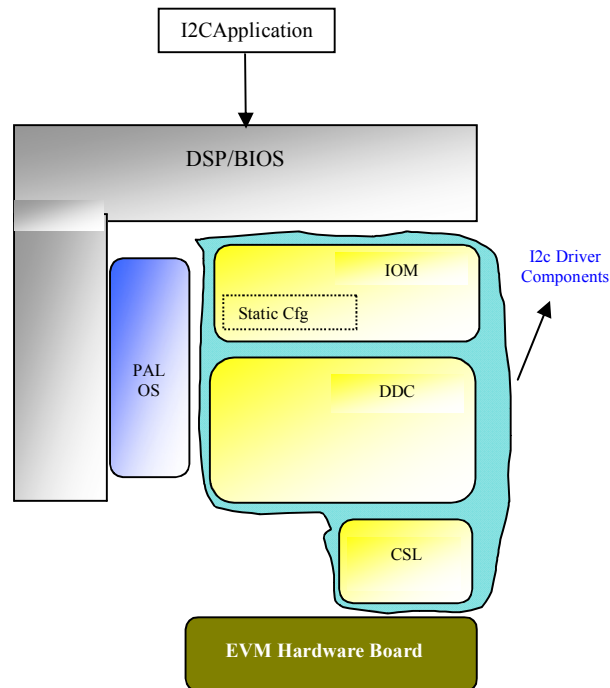- **Multi-instantiable and re-entrant safe driver**
- **Provides Synch mode of operation**
- **Operates in Polled and Interrupt Modes**
- **Compliance of Philips IIC specification (reference to Philips IIC specification v2.1)**
- **7-bit and 10-bit device addressing modes**
- **IIC data transfer rate from 10kbps up to 400kbps (Philips IIC rate).**

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Capabilities

The I2C BIOS device driver adopts a scalable architecture that eases customization/extension

- Isolates H/W and OS Accesses, Easy to maintain & re-target to new platforms.

- Can stack custom-functions along control/data-path to realize "driver filters".

- Supports Multiple Instances.

The driver is constituted of following sub components:

- I2C IOM –OS Specific Adaptation of I2C Device Driver

- I2C DDC – OS Independent part of I2C Driver Core. This also includes CSL.

- System components – BIOS: BIOS Abstraction.

The following table gives a quick overview of the supported API services. For help on interfaces refer to the I2C Driver Help File:

| GIO_create	Call PSP_i2cCreate, Creates the channel for the data transfer by setting up I2C hardware params
GIO_Delete	Call PSP_i2cClose, which will Delete a given I2C driver (channel).
GIO_write	Call the PSP_i2cTransfer for data transaction (for write).
GIO_Read	Call the PSP_i2cTransfer for data transaction (for Read)
GIO_control	Call PSP_i2cIoctl that will do Ioctl interface. Ioctl's Supported are: Refer User guide document

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Driver Performance Characteristics

I2C DEVICE DRIVER SUB-COMPONENT	PROGRAM MEMORY (IN BYTES)	DATA MEMORY (IN BYTES)		
		MEMORY TYPE		TOTAL
		INITIALIZED	UN INITIALIZED	
<i2c/IOM>	1888	208	200	2296
<i2c/ddc>	7072	132	200	7404
Total	**8960**	**340**	**400**	**9700**

- System Components Total Memory (Code & Data): 9764 Bytes

Driver Performance and Profiling Characteristics for DM648/C6452:
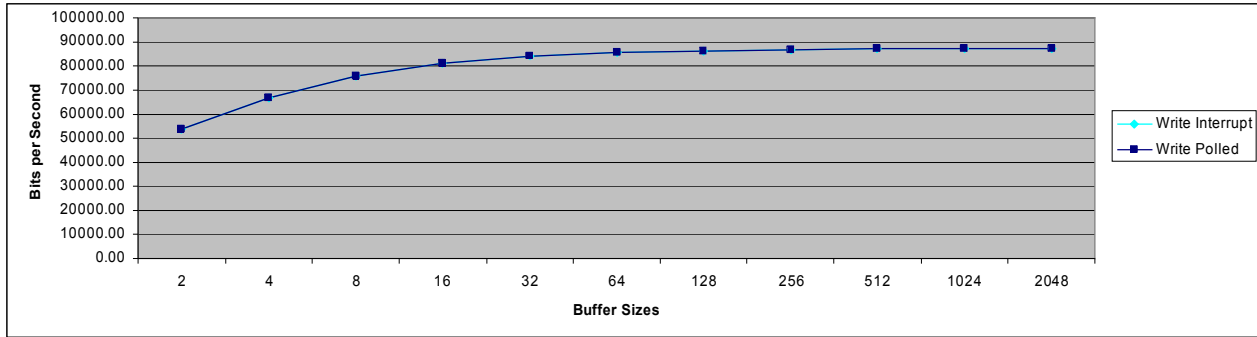
Test Setup Information	Buffer Size	Write Interrupt			Write Polled		
		Bits/Sec	Pkts	Duration	Bits/Sec	Pkts	Duration
	2	53776.80	201663	60	53800.00	201750	60
	4	66585.07	124847	60	66601.07	124877	60
API Interface	8	75586.13	70862	60	75596.80	70872	60
	16	81066.67	38000	60	81068.80	38001	60
	32	84117.33	19715	60	84117.33	19715	60
	64	85734.40	10047	60	85734.40	10047	60
	128	86562.13	5072	60	86562.13	5072	60
	256	87005.87	2549	60	87005.87	2549	60
	512	87244.80	1278	60	87244.80	1278	60
	1024	87381.33	640	60	87381.33	640	60
	2048	87381.33	320	60	87381.33	320	60
Comments:							
System is configured as cache enabled							
Bus Frequency was set to 100 Khz							

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Driver Profiling Characteristics

Polled Mode								
API Profiled	**Trial-1**	**Trial-2**	**Trial-3**	**Trial-4**	**Trial-5**	**MIN (uSecs)**	**Average (uSecs)**	**MAX (uSecs)**
DEV_createDevice	8.00	3.00	3.00	3.00	3.00	3.00	4.00	8.00
GIO_create	6.00	3.00	3.00	3.00	3.00	3.00	3.60	6.00
GIO_write	58.00	58.00	58.00	58.00	58.00	58.00	58.00	58.00
GIO_read	59.00	58.00	58.00	58.00	58.00	58.00	58.20	59.00
GIO_control	1.00	0.00	0.00	0.00	0.00	0.00	0.20	1.00
GIO_delete	3.00	1.00	1.00	1.00	1.00	1.00	1.40	3.00
DEV_deleteDevice	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Interrupt Mode								
API Profiled	**Trial-1**	**Trial-2**	**Trial-3**	**Trial-4**	**Trial-5**	**MIN (uSecs)**	**Average (uSecs)**	**MAX (uSecs)**
DEV_createDevice	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GIO_create	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
GIO_write	59.00	59.00	59.00	59.00	59.00	59.00	59.00	59.00
GIO_read	59.00	59.00	59.00	59.00	59.00	59.00	59.00	59.00
GIO_control	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GIO_delete	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
DEV_deleteDevice	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Test setup Details

I2C bus frequency is set 400Khz
1 uSec = 148 Tics

References

[1] I2C Module Hardware Specifications

[2] BIOS Documentation from TI

[3] I2C Device Driver Documentation

Glossary

IOM	TI Terminology, Input/Output Mini Driver.
DDC	TI Terminology, Device Driver Core that is OS independent

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