

emSET

Version 2.0 Software

User guide

emSET-UG01-003

Product: **emSET**

FEB 8, 2018



Table of contents

1- Overview	3
2- Prerequisites	3
3- Getting started;	3
Installing the Server software	3
Connecting to the emSET	4
Administration	4
Defining a user and permission.....	4
Defining the discovery range	6
4- Using the Software.....	7
General navigation.....	7
Configuring the devices.....	8
Configuring the flows.....	9
Using the routing panel.....	12
Installing program on devices	13
Removing program on devices	14
Selecting program on devices	15
5- Data storage.....	16

1- Overview

emSET software can be used to configure a variety of Embrionix processing modules. The software can be used to configure, monitor and control the routing of flows by communicating with individual modules inside your network space. The emSET is designed as a server / client software; the server software can be installed on one PC and multiple instances of clients can connect to the server remotely or locally via an internet browser.

2- Prerequisites

To run the Server Software for Server Software or Clients

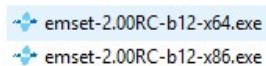
- Intel ® core ™ i5 CPU 2.39 GHz or equivalent
- Windows 7 or Windows 10 operating system.
- 64-Bit or 86-Bit base processor
- Supported HTML Browsers: Internet Explorer 11+, Microsoft Edge 41+, Mozilla Firefox 58+, Chrome 63+

3- Getting started

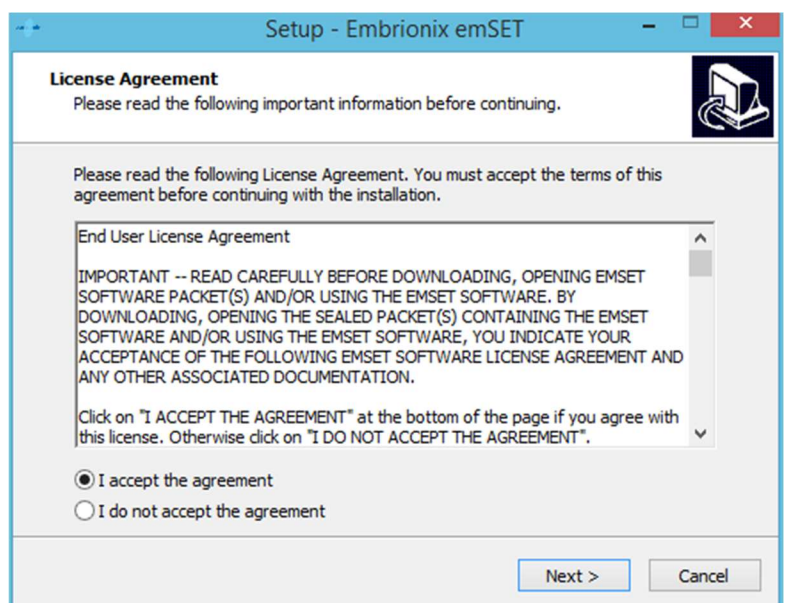
Installing the Server software

The software installer comes with an executable running on Windows platform 64-Bit or 86-Bit.

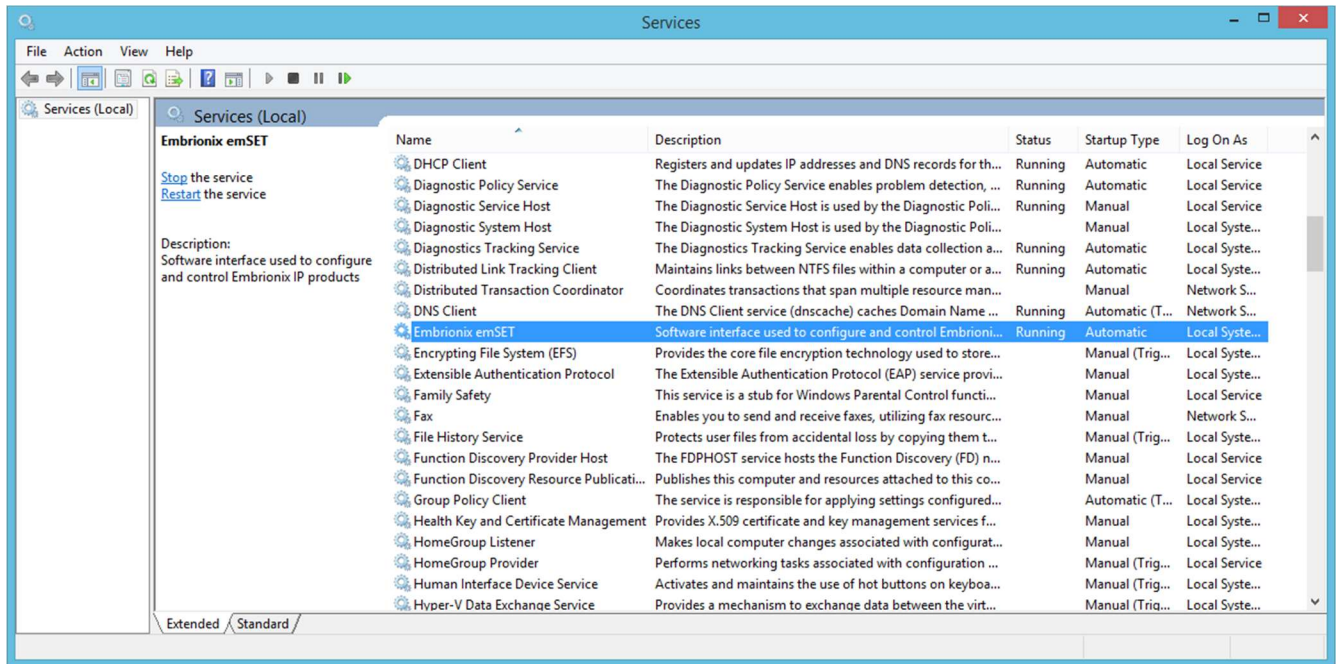
- Choose the one that corresponds to your Windows system platform and DoubleClick to proceed with the installation.



- Accept the end user License Agreement and click Next.
- Enter your preferred Administration password and click Next.
- Then Select the port where the server will be available and click Next.
- Click Install to proceed



- f. A Service “Embrionix emSET” will be installed on your System. This service starts automatically at boot up of the PC.



Connecting to the emSET

The emSET can be accessed via a browser, to connect follow these steps:

- a. Open an Internet Browser either on the local PC or on a remote PC.
 - a. Local PC: Type; Local host and the configured port address. i.e. <http://localhost:8080>
 - b. Remote PC within the same Network: Type; IP address of the Host PC and the configured port address. i.e. [Http://192.168.39.240:8080](http://192.168.39.240:8080)
- b. The client application will start and you will be prompted to enter your login info.
- c. Enter the Admin login info.
- d. The software will open directly to the Admin page

Administration

The administration tab is divided in 3 main sections, the Users management, the server discovery settings and the about.

Defining a user and permission

To create a new user click New in the “Define Users” section

Users management:

Define Users:

admin

+ New Edit

Info:

Username: N/a
Password: *****

Role:

Admin View Only

You will be prompted to enter the Username and Password. Then you need to select a role, by default there is the Admin role than can View and Edit anything. The other default role is View Only, this role can not edit but view every page.

Create New User

Username: test

Password: ****

Role:

Admin View Only

Create Cancel

You can also define a new role, to do so you can click New in the Define Roles section

Define Roles:

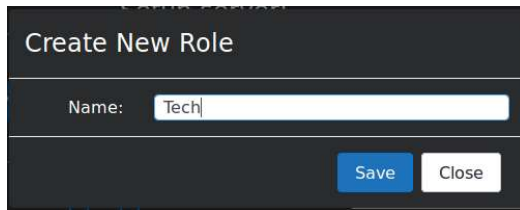
Role ▾

+ New

Permission	View	Edit
PAN A:		
Panel	<input type="checkbox"/>	<input type="checkbox"/>
List	<input type="checkbox"/>	<input type="checkbox"/>
Routing	<input type="checkbox"/>	<input type="checkbox"/>
Graph	<input type="checkbox"/>	<input type="checkbox"/>
PAN B:		
Setup	<input type="checkbox"/>	<input type="checkbox"/>
Monitor	<input type="checkbox"/>	<input type="checkbox"/>
Upgrade	<input type="checkbox"/>	<input type="checkbox"/>

System Permissions	View	Edit
Define Users	<input type="checkbox"/>	<input type="checkbox"/>
Define Role	<input type="checkbox"/>	<input type="checkbox"/>
Server Config	<input type="checkbox"/>	<input type="checkbox"/>

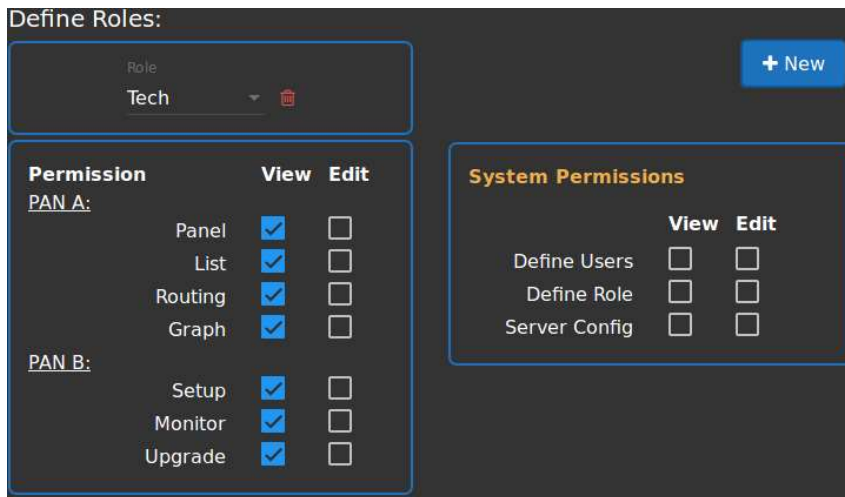
You will be asked to enter the new role's name. Enter a name and click Save.



Create New Role

Name:

After that, you will be able to configure the permission for the role. To add/remove a permission for a task, you click on the permission view or edit. As soon as you click on a permission, the configuration is pushed to the server.



Define Roles:

Role: Tech

Permission	View	Edit
PAN A:		
Panel	<input checked="" type="checkbox"/>	<input type="checkbox"/>
List	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Routing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Graph	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PAN B:		
Setup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Monitor	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Upgrade	<input checked="" type="checkbox"/>	<input type="checkbox"/>

System Permissions	View	Edit
Define Users	<input type="checkbox"/>	<input type="checkbox"/>
Define Role	<input type="checkbox"/>	<input type="checkbox"/>
Server Config	<input type="checkbox"/>	<input type="checkbox"/>

Defining the discovery range

The discovery range determines the accessibility to your devices from this server. You can configure one or multiples ranges. By default, the emSET will scan address 192.168.39.1 to 192.168.39.254. To configure multiples ranges you define one per line as shown in the next image.

Setup server:

RESTful API control settings:

Discovery range:
 1

i.e: 10.0.0.1-10.0.0.254 or 10.0.0.1-254 ?

Interval: The time (ms) between 2 discovery processes. ?

Request Timeout: The time (ms) to wait device response before leaving. ?

Thread Pool: Number of parallel discovery threads. ?

Refresh Data After: The time (s) between 2 refreshes of static data. ?

NMOS settings:

NMOS Server IP:

Discovery range:

i.e: 10.0.0.1-10.0.0.254 or 10.0.0.10-254 ?

2

Note that you can always go back to the default setting by click the Reset button at the bottom of the page and click Submit.

4- Using the Software

General navigation

The software is designed in two principal sections; the PAN A on the left is used to navigate and select devices for configuration and monitoring. The PAN B on the right is used to execute the configuration and monitor statuses.

- a. At the top of each PAN, you can select to see the Devices, or the Signals.

- PAN A: Let you navigate through the list of discovered devices or signals. You can also use the Routing to route the flows. The SDI Audio Mapping can also be done via PAN A as well as PAN B.
- PAN B: Let you configure the management of the devices and the configuration of the signals via the Setup panel. Another available panel is the monitoring to monitor the devices or signals statuses. Finally, you can switch to the upgrade to update the devices' firmware or change the running program.

The screenshot displays the emSET software interface. On the left, the 'List' view (PAN A) shows a table of discovered devices. On the right, the 'Setup' view (PAN B) shows the configuration details for a selected device.

Name	MAC	IP	Type	Status
3-2110 Encapsulator	40:a3:6b:a0:14:e2	192.168.39.190	3-2110 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:5a	192.168.39.170	4-2110 Decapsulator	ONLINE
3-2110 Encapsulator	40:a3:6b:a0:14:e8	192.168.39.196	3-2110 Encapsulator	ONLINE
3-2110 Encapsulator	40:a3:6b:a0:14:f2	192.168.39.194	3-2110 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:38	192.168.39.177	4-2110 Decapsulator	ONLINE
3-2110 Encapsulator	40:a3:6b:a0:14:dc	192.168.39.191	3-2110 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:58	192.168.39.173	4-2110 Decapsulator	ONLINE
8-2022-6/7 Encapsulator	40:a3:6b:a0:14:d2	192.168.39.179	8-2022-6/7 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:44	192.168.39.175	4-2110 Decapsulator	ONLINE
8-2022-6/7 Encapsulator	40:a3:6b:a0:2c:22	192.168.39.215	8-2022-6/7 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:2a:02	192.168.39.113	4-2110 Decapsulator	ONLINE
3-2110 Encapsulator	40:a3:6b:a0:14:ea	192.168.39.197	3-2110 Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:5c	192.168.39.174	4-2110 Decapsulator	ONLINE
9-2022-6/7 De-Encapsulator	40:a3:6b:a0:15:5e	192.168.39.180	9-2022-6/7 De-Encapsulator	ONLINE
4-2110 Decapsulator	40:a3:6b:a0:15:36	192.168.39.171	4-2110 Decapsulator	ONLINE
3-2110 Encapsulator	40:a3:6b:a0:14:de	192.168.39.198	3-2110 Encapsulator	ONLINE
2022-6 Decapsulator	40:a3:6b:a0:21:38	192.168.39.210	2022-6 Decapsulator	ONLINE

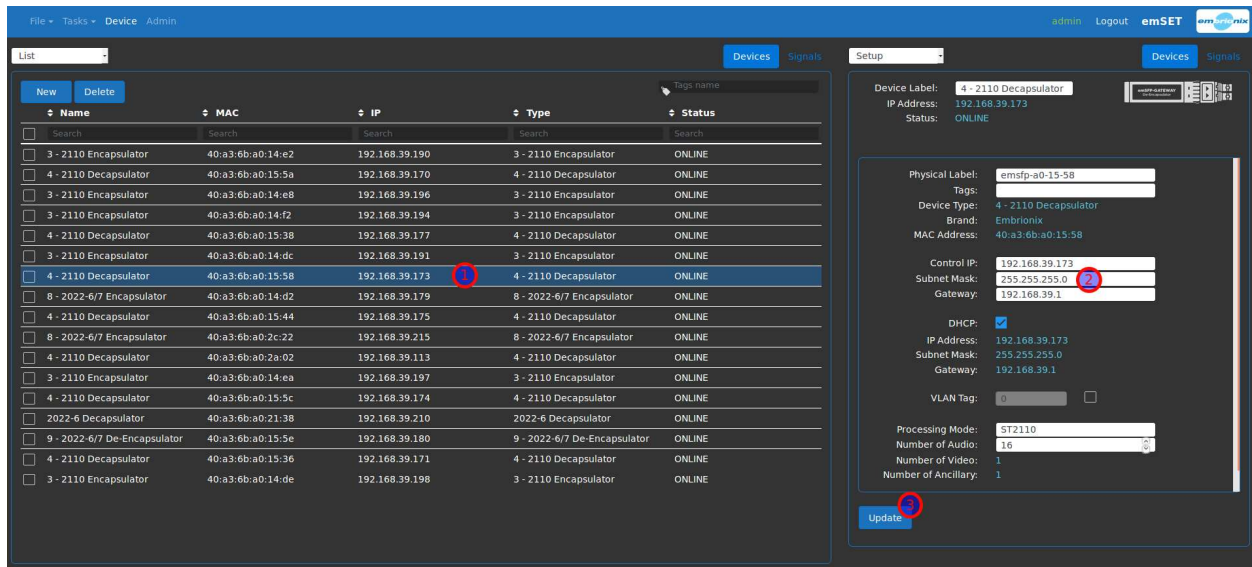
The 'Setup' view (PAN B) for the selected device '2022-6 Decapsulator' shows the following configuration:

- Device Label: 2022-6 Decapsulator
- IP Address: 192.168.39.210
- Status: ONLINE
- Physical Label: emsp-a0-21-38
- Tags: [empty]
- Device Type: 2022-6 Decapsulator
- Brand: Embriomix
- MAC Address: 40:a3:6b:a0:21:38
- Control IP: 192.168.39.10
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.39.2
- DHCP:
- IP Address: 192.168.39.210
- Subnet Mask: 255.255.255.0
- Gateway: 192.168.39.2
- Processing Mode: 572022_6
- Location: [empty]

Configuring the devices

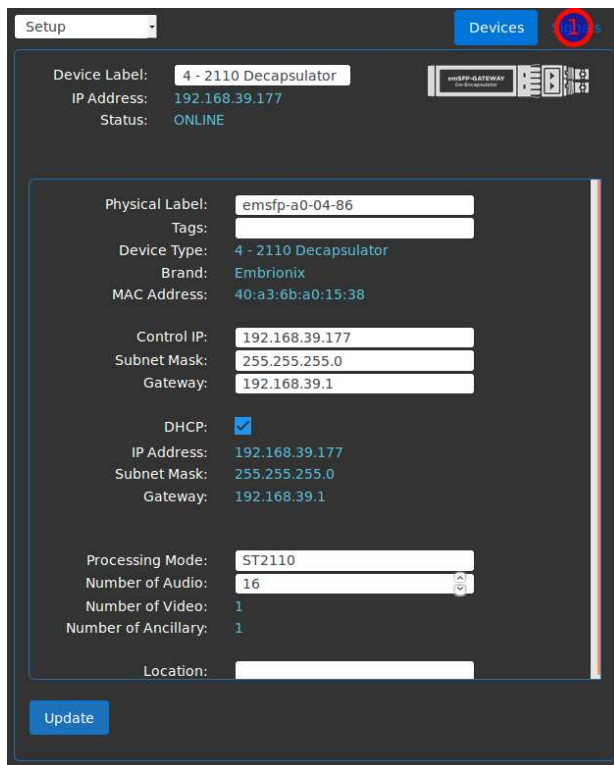
To configure the devices control IP addresses, you can click on Tasks and then Setup devices. This will adjust both PAN A and PAN B for the task.

After that you will want to select a device in PAN A, the PAN B will be updated with the information of that device. You can now update the Control IP, Subnet Mask and Gateway. Double check the information before clicking the Update button since if the information is not filled correctly you might lose the connectivity with the device. Subsequently, you can click Update, the device will restart with its new configuration.



Configuring the flows

To configure the flows, you can switch the PAN B to Signals.



The PAN B will switch to the Signals configuration. There you can first select the channel you want to configure. Then, you can choose the essence you want to configure if you are in 2110, in 2022 there is only one flow. You will want to minimally configure the destination IP, the destination MAC will be

automatically calculated based on the multicast IP. Make sure the flow is enable and click Update. Repeat for all essences, secondary flows and channel. You can also repeat the same configuration with the decapsulator but you can also use the routing to “copy” the configuration from the encapsulator to the decapsulator. The routing will be explained in next section.

Setup

Devices Signals

Device Label: 3 - 2110 Encapsulator

IP Address: 192.168.39.190

Status: ONLINE

Channel: 1

Flows SDI

Primary/Secondary: Primary Secondary

Flow: Video

Source IP: 192.168.1.1

Source Port: 10000

Name: 190_0

Tags:

Label: st2110 flow

Destination IP: 239.190.120.1

Destination Port: 20000

Destination MAC: 01:00:5e:3e:78:01

VLAN ID: 120

Enable Flow:

RTP SRC ID: 96

SDP File URL: 192.168.39.190/emsfp/node/v1/s

Sample Rate: 6144

Update

Thereafter, you can configure the SDI Audio Mapping if you are in 2110. The first thing to do is to change from the flows to the SDI configuration. In the following example, only Audio 1 and Audio 2 have been enabled so Audio 3 to 8 are greyed out. Here you will want to enable the channel you want to be assigned to each IP flows.

Setup

Devices Signals

Device Label: 3 - 2110 Encapsulator

IP Address: 192.168.39.190

Status: ONLINE

Channel: 1

Flows SDI

SDI audio mapping; Enable SDI audio channel inside your IP audio flows by selecting the SDI channels from 1 to 16. Enabled SDI channels will be mapped in the IP flows in the same order.

Audio IP

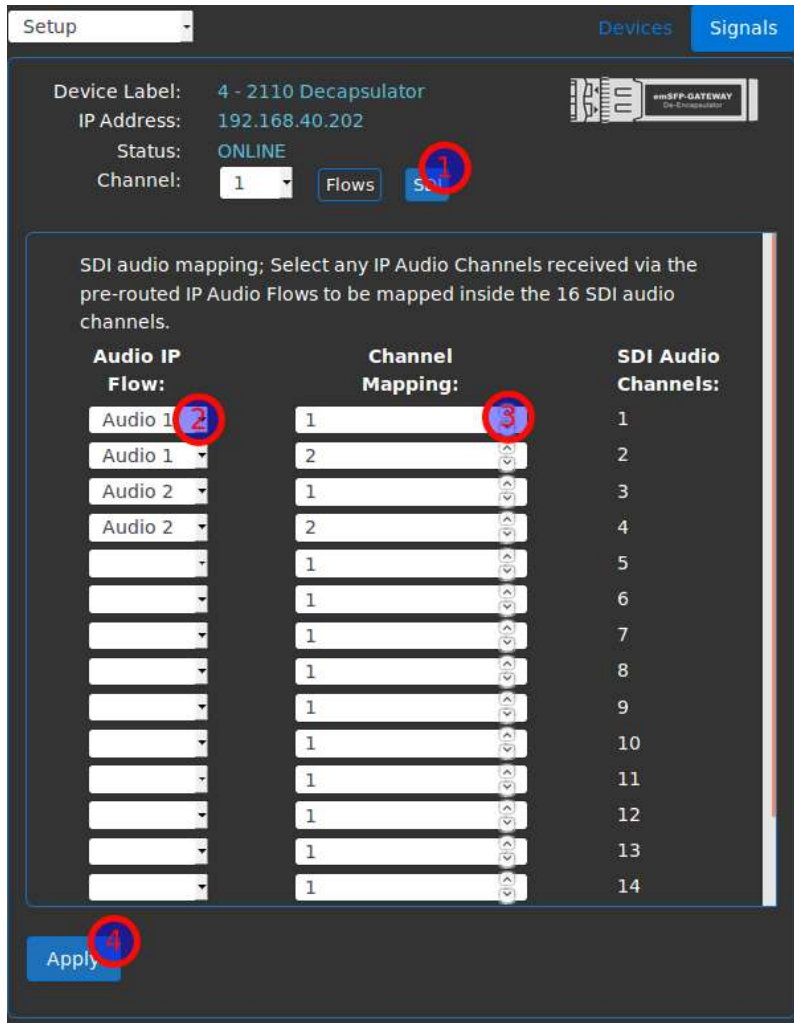
Flows: SDI to IP Channel Mapping:

Audio 1:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 2:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 3:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 4:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 5:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 6:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 7:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Audio 8:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Clear

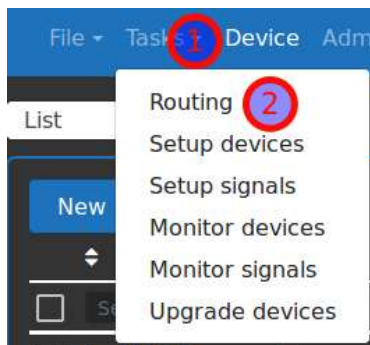
Apply






For the SDI Audio Mapping is a little bit different on the decapsulator side. For each SDI Audio channel you can select the assigned channel(s) for each IP Flow. In the following example, we assigned the SDI channel 1 and 2 to the first audio flow and 3 and 4 to the second audio flow so we remapped the original channels 5 and 6 to 3 and 4. One other thing to consider is the number of SDI channels. This setting can be configured in the Flows page for the audio flows. That configuration need to match the number of enabled channels in the flow on the encapsulator.



Using the routing panel

To change the flow configuration of a decapsulator you can easily use the Routing to do that. The routing will copy the configuration of the encapsulator and paste it to the decapsulator. To perform a routing action, you first need to go in the Routing mode. To do so click on Tasks then Routing.



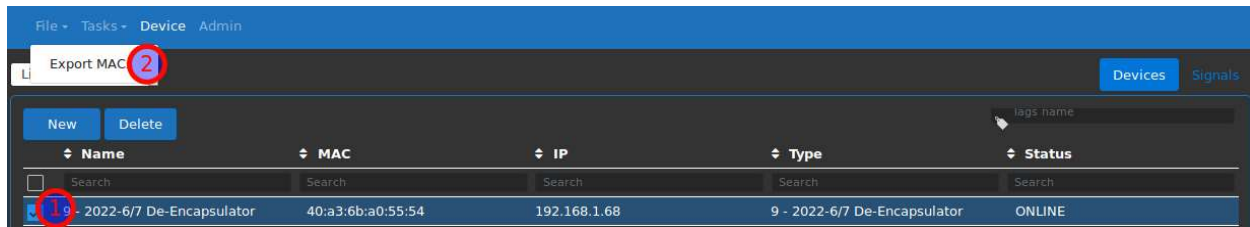
- **Routing:** When the  is ON, you can use the panel as a router panel. The workflow starts with selecting a Destination (Decapsulator) first, then, clicking on a Source (Encapsulator) to execute a routing.
- **Editing:** To enter in Edition mode. De-active the routing by clicking the editing mode  and set the PAN-B to Setup. This will let you change the configuration of the Signals and the Devices.
- **Multiple selection:** Pressing on  will change to the multiple selection. In routing mode, the multiple selection lets you configure multiple destinations to the same source. To go back to the single selection click on . Also you can do a select if you need to change all decapsulators by clicking on  after clicking on the multiple selection icon.

Installing program on devices

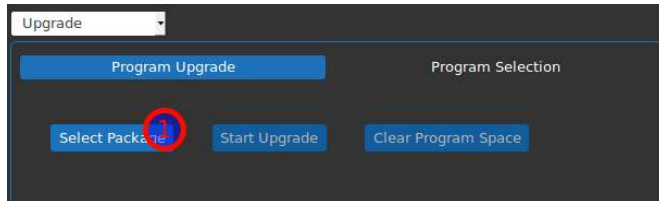
To upgrade devices managed by the emSET you first need to navigate to the Upgrade devices panels. To do that click on Tasks in the top left corner and select Upgrade devices.



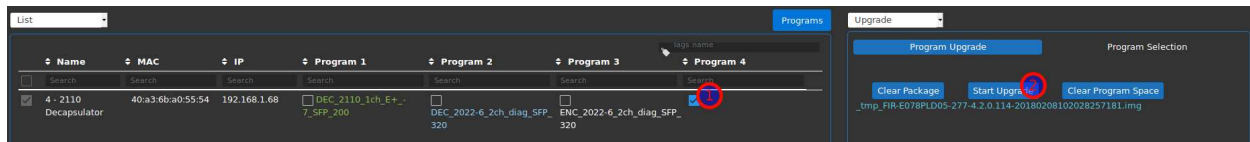
After that, you need to select a package that was provided by Embrionix. If you don't have a package you need to provide the MAC address list of the device you want to upgrade to Embrionix. You can export the MAC addresses from the emSET by first selecting one or multiples devices and then click on File and Export MAC. To facilitate the exportation of a particular type of device you can also filter first then do a select all.



Now that you have a package you can load it in the emSET. Click on Select Package from PAN B. The emSET will read the package and will filter the PAN A with the devices associated with the package.



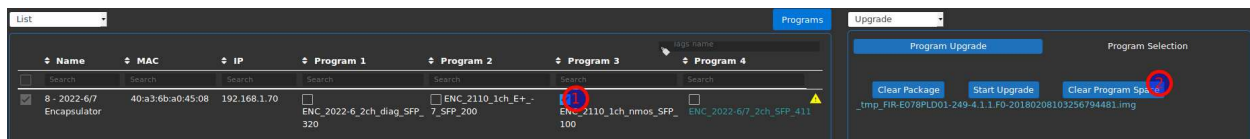
The system will automatically select the first available program for each device. You can make adjustments as needed. Also, if for some devices there is no free slot for the new program an exclamation mark will be displayed. We will explain how to erase a program in the next section.



The next thing you can do is to click on Start Upgrade and wait a few minutes for the upgrade to finish. Once completed you can click Clear Package to upgrade another set of devices. Now the program is installed but not currently running. To change the current program, follow the guide in the [“Selecting program on devices”](#) section.

Removing program on devices

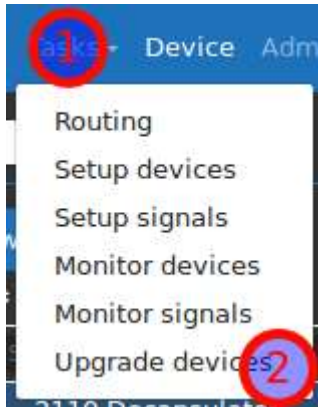
In the event that all the programs on the device are used you can clear a program by selecting the program you want to clear for each device and click “Clear Program Space” in PAN B. Once you click the clear button it will take approximately one minute for the program to be erased from the flash.



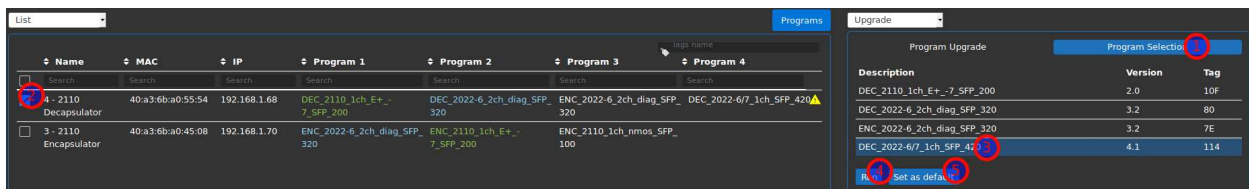
Once completed, you will be able to select this empty program slot to install the new program.

Selecting program on devices

To change the active program on one or multiple devices you need to go in the device upgrade panel. To do that you just have to click on Tasks and then Upgrade devices.



Once you are in the device upgrade section you will want to switch PAN B to Program Selection and then select the device for which you want to change the running program. After this, you select the program and hit the Run button. The program will change and the device will come back shortly. Thereafter, you might want to set this new program as the default. The default program is what will be loaded after a power outage or a reboot of the host.



Following the program selection, you will want to wait for the emSET to update the configuration. To go back to the device list, click on Tasks then Setup devices.



5- Data storage

Most of the configuration data are stored inside the devices themselves. Some additional information such as friendly names, locations of devices are stored inside flat files located here:

C:\Program Files\Embrionix emSET\data: discovery, user and permissions and devices settings.

C:\Program Files\Embrionix emSET/logs: Contains logging information. These files will be very useful for Embrionix support in case you may experience issues with the software.