



Microsemi

Software Release Notice

Timberwolf™ Software Development Kit ZLS38100 Revision P2.0.1

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This document describes new features, fixed errata and operational notes for the ZLS38100 Timberwolf Software Development Kit (SDK) P2.0.1 release.

1.0 REVISION SUMMARY

These are the release and errata notes for the Production release P2.0.1 of the ZLS38100 Timberwolf SDK. Proven on both Linux based platforms and non-OS platforms. The SDK includes direct support for Linux based platforms such as the Raspberry PI, the Ambarella S2, S2L, A5s, etc. and non-OS platforms such as the NxP Jn516x Zigbee

2.0 CONTENTS

Included within the P2.0.1 package:

1. Documentation - Documents every aspect of the SDK
2. Voice Processing SDK source code:
 - a) HBI kernel driver - Host BUS Interface slave Linux kernel device driver for Host controllers that want to communicate with the Timberwolf devices over either SPI or I2C.
 - b) System Service Layer - To prevent multiple threads or processes from accessing a Timberwolf device simultaneously.
 - c) HBI user-space wrapper - User-Space wrapper of the main kernel driver functions exposed to the user.
 - d) Microsemi ALSA audio codec and sample ALSA machine drivers for audio samples exchange between the Host Controller and the Timberwolf devices over I2S or PCM.
 - e) Sample User-Space Host Applications - To quickly demo the features of the Timberwolf devices.
3. Utility Tools - To convert the Timberwolf firmware image file into either a binary (*.bin) format that can be loaded into the device at runtime or into a c-code (*.h) format that can be compiled with the SDK.

3.0 NEW FEATURES ADDED (SINCE P2.0.0)

- Example Applications are provided in both c-code and Python formats.
- Added support for two new platforms (Ambarella, NxP JN516x).
- Provided an alternative ALSA codec driver that includes an ALSA mixer.
- The firmware image and the configuration record can now both be converted into either a binary (*.bin) image or c-code (*.h) format using the newly updated twConvertFirmware2c tool.
- Updated the example demo applications to demonstrate support for multiple slave devices and other device related features.

- Added a new application that demonstrates how to load an ASR grammar image into the device and optionally save it to flash.

4.0 BUG FIXES

- Fixed an issue in the demo application that demonstrates the loading of firmware and configuration images into the device. The issue relates to the loading of configuration image included within version 2.x.x ZLS380xx firmware package. It was observed that configuration records included within 2.x or later firmware package were not loaded properly by the application.
- Fixed an issue where some of the variable types used in the hbi code were using typedefs that were only supported on Linux platform.

5.0 COMPILE INSTRUCTIONS

- The Source code for the Timberwolf SDK is partitioned into 6 main directories. The code within the /platform directory is platform dependent therefore is the only code that is specific to the particular platform SDK. The HBI driver, ALSA driver and System Service Layer codes reside within this directory. If any aspect of the SDK needs to be modified as a result of a change in the particular platform Controller SDK, then this code is the only code that must be changed. The code in the other directories are Timberwolf device specific and the user of the SDK must not modify this code.
- The root folder of the SDK includes a Makefile and accompanying Makefile.globals and configuration files. The user must at least configure the following variables within the Makefile.globals accordingly prior to compiling the SDK.
 - `VPROC_MAX_NUM_DEVS` *specify the number of Timberwolf devices that needs to be supported by the driver*
 - `HBI_MAX_INST_PER_DEV` *For multi-threaded application that wants to have access to the same device driver from different thread*
 - `TOOLSPATH` *The path to the tool chain needed to compile the SDK*
 - `KSRC` *The path to the Linux kernel for which to compile the SDK*
- The SDK can be compiled to include either the SPI or the I2C driver not both. Therefore, to compile the SDK for the desired HBI option use either one of the following commands:
 - For SPI: `make hbilnx HBI=SPI` or simply `make hbilnx`
 - For I2C: `make hbilnx HBI=I2C`

6.0 SUPPORTED DEVICES AND FIRMWARE

The Driver supports the following combination of devices and firmware:

- OPN ZL3804x (x:0, 2) with firmware ZLS380x version P1.0 or later
- OPN ZL3805x (x:0, 1, 2) with firmware ZLS3805x version P1.0 or later
- OPN ZL3806x (x:0, 2, 3, 7) with firmware ZLS3806x version P1.0 or later
- OPN ZL38080 with firmware ZLS38080 version P1.1.0 or later
- OPN ZL38090 with firmware ZLS38090 version E1.0.1 or later

7.0 ERRATA

None known at the time of release.

8.0 OPERATIONAL NOTES

The current release of the SDK was tested on various platforms such as the Raspberry Pi (rev 1-3) Raspian images with Linux kernels 3.18 to 4.9.34, Ambarella S2L SDK 2.0 and Linux kernel 3.10.50, and non OS platform NxP Jn516x.

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