

LINUX 開發環境用戶指南

Version: 0.0.0.1

Release date: 2022-06-01

© 2018-2019 Crystal Vision Intelligence Inc.

Unauthorized reproduction or disclosure of this information in whole or in part is strictly prohibited. Confidentie

confidential fo

or Killing

This data sheet contains information that is confidential to Crystal Vision Intelligence Inc. Unauthorized use or disclosure of the information contained herein is prohibited. You may be held responsible for any loss or damages suffered by Crystal Vision Intelligence Inc. for your unauthorized disclosure hereof, in whole or in part.

Information herein is subject to change without noticed. Crystal Vision Intelligence Inc. does not assume any responsibility for any use of, or reliance on, the information contained herein.

THIS DATA SHEET AND ALL INFORMATION CONTAINED HEREIN IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE. CRYSTAL VISION INTELLIGENCING. SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER DOES CRYSTAL VISION INTELLIGENC INC. PROVIDE ANY WARRANTY WHATSOEVER WITH RESPECT TO THE SOFTWARE OF ANY THIRD PARTY WHICH MAY BE USED BY, INCORPORATED IN, OR SUPPLIED WITH THIS DATA SHEET, AND USER AGREES TO LOOK ONLY TO SUCH THIRD PARTY FOR ANY WARRANTY CLAIM RELATING THERETO. CRYSTAL VISION INTELLIGENC INC. SHALL ALSO NOT BE RESPONSIBLE FOR ANY CRYSTAL VISION INTELLIGENC DELIBERABLES MADE TO USER'S SPECIFICATION OR TO CONFORM TO A PARTICULAR STANDARD Confidential for OR OPEN FORUM. Confidentia



目录

Specii	icatioi	s are subject to change without notice		
	目表	是声明		ior 深圳雁十
	法律	声明		1
	1.	開發環境	- Onlident is	4
		1.1. 目的		4
		1.2. 如何編譯內核		4
	2.	U-boot 搭建		6
	3.	LINUX 內核		7
		3.1. 配置内核 DTS		7
		3.2. 配置 kernel configuration	KINITE Y	8 ********************************
	4.	根文件系統(rootfs)	1.12. (1.12.)	10
		4.1. 根文件系統簡介	Cartigen	10
		4.2. Busybox 支援		10

版本记录

	版本记录					
	版本	日期	修订说明	修订人		
. dent	0.0.0.1	2022/06/01	draft	蔡明育 487		
		COD		Contra		

Confidential for * ## ######

1. 開發環境

Confidential 1.1.目的

Confidential for TrillAll for TrillAll ifidential for TRHIME 此份文件說明 Linux 開發環境。Linux 開發環境的搭建 U-boot、Linux 内核、根文件系 统(rootfs)以及内核和根文件系统的烧写,以及創建網路開發環境和啟動 Linux 開發。 本文檔提供用戶端可以快速搭建 Linux 環境, 並將自行開發的應用程式移植到 Linux 作業系統上面。

1.2. 如何編譯內核

confidential for William Confidential for 在 HOST 端 ubuntu 環境要編譯 SDK,需要安裝以下工具

請參閱 SDK 編譯及使用說明 V1.0.docx 建構編譯環境

設定環境變數(以 cv1800b wevb 0008a spinor 為例)

```
source build/cvisetup.sh
    (1) menuconfig - Use menu to configure your board.
       ex: $ menuconfig
    (2) defconfig $CHIP ARCH - List EVB boards($BOARD) by CHIP ARCH.
      ** cv183x ** -> ['cv1829', 'cv1832', 'cv1835', 'cv1838', 'cv9520',
'cv7581']
       ** cv182x ** -> ['cv1820', 'cv1821', 'cv1822', 'cv1823', 'cv1825',
'cv1826', 'cv7327', 'cv7357']
          cv181x ** -> ['cv181x', 'cv1823a', 'cv1821a', 'cv1820a', 'cv1811h',
'cv1811c', 'cv1810c', 'cv1812h']
      ** cv180x ** -> ['cv180x', 'cv1800b', 'cv1800c', 'cv1801b', 'cv1801c']
       ex: $ defconfig cv183x
    (3) defconfig $BOARD - Choose EVB board settings.
       ex: $ defconfig cv1835 wevb 0002a
```



```
ex: $ defconfig cv1826 wevb 0005a spinand
ex: $ defconfig cv181x fpga c906
                                               Confide
```

選定 EVB cv1800b_wevb_0008a_spinor

```
Run defconfig function
Loaded configuration
'/workspace/build/boards/cv180x/cv1800b wevb 0008a spinor/cv1800b wevb 0008a spinor
defconfig'
No change to configuration in '.config'
Loaded configuration '.config'
===== Environment Variables ====== PROJECT: cv1800b_wevb_0008a_spinor, DDR_CFG=ddr2_1333_x16
  CHIP ARCH: cv180x, DEBUG=0
  SDK VERSION: musl riscv64, RPC=0
  ATF options: ATF_KEY_SEL=default, BL32=1
  Linux source folder: linux_5.10, Uboot source folder: u-boot-2021.10
  CROSS_COMPILE_PREFIX: riscv64-unknown-linux-musl-
  ENABLE BOOTLOGO: 0
  Flash layout xml: /workspace/build/boards/cv180x/
cv1800b wevb 0008a spinor/partition/partition spinor.xml
  Sensor tuning bin: gcore_gc4653
 Output path: /workspace/master/install/soc_cv1800b_wevb_0008a_spinor
                                                                  fident1
```

編譯 linux kernel

```
build kernel
[TARGET] kernel-dts
[TARGET] kernel-build
```

產生燒錄檔 boot.{spinor, spinand, emmc}

```
ls install/soc_cv1800b_wevb_0008a_spinor/boot.spinor
install/soc cv1800b wevb 0008a spinor/boot.spinor
```

Confidential for TRHIME!

2. U-boot 搭建

for 深圳随 請參閱 U-boot 移植应用开发指南_v1.2.0.1.docx

Confidential for ikillimet

Confidential for White

3. LINUX 內核

在 sdk source 目錄下可以找到內核的程式碼

```
dential for *** HIMET
                    // version 4.19, cv182xA, ca53 32bit CPU
sdk source/linux
sdk source/linux 5.10 // cv180x,cv181x C906B 64 bit CPU
```

for 深圳随

3.1. 配置内核 DTS

如果要針對內核的模組增減修改,可以透過修改 DTS(*1)的方式來完成,每張 EVB 會 有 dts 檔案来定義其 device tree,以 cv1800b wevb 0008a spinor 為例,其 DTS 檔 案定義在檔案路徑如下:

```
$ cat build/boards/cv180x/cv1800b wevb 0008a spinor/dts riscv/
cv1800b wevb 0008a spinor.dts
/dts-v1/;
#include "cv180x base arm.dtsi"
#include "cv180x asic bga.dtsi"
#include "cv180x asic spinor.dtsi"
#include "cv180x default memmap.dtsi"
/ {
// add your customized device description
```

上述*.dtsi(device tree source include files)為晶片預設值, 不建議直接更改, 若要修改

預設值,建議使用/delete-node/方式修改

(*1) u-boot 和 kernel 使用共用 DTS Confidential for in

Confidential for 深圳種子

3.2. 配置 kernel configuration

idential for William 如果要針對內核的組態修改,可以直接修改 kernel 組態檔,以 cv1800b wevb 0008a spinor 為例,其 defconfig 檔案定義在檔案路徑如下

```
$ cat build/boards/cv180x/cv1800b wevb 0008a spinor/linux/
cvitek cv1800b wevb 0008a spinor defconfig
# CONFIG SWAP is not set
CONFIG SYSVIPC=y
CONFIG POSIX MQUEUE=y
CONFIG NO HZ IDLE=y
CONFIG HIGH RES TIMERS=y
CONFIG PREEMPT=y
CONFIG IKCONFIG=y
CONFIG IKCONFIG PROC=y
CONFIG LOG BUF SHIFT=15
                                                  dential for TRHIMET
CONFIG CC OPTIMIZE FOR SIZE=y
                              for 深圳榧
```

使用修改 defconfig 檔案方式 範例《新增支援 SPI driver》

```
confidential
             SPI drivers
           #
           # CONFIG SPI is not set
           # CONFIG SPI MASTER is not set
           # CONFIG SPI DESIGNWARE is not set
           # CONFIG SPI DW MMIO is not set
           # CONFIG SPI SPIDEV is not set
                                                          Confidential for Frime
                             confidential for TRHIME!
Confidential for William Confidential
```



使用 command line - setconfig_kernel 方式

```
or 深圳随上
$ setconfig kernel SPI=y
$ setconfig kernel SPI MASTER=y
$ setconfig kernel SPI DESIGNWARE=y
```

使用 Graphic user interface line - menuconfig kernel 方式

```
$ menuconfig kernel
               .config - Linux/riscv 5.10.4 Kernel Configuration
              Linux/riscv 5.10.4 Kernel Configuration
              Arrow keys navigate the menu. <Enter> selects submenus --->
              (or empty submenus ----). Highlighted letters are hotkeys.
              Pressing <Y> includes, <N> excludes, <M> modularizes
              features. Press <Esc> to exit, <?> for Help, </> for
              Search. Legend: [*] built-in [ ] excluded <M> module < >
              module capable
                    General setup --->
                     [*] MMU-based Paged Memory Management Support (NEW)
                     (10) Maximum zone order
Confidenti
                        SoC selection --->
                        Platform type --->
                        Kernel features --->
                        Boot options --->
                        Power management options --->
                        Firmware Drivers --->
                     [*] Cvitek SoC Family
              <Select>
                       < Exit >
                                     < Help > < Save > < Load >
```

Confidential for This Hilling t

onfidential for TRHIME 4. 根文件系統(rootfs)

4.1.根文件系統簡介

Confidential for TRHIMET 請參閱 SDK 編譯及使用說明_V1.0.docx - Chapter 4 根文件系統(rootfs)

4.2. Busybox 支援

目前文件系統內部使用 BusyBox v1.27.1 版本,如果有更新 busybox 的需求,可以將 編譯好的 busybox 放到下列路徑:

```
ramdisk/rootfs/common arm/bin/busybox
                                                             // CV182xA
            ramdisk/rootfs/common glibc riscv64/bin/busybox // CR182x
            ramdisk/rootfs/common musl riscv64/bin/busybox
                                                             // CV181X
            ramdisk/rootfs/common musl riscv64/bin/busybox
                                                              // CV180X
                                                       Confidential
Confidentia!
                           Confidentia
```

Confidential for TRHIME!