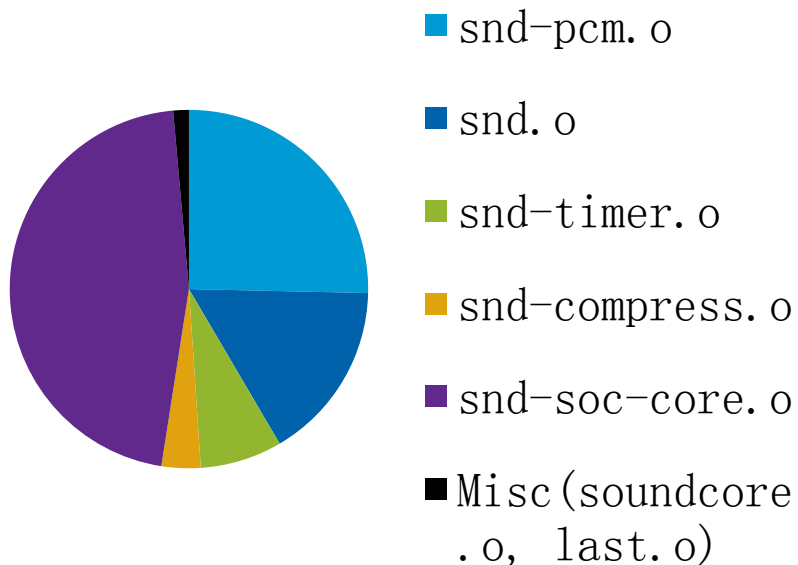


Reducing ALSA Size for IoT Kernel

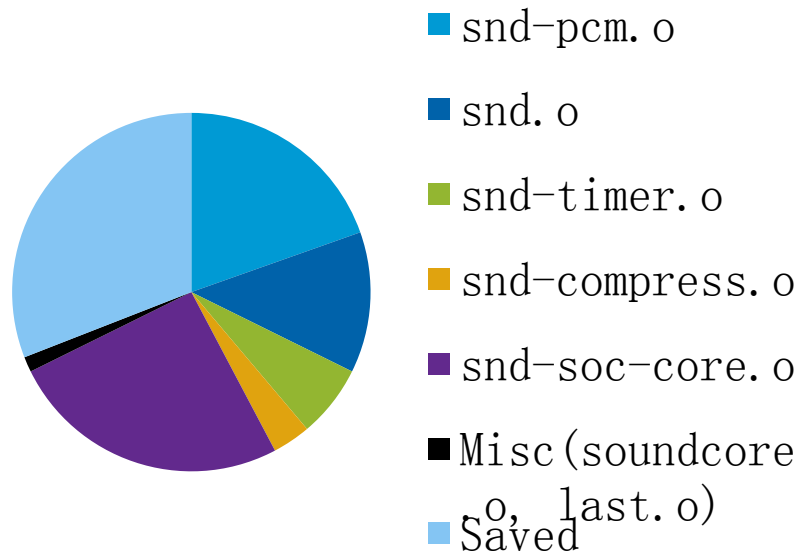
Jie Yang Oct 8th 2015

Code Size Status

Upstream Code Size

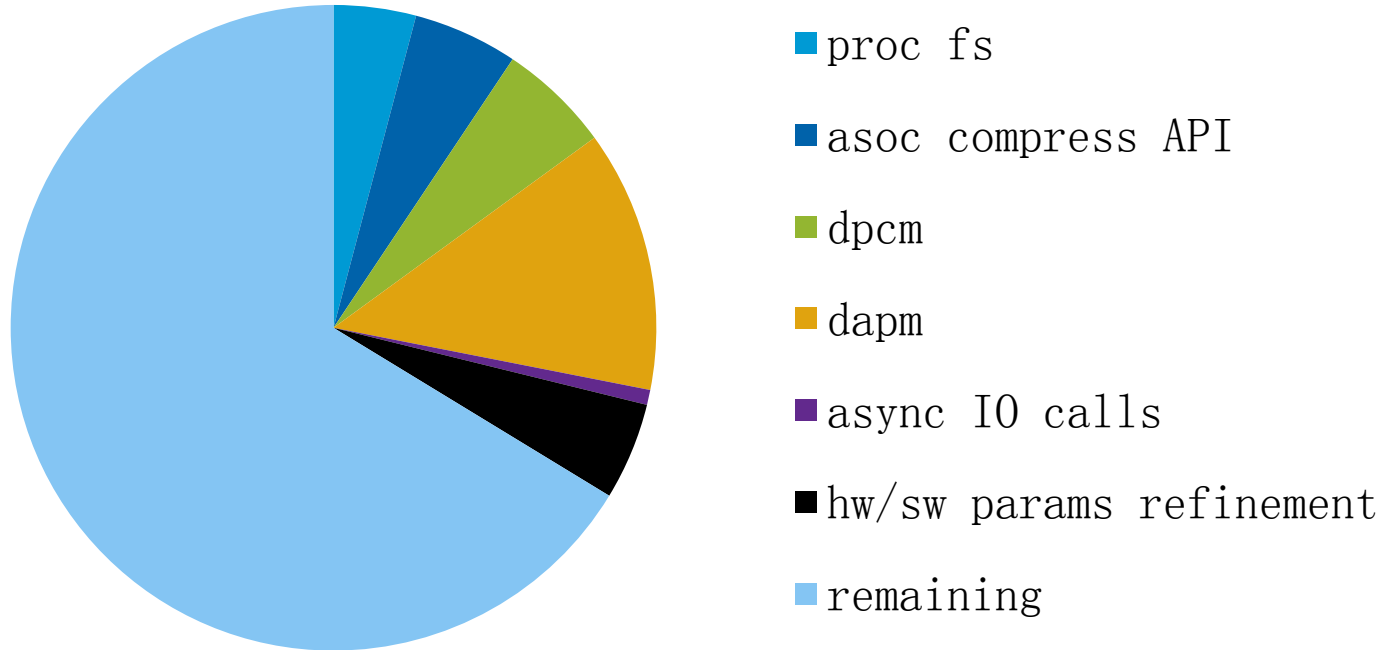


Optimized Code Size



What we have saved

Code Size Reduced



Upstreaming Plans

- ❑ 1 series upstreamed, 5 series on the way.
- ✓ remove proc fs: upstreamed.
- ❖ disable audio compressed APIs: v2 patches sent.
- disable dpcm
- disable dapm(will also disable dpcm)
- disable async IO calls
- disable hw/sw params refinement (may need patch tinyalsa also)

Lower hanging fruits

❑ disable audio compressed APIs:

v2 patches sent

[ASoC: soc-compress: add a config item for soc-compress](#)

[ASoC: soc-compress: split soc-compress to a module](#)

Takashi suggest to change soc-core.c: soc_probe_link_dais()

```
{
...
    if (cpu_dai->driver->create)
        ret = cpu_dai->driver->create(rtd, num);
}
```

I will add a member to struct snd_soc_dai_driver:

```
struct snd_soc_dai_driver {
    ...
+   int (*create)(struct snd_soc_dai *dai);
-   bool compress_dai;
    ...
}
```

And then change sst_platform_dai[] in sst-mfld-platform-pcm.c such as:

```
{
-   .
+   .name = "compress-cpu-dai",
    compress_dai = 1,
+   .create = soc_new_compress,
    .ops = &sst_compr_dai_ops,
    .playback = {
        .stream_name = "Compress Playback",
        .channels_min = SST_STEREO,
        .channels_max = SST_STEREO,
        .rates = SNDRV_PCM_RATE_48000,
        .formats = SNDRV_PCM_FMTBIT_S16_LE,
    },
},
```

And then, we can remove the dummy soc_new_compress() inline definition, is that right?

Will update to v3 soon after miniconf sync.

DPCM & DAPM disabling

- ❑ Disable DPCM -- 15KB bonus

- ❑ [ASoC: DPCM: split dpcm related codes to soc-dpcm.c](#)

- ❑ [ASoC: DPCM: add config to enable/disable dpcm](#)

- ❑ Don't use '.dynamic = 1' for dai_link in machine driver, example:

- [ASoC: Intel: broadwell: link system pcm to codec when no soc dpcm sup...](#)

- ❑ Disable DAPM(will also disable DPCM automatically) - 35KB extra bonus

- ❑ [ASoC: DAPM: add a config item to enable/disable DAPM](#)

- ❑ Will need change DAPM usage to kcontrols, example:

- [ASoC: rt286: create kcontrols for no soc DAPM case](#)

HW Refinement

❑ disable hw/sw params refinement 13KB bonus

❑ [ALSA: split params refinement to seperated file](#)

Note: when this params refinement is disabled, we can't use aplay/arecord, we use tinyplay/tinycap instead, at the same time, we need patch tinyalsa:

[pcm: add setting for buffer size and buffer byte.](#)

Others?

1. disable timer? 20K for timer.o
2. Reducing soc-core.c? soc-core.o:52K
3. disable string kcontrol names?
4. disable misc ASoC functions?
5. async IO, PCM blocking IO, mmap?
6. Others?