![NXP logo]

freescale™
QorIQ

QorIQ LS1 Processor Family

QorIQ LS1024A Communications Processor

Optimized for low-end applications requiring enterprise-class performance in a cost-effective envelope

Overview

The QorIQ LS1024A system-on-chip (SoC) communications processor delivers vastly increased processing power and VoIP density, wire speed handling of small packets, DRM-compliant security and enterprise-grade VPN and SSL throughput. The processor allows considerable system cost savings due to the integration of new features that are emerging in the CPE market. In addition to providing high throughput IPsec and SSL CPU offload, the QorIQ LS1024A communications processor's onboard security engine includes a powerful Deep Packet Inspection engine with GZIP decompression capability. The device's three Ethernet interfaces allow for DMZ configuration providing further security for SOHO/SMB routers and gateways.

Target Applications

- High-end VoIP and video-enabled home gateways
- Small- to mid-sized business (SMB) high-performance security appliances
- Ethernet-powered 802.11n enterprise access points
- Consumer networked storage products
- Secure payment terminals

QorIQ LS1024A Processor Block Diagram
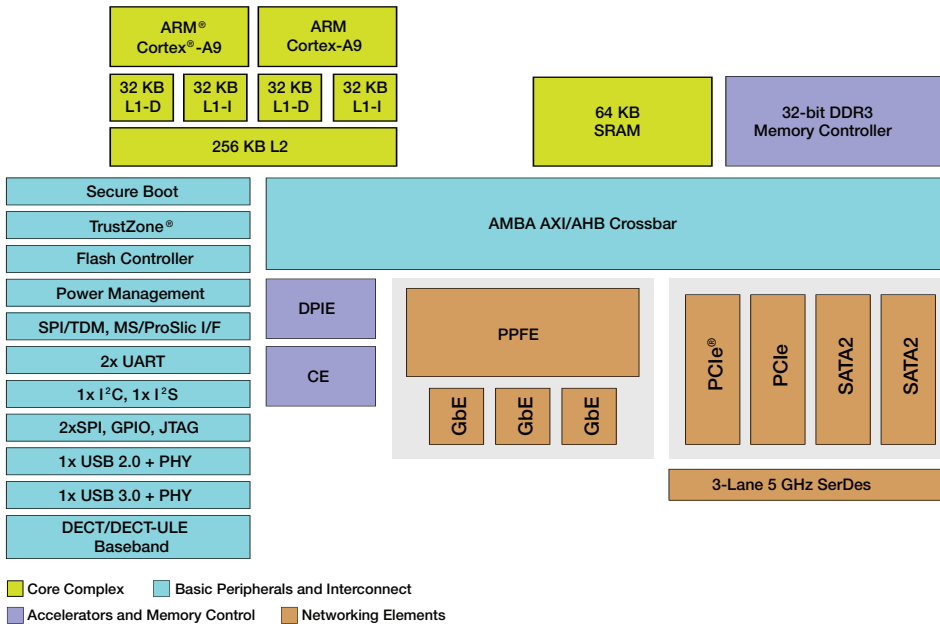
Core Complex

The QorIQ LS1024A communications processor leverages the energy efficiency of ARM® technology and a low-power design process to achieve the lowest power consumption in its class (<2 W typical at 900 MHz). In order to provide performance scalability and maximum flexibility, the LS1024A communications processor includes dual ARM Cortex®-A9 cores ranging from 650 MHz to 1.2 GHz delivering up to 6000 DMIPS.

System Interfaces and Networking

The QorIQ LS1024A communications processor includes I/O interfaces in conjunction with the innovative multilayer bus architecture that allows non-blocking concurrent transactions across all data interfaces, thus minimizing on-chip packet processing latency. The SATA-2 interfaces, along with the powerful processing engine and integrated RAID controller, provide an ideal solution for network attached storage applications.

Complete Enablement, Rich Ecosystem

Additionally, the rich ecosystem provided by the powerful combination of Freescale and ARM delivers turnkey solutions that reduce time to market and lower development costs for VPN/SSL SMB routers, home gateway, consumer network attached storage and enterprise access point manufacturers. The board support package software provides a rich set of power management features to address the energy-saving goals of service providers and product manufacturers worldwide. Finally, the software deliverables for the QorIQ LS1024A dual-core devices are backward compatible with the LS102MA devices.

QorIQ LS1024A Processor Features

Feature	Description
Packet acceleration logic	• Complete offload of packet handling • Up to 6000 DMIPS of ARM Cortex-A9 core and two ARM Neon™ DSPs available for user applications (e.g., OSGI and Android™ apps, video transcoding, etc.)
	• Hardware security encryption for IPsec and SSL
	• Deep Packet Inspection engine • High-rate packet content screening for policy enforcement, intrusion detection and prevention, antivirus and application-dependent QoS
Dual-core Cortex-A9 core with cache coherence	• Highly efficient multicore processing with SMP Linux®
Support for voice software	• VoIP for up to 16 carrier-grade VoIP channels
SATA, USB 3.0 DDR3 and NAND controller interfaces	• Highly cost-effective design for a wide variety of applications and high-bandwidth access to peripheral devices
Comprehensive set of security features (e.g., Secure boot, ARM TrustZone®, OTP, JTAG blocking)	• Complies with security requirements of business applications, digital media gateways and financial transaction devices
Integrated DECT and DECT-ULE baseband processor	• Cost-efficient design for DECT base stations and home-automation devices
Rich ecosystem of software partners	• Accelerated time to market or turnkey solutions for designs involving advanced software features (e.g., OSGI, Java™, DLNA, TR-69, etc.)

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