



PXA270-10 Card Engine Addendum to LogicLoader™ v2.3 User Manual

LogicLoader Documentation

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Abstract

This document contains information about how LogicLoader runs specifically on the PXA270-10 Card Engine. As such, this document acts as a supplement to the *LogicLoader v2.3 User Manual*.

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Revision History

REV	EDITOR	DESCRIPTION	LOGICLOADER VERSION	APPROVAL	DATE
A	MA	-Initial release	2.0.3	MAA	09/08/05
B	EN	-Updated for NAND-based configurations; -Added 3.6" display to supported hardware table	2.3.1	MAA	01/11/07
C	SO	-Throughout: Updated template; updated links for new support site; -Table 2.1: Corrected serial EEPROM to 512 bytes	2.3.11	RAH	02/10/14

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1 PXA270-10 Memory Map Diagrams

1.1 SDRAM Configuration

The PXA270-10 Card Engine is designed to accommodate SDRAM of different sizes. Under LogicLoader's default configuration, all on-board memory installed is accessible.

Please refer to Marvell's [PXA270 Processor Developer's Manual](#)¹ for more information on the SDRAM controller.

1.2 MMU Remap: Physical Memory to Logical Memory

LogicLoader sets up the MMU to remap physical memory to logical memory. Type *info cpu* at the *losh* prompt to see how LogicLoader remaps physical memory to logical memory. If you need to address a device outside of the default address map, use the *remap* command to make additional address space accessible from within LogicLoader.

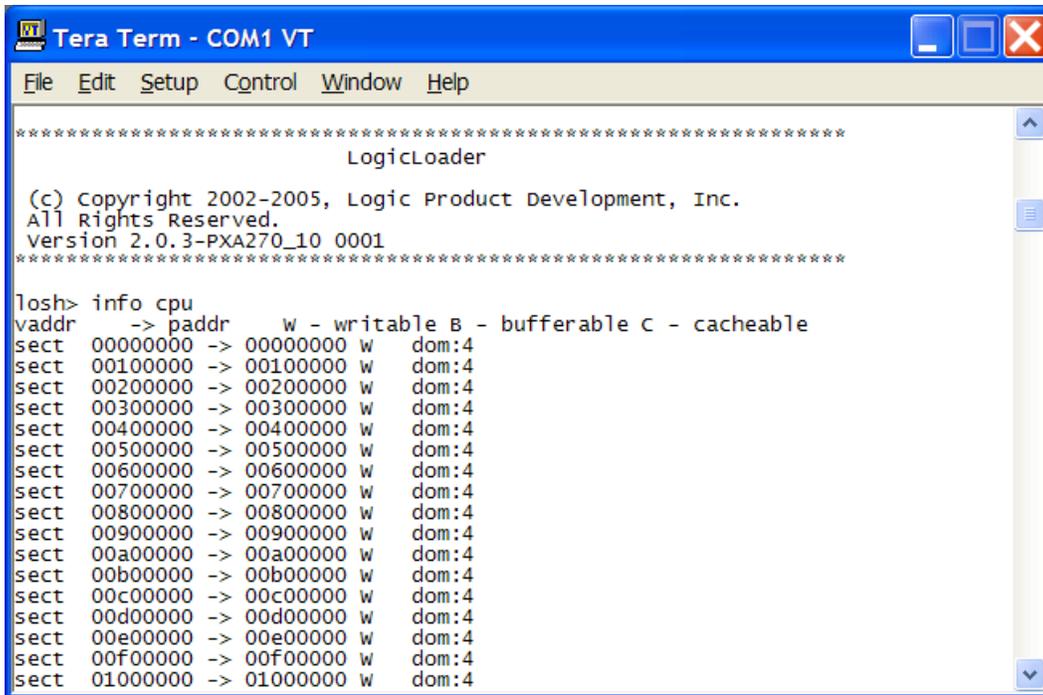


Figure 1.1: View MMU Remap

¹ <http://www.marvell.com/application-processors/pxa-family/>

1.3 PXA270-10 Physical Hardware memory Map

NOTE: Memory regions may require the use of the *remap* command to be accessible.

PXA270-10 Logical Memory Map during execution of LogicLoader for 64MB SDRAM

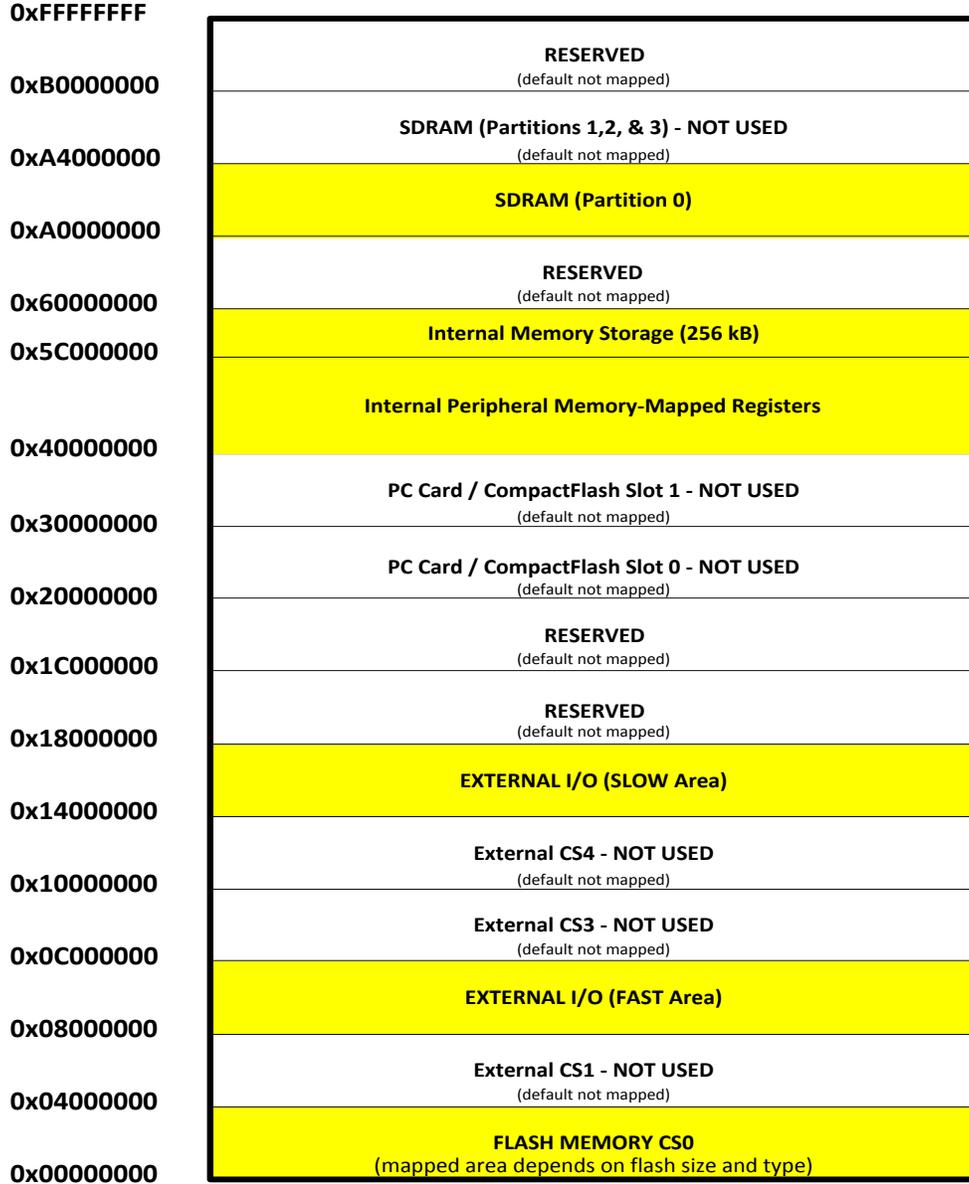


Figure 1.2: PXA270-10 Hardware Memory Map

1.4 LogicLoader and Configuration Block in NOR Flash Memory

LogicLoader is programmed into the PXA270-10 Card Engine's resident flash array. The optional configuration block may be added with the *config CREATE* command.

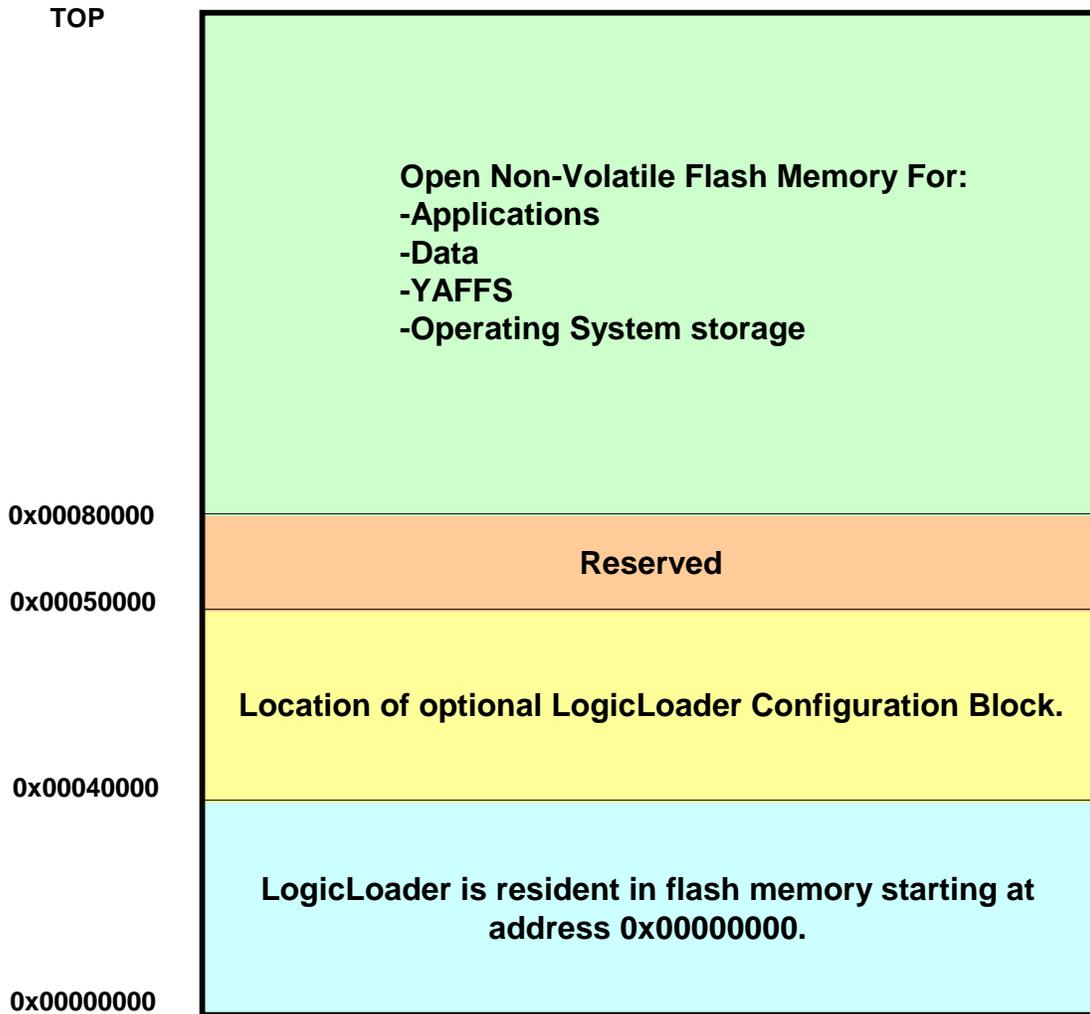


Figure 1.3: NOR Flash Memory Layout

1.5 LogicLoader and Configuration Block in NAND Flash Memory

LogicLoader is programmed into the PXA270-10 Card Engine's resident flash array. The optional configuration block may be added with the *config CREATE* command.

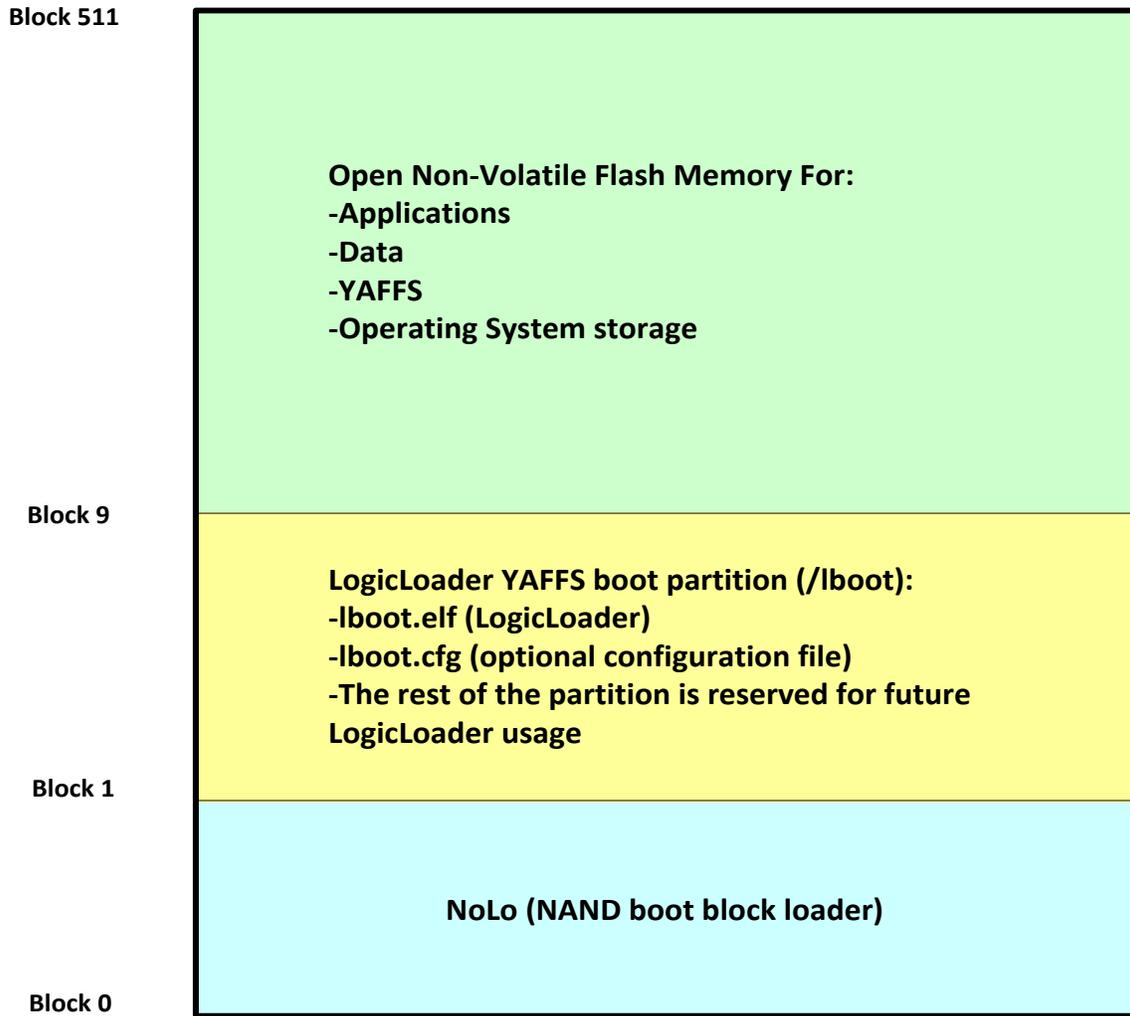


Figure 1.4: NAND Flash Memory Layout

1.6 LogicLoader's Location in RAM

LogicLoader executes out of RAM. The diagrams below depict run-time locations of LogicLoader.

Run-time location of LogicLoader:

At reset, LogicLoader relocates itself from flash memory to system SDRAM. LogicLoader then spends the remainder of its run-time executing out of system SDRAM.

Note: The size of LogicLoader's code and variable sections are estimates. This size depends on the exact features built into the LogicLoader image and may change with new releases. The location of LogicLoader's stack is dynamically determined at run-time based on the size of the code and variable section. Therefore, the location of the stack is provided as an estimate in this diagram.

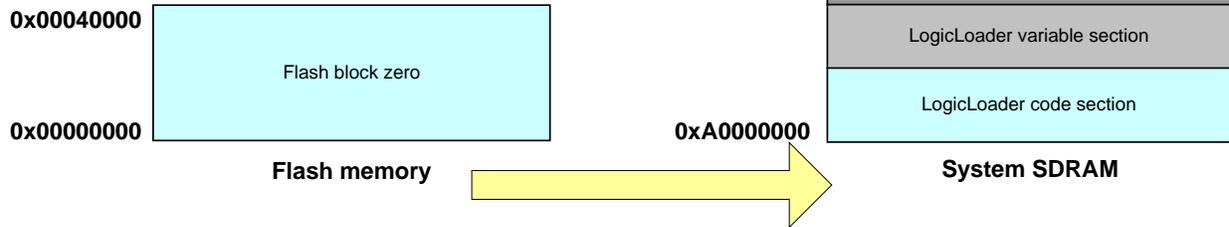


Figure 1.5: LogicLoader RAM Execution Environment from NOR

Run-time location of LogicLoader:

At reset, LogicLoader relocates itself from flash memory to system SDRAM. LogicLoader then spends the remainder of its run-time executing out of system SDRAM.

Note: The size of LogicLoader's code and variable sections are estimates. This size depends on the exact features built into the LogicLoader image and may change with new releases. The location of LogicLoader's stack is dynamically determined at run-time based on the size of the code and variable section. Therefore, the location of the stack is provided as an estimate in this diagram.

More information regarding NAND boot phases can be found in the "NAND Boot Process" section of the "LogicLoader User's Manual."

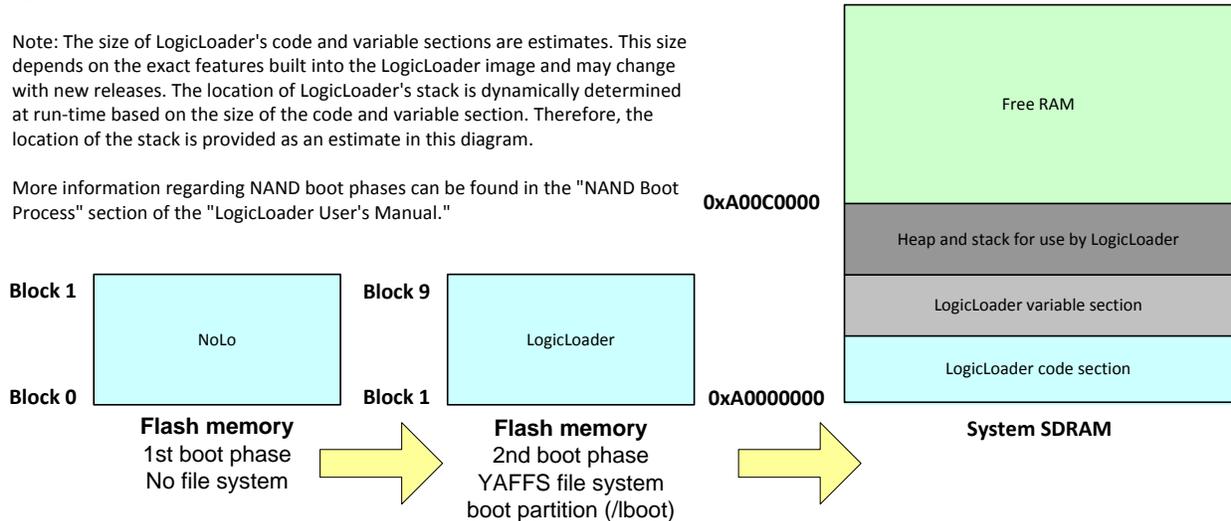


Figure 1.6: LogicLoader RAM Execution Environment from NAND

2 PXA270-10 LogicLoader Functionality

The table below lists the PXA270-10-specific peripherals supported by LogicLoader.

Table 2.1: Supported Hardware Peripherals

Hardware Peripheral	Supported	Details
Audio	No	---
Display:	Yes	LogicLoader supports 16 bits per pixel; custom displays can be supported by using the config block
LCD-3.5-QVGA-10	No	Display kit with LCD part number LQ035Q7DB02
LCD-3.5-QVGA-20	Yes	Display kit with LCD part number LQ035Q7DB02 w/ASIC
LCD-3.6-QVGA-10	Yes	Display kit with LCD part number LQ036Q1DA01
LCD-5.7-QVGA-10	Yes	Display kit with LCD part number LQ057Q3DC02
LCD-6.4-VGA-10	Yes	Display kit with LCD part number LQ64D343
LCD-10.4-VGA-10	Yes	Display kit with LCD part number LQ10D368
LCD-12.1-SVGA-10	Yes	Display kit with LCD part number LQ121S1DG41
Ethernet	Yes	10/100 MBit support; MAC address stored in dedicated serial EEPROM; static IP address can be supported by using the config block
Flash Memory	Yes	NOR or NAND flash
IrDA	No	--
Memory / IO Card Expansion:	Yes	CompactFlash memory cards are only supported. 16 -> 256 MB CompactFlash memory cards have been verified.
IO Mode PCMCIA/CF	No	---
Memory Mode CF	Yes	Recommended: SanDisk, Toshiba, PNY
SD/MMC	No	---
SDIO	No	---
Processor:		
Cache	Yes	Copy-back mode
Clock	Yes	312, 416, 520 MHz CPU / 104 MHz Bus
Power Management	No	--
MMU	Yes	Use <i>remap</i> command to access unmapped regions of memory
RTC	No	--
SDRAM	Yes	64 Mbytes; CAS-3
SSP	No	---
Serial Port:		
UARTA	Yes	115200 baud standard, RTS flow only; 2400 to 460800 baud can be supported by using the config block
UARTB	No	---
UARTC	No	---
Touch Screen	No	---
USB Host	No	---
USB Function	No	---

Hardware Peripheral	Supported	Details
Misc:		
GPIO	Yes	Use <i>w</i> and <i>x</i> commands to access data direction and data registers to control GPIO lines per register description in processor and IO Controller specification documents
Status	Yes	Toggles to show system "heartbeat"
Mode Line 2	Yes	QuickBoot Feature details: LogicLoader will typically pause 500 mS to look for the 'q' key on UARTA. However, if the Mode Line 2 (uP_MODE2) is grounded, this 500 mS timeout is skipped and the boot script runs immediately.
Serial EEPROM	Yes	512 bytes

NOTE: If a peripheral is not mentioned in the table above, it should be assumed there is no native support for it in LogicLoader besides the ability to read and write from registers.

3 Disclaimer

Logic PD strives to provide the most up-to-date information. However, the list of supported features in this document is partial and subject to change.

The information in Table 2.1 was created to describe the supported features for fully populated, standard PXA270-10 Card Engine builds. If the card engine in use is a custom build or has some hardware feature omitted, the commands related to those hardware features may not function.

For questions or if additional support is needed, please [contact Logic PD](#).²

² <http://support.logicpd.com/TechnicalSupport/AskAQuestion.aspx>