LSI

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Product Brief

Axxia® Communication Processor 3400 Family

Powered by Virtual Pipeline™ Technology

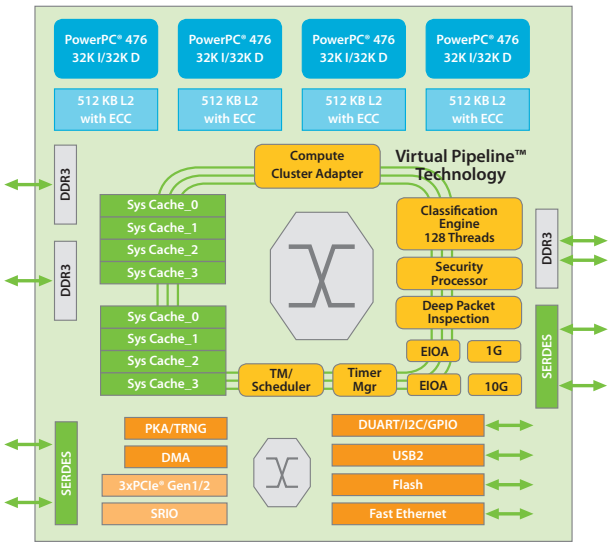
Features

- PowerPC® Processor Compute Complex
  - Up to Quad PowerPC® 476 cores
  - 32KB I / 32KB D L1 cache per core
  - 512KB L2 cache per core w/ECC
  - Power ISA™ Version 2.05
- Acceleration Engines
  - Packet Processing (20 Gb/s)
  - Security Engine (10 Gb/s)
  - RegEx Engine (3 Gb/s)
  - Traffic Manager/Scheduler (up to 6 levels of hierarchy)
- System Communication
  - Virtual Pipeline technology enables efficient intra-system communication for deterministic performance
- System Cache / Memory Subsystem
  - Up to 4 MByte of System Cache
  - Dual 72-bit DDR3
- Serial High-Speed Interfaces
  - 8x SGMII SerDes based (4-pin)
  - 2x 10GbE (XAUI based)
  - 3x PCI Express® up to 5.0 Gb/s per lane up to 3 ports (x1/x2/x4)
  - IEEE1588v2 support
  - SRIO - up to 3.125 Gb/s (x1/x4)
- Technology
  - 45nm SOI (Silicon on Insulator) technology
- Software Development Environment
  - Eclipse-based Axxia Software Environment (ASE) provides comprehensive tool-suite for rapid code development
  - Production-ready Axxia Development Kits (ADK) for wireless infrastructure and multi-service access applications
- Axxia Evaluation Kit
  - Hardware Evaluation Platform containing Axxia Communication Processor, memory and external interfaces (SFP/SFP+, PCIe, USB, JTAG)
  - Full software environment including ADK, ASE, Run-Time Environment and Linux BSP
- Package Specifications
  - 1295-pin FC-BGA
  - 899-pin FC-BGA (ACP342x only)

The Axxia Communication Processor 3400 (ACP3400) family, the sixth-generation of advanced communication processors from LSI®, is designed to meet the increased performance and lower power demands of next-generation communication networks. Using an innovative asymmetric multicore architecture tied together with Virtual Pipeline technology, the ACP3400 family delivers fully deterministic performance with up to 20 Gb/s of data throughput, regardless of packet size, system loading, or protocol.

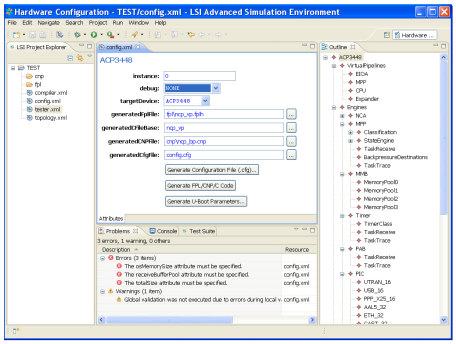
At the heart of the ACP3400 family is a high-performance multicore PowerPC® processor complex made by IBM® capable of running at up to 2GHz and an array of function-specific hardware accelerators. These acceleration engines deliver fast path processing without unnecessarily taxing the PowerPC complex and are derived from silicon-proven IP blocks used extensively throughout the broad networking portfolio from LSI, including deep packet inspection, security, packet processing, and traffic management capabilities. The Axxia architecture uses Virtual Pipeline technology, a message-passing technique for intra-processor communication between the acceleration engines, CPU complex and SoC subsystem components.

The ACP3400 family is available in a range of pin-compatible configurations for a variety of networking applications including 3G/4G mobile access systems such as NodeB and eNodeB, mobile broadband Radio Network Controller (RNC) applications, and enterprise gateways. The ACP3400 family includes a comprehensive software development environment, evaluation boards and an ecosystem of software and hardware solutions from leading industry suppliers.

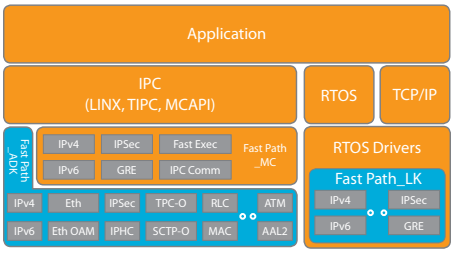


Axxia Communication Processor 3400 Block Diagram

Feature	Axxia Communication Processor 3400 Family			
	ACP3421	ACP3423	ACP3442	ACP3448
Example Application	Midrange Multiservice Gateway Entry-level BTS	Multi-Radio BTS Enterprise	High-end Multiservice Gateway Entry-level Services Card	High-end Enterprise Switches High-end Services Card
Datapath Throughput (IMIX)	5 / 10 Gbps (2 PPEs)	10 Gb/s (2 PPEs)	10 Gb/s (2 PPEs)	20 Gb/s (4 PPEs)
PPC Cores	2 @ up to 1.6 GHz	2 @ up to 1.6 GHz	4 @ up to 1.8 GHz	4 @ up to 1.8 GHz
L2 Cache Total	1 MB Total	1 MB Total	2 MB Total	2 MB Total
System Cache Total	2 MB Total	2 MB Total	2 MB Total	4 MB Total
System Memory Classifier Memory	1x 72b DDR3 1x 9b DDR3	1x 72b DDR3 1x 9b DDR3	1x 72b DDR3 2x 9b DDR3	2x 72b DDR3 2x 9b DDR3
System Clock	200/400 MHz	400 MHz	400 MHz	400 MHz
Traffic Management Queues	32K	32K	64K	1M
I/O Interfaces	8x SGMII 3x PCIe SRIO	8x SGMII 3x PCIe SRIO 1 XAUI	8x SGMII 3x PCIe SRIO	8x SGMII 3x PCIe SRIO 2x XAUI
Security Engine	Optional	Optional	Optional	Optional
Pin-Compatible	Yes (899 pin package also available)	Yes (899 pin package also available)	Yes	Yes



Axxia Software Development Environment



Axxia Software Architecture Block Diagram

The Axxia Software Environment (ASE) and Axxia Development Kit (ADK) support rapid system development and integration. LSI provides the Axxia Software Environment for end-to-end software development, optimization, simulation, and debugging. Available on Windows® and Linux® platforms, the Eclipse-based ASE includes efficient tools to seamlessly configure, compile, simulate, debug, optimize, trace, and debug an entire application including the data-path and control planes.

The Axxia Development Kit is a comprehensive suite of production-ready, protocol-processing software modules for wireless infrastructure and multi-service access applications. Optimally balanced for power and performance across the Axxia acceleration engines and CPU complex, the kit includes a C-based application programming interface (API) at a functional level of abstraction and high degree of configurability for all underlying functions such as protocol inter-working, traffic processing, traffic management, OA&M, and security.

The Run-Time Environment (RTE) software API provides an abstracted model for each hardware accelerator, and enables customers to easily add proprietary modules and corresponding functional APIs. Developed in portable, POSIX-compliant C, the RTE is available in versions compatible with Linux, VxWorks, and Enea OSE®.

The Axxia Evaluation Kit enables customers and partners to evaluate, develop, and optimize their software prior to target hardware availability. It includes a variety of connectivity options, including eight (8) SGMII ports, one (1) XGMII port, PCIe, USB, JTAG, and console Ethernet and serial interfaces. The evaluation kit comes complete with open source Linux, reference boot-loader, and a Linux Support Package. Opensource Linux toolchains are also available.

Commercial grade operating systems, boot software, and Board Support Packages (BSP) for Linux and VxWorks are available from Wind River. Enea OSE and related supporting software is also available from Enea.

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