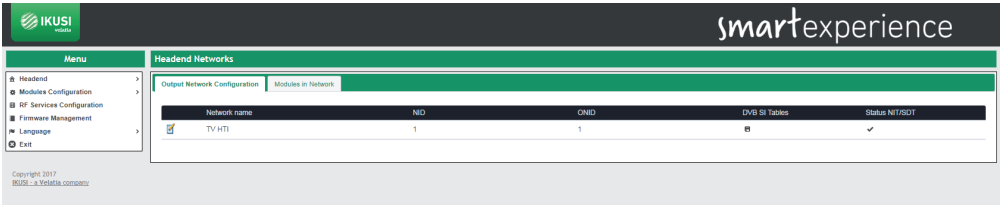


4.1.3 Headend DVB network

This menu displays two tabs through which the user can configure the parameters associated with the transmission network. To access this menu, go to Headend → Headend DVB Network.

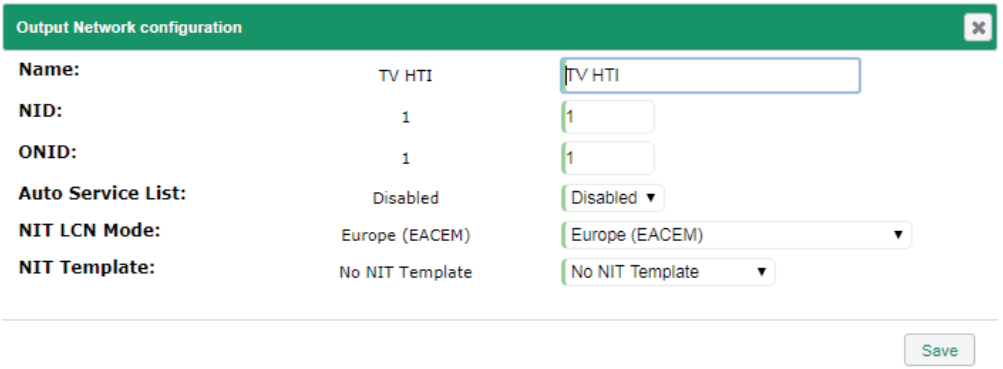
4.1.3.1 Output network configuration

When selecting this first tab, a window as the following one will be displayed:



In this window, the name of the network included in the NIT will be shown, with the value of NID and ONID that are being used. Pushing , icon, you can download the NIT, SDT and TDT tables on your computer. In addition, the Status NIT / SDT field will indicate whether the insertion of tables is correct or not.

To configure the parameters related with the NIT table, . icon. A window as the following one will open:



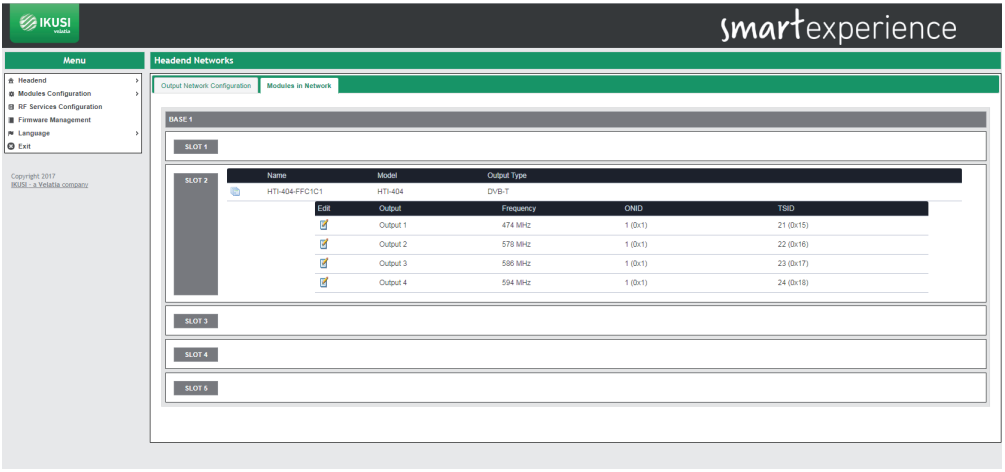
In this window you can configure the following parameters:

- Name: is the network name that will be signalled in the NIT table.
- NID: is the value of the Network Identifier that will be signalled in the NIT table.
- ONID: is the value of the Original Network Identifier that will be signalled in the NIT table.
- Auto Service List: If you don't want to send the service_list_descriptor, select Disabled. In other case, a service_list_descriptor with the information of the services broadcasted by the headend will be included in the NIT table.
- NIT LCN Mode: if youn don't want to send LCN, select Disabled. In other case, select the LCN mode used by the TVs of the facility.
- NIT Template: it allows to select the method of generation of NIT in the case of several NITs exist in the input. The user can choose between three options:
    - No NIT Template: the headend generates a NIT from zero, based on the selected output frequencies, the output services and the selected LCNs.
    - Merged NITs: the headend generates a new NIT based on the descriptors of the NIT tables of the input signals.
    - Available Input NITs: a new NIT is generated, based on the descriptors of the NIT table of a specific input.

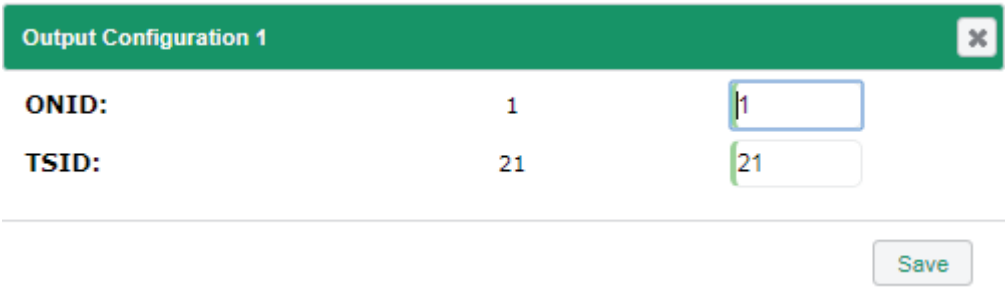
To save the selected parameters, push the Save button.

4.1.3.2 Modules in network

This tab shows the DVB signaling information of the output carriers of all the modules included in the broadcasting network.



Push icon to edit the information of a specific carrier. A window as the following one will open:



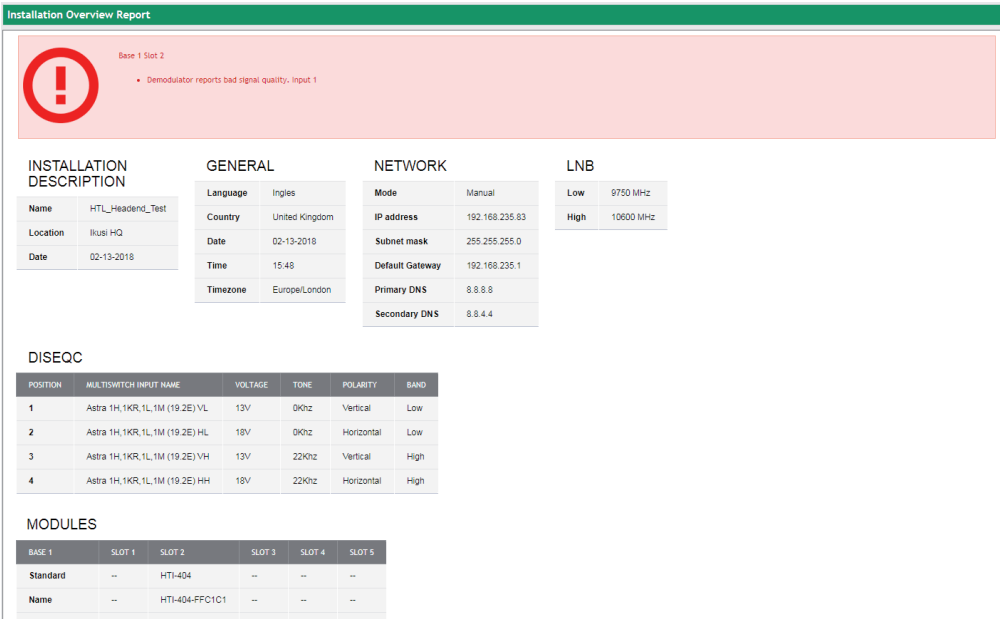
Edit ONID (Original Network Identifier) and TSID (Transport Stream Identifier) fields with the desired values for that carrier and push Save button.

4.1.4 Installation report

Installation report option (Headend → Installation Report) shows, in a grouped way, all the information of the headend. In this report you can find:

- Information about alarms, in the case there are any.
- Installation description.
- Language, data, hour and country information.
- Information about IP connectivity.
- Configuration of the LNB and Multiswitch.
- Headend composition.
- Relevant information of each module, such as serial number, sw version, hw version, temperature or working hours.

- Information about the RF inputs of each module, such as standard, frequency, status, signal strength or signal quality.
- Information about the RF outputs of each module, such as standard, frequency, available space or number of services.
- Information about the services that are processed by each module.



Installation Overview Report

Base 1 Slot 2

- Demodulator reports bad signal quality. Input 1

INSTALLATION DESCRIPTION

Name	HTI_Headend_Test
Location	Ikusi HQ
Date	02-13-2018

GENERAL

Language	Ingles
Country	United Kingdom
Date	02-13-2018
Time	15:48
Timezone	Europe/London

NETWORK

Mode	Manual
IP address	192.168.235.83
Subnet mask	255.255.255.0
Default Gateway	192.168.235.1
Primary DNS	8.8.8.8
Secondary DNS	8.8.4.4

LNB

Low	9750 MHz
High	10600 MHz

DISEQC

POSITION	MULTISWITCH INPUT NAME	VOLTAGE	TONE	POLARITY	BAND
1	Astra 1H,1KR,1L,1M (19.2E) VL	13V	0Khz	Vertical	Low
2	Astra 1H,1KR,1L,1M (19.2E) HL	18V	0Khz	Horizontal	Low
3	Astra 1H,1KR,1L,1M (19.2E) VH	13V	22Khz	Vertical	High
4	Astra 1H,1KR,1L,1M (19.2E) HH	18V	22Khz	Horizontal	High

MODULES

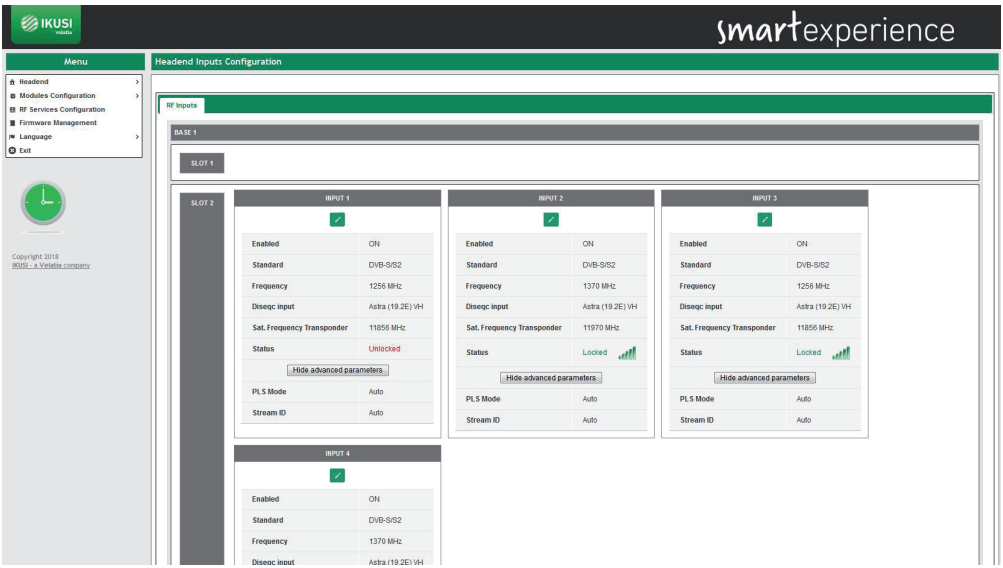
BASE 1	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5
Standard	--	HTI-404	--	--	--
Name	--	HTI-404-FFC1C1	--	--	--

4.2 Modules configuration

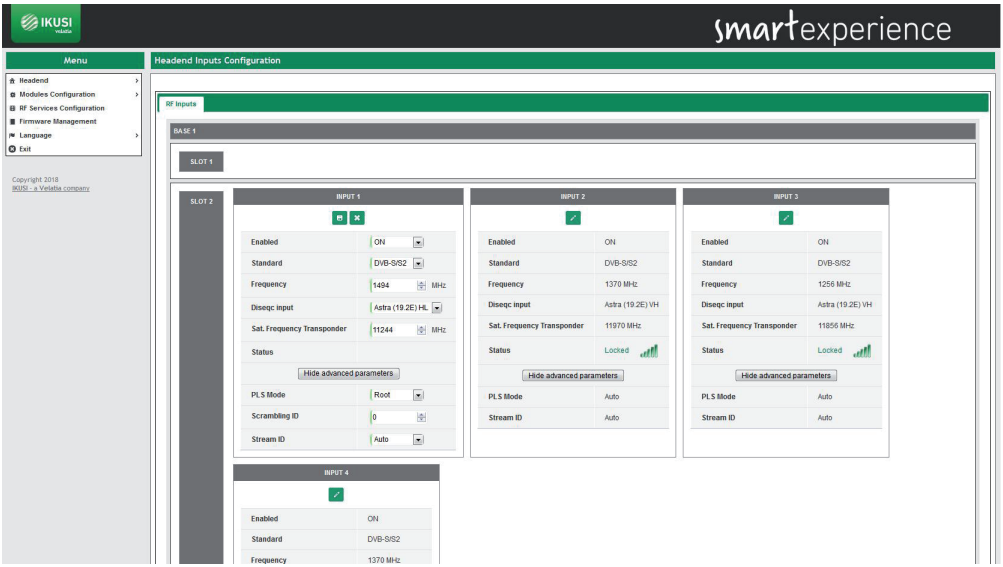
This menu allows you to configure the inputs you want to receive and the carriers that you want to transmit.

4.2.1 Inputs

To configure the inputs you want to receive, select Modules Configuration → Inputs. A window as the following one will open:



In this window, the four inputs of each HTI are displayed. To configure one of them, select the icon associated with that input.



For each input, you must configure if it is enabled or not and what is the reception standard (DVB-S / S2 for satellite, DVB-T / T2 for terrestrial or DVB-C for cable). The rest of parameters will depend on the selected standard, in the following way:

DVB-S/S2

- Frequency (MHz): it allows to select the intermmediate frequency value to be received.
- Diseqc input: it allows to select the multiswitch signal (or the LNB signal) to be received.
- Sat. Frequency Transponder (MHz): it allows to select the frequency value of the transponder to be received. By modifying this parameter, the value of the Frequency field is automatically updated and vice versa.
- Advanced parameters: it allows to show or hide the advanced parameters related to the reception of multistream signals. They are the following:
  - PLS Mode: choose between Auto, Root or Gold modes.
  - Scrambling ID: enter the scrambling identifier related to the selected PLS mode (it does not appear with PLS Auto Mode).
  - Stream ID: choose the specific stream of the multistream signal that you want to receive.

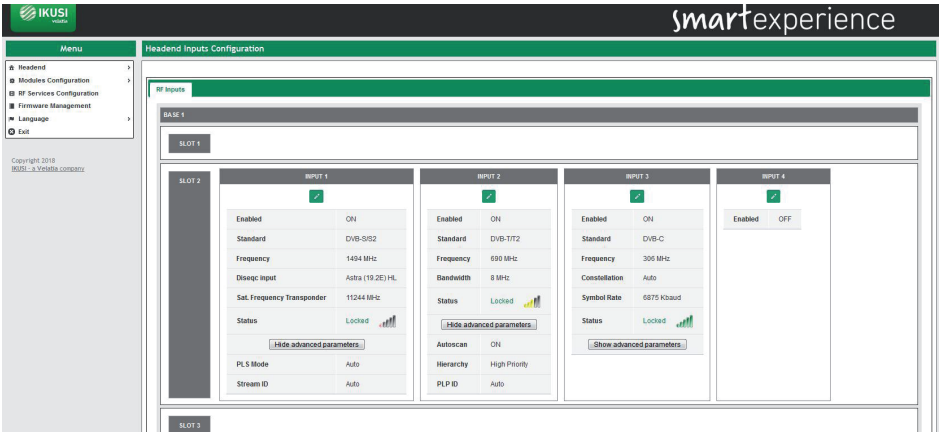
DVB-T/T2

- Frequency (MHz): it allows to select the frequency value of the multiplex to be received.
- Bandwidth (MHz): it allows to select the bandwith of the multiplex to be received.
- Advanced parameters: it allows to show or hide the advanced parameters related to the reception of DVB-T/T2. They are the following:
  - Hierarchy: in broadcasting with several hierarchies, it allows to select the hierarchy of the signal to be received.
  - Autoscan: it allows to enable or disable the automatic scan of the DTT inputs in case of a change in the frequency plan.
  - PLP ID: choose the specific PLP that you want to receive in the case of a signal with multiple PLPs.

DVB-C

- Frequency (MHz): it allows to select the frequency value of the multiplex to be received.
- Constellation: it allows to select the constellation of the input signal. In the case it is configured as "Auto", the module will detect the constellation automatically.
- Symbol Rate (Kbaud): it allows to select the symbol rate of the multiplex to be received.

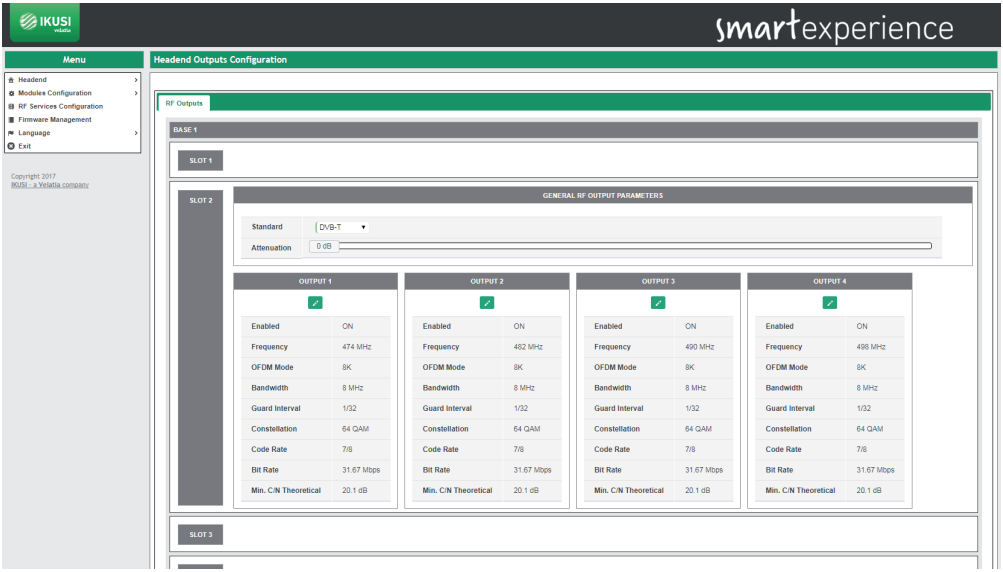
Once the parameters of each input have been selected, push icon to save the changes. If, however, you want to discard them, push icon.



Tuning status (Locked or Unlocked) will appear in each of the inputs. Also, an icon indicating the level of signal and its quality, where red is bad quality, yellow medium quality and green good quality, will be displayed.

4.2.2 Outputs

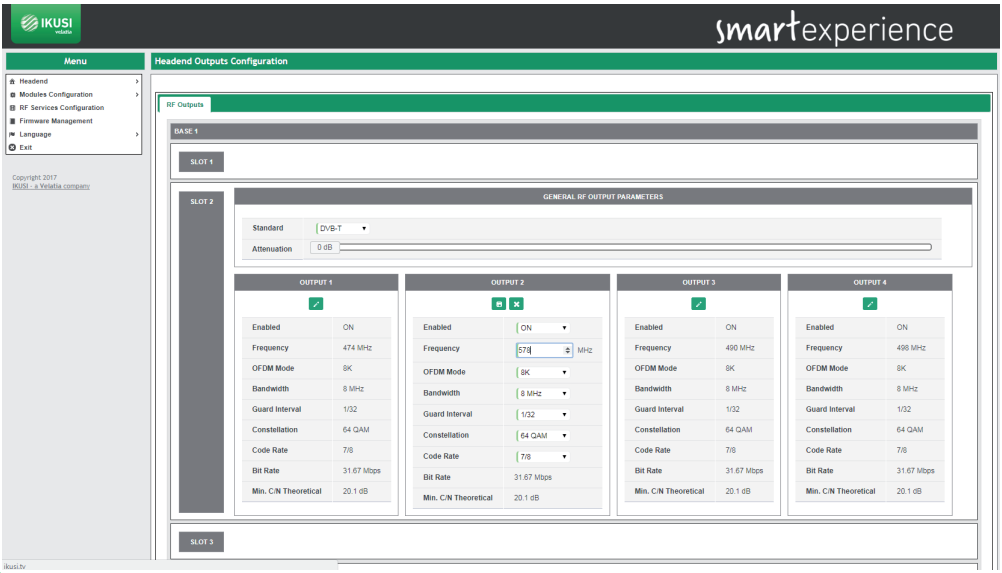
To configure the output carriers you want to transmit, select Modules Configuration → Outputs. A window as the following one will open:



In this screen the output configuration of each module is displayed. This configuration is divided into two parts: a global part associated with the module and another part associated with each of the carriers.

In the global configuration, the output standard (DVB-T or DVB-C) and output attenuation (using a scroll bar) will be selected.

In the configuration associated with the output carriers, the four outputs of each HTI are shown. To configure one of them, select the icon associated with that output.



To enable an output carrier, select Enabled ON. Otherwise, select OFF.

The rest of parameters to configure will depend on the selected standard, in the following way:

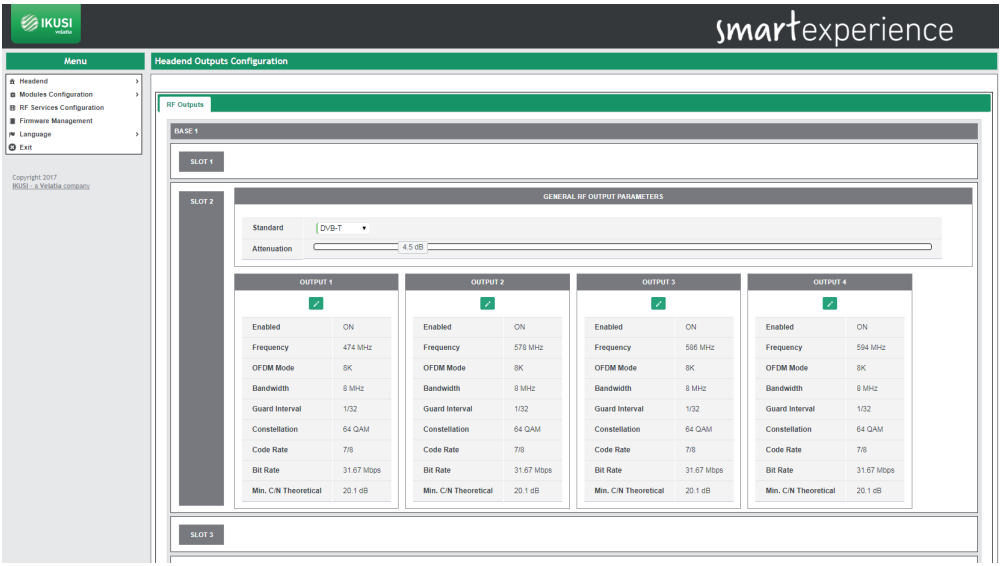
DVB-T

- Frequency (MHz): it allows to select the frequency value of the carrier to be generated.
- OFDM Mode: it allows to select the number of subcarriers of the output COFDM carrier to be generated (2K or 8K).
- Bandwith (MHz): it allows to select the bandwidth of the output carrier to be generated. Choose between 6 MHz, 7 MHz and 8 MHz.
- Guard Interval: it allows to select the guard interval of the output carrier to be generated. Choose between 1/4, 1/8, 1/16 and 1/32.
- Constellation: it allows to select the constellation of each one subcarrier of the COFDM output carrier. Choose between QPSK, 16QAM and 64QAM.
- Code Rate: it allows to select the value of the convolutional code rate used as error protection. Choose between 1/2, 2/3, 3/4, 5/6 and 7/8.

DVB-C

- Frecuency (MHz): it allows to select the frequency value of the carrier to be generated.
- Symbolrate: it allows to select the symbol rate of the output carrier to be generated.
- Constellation: it allows to select the constellation of the output carrier. Choose between 16QAM, 32QAM, 64QAM, 128QAM, 256QAM.

Once the parameters of each output carrier have been selected, push icon to save the changes. If, however, you want to discard them, push icon.



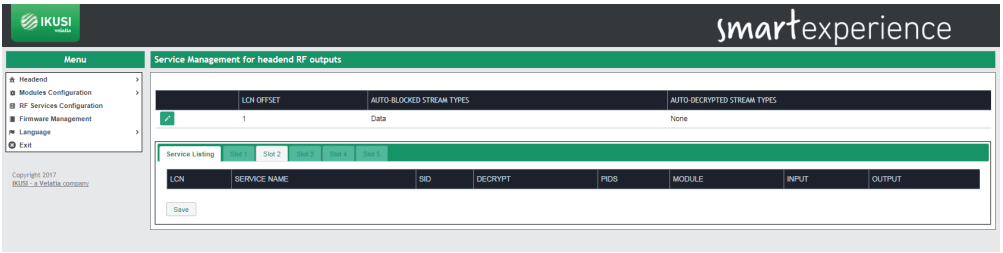
For informative purposes, the following data will appear in each of the outputs:

- Bit Rate (Mbps): it is the capacity of the carrier to transport information, in Mbps.
- Min C/N Theoretical (dB): it is the minimum C/N value that the signal must have at the reception point to make possible its demodulation without erroneous bits.

Both data are theoretical and only depend on the selected modulation.

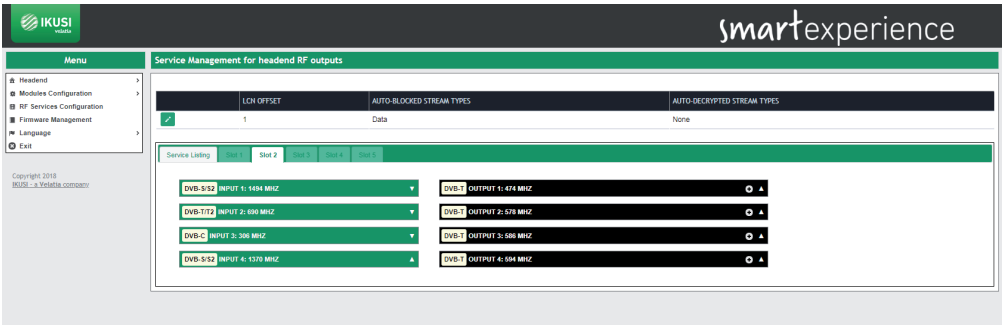
4.3 RF services configuration

Through the RF Services Configuration menu you can select which services you want to receive and in which output carrier they will be broadcasted. In addition, you can customize these services by changing their name, blocking certain streams or editing their LCN value. To access this menu, select RF Services Configuration. A window as the following one will open:

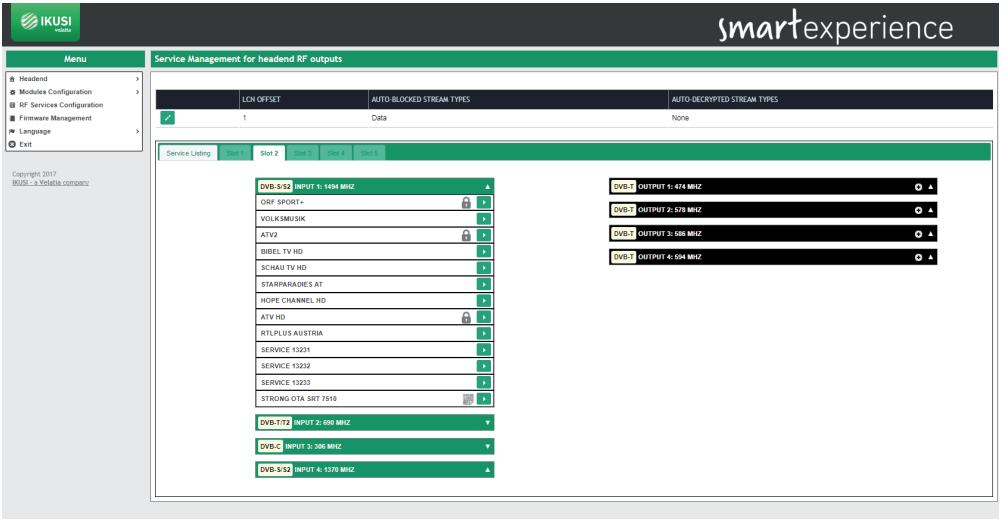


This window is composed of several tabs, one for each slot of the headend, plus one with the complete list of services broadcasted by the headend.

To add services in one of the modules, click the associated slot tab. A window as the following one will open:

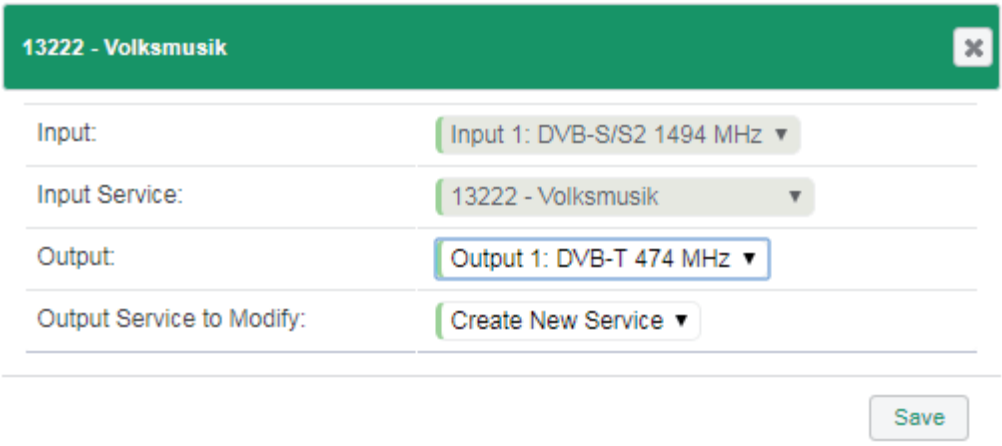


In this window, four drop-down boxes appear on the left, one for each input, and on the right four others, one for each output. To add a service to the output channel lineup, first expand the input where the service is, pushing ▼ icon.

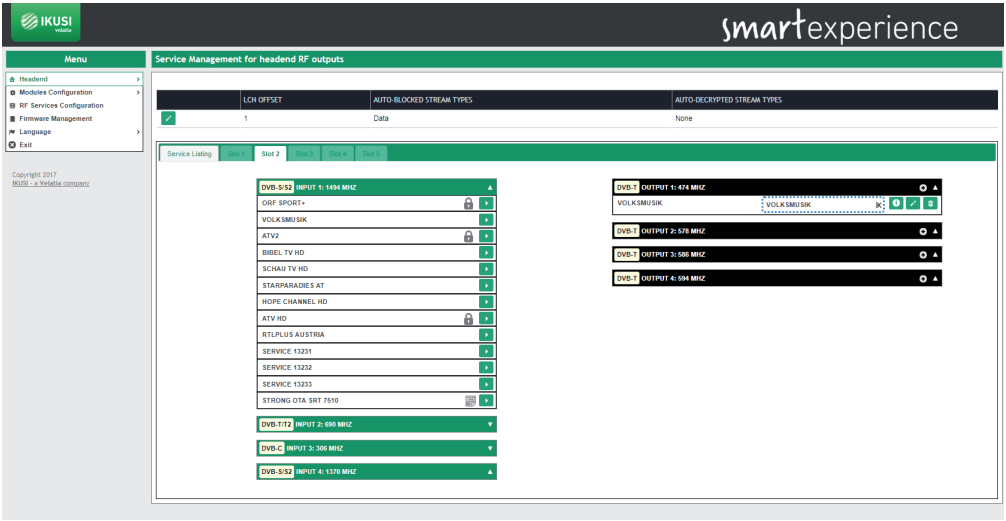


A list with all the services available in that input will appear. In that list, the encrypted services will be identified with the , icon, the radios with the icon and the data services with the icon.

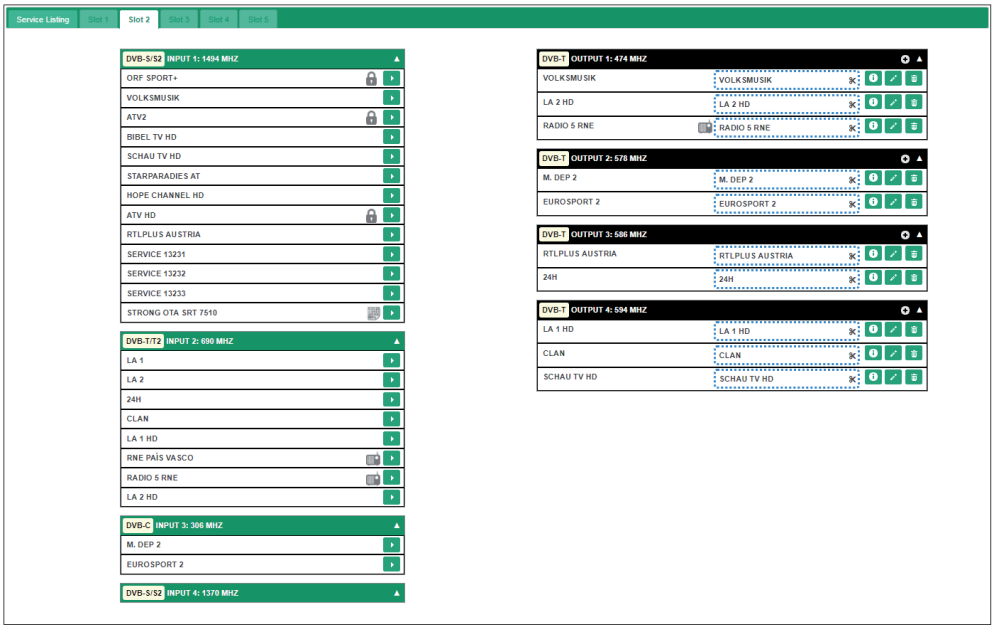
Select the service you want to add and pushing icon. A window as the following one will open:



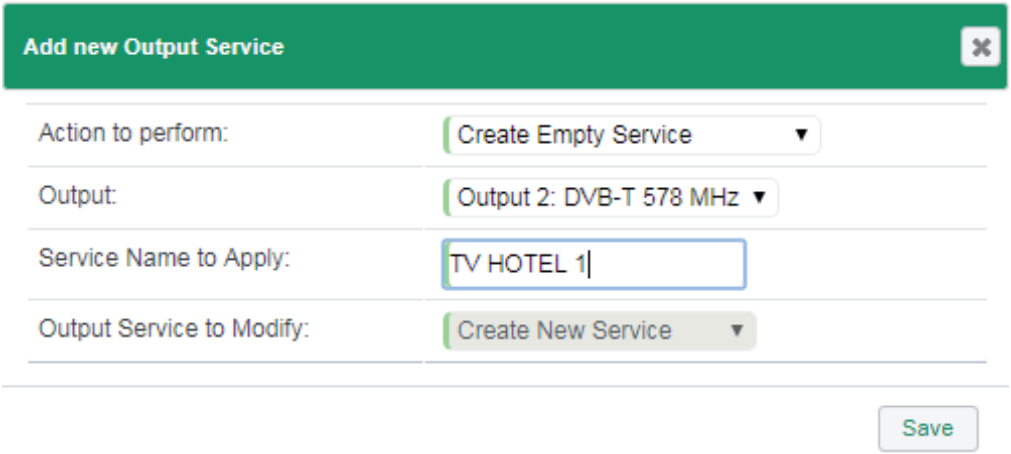
In this window you can choose the output carrier to which the service will be added. You can also choose between creating a new service or reusing the space and signaling of an existing one in the output. In this example, since there are still no services in the outputs, we have chosen to create a new one. Once the desired changes have been made, push Save button. The service will appear in the selected output.



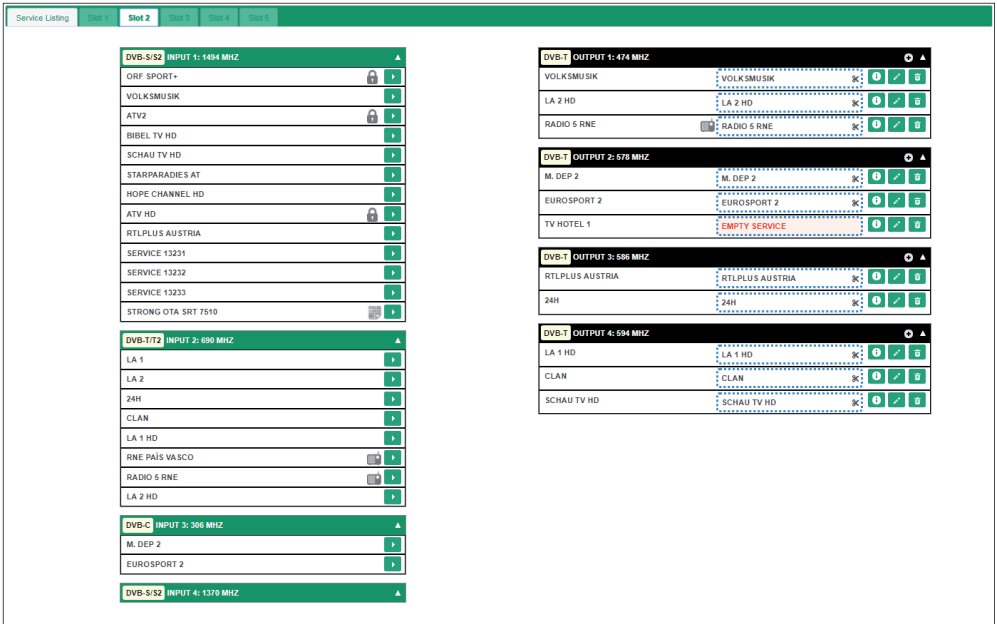
Repeat the process with all the services that you want to add.



The HTI headends also offer the option of presetting backup channels (empty services) that will allow to increase the lineup in the future without the need of launch a scan in the TVs. To create an empty service, push icon in the output where you want to create the backup channel. A window as the following one will open:

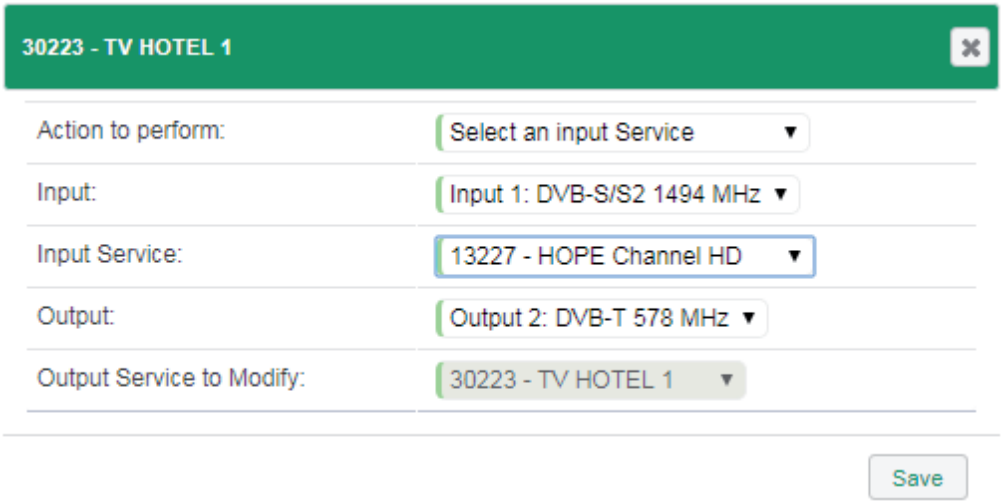


Enter the name you want to assign to the service (in the example, TV HOTEL 1) and push the Save button.

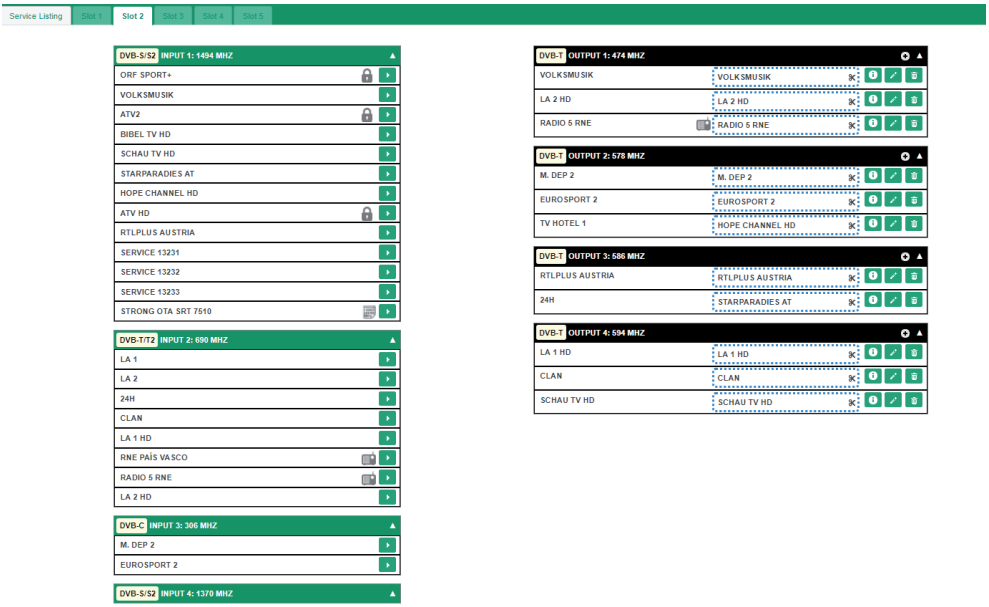


When launching a scan in the TVs, all the services will be stored in memory, empty services too. These backup services could be used in the future for conveying new contents, without the need of rescanning the TVs. In the same way, HTI headends allow to replace the content of an existing services by another one, without the need of rescanning the TVs of the facility.

To add content to an empty service or to replace the content of an existing service, push icon associated with that service. A window as the following one will open:

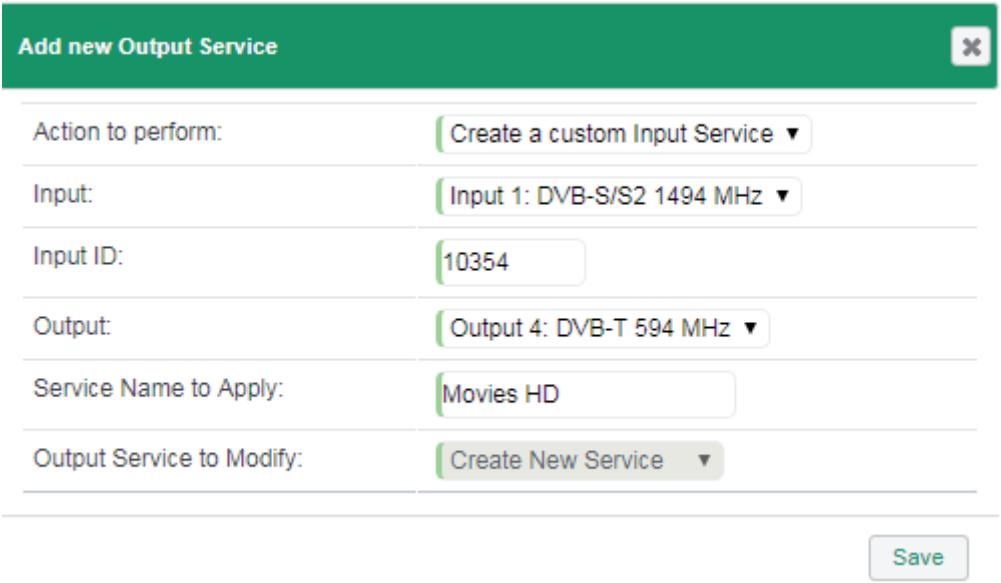


Select the input from which the service will be extracted. In Input Service drop-down select the new content that will be conveyed by the service already scanned in the TVs. Once the service configuration has been modified, push Save button.

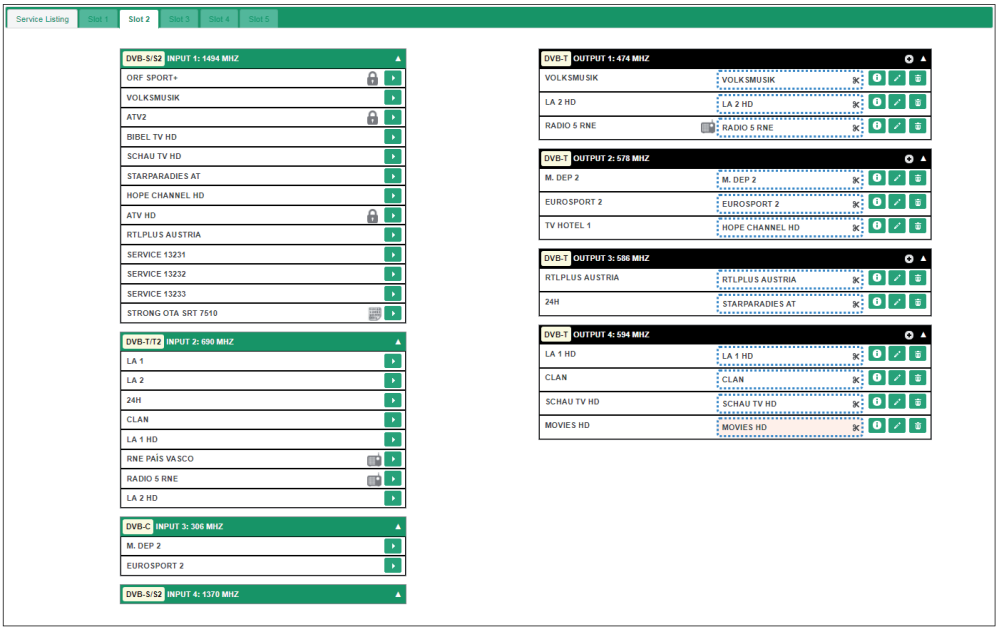


In the example above, HOPE CHANNEL HD service has been added in the TV HOTEL 1 empty service room and the content of 24H service has been replaced by STARPARADIES AT service.

Finally, a service that is not currently being broadcasted can also be added to the channel lineup (for example, services that are only broadcasted at night). To do this, push iconon the output in which you want to broadcast this service and choose "Create a custom Input Service" in the "Action to perform" drop-down.



Enter from which input the service will be extracted, what is its SID (Service Identifier), what name will be assigned to the service and in what output will be broadcasted. To save the changes, push the Save button.



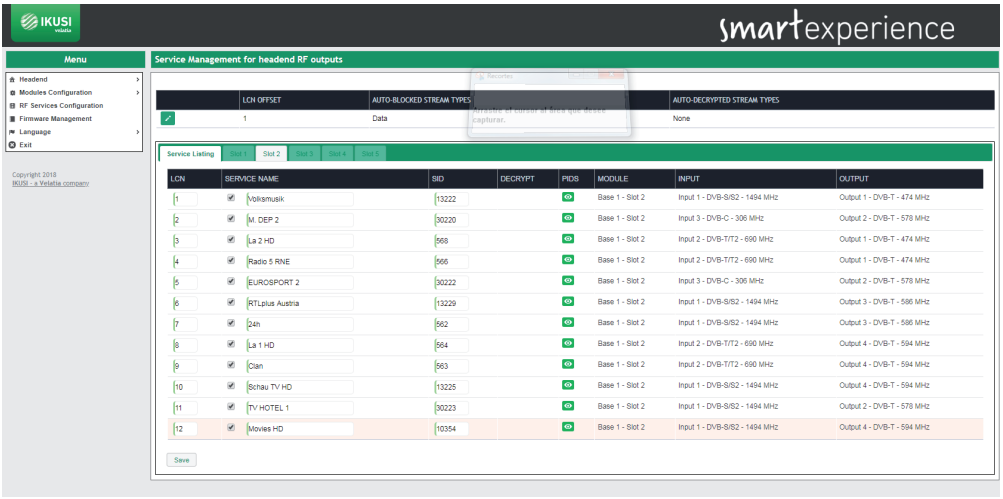
The added custom service will be highlighted on a pink background, which will turn white as soon as the service is available at the input.

Besides adding services, in this same tab you can perform the following actions:

- To obtain information of the service. Pushing , icon, a window with information about name, SID and LCN will open.

- To remove the content of a service. Pushing , icon, the content of the current service will be eliminated, becoming an empty service.
- To remove a service from the output channel lineup. Pushing , icon, the service will be completely eliminated from the output channel lineup.

To see the final result of the channel lineup, select the Service Listing tab. A window as the following one will be displayed:



This window shows a list with all the services generated by the headend. In addition, several global configuration options appear at the top.

The following fields appear in the list of services:

- LCN: it is the value of the Logical Channel Number associated with the service. It is an editable value for the user.
- SERVICE NAME: it is the name of the service that will be transferred to the TVs. It is an editable value for the user. To force this name and to not depend on the name of the service in the input, enable the checkbox that appears on the left. On the other hand, if you want the name to change as the input name changes, leave the checkbox disabled.
- SID: it is the value of the Service Identifier associated with the service. It is an editable value for the user.
- DECRYPT: it is a field reserved for future modules that will include the ability to decrypt. .
- PIDS: it allows to modify the management of the elementary streams. Pushing icon, a window will open, where the user can force the blocking of a specific PID, pass it to the output or let the headend makes the decision of processing it or not.
- MODULE: it indicates in which module the service is being processed.
- INPUT: it indicates which input is receiving the service
- OUTPUT: it indicates which output carrier is broadcasting the service.

Global options are edited by pushing icon and they are the following ones:

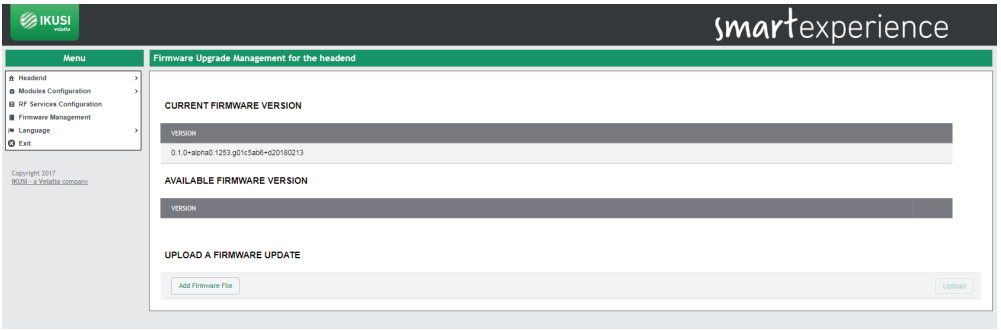
- LCN OFFSET: it is the value from which the headend proposes LCNs.
- AUTO-BLOCKED STREAM TYPES: it indicates whether the Teletext, Subtitle or Data streams are automatically blocked.
- AUTO-DECRYPTED STREAM TYPES: it indicates whether the Teletext, Subtitle or Data streams are automatically decrypted.

4.4 Firmware management

Firmware Management option allows to upgrade the headend with a new firmware version.

NOTE: the HTI headend does not allow to downgrade the modules to an older version.

The screen to manage firmware files is as follows:



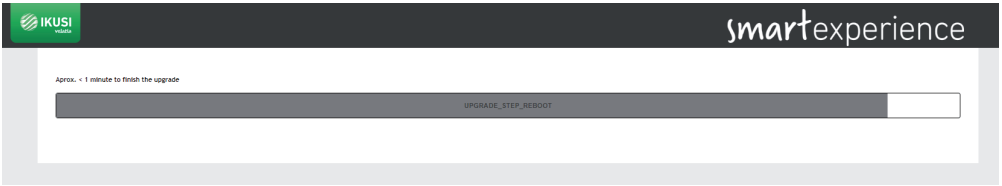
This screen is divided into three blocks:

- CURRENT FIRMWARE VERSION: it informs about the firmware version of the headend.
- AVAILABLE FIRMWARE VERSION: it allows to upgrade the whole headend with a firmware version that, previously, has been uploaded from the PC. Push Install button to upgrade the headend with this version.

- UPLOAD A FIRMWARE UPDATE: use this option to upload to the headend a firmware version. Select the firmware through Add Firmware File button. After that, push Upload button. Once the firmware has been uploaded, it will appear in the AVAILABLE FIRMWARE VERSION section.

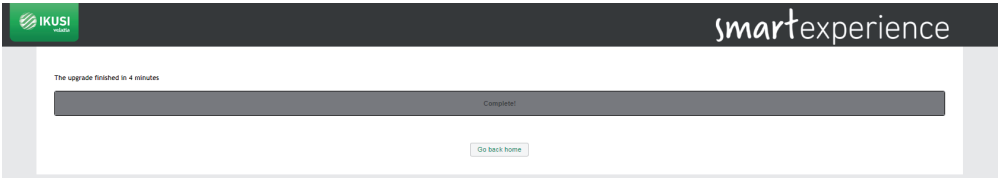
To update the headend, push the Install button associated with the desired firmware version. If necessary, upload the version previously through the web interface, using UPLOAD A FIRMWARE UPDATE option.

After pushing the Install button, the upgrade progress screen will open.

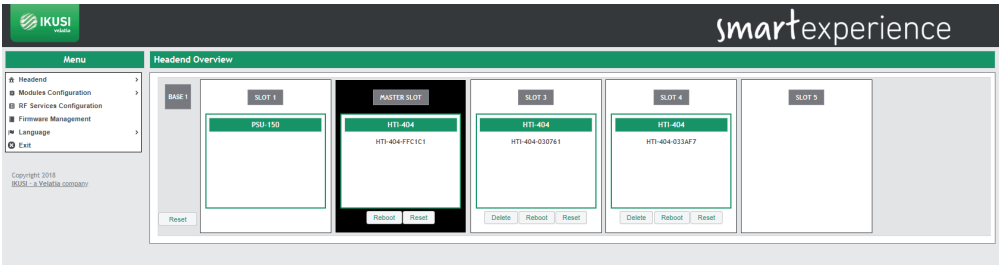


This screen shows an estimate of the time remaining to complete the update, a progress bar indicating the progress of the update and information on what action is currently running.

At the conclusion of the upgrade, a message will appear as follows:



Push the Go back home button. The web interface will redirect you to Overview screen.

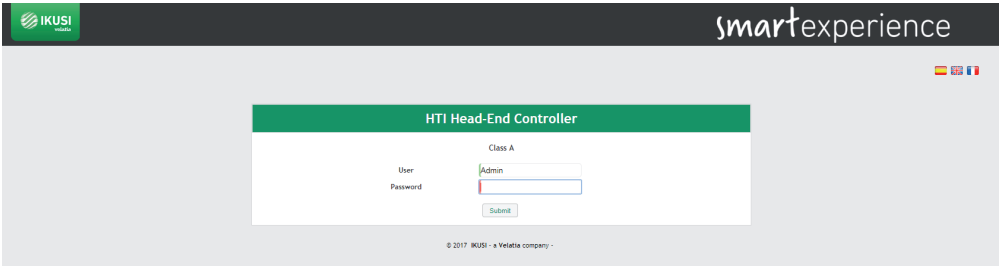


4.5 Language

Language menu allows to select the language you want the interface will be shown.

4.6 Exit

Select this option to close the session with the headend. The browser will redirect you to the welcome screen.



5. EQUIPMENT RECYCLING

RECYCLING OF ELECTRICAL AND ELECTRONIC EQUIPMENT

(Applicable in the European Union and in European countries with selective waste collection systems)

This symbol on your equipment or its packaging indicates that this product cannot be treated as general domestic waste and must be handed in at the corresponding point of collection for electric and electronic equipment. By ensuring this product is disposed of correctly you will help prevent negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. Recycling of materials helps preserve natural resources. For more detailed information on the recycling of this product, please contact your local council, your nearest collection point or the distributor from whom you purchased the product.

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