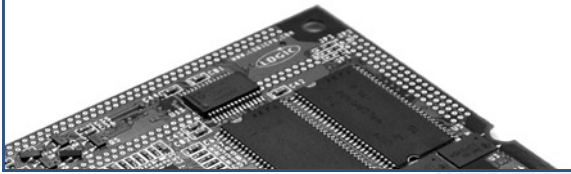




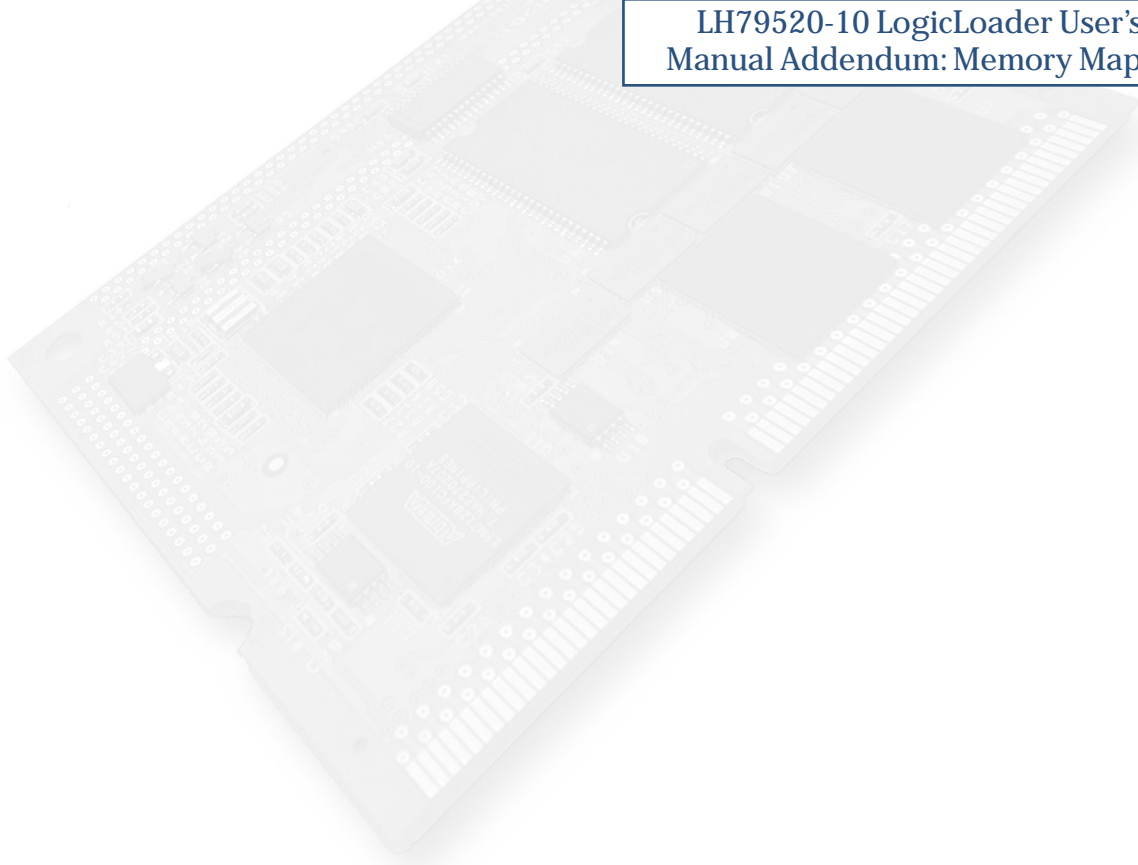
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# Zoom™

Card Engine

LH79520-10 LogicLoader User's  
Manual Addendum: Memory Maps



## REVISION HISTORY

REV	EDITOR	REVISION DESCRIPTION	LoLo Ver.	APPROVAL	DATE
A	Bruce Rovner Andrew Wawra James Wicks	Release	--	B.R.	10/17/2003
B	Bruce Rovner Aaron Stewart	Deleted section on non-contiguous SDRAM; Added Supported Options Table.	1.2	ME	12/1/2004

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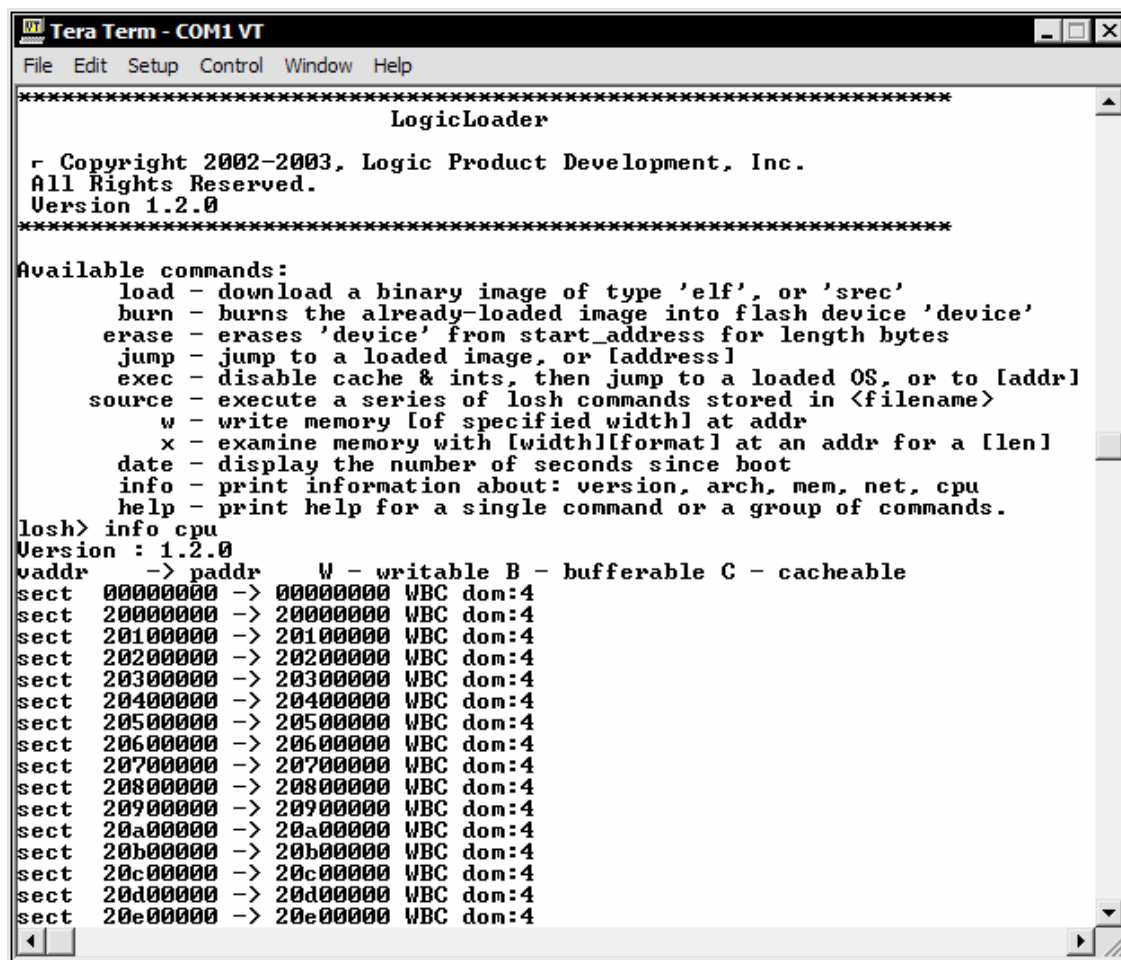
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# 1 LH79520-10 LogicLoader Addendum: Memory Map Diagrams

## 1.1 MMU Remap of Physical Memory to Logical Memory

The LH79520 Card Engine is designed to accommodate SDRAM of different sizes. LoLo sets up the MMU to remap physical memory to logical memory. You can type "info cpu" at the "losh" prompt to see how LoLo remaps physical memory to logical memory. (You may need to lengthen the number of lines your software terminal emulator displays in order to view the information in entirety-- to do this in TeraTerm select **Setup/ Window**, then adjust **Scroll Buffer** to the maximum 10000 lines.)

*Figure 1.1: Type "info cpu" to See the Remap by the MMU*



```

Tera Term - COM1 VT
File Edit Setup Control Window Help
*****
                        LogicLoader
*****
r Copyright 2002-2003, Logic Product Development, Inc.
All Rights Reserved.
Version 1.2.0
*****
Available commands:
  load - download a binary image of type 'elf', or 'srec'
  burn - burns the already-loaded image into flash device 'device'
  erase - erases 'device' from start_address for length bytes
  jump - jump to a loaded image, or [address]
  exec - disable cache & ints, then jump to a loaded OS, or to [addr]
  source - execute a series of losh commands stored in <filename>
  w - write memory [of specified width] at addr
  x - examine memory with [width][format] at an addr for a [len]
  date - display the number of seconds since boot
  info - print information about: version, arch, mem, net, cpu
  help - print help for a single command or a group of commands.
losh> info cpu
Version : 1.2.0
vaddr  -> paddr    W - writable B - bufferable C - cacheable
sect  00000000 -> 00000000 WBC dom:4
sect  20000000 -> 20000000 WBC dom:4
sect  20100000 -> 20100000 WBC dom:4
sect  20200000 -> 20200000 WBC dom:4
sect  20300000 -> 20300000 WBC dom:4
sect  20400000 -> 20400000 WBC dom:4
sect  20500000 -> 20500000 WBC dom:4
sect  20600000 -> 20600000 WBC dom:4
sect  20700000 -> 20700000 WBC dom:4
sect  20800000 -> 20800000 WBC dom:4
sect  20900000 -> 20900000 WBC dom:4
sect  20a00000 -> 20a00000 WBC dom:4
sect  20b00000 -> 20b00000 WBC dom:4
sect  20c00000 -> 20c00000 WBC dom:4
sect  20d00000 -> 20d00000 WBC dom:4
sect  20e00000 -> 20e00000 WBC dom:4

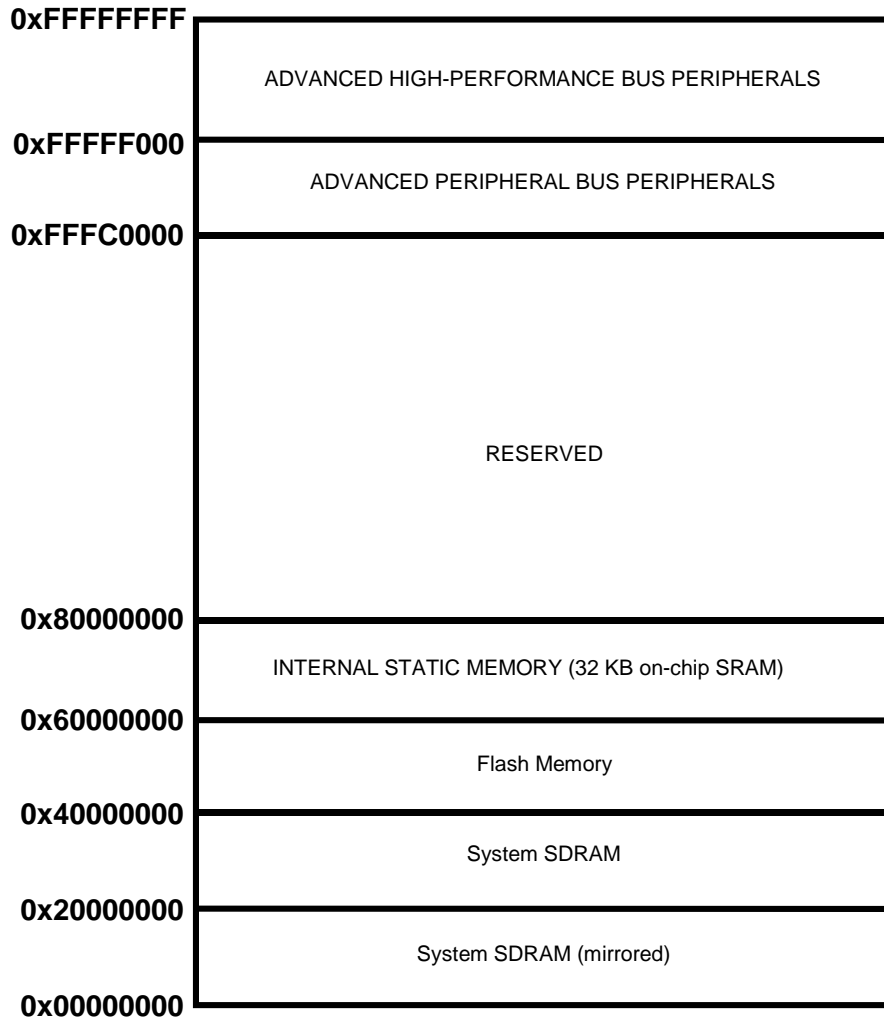
```

Note: the figures you see may differ from those presented in this example.

The resulting logical hardware memory map can be seen in the following diagram.

**Figure 1:2: LH79520-10 Hardware Memory Map**

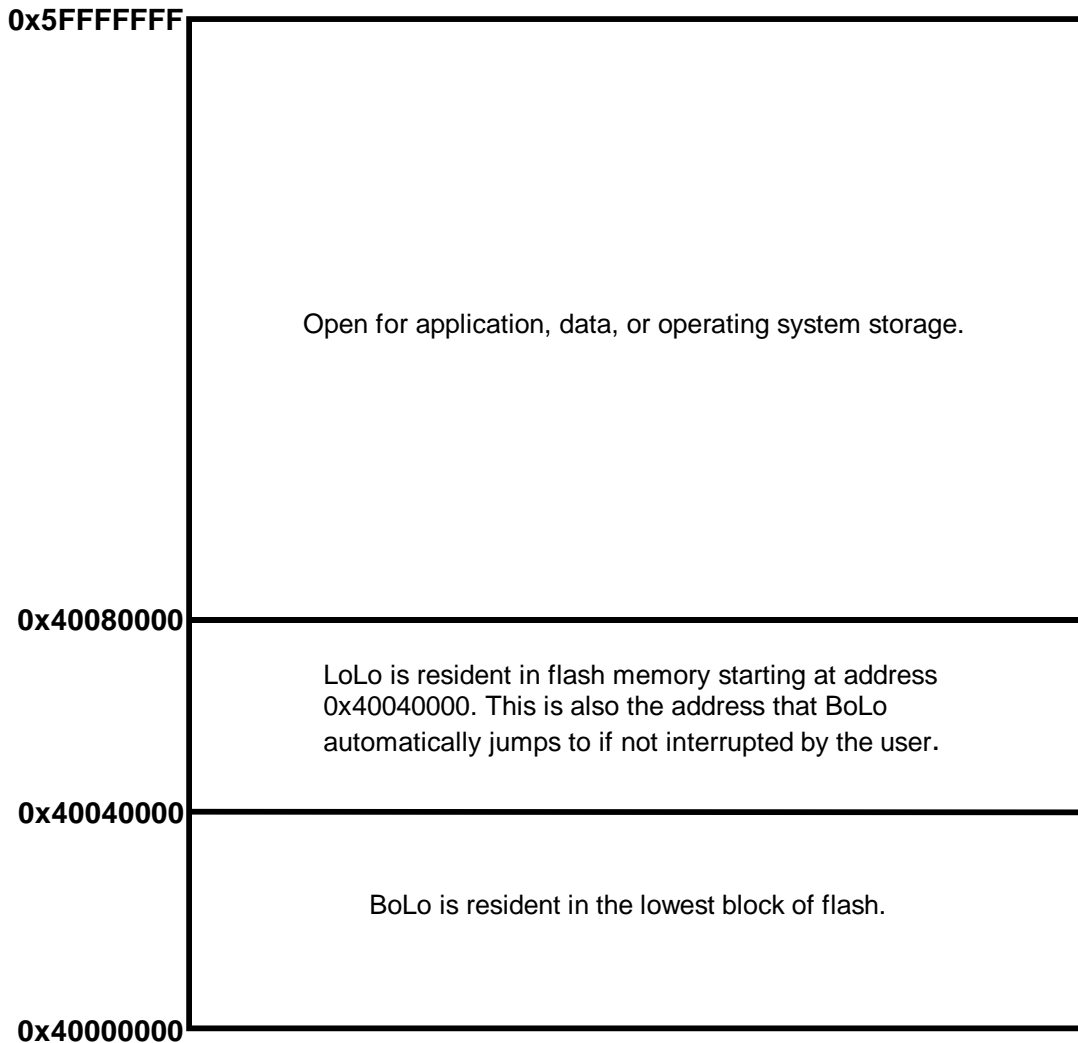
**LH79520 Memory Map During Execution of BoLo and LoLo**



## 1.2 Location of BoLo and LoLo in Flash Memory on the LH79520-10

The Zoom Starter Development Kits come with both BoLo and LoLo programmed into the Card Engine's resident flash array. See Figure 1.3 below.

**Figure 1.3: Flash Memory Layout**



## 1.3 Run-time RAM location of BoLo and LoLo on the LH79520

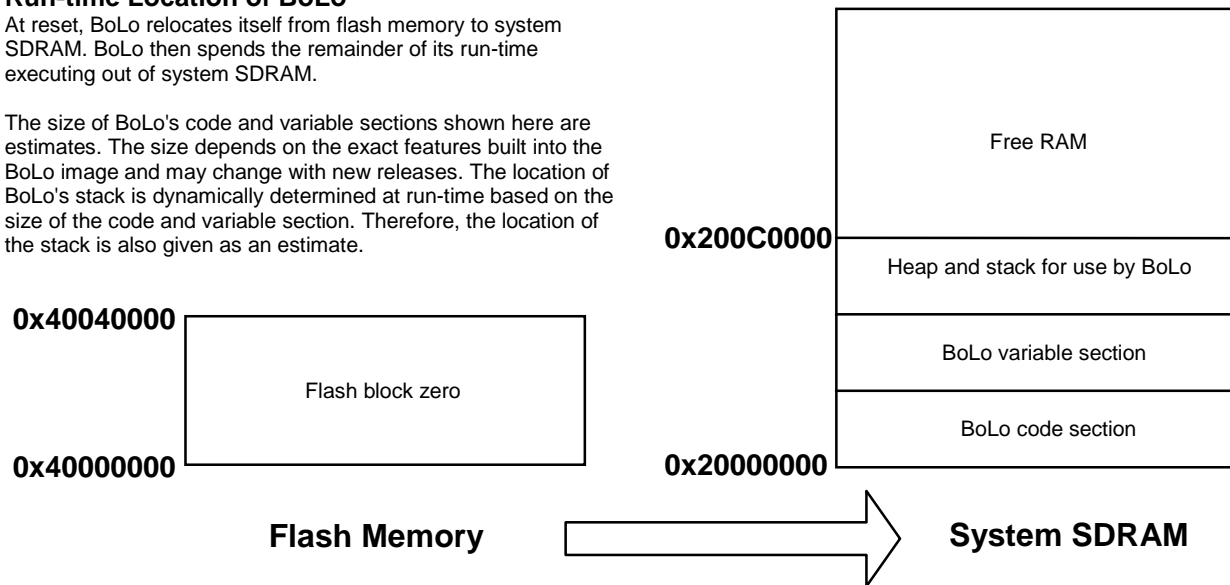
Both BoLo and LoLo execute out of RAM. The diagrams shown on the following page, Figure 1:4: LH79520-10 RAM Execution Environment for BoLo and LoLo, depict the memory used by these two programs.

**Figure 1.4: LH79520-10 RAM Execution Environment for BoLo and LoLo**

**Run-time Location of BoLo**

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

The size of BoLo's code and variable sections shown here are estimates. The size depends on the exact features built into the BoLo image and may change with new releases. The location of BoLo'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 also given as an estimate.

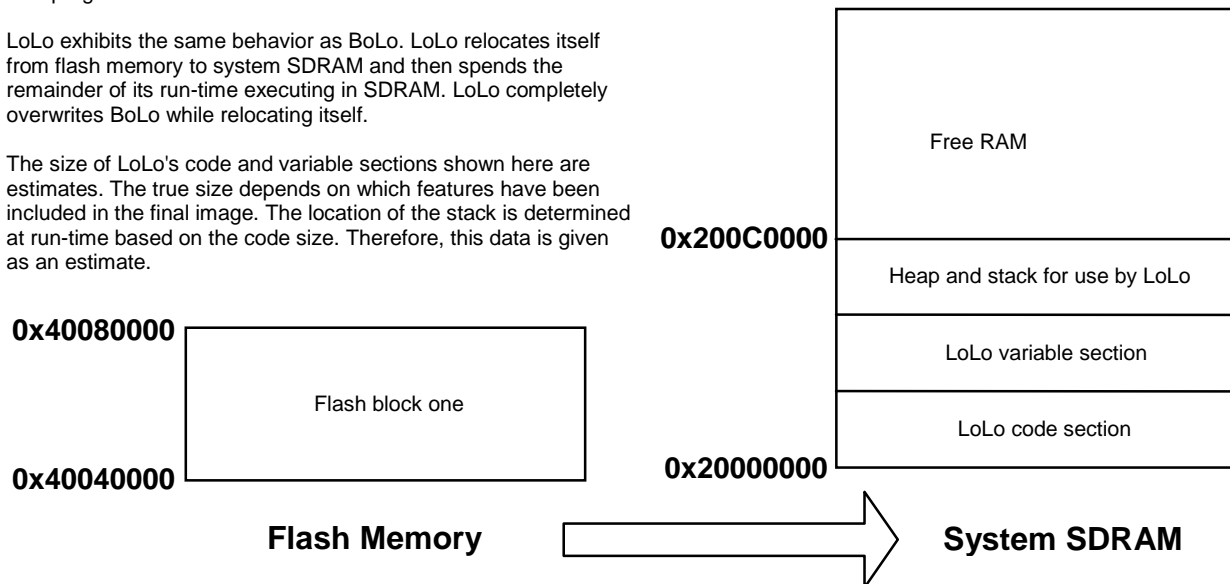


**Run-time Location of LoLo**

If not interrupted by the user, or the presence of the RAM cookie, BoLo jumps to the address 0x40040000, where it expects to find LoLo. However, users may choose to overwrite LoLo with their own program code.

LoLo exhibits the same behavior as BoLo. LoLo relocates itself from flash memory to system SDRAM and then spends the remainder of its run-time executing in SDRAM. LoLo completely overwrites BoLo while relocating itself.

The size of LoLo's code and variable sections shown here are estimates. The true size depends on which features have been included in the final image. The location of the stack is determined at run-time based on the code size. Therefore, this data is given as an estimate.



## 2 LH79520-10 Supported Options

The table below provides data on the peripheral support options built-in to LogicLoader for this card engine. Additional functionality is possible by implementing custom code or commands on the system.

<u>Feature</u>	<u>LoLo Command</u>	<u>Supported Options Description</u>
Audio	play-wav	16 bit stereo only .wav files can be played at: 11.025, 22.050, 44.100 kHz
CompactFlash	mount	Memory Cards only SanDisk, PNY, HP cards have been verified 16 -> 256MB are verified
Ethernet	ifconfig	LogicLoader supports file downloads through TFTP
IRDA	None	LogicLoader does not support IRDA
PCMCIA/ CompactFlash	None	LogicLoader does not support PCMCIA/CompactFlash
Power Management	None	LogicLoader does not support power management
Serial	None	LogicLoader uses UARTA (UART 1) on the LH79520-10 for serial communication.
Touch	touch-cal	LogicLoader supports touch calibration
USB Device	None	LogicLoader does not support USB
Video	video-open	LogicLoader supports the following video displays for the LH79520-10 card engine at 8 and 16 bits per pixel only.  <b><u>Logic Display Kits:</u></b> LQ121S1DG31 TFT SVGA 12.1" LQ64D343 TFT VGA 6.4" LQ035Q7DB02 TFT QVGA 3.5" LQ10D368 TFT VGA 10.4"

### 3 Disclaimer

Logic 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 Supported Options list was created to describe the supported features for fully populated standard 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.

If you need software support on demand, please contact Logic Product Development sales at: [product.sales@logicpd.com](mailto:product.sales@logicpd.com).