ADSP-SC5xxx Setup

Setup

Demo of the AES67/RAVENNA implementation using the sc573-ezkit

Features

Supported sampling rates are 44.1,48,88.2,96 kHz. Supported number of channels is 8 in and 8 out at 1 FS and 4 in and 4 out at 2 FS

Startup

To run the example :

- 1. Load the ramdisk/sdcard image using u-boot
- 2. Log in with username is **root** and the password is **adi**.
- 3. Modify the /home/root/startup.sh with e.g. nano and set the wanted IP address and hostname (a uniq hostname is required for Avahi).
- 4. Run startup.sh from /home/root/ directory

Default startup.sh Script

```
hostname adsp-sc573-ezkit-xxx
# NIC setup
ifconfig eth0 169.254.20.13 netmask 255.255.0.0
ethtool -C eth0 tx-frames 1
ethtool -C eth0 tx-usecs 0
ethtool -C eth0 rx-usecs 75
# configuring PTP using ptp41
/usr/bin/sbin/ptp4l -i eth0 -s &
# increase the irq priority
chrt -r -p 99 9
# AES67
insmod /lib/modules/4.19.0-yocto-
standard/extra/MergingRavennaALSA.ko
cd Butler/
./Merging RAVENNA Daemon &
# only critical message are print in the console
dmesg -n 1
# SHARC firmware load and start
cd ..
mkdir /lib/firmware
cp -- "Firmware/SharcAES67.ldr" "/lib/firmware/SharcAES67.ldr"
echo "Start SHARC core"
cd /lib/firmware
echo SharcAES67.ldr >/sys/class/remoteproc/remoteproc0/firmware
echo start >/sys/class/remoteproc/remoteproc0/state
```

Load a Sharc firmware from Crosscore Embedded Studio :

- 1. Lines below "# SHARC firmware load and start" need to be commented out
- 2. Load code on sharc (from Crosscore Embedded Studio)
- 3. Start sharc code with corecontrol --start 1

Streams Setup

In a browser (Chrome recommended) go to the advanced pages by typing the board IP address followed by :9090 e.g. 169.254.1.5:9090

The following should be shown:

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← → C ▲ Not secure	169.254.20.13:9090		\$ 🛎 i
RAVENNA AES67 ^{now1} (*) a	dsp-sc573-ezkil local 💌 🚷	Vendor Merging Technologies Product ADSP-SC5xxx Serial 2751683637736	
General settings PTP S	ession sources Session sinks Ins/Outs NMOS System		
Device Name ALSA (on adsp-sc573-ezkit-xx			
This is the unique zeroconf device na Audio Configuration	me. Other devices see this device name.		
Sample rate	48 KHZ •		
Session Sinks Global			
Safety Playout Delay (@1FS) SSM (requires IGMP v3)	0		
Network			
Interface 1 Link Name	Bp etno		
Type Address Netmask Gateway	Zeroconf		
Note: changing the network settings	Apply require a reboot of the device.		

For an exhaustive documentation about the user interface, please refer to the advanced page manual (link available in the Resources section)

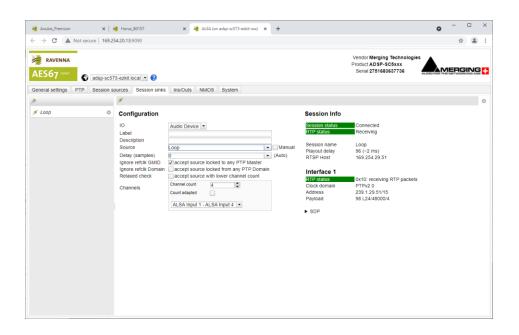
Create a Session source with the button to setup a Transmitter

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		Ins/Outs NMOS System			
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ALSA (on adsp-sc573-ezkit-sx ⁽⁶⁾	Configuration Enabled IO Description Output Interface(s) Auto-unicast Auto-unicast Auto-unicast Auto-unicast Auto-unicast Auto-unicast Codec Frame size (samples) DSCP RefCik PTP traceable Channels The URL of the SDP of	Interface ALSA (on adsp-sc573-ezkil-xxx)_1 Interface 1	user defined user defined		

Create a Session sink with the button to setup a Receiver and select a Source to listen to

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0		Ins/Outs NMOS System						
,®,'	2. ⁴							0
, ⁴ 0	Configuration			Session Info				
	IO Label Description Source Delay (samples) Ignore retck (SMID Ignore retck (SMID Ignore retck Comain Relaxed Check Channels	Addio Device _ Anubis, Premium, 2081 Anubis, Premium, 2081 Anubis, Premium, Jack 3/4 Loop NUC_HAPI Sap/Anubis, Premium, 2081 Sap/Anubis, Premium, 2081 Sap/Anubis, Premium, 2084 Sap/INUC_HAPI	• Manual (Auto)	Session status RTP status Session name Playout delay RTSP Host Interface 1 RTP status Clock domain Address Paytoad • SDP	Initializing			

A stream will be initialized and its status will reported. If everything is green, the audio is working.



Options

Butler configuration options

Next to the Butler (Merging_RAVENNA_Daemon) there is configuration file : merging_ravenna_daemon.conf

The following options can be set :

- interface_name : Network interface name used by RAVENNA/AES67 network. e.g eth0, eth2, enc0, br1...
- device_name : By default the name is "Merging ALSA-AES67 (on <hostname>". This can be changed but the name has to be unique on the network (used by Zeroconf) and white spaces are not supported
- web_app_port : Port number on which the RAVENNA/AES67 webserver will listen to
- web_app_path : Path of the webapp folder provided in the package. Should terminate by webapp/advanced
- tic_frame_size_at_1fs : Frame size in sample at 1Fs (44.1 / 48 kHz). e.g 48 for AES67
- config_pathname : Path where the config file will be saved e.g streamer and receiver
- max_tic_frame_size : In case of a high value of tic_frame_size_at_1fs, this have to be set to 8192
- source_name_prefix : The name of the source that will be automatically used. Useful in the high-end world
- default_sample_rate : Samplerate (44100, 48000, 96000, ...) set at daemon launch. Useful to start at the nominal system samplerate

For the ADI project the following options are set :

```
config_pathname=./ALSA_configuration.cfg
web_app_path=./webapp/advanced
interface_name=eth0
web_app_port=9090
tic_frame_size_at_lfs=48
default_sample_rate=48000
```

SHARC working modes

The SHARC has 3 working modes :

- 1. Loopback the audio data in the L2
- 2. Send the audio data from the L2 SRAM to the DAC
- 3. Send the audio data from the ADC to the L2 SRAM

The working mode is defined at the beginning of the src/main.c file. Working mode 1) and 3) cannot both be set.

The ADC/DAC implementation only supports 4 channels at the moment. The sampling rate of the ADC/DAC is defined in inc/common.h "#define ADA_FS 1"

LKM loopback modes

2 loopback mode are possibles :

- 1. Loop in Sharc : MT_SHARC_LOOPBACK
- 2. Loop in the LKM : MT_LOOPBACK

Loopack #define option in

work space/sources/meta-merging-ravenna/recipes-merging-ravenna/merging-ravenna-alsa-mod/files/ravenna-alsa-lkm/common/MergingRAVENNACommon.h

The provided package is set to mode 1 (loopback in SHARC)

Misc

Known issues

- PTP Domain is limited to 0, DSCP not working, Master Slave status not reported, Statistics not working <u>RAV-1537</u>
- Max Sink and Sources size should be limited to 4 @ 96kHz and 88.2 kHz RAV-1527
- When using ADC or DAC one cannot change sampling rate and number of channels during runtime.

Ressources

Sources

Ask by email to Merging

ADI Merging AES67LKM repository

https://bitbucket.org/MergingTechnologies/ravenna-alsa-lkm/src/yocto/

Web user interface documentation

Merging RAVENNA Advanced Pages User Guide.