QorIQ T1024/14 and T1023/13 Communications Processors

Next-generation system-on-chip (SoC) for low-cost enterprise and service provider edge and network control applications

TARGET APPLICATIONS

- Wired and wireless branch routers
- WLAN 11ac enterprise access points
- Service provider WLAN access points
- Unified threat management gateways
- Multifunction printers
- Router and switch controllers
- Line card controllers
- Industrial automation and computing, single board computers
- Aerospace and defense ruggedized network equipment

The QorIQ T1024/23 communications processors combine single or dual 64-bit cores, built on Power Architecture® technology, with high-performance Data Path Acceleration Architecture (DPAA) and network peripheral bus interfaces required for networking and telecommunications applications. The T1024 and T1014 processors come in a full featured 23 x 23 mm package which provides scalable pin compatibility with the quad-core T1042 processor, and even the eight-core T2081 processor, for price and power scaling with a single system design. The T1023 and T1013 processors are interfaces and power-optimized SoCs designed to deliver impressive single- or dual-core performance for cost and power sensitive networking systems. Both versions offer an excellent software compatible 64-bit and I/O upgrade path for the popular QorIQ P10XX family of 32-bit communications processors.

SOFTWARE AND TOOL SUPPORT

With the help of our partner network, we deliver a wide range of tools, run-time software, reference solutions and services to accelerate your designs.

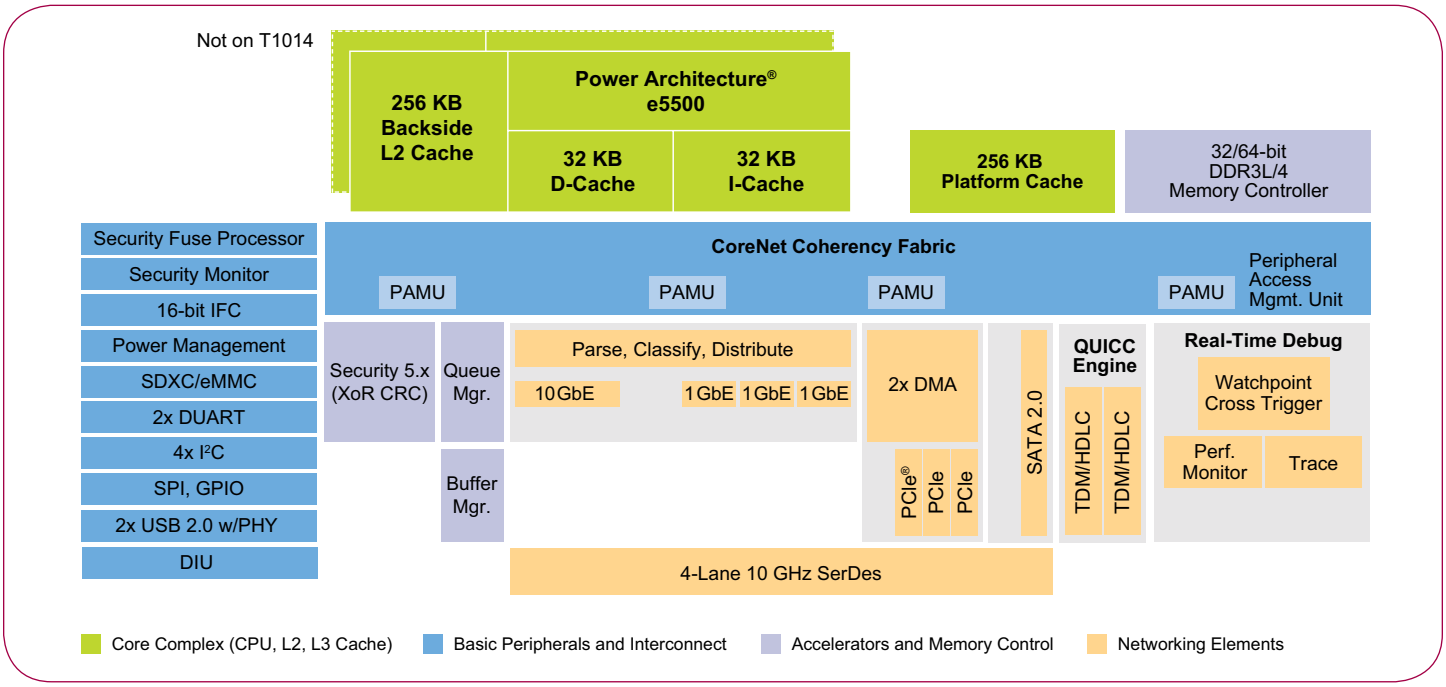
- CodeWarrior Development Studio for Power Architecture technology
- Proprietary QorIQ Linux® SDK
- VortiQa application software
  - VortiQa application identification software (AIS)
  - Enterprise software for networking
  - VortiQa open network switch software
  - VortiQa open network director software

- Professional services and support
  - Commercial services
  - Linux SDK support package
  - Reference design software (RDS) support package
- Third-party software and tools
  - Enea, Green Hills, Mentor Graphics and Wind River

QorIQ P1020 AND T102X PROCESSORS COMPARISON TABLE

	P1020/11	T1023/13	T1024/14	T1042
Core	1-2 x e500v2	1-2 x e5500	1-2 x e5500	4 x e5500
Power ISA	32-bit	64-bit	64-bit	64-bit
Max MHz	800	1400	1400	1400
L2 Backside Cache	–	256 KB	256 KB	256 KB
Platform Cache	256 KB	256 KB	256 KB	256 KB
DDR Type and Speed	2/3 1333MTs	3L/4 1600MTs	3L/4 1600MTs	3L/4 1600MTs
DDR Speed	to 1333MTs	to 1600MTs	to 1600MTs	to 1600MTs
DDR Width	36 b	36 b	36 b/72 b	36 b/72 b
SerDes	4	4	4	8
PCIe Lanes	2 x 1 v1	3 x 1 v2	3 x 1 v2	4 x 1 v2
GbE	up to 3	up to 4	up to 4	up to 5
10GbE I/O	–	1	1	-
MACSEC	–	All ports	All ports	All ports
Hardware Offload	–	DPAA	DPAA	DPAA
Crypto	SEC 3.x	SEC 5.x	SEC 5.x	SEC 5.x
Pattern Matching	–	–	–	Yes
QUICC Engine TDM/ HDLC, ISDN, Industrial	Yes	–	Yes	Yes
SATA	–	2.0 x 1	2.0 x 1	2.0 x 2
USB	2.0 x 2	2.0 x 2 w Phy	2.0 x 2 w Phy	2.0 x 2 w Phy
Lossless Deep Sleep	–	–	Yes	Yes
Auto Response	–	–	Yes	Yes
Display Interface	–	-	Yes	Yes
Single Clock Source	–	Yes	Yes	Yes
Package	31 x 31 PBGA	19 x 19 FCBGA	23 x 23 FCBGA	23 x 23 FCBGA
Pin Compatible	No	No	Yes	Yes

QORIQ T1014 AND T1024 COMMUNICATIONS PROCESSOR



QorIQ T1023/24 PROCESSORS FEATURES LIST

Two or four e5500 single-threaded cores built on Power Architecture technology	• Up to 1.4 GHz with 64-bit ISA support • Low latency, per core, core clocked 256 KB dedicated cache • Hybrid 32-bit mode to support legacy software and transition to a 64-bit architecture • Nap, wait and doze low-power modes
CoreNet platform cache	• 256 KB shared platform cache for stashing support
Hierarchical interconnect fabric	• CoreNet fabric supporting coherent and non-coherent transactions with prioritization and bandwidth allocation amongst CoreNet endpoints • QMAN fabric supporting packet-level queue management and quality of service
64-bit DDR3L/4 SDRAM memory controller with ECC support	• 32-bit or 64-bit low power DDR up to 1600 MT/s
DPAA incorporating acceleration for the following functions	• Full L2/3 tunneling and en/decrypt offload support for functions such as WLAN • CAPWAP/DTLS secure wired links • Packet parsing, classification and distribution • Queue management for scheduling, packet sequencing and congestion management • Hardware buffer management for buffer allocation and de-allocation • Cryptography acceleration (SEC 5.x)
SerDes	• Four lanes at up to 10 Gbit/s • Supports SGMII, 2.5 Gbit SGMII, QSGMII, XFI, 10G BASE-KR, PCI Express® and SATA
Ethernet interfaces	• Up to 4 x Ethernet MACs
QUICC Engine module	• Integrated support for legacy WAN protocols TDM, HDLC, UART, ISDN and industrial protocols
High-speed peripheral interfaces	• Three PCI Express 2.0 controller
Additional peripheral interfaces	• One serial ATA (SATA 2.0) controller • Two high-speed USB 2.0 controllers with integrated PHYs • Enhanced secure digital host controller (SD/MMC/eMMC) • Enhanced serial peripheral interface • Two I²C controllers • Four UARTS • Integrated flash controller supporting NAND and NOR flash memory
DMA	• Dual four channel
Support for hardware virtualization and partitioning enforcement	• Extra privileged level for hypervisor support
QorIQ trust architecture	• Secure boot, secure debug, tamper detection, volatile key storage
Single source clocking	• For BOM cost reduction

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