

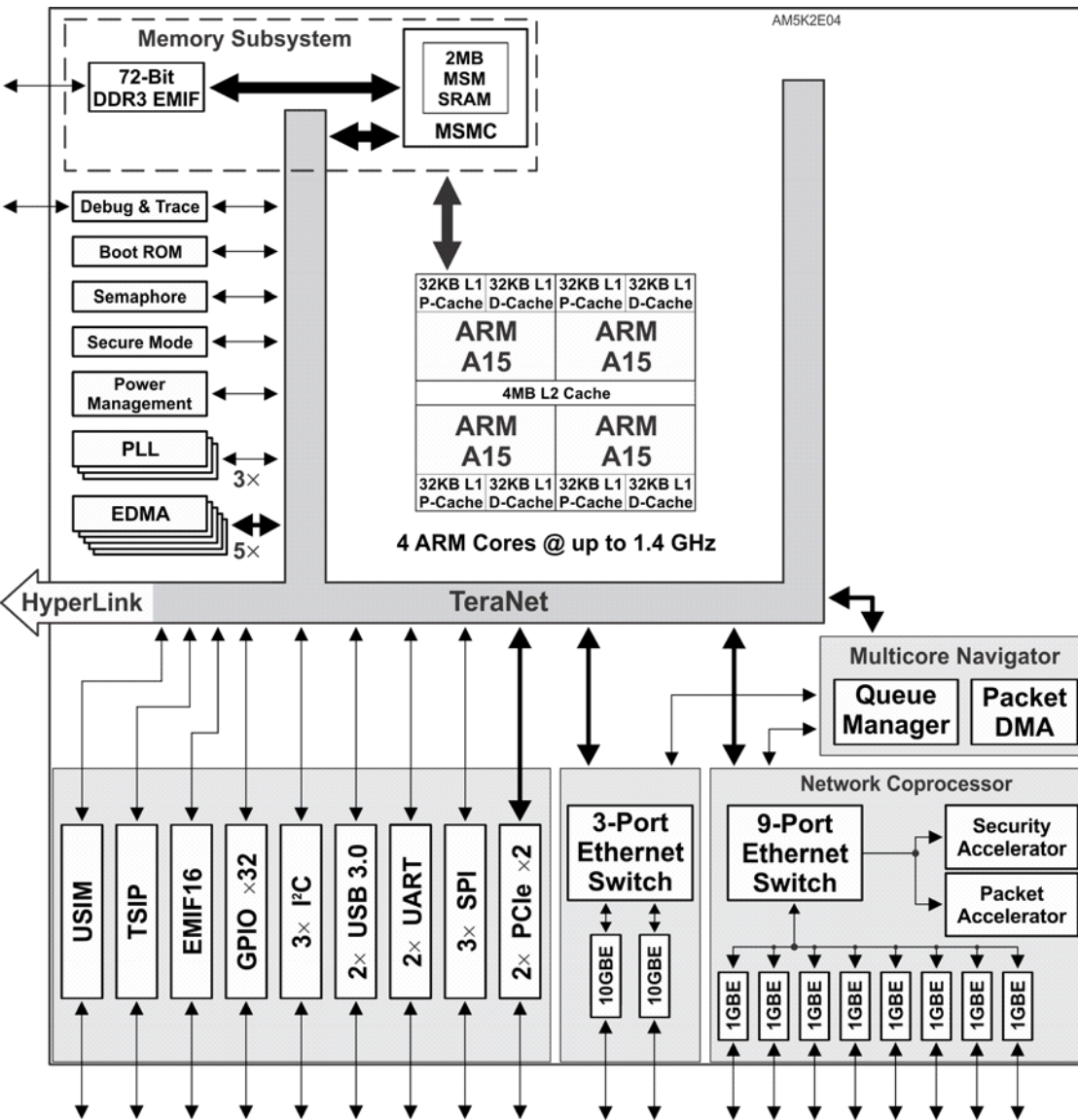
Introduction to AM5K2Ex/66AK2Ex Processors

Recommended Pre-Requisite Training

Prior to this training, we recommend you review the KeyStone II DSP+ARM SoC Architecture Overview, which provides more details on the elements that are common to all KeyStone II devices

<https://training.ti.com/keystone-ii-dsparm-soc-architecture-overview>

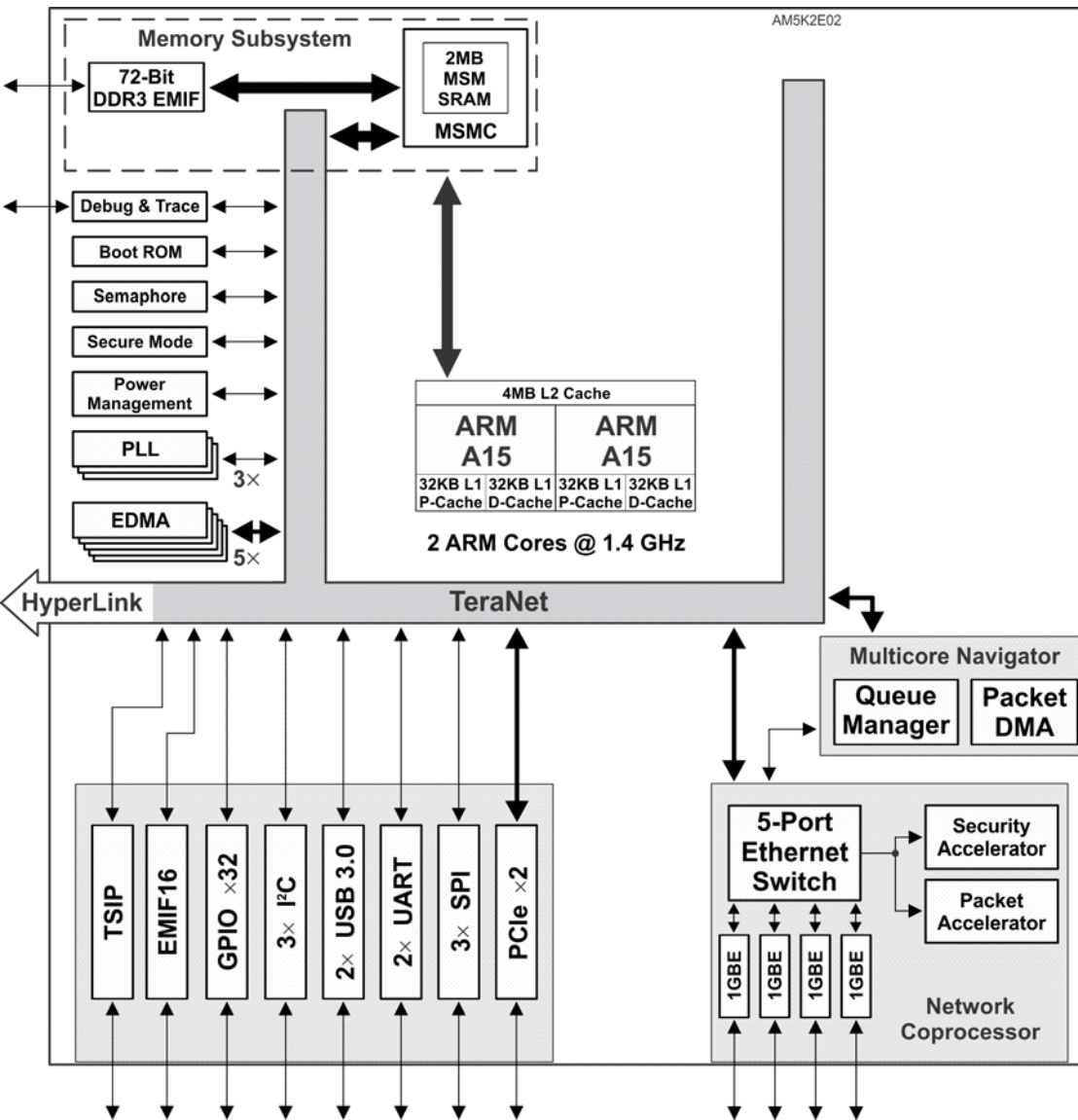
K2E Platform Devices: AM5K2E04



The K2E platform has four variations:

- **AM5K2E04**
 - First TI ARM-only multicore device
 - Quad-ARM Cortex-A15 CorePac
 - 1x Queue Manager supports up to 8K queues
 - Network Coprocessor with 8 external 1GBE ports
 - 1x 3 port 10GBE Switch Subsystem
 - Telecommunications Serial Port (TSIP)
 - 2x USB 3.0 to support solid state drive
 - No SRIO

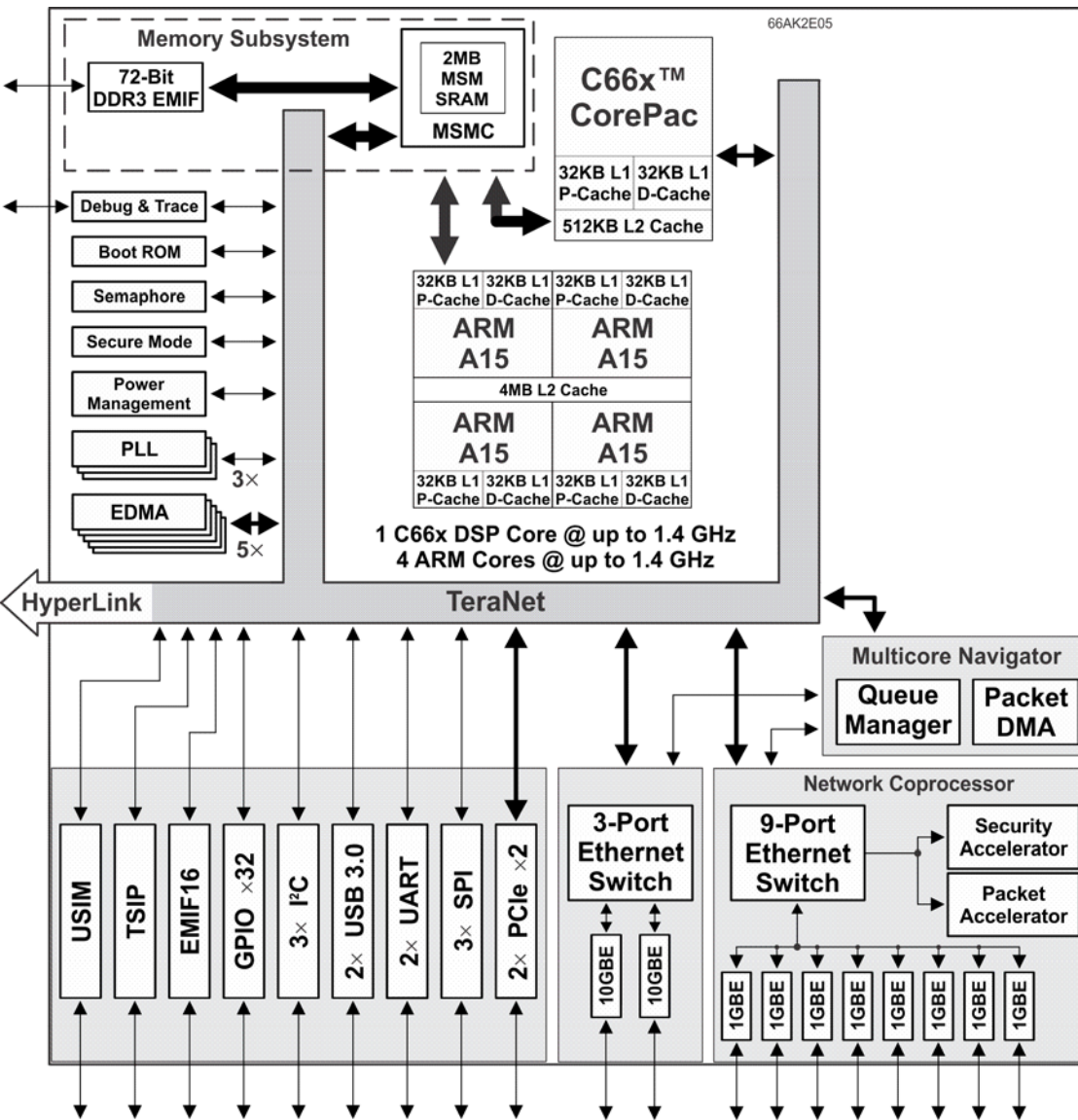
K2E Platform Devices: AM5K2E02



The K2E platform has four variations:

- AM5K2E04
 - First TI ARM-only multicore device
 - Quad-ARM Cortex-A15 CorePac
 - 1x Queue Manager supports up 8K queues
 - Network Coprocessor with 8 external 1GBE ports
 - 1x 3 port 10GBE Switch Subsystem
 - Telecommunications Serial Port (TSIP)
 - 2x USB 3.0 to support solid state drive
 - No SRIO
- AM5K2E02
 - Scaled-down version of AM5K2E04
 - Dual-ARM Cortex-A15 CorePac
 - Network Coprocessor with 4 external 1GBE ports
 - 10GBE not included

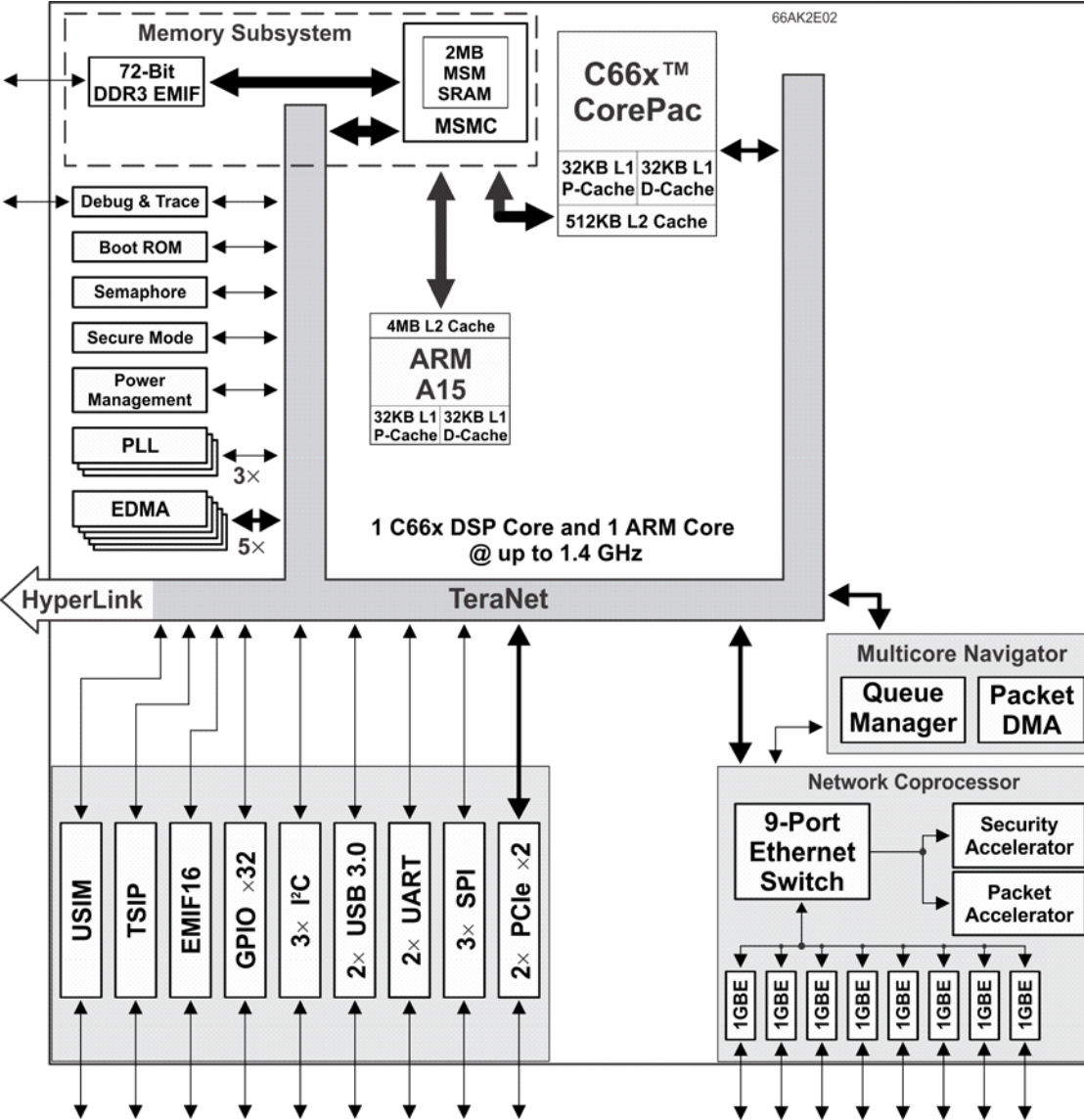
K2E Platform Devices: 66AK2E05



The K2E platform has four variations:

- **AM5K2E04**
 - First TI ARM-only multicore device
 - Quad-ARM Cortex-A15 CorePac
 - 1x Queue Manager supports up 8K queues
 - Network Coprocessor with 8 external 1GBE ports
 - 1x 3 port 10GBE Switch Subsystem
 - Telecommunications Serial Port (TSIP)
 - 2x USB 3.0 to support solid state drive
 - No SRIO
- **AM5K2E02**
 - Scaled-down version of AM5K2E04
 - Dual-ARM Cortex-A15 CorePac
 - Network Coprocessor with 4 external 1GBE ports
 - 10GBE not included
- **66AK2E05**
 - Same as AM5K2E04 with a single C66x CorePac

K2E Platform Devices: 66AK2E02

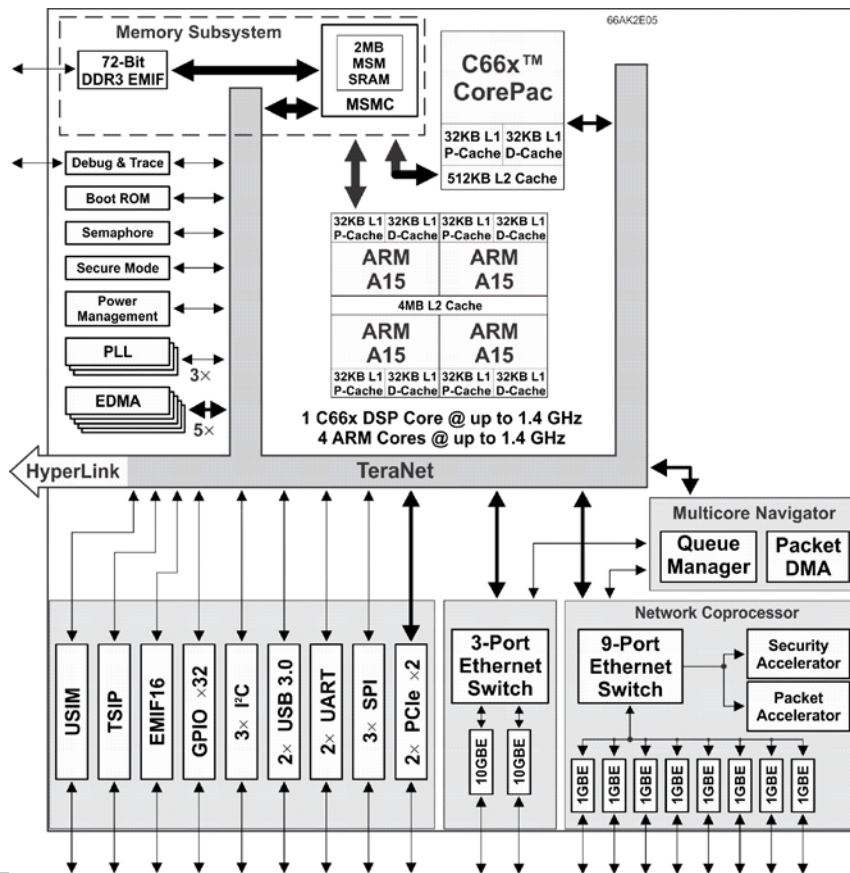


The K2E platform has four variations:

- **AM5K2E04**
 - First TI ARM-only multicore device
 - Quad-ARM Cortex-A15 CorePac
 - 1x Queue Manager supports up 8K queues
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 - 1x 3 port 10GBE Switch Subsystem
 - Telecommunications Serial Port (TSIP)
 - 2x USB 3.0 to support solid state drive
 - No SRIO
- **AM5K2E02**
 - Scaled-down version of AM5K2E04
 - Dual-ARM Cortex-A15 CorePac
 - Network Coprocessor with 4 external 1GBE ports
 - 10GBE not included
- **66AK2E05**
 - Same as AM5K2E04 with a single C66x CorePac
- **66AK2E02**
 - Same as AM5K2E02 with a single-ARM Cortex-A15 CorePac and a single C66x CorePac.

66AK2Ex Applications

- Communication and networking
- Fast hard-disk storage (PCIe, USB)
- Imaging, including analytics
- Example: Defense communication systems

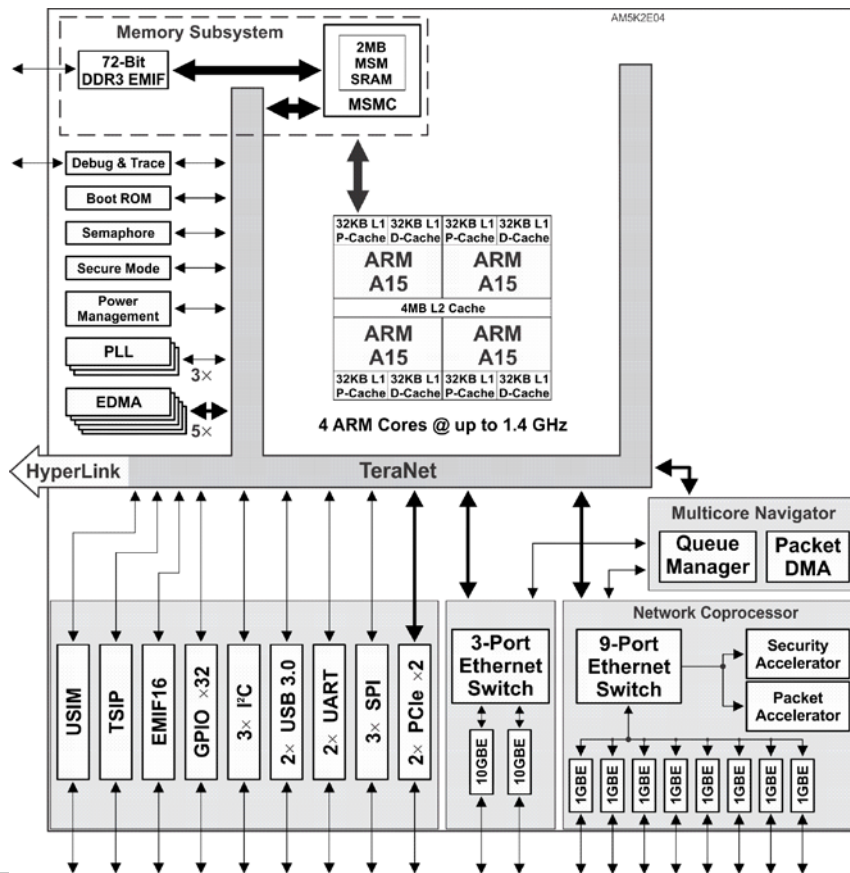


66AK2Ex Advantages

- Integrated SOC solution
- High-speed communication and disk bandwidth for data storage
- DSP enables on-the-fly signal processing
- Ability to scale up using HyperLink to connect multiple devices, or scale down using 66AK2E02
- Low power (compared to other solutions)

AM5K2Ex Applications

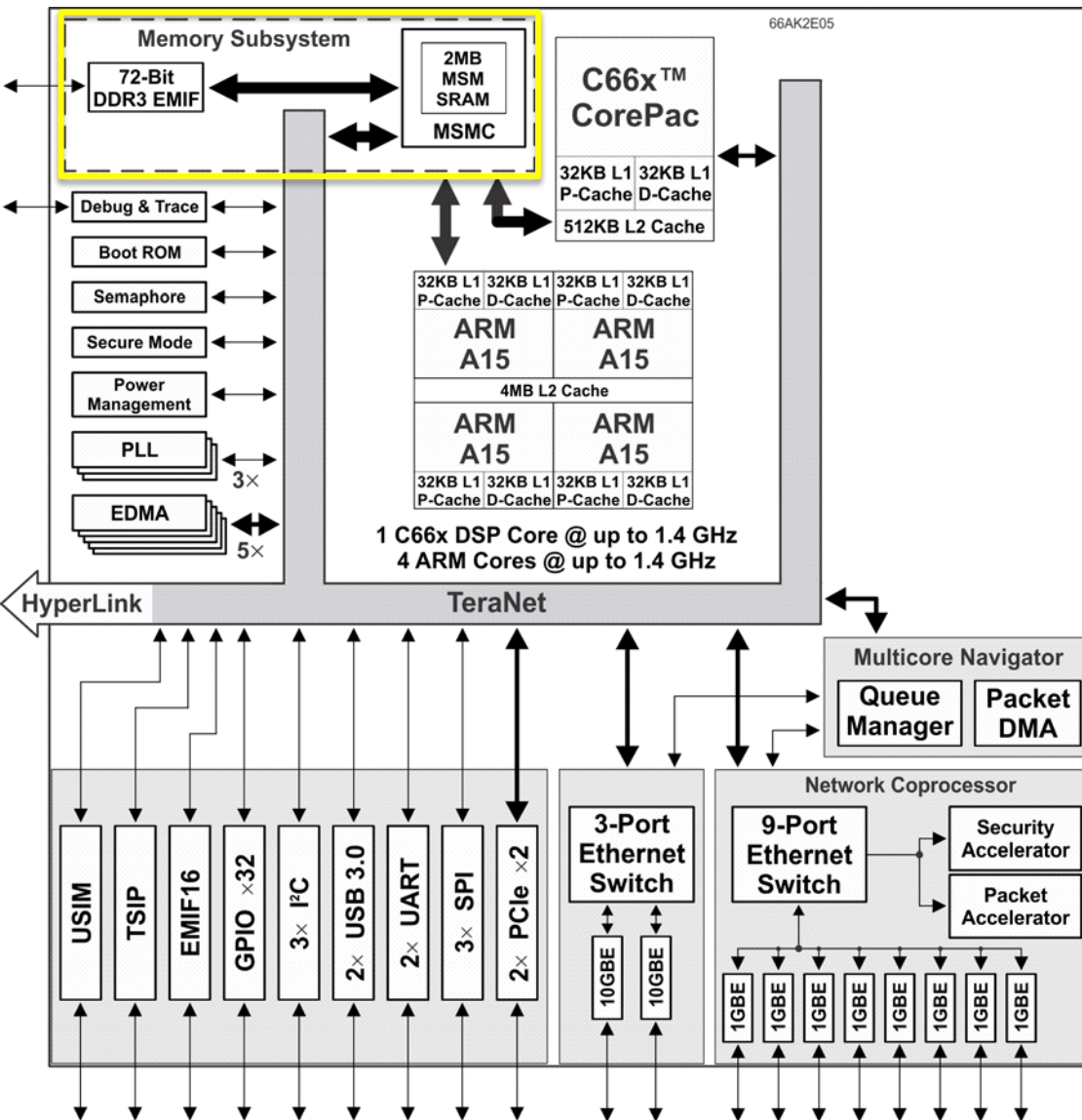
- Communication and networking
- Fast hard-disk storage (PCIe, USB)
- Avionics, communications, industrial process control
- Example: Software Defined Radio (SDR)



AM5K2Ex Advantages

- Integrated SOC solution
- High-speed communication and disk bandwidth for data storage
- Ability to scale up using HyperLink to connect multiple devices, or scale down using AM5K2E02
- Low power (compared to other solutions)

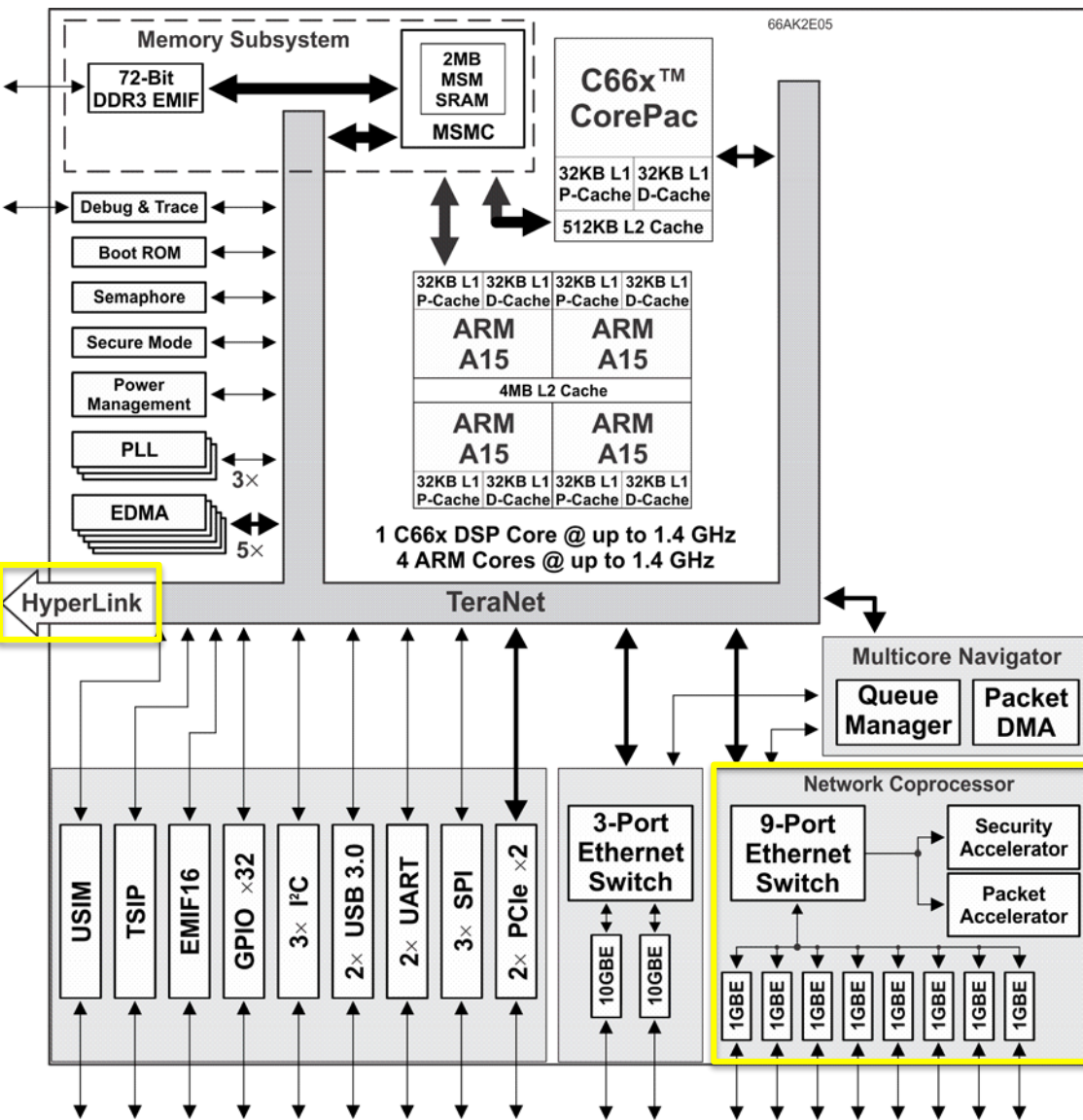
K2E: Memory Subsystem



K2E devices include the standard KeyStone II memory subsystem with the following variations:

- Multicore Shared Memory Controller (MSMC) with **2MB** Multicore Shared Memory (MSM SRAM)
- **One** 72-bit DDR3 EMIF supports up to 8GB external memory

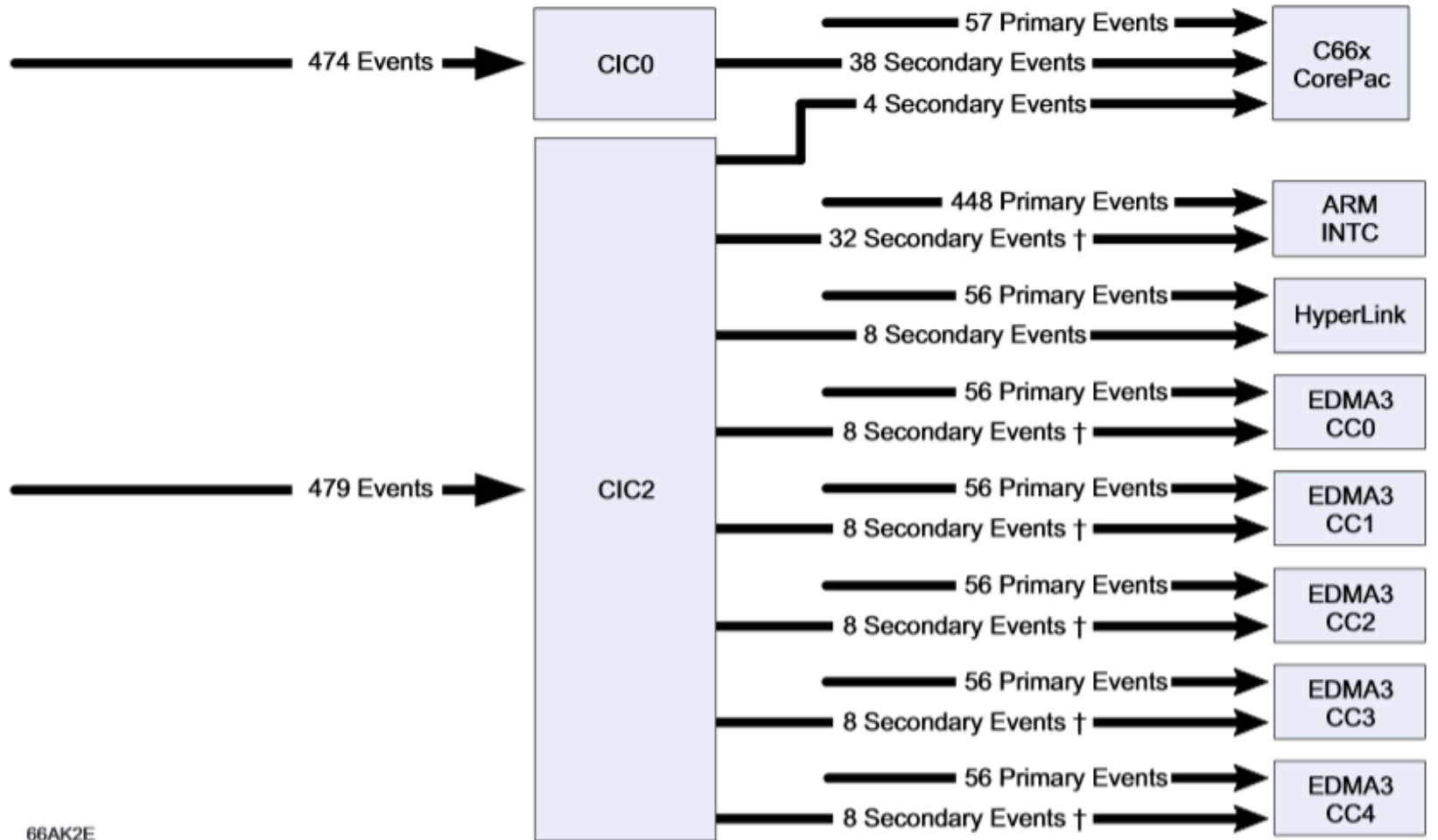
K2E Interfaces



The K2E devices include the standard high-bitrate and low bitrate interfaces, as well as the following variations:

- **One** 50Gbps HyperLink
- Network Coprocessor provides hardware accelerators and switching to perform L2, L3, and L4 processing and encryption:
 - Packet Accelerator (PA)
 - Security Accelerator (SA)
 - **9-port Ethernet switch with 8 SGMII ports and 1 port connecting to the PA and SA (AM5K2E04 and 66AK2E05 only)**

K2E Central Interrupt Controller



66AK2E

† ARM shares two secondary events with every instance of EDMA.

Figure 7-4. Interrupt Topology

For more information, refer to the 66AK2Ex data sheet: <http://www.ti.com/lit/gpn/66ak2e05>

K2E TeraNet Data Connections

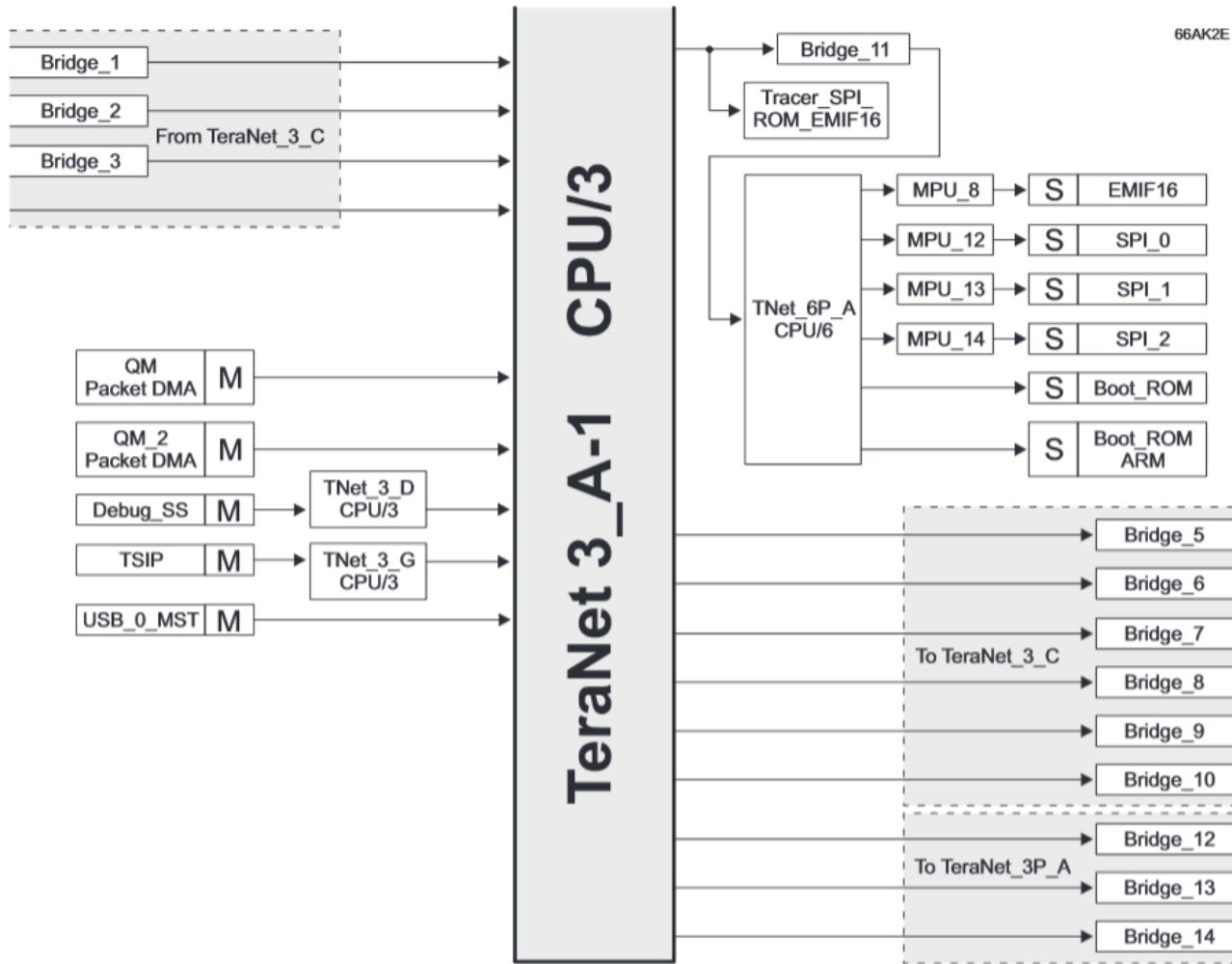
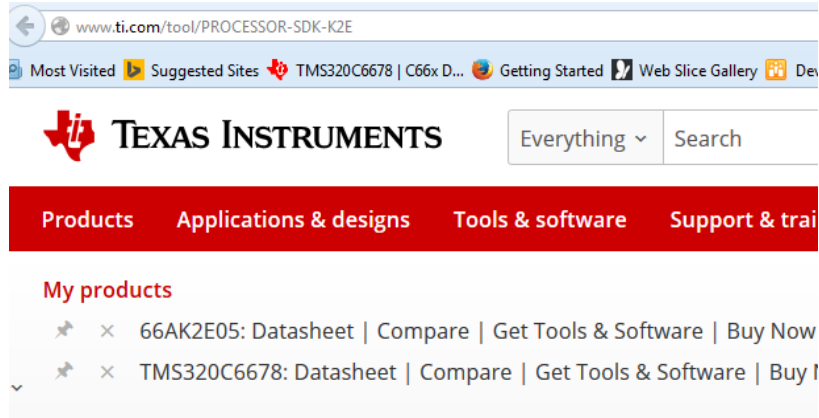


Figure 8-1. TeraNet 3_A-1

- 3 TeraNet parts, connected by bridges
- 128-bit wide, CPU/3 frequency
- The image shown is taken from the 66AK2E data sheet where all TeraNet parts are described

Software: Processor SDK for K2E





The screenshot shows the Texas Instruments website for the Processor SDK for K2E. The browser address bar displays 'www.ti.com/tool/PROCESSOR-SDK-K2E'. The navigation menu includes 'Products', 'Applications & designs', 'Tools & software', and 'Support & training'. Under 'My products', there are links for '66AK2E05: Datasheet | Compare | Get Tools & Software | Buy Now' and 'TMS320C6678: Datasheet | Compare | Get Tools & Software | Buy Now'.

TI Home > Semiconductors > Processors > Processor SDK for K2E Processors

Processor SDK for K2E Processors

(ACTIVE) PROCESSOR-SDK-K2E

 Description & Features  Technical Documents

Order Now

Part Number	Buy from Texas Instruments or Third Party
PROCESSOR-SDK-LINUX-K2E: Linux Processor SDK for K2E	Get Software
PROCESSOR-SDK-RTOS-K2E: RTOS Processor SDK for K2E	Get Software

- Like other TI SOC devices, K2E is supported by Processor SDK.
- Processor SDK is a comprehensive software building blocks in a single installation and is free to download (binaries and source code).
- Two software perspectives:
 - LINUX Processor SDK for K2E
 - TI RTOS Processor SDK for K2E
- Download Processor SDK for K2E:

<http://www.ti.com/tool/PROCESSOR-SDK-K2E>

For More Information

- KeyStone ARM & DSP Multicore Device Training Series
<https://training.ti.com/keystone-arm-dsp-multicore-device-training-series>
- Product Folders:
 - 66AK2E05: <http://www.ti.com/product/66ak2e05>
 - 66AK2E02: <http://www.ti.com/product/66ak2e02>
 - AM5K2E04: <http://www.ti.com/product/am5k2e04>
 - AM5K2E02: <http://www.ti.com/product/am5k2e02>
- For questions regarding topics covered in this training, visit the support forums at the [TI E2E Community](#) website.