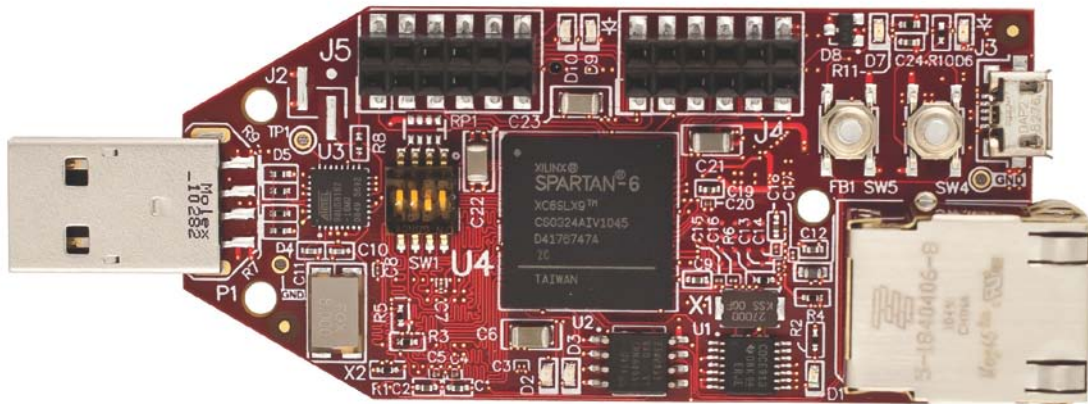


Spartan-6 LX9 MicroBoard Pre-Built MicroBlaze Hardware Platforms



Version 04

Revision History

Version	Description	Date
01	Initial Avnet Release with PLB platforms	08 Mar 2011
02	Adding initial AXI 13.1 platforms	19 May 2011
03	Added 012 platform with PMods connected to GPIO outputs; Added area-optimized 311 platform	29 Aug 2011
04	Added 230 platform which was used for PetaLinux	26 Sep 2011

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Overview

The MicroBlaze™ core is a 32-bit RISC Harvard architecture soft processor core with a rich instruction set optimized for embedded applications. With the MicroBlaze soft processor solution, you have complete flexibility to select the combination of peripheral, memory and interface features that will give you the exact system you need at the lowest cost possible on a single FPGA.

To get you started in the right direction, Avnet has generated and pre-built several MicroBlaze Hardware Platforms to use as your starting point. The platforms original XPS project is available, as well as a version exported for SDK.

Pre-built hardware platforms give hardware engineers a starting point for adding unique combinations of peripherals or even a custom-designed peripheral to off-load the CPU.

Pre-built hardware platforms are also an excellent starting point for software engineers as they can immediately begin using SDK and designing software applications.

Objectives

- Provide selection table for finding MicroBlaze Hardware Platforms
- Provide a block diagram for each platform
- Point people to the other tutorials that show how to make use of the hardware platforms to start software development

Requirements

The following items are required to use the MicroBlaze Hardware Platforms.

Software

- Xilinx XPS is required for hardware platform customization (EDK required)
- Xilinx SDK is required for software application design (included in Spartan-6 LX9 MicroBoard Kit)
- Digilent Adept and Xilinx 3rd-party USB Cable driver (ISE 13.1 and previous revisions only)
- Silicon Labs CP2102 USB-to-UART Bridge Driver

Hardware

- Computer with a minimum of 300-900 MB (depending on O/S) to complete an XC6SLX9 design¹
- Avnet Spartan-6 LX9 MicroBoard Kit
 - Avnet Spartan-6 LX9 MicroBoard
 - USB Extension cable (if necessary)
 - USB A-to-MicroB cable

¹ Refer to www.xilinx.com/ise/products/memory.htm

Recommended Reading

- The hardware used on the Spartan-6 LX9 MicroBoard is described in detail in Avnet document *Xilinx Spartan-6 LX9 Microboard, Rev. B - User Guide*.
- The installation and use of the on-board USB JTAG circuit on the Spartan-6 LX9 MicroBoard is described in detail in Avnet document *Spartan-6 LX9 MicroBoard Configuration Guide*.
- The driver installation for the Silicon Labs CP2102 USB-UART bridge on the Spartan-6 LX9 MicroBoard is described in detail in Avnet document *Silicon Labs CP201x USB-to-UART Setup Guide v.1.0*.
- For more detailed information about SDK, please refer to the Xilinx document titled *Embedded System Tools Reference Manual* (*est_rm.pdf*).
- Details on the Spartan-6 FPGA family are included in the following Xilinx documents:
 - *Spartan-6 Family Overview (DS160)*
 - *Spartan-6 FPGA Data Sheet (DS162)*
 - *Spartan-6 FPGA Configuration User Guide (UG380)*

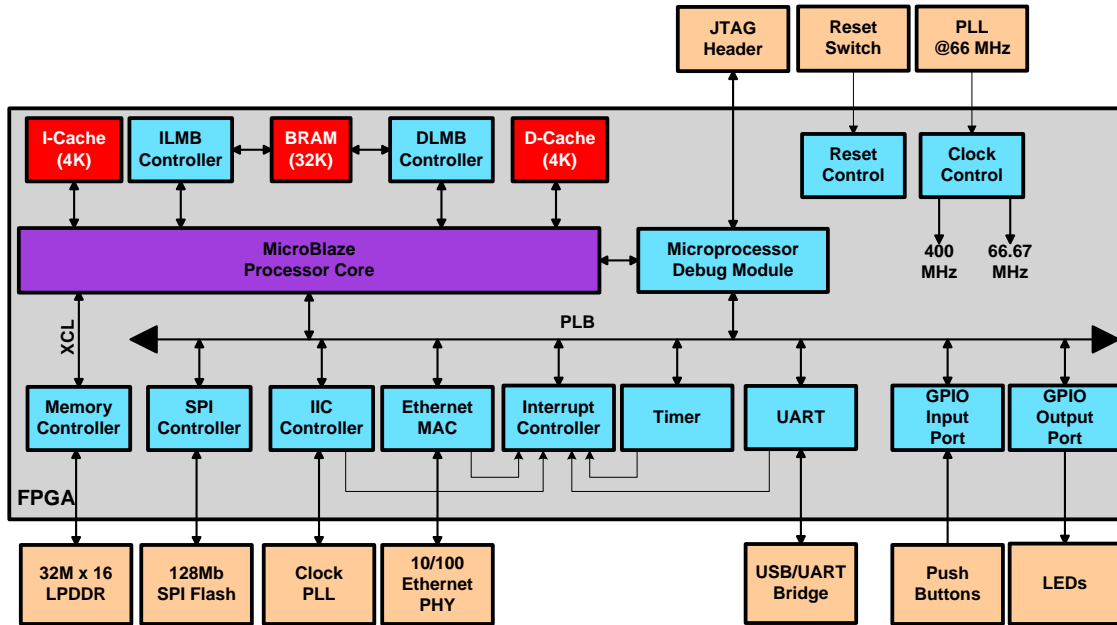
MicroBlaze Hardware Platform Selection

AVS6LX9MBHP	# of CPUs	Area Optimized?	CPU Frequency (MHz)	Bus	Bus Frequency (MHz)	CPU PC HW Breakpoints	CPU Read Address Watchpoints	CPU Write Address Watchpoints	CPU Barrel Shifter	CPU Hardware Divider	CPU Hardware Floating Point Unit	CPU Memory Management Unit	Local Memory-BRAM (KB)	I-Cache-BRAM (KB)	D-Cache-BRAM (KB)	LPDDR Size (MB)	LPDDR Frequency (MHz)	Ethernet_lite 10/100	LL_TEMAC 10/100	UARTLITE / Speed	UART 16550	SPI Flash (MB)	IIC Clock Control	32-bit Timers	DIPs x4	LEDs x4	Pmods	Interrupt Controller
010	1	N	66	PLB	66	1	1	1	X	X	-	-	32	4	4	64	200	X	-	115200	-	16	X	1	X	X	-	X
011	1	N	66	PLB	66	1	1	1	X	X	-	-	32	4	4	64	200	X	-	115200	-	16	-	1	X	X	-	X
012	1	Y	66	PLB	66	1	1	1	X	X	-	-	32	4	4	64	200	X	-	115200	-	16	-	1	X	X	GPIO	X
020	1	N	66	PLB	66	1	1	1	X	X	X	-	16	2	2	64	200	-	-	115200	-	-	-	1	X	X	-	X
030	1	N	75	PLB	75	1	1	1	X	X	-	-	64	-	-	-	-	-	-	115200	-	-	-	1	X	X	-	X
211	1	N	66	AXI	66	1	1	1	X	X	-	-	32	4	4	64	200	X	-	115200	-	16	-	1	X	X	-	X
212	1	N	75	AXI	75	1	1	1	X	X	-	-	32	4	4	64	150	X	-	115200	-	16	-	1	X	X	-	X
220	1	N	66	AXI	66	1	1	1	X	X	X	-	16	2	2	64	200	-	-	115200	-	-	-	1	X	X	-	X
230	1	N	66	AXI	66	1	0	0	X	-	-	X	4	8	8	64	100	X	-	115200	-	16	-	2	-	-	-	X
311	1	Y	66	AXI	66	1	1	1	X	X	-	-	32	4	4	64	200	X	-	115200	-	16	-	1	X	X	-	X

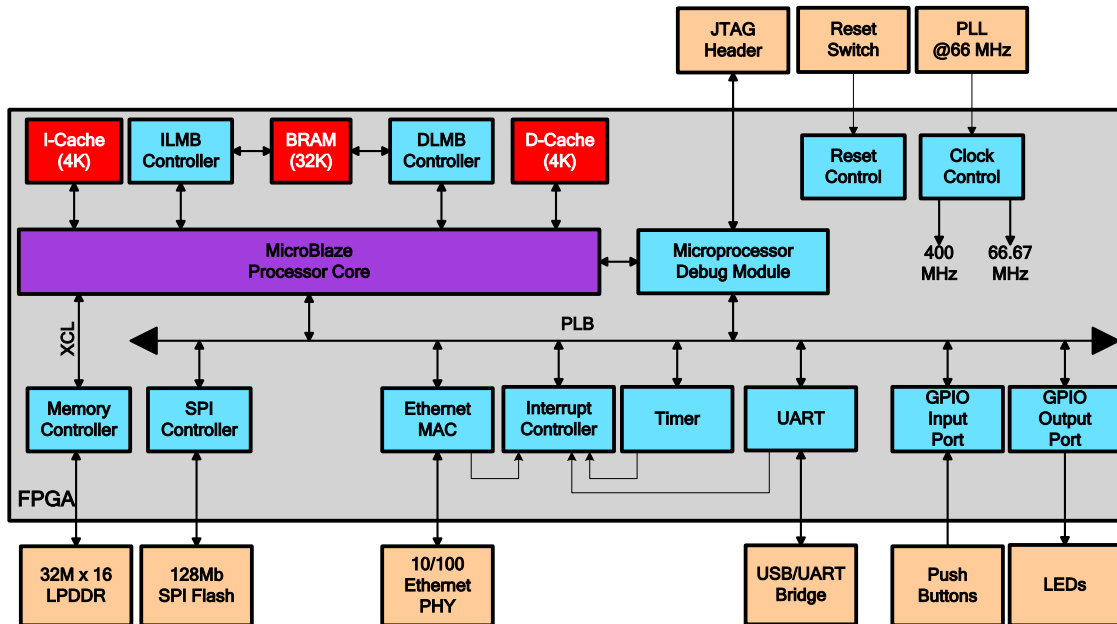
Blocks highlighted in yellow are connected to the Interrupt Controller

MicroBlaze Hardware Platforms

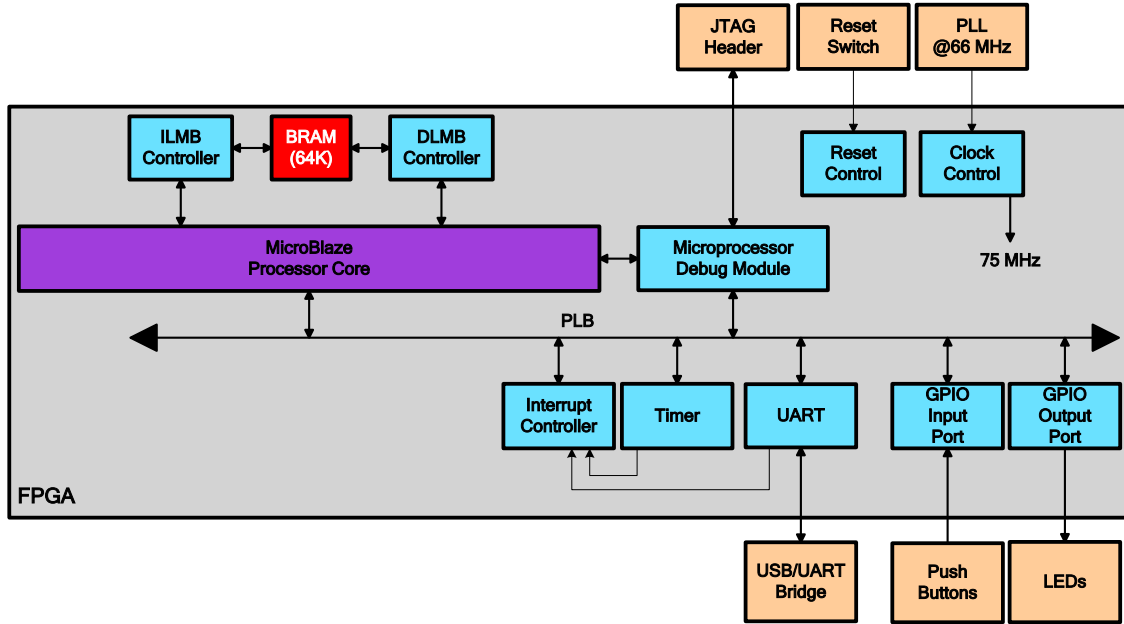
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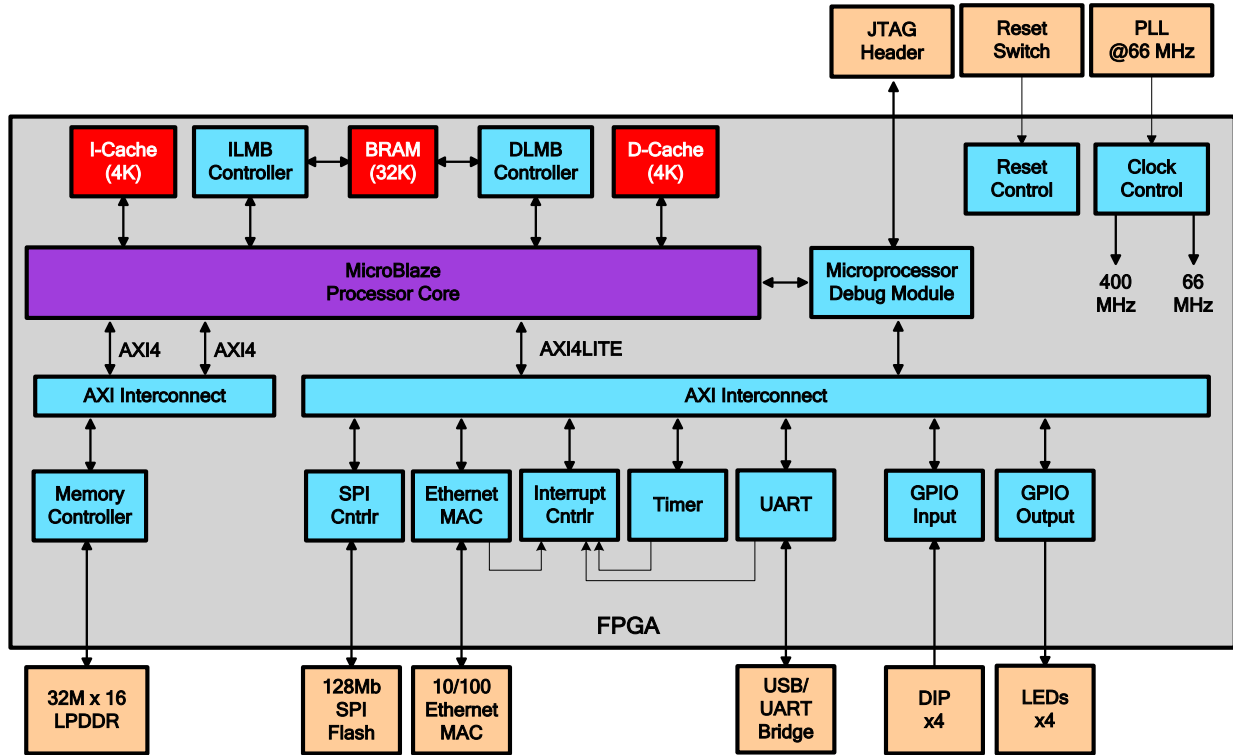
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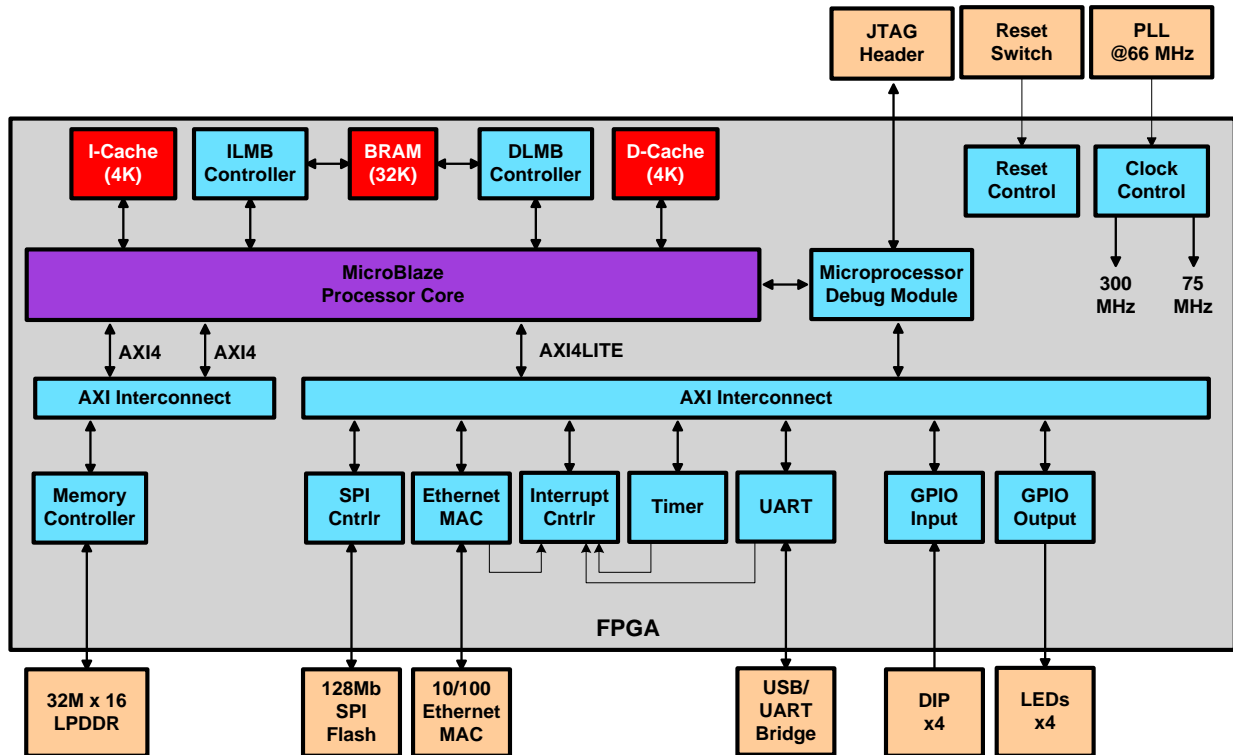
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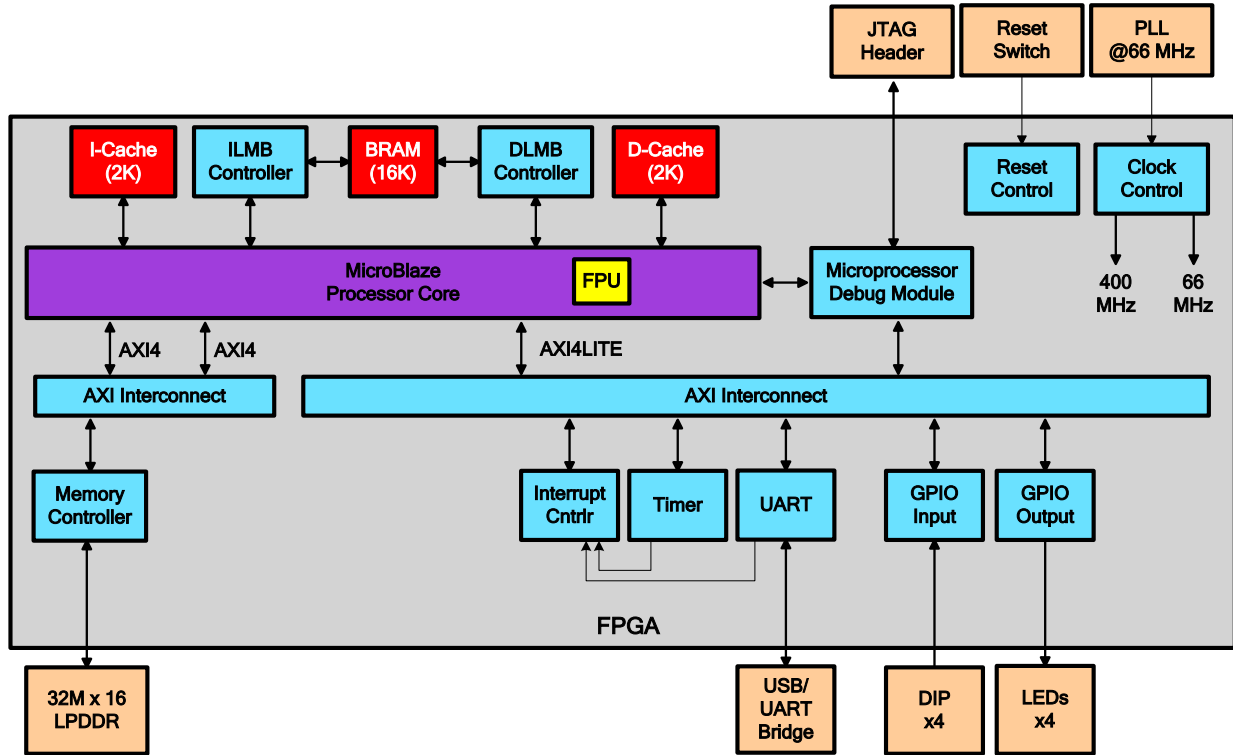
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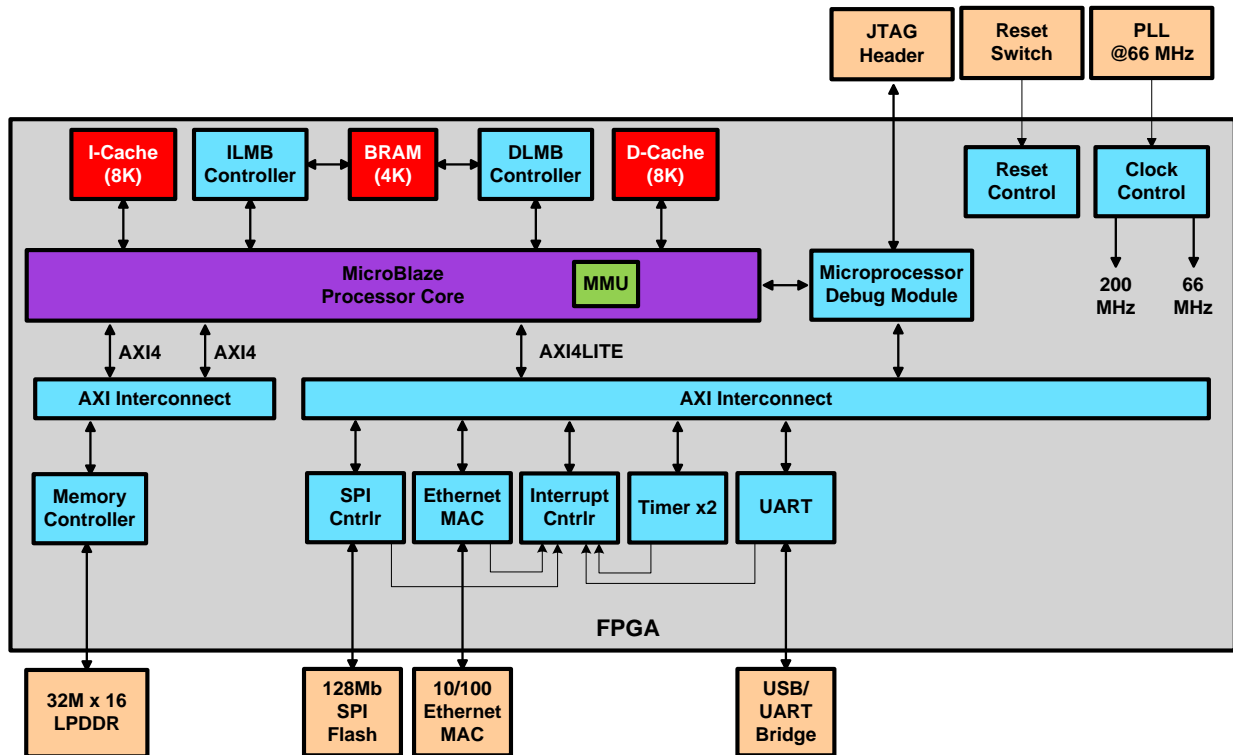
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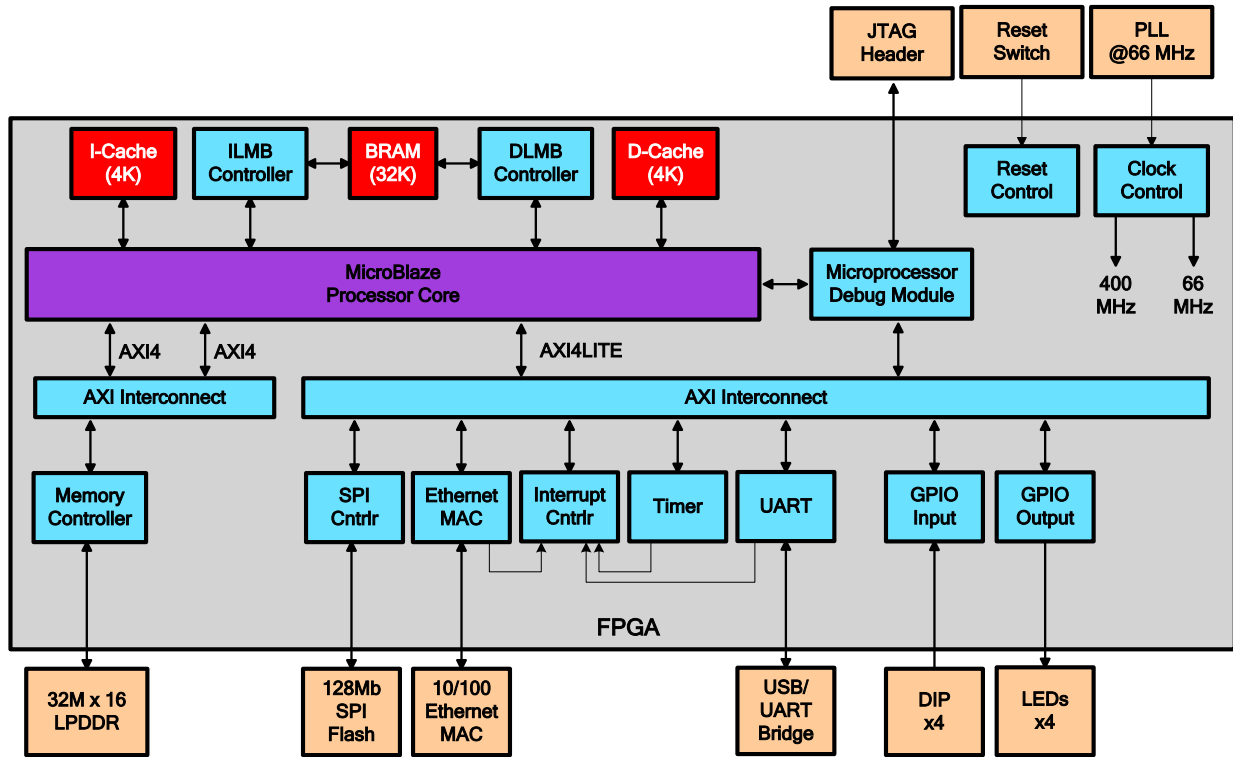
AVS6LX9MBHP220



AVS6LX9MBHP230



AVS6LX9MBHP311



Design

Please refer to the accompanying SDK tutorials to begin immediately designing software applications with a hardware platform. These are accessible on the Avnet DRC at:

www.em.avnet.com/s6microboard

→ Support Files & Downloads

→ App Notes/Ref Designs

Getting Help and Support

Evaluation Kit home page with Documentation and Reference Designs

<http://em.avnet.com/s6microboard>

If you have a suggestion for a different hardware platform, please post your request to the Avnet Spartan-6 LX9 MicroBoard forum:

<http://community.em.avnet.com/t5/Spartan-6-LX9-MicroBoard/bd-p/Spartan-6LX9MicroBoard>

For Xilinx technical support, you may contact your local Avnet/Silica FAE or Xilinx Online Technical Support at www.support.xilinx.com. On this site you will also find the following resources for assistance:

- Software, IP, and Documentation Updates
- Access to Technical Support Web Tools
- Searchable Answer Database with Over 4,000 Solutions
- User Forums
- Training - Select instructor-led classes and recorded e-learning options

Contact Avnet Support for any questions regarding the Spartan-6 LX9 MicroBoard reference designs, kit hardware, or if you are interested in designing any of the kit devices into your next design.

- <http://www.em.avnet.com/techsupport>

You can also contact your local Avnet/Silica FAE.