# Design Document for IOMUX Driver


LINEO
Solutions

# 1 Outline

This document describes the IOMUX driver in Linux kernel of MVF TOWER BOARD (XTWR-VF600) with VF6XX SoC.

# 2 Existing code to be changed

## 2.1 Source

i.MX 6Solo SABRE-A BSP
arch/arm/plat-mxc/include/mach/iomux-mx6q.h
arch/arm/plat-mxc/include/mach/iomux-v3.h
arch/arm/plat-mxc//iomux-v3.c
arch/arm/mach-mx6/board-mx6q_arm2.c
arch/arm/mach-mx6/board-mx6q_arm2.h

## 2.2 Modification

- arch/arm/plat-mxc/include/mach/iomux-vfxx.h

1. Source: arch/arm/plat-mxc/include/mach/iomux-mx6q.h

2. By using IOMUX_PAD macro, define data combination for MUX_MODE of each I/O pin. Name of definition will be _VF6XX_PAD_PAD_XXX and include the data below.
   - IOMIXC_SW_MUX_CTL_PAD_XXX Resister address/offset value
   - IOMIXC_SW_MUX_CTL_PAD_XXX[MUX_MODE] Bit field value
   - IOMUXC_XXX_SELECT_INPUT Register address/offset value
   - IOMUXC_XXX_SELECT_INPUT[DAISY] Bit field value

3. Define PAD value for MUX_MODE of each I/O pin. Combine with the definition mentioned above #1, name it as VF6XX_PAD_PAD_XXX and create resource definition value for external call.

- arch/arm/plat-mxc/include/mach/iomux-vmvf.h

1. Source: arch/arm/plat-mxc/include/mach/iomux-v3.h

2. Modify IOMUX_PAD definition and resource definition for IOMUXC register setting defined in the iomux-v3.h to fit for MVF SoC family.

3. Change ”v3” in the function name to ”vmvf”.

- arch/arm/plat-mxc/iomux-vmvf.c

1. Source: arch/arm/plat-mxc/iomux-v3.c

2. Modify to write definition value that is created with iomux-vfxx.h to IOMUXC register.

3. Change ”v3” in the function name declared in iomux-v3.c to ”vmvf”.

- arch/arm/mach-mx6/board-twr_vf600.h

1. Source: arch/arm/mach-mx6/board-mx6q_arm2.h

2. Based on the definition value of iomux-vfxx.h, create PAD setting array for primary/secondary of twr-vf600.
   Functions to be enabled are as follows.
   Primary:
   SDHC, FTM, SAI, SCI, I2C, DSPI, RMII, NFC, QSPI, DCU, ADC and such
   Secondary:
   ENET, SCI, FTM, CAN and such

3. Switchover of primary/secondary is done by kernel configuration.

- arm/arm/mach-mx6/board-twr_vf600.c

1. Source: arch/arm/mach-mx6/board-mx6q_arm2.c

2. Implement IOMUXC register initialization processing
   IOMUXC register initialization is carried out by passing setting array made by board-twr_vf600.h to register setting value implemented for iomux-vmvf.c.

## 3 API of new functions

None

## 4 Expected register settings

See attached excel for mode setting of primary/secondary and PAD register setting.

*TBD for PAD resister setting.

## 5 Expected functionality and usage

Call at the time of board initialization processing and initialize IOMUXC register.

## 6 Any other pertinent information

None