

# Sneak Peak: **What's New** for QorIQ Processors?

AMF-SNT-T1046

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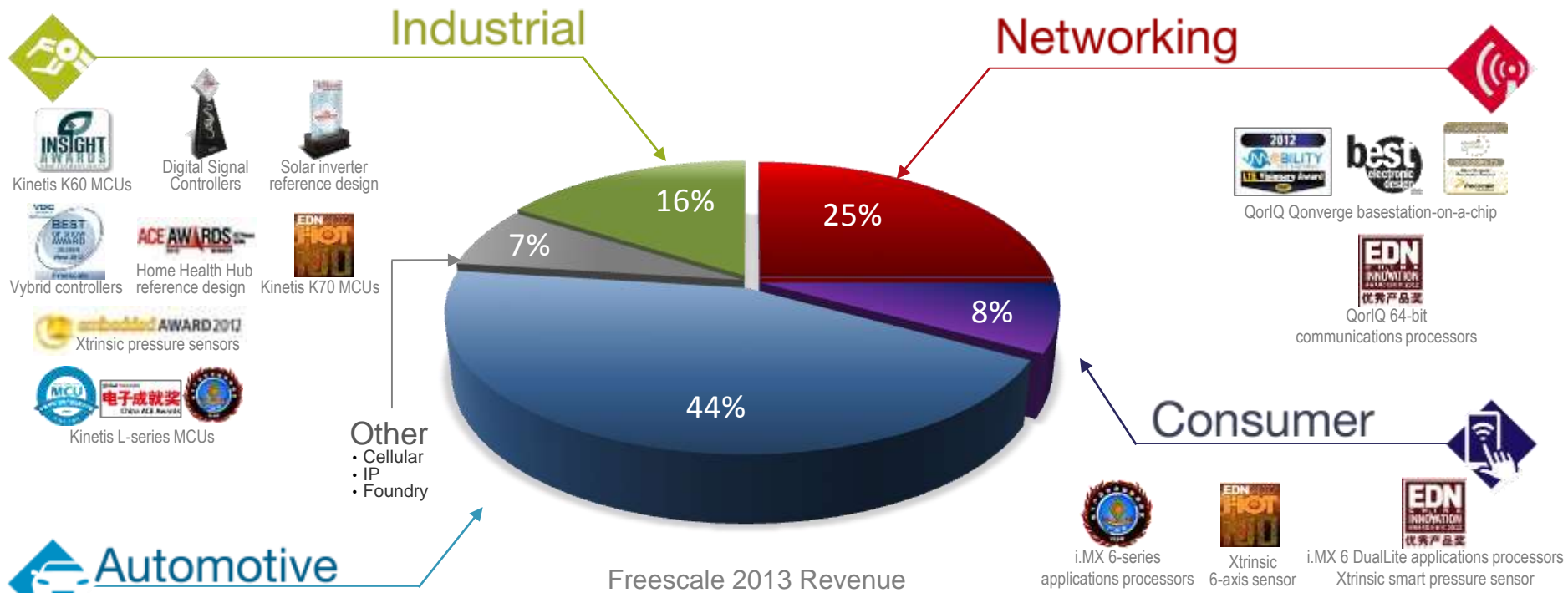


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# Significant Presence in Key Segments



- #1** High Power RF transistors for wireless infrastructure<sup>(1)</sup>
- #1** Communications Processors<sup>(2)</sup>
- #1** Embedded Microprocessors (ex Data Processing)<sup>(3)</sup>
- #1** Merchant Automotive Accelerometers<sup>(4)</sup>
- #1** Automotive Semiconductors – North America<sup>(5)</sup>
- #1** Applications Processors in eReaders<sup>(6)</sup>
- #2** Microcontrollers<sup>(7)</sup>
- #2** Automotive Microcontrollers<sup>(8)</sup>
- #2** Automotive Processors<sup>(9)</sup>
- #2** Merchant Automotive MEMS<sup>(10)</sup>

Sources: (1) ABI Research, December 2012; (2) Gartner, Apr 2013, Market Share: Semiconductor Applications, Worldwide, 2012, ranking based on market share; (3) Embedded Processing Unit – excluding compute applications. Ranking based market share. "Market Share: Semiconductor Applications, Worldwide, 2012," Gartner Dataquest, March 2013. The Gartner Report(s) described herein, (the "Gartner Report(s)") represent(s) data, research opinion or viewpoints published as part of a syndicated subscription service by Gartner, Inc. ("Gartner"). Each Gartner Report speaks as of its original publication date (and not as of the date hereof); Gartner Report speaks as of its original publication date (and not as of the date of this Filing) and the opinions expressed in the Gartner Report(s) are subject to change without notice; (4) IHS, April 2013; excludes internally supplied sub-system businesses; (5) Strategy Analytics, April 2013; (6) IDC, Tablet and eReader Application Processor Market Share Q2 2013, doc # #244035; (7)-(8) IHS, March 2013, Competitive Landscape Tool – Annual - 2012; (9) Strategy Analytics, April 2013; (10) IHS, April 2013; excludes internally supplied sub-system businesses.



# Digital Networking Update



Service Provider  
Wireless & Wired Equipment  
QorIQ, QorIQ Qonverge, VortiQa



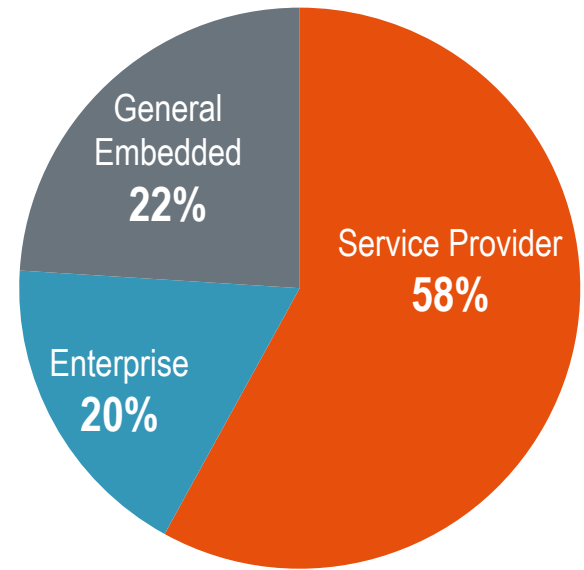
Enterprise / Data Center  
Network Infrastructure  
QorIQ, C29x, VortiQa



General Embedded  
Internet of Things, Industrial, Printing  
QorIQ, C29x, VortiQa

## 2013 Revenue Profile

915 MUSD (+7% Yr-Yr)



## Focus Areas

1. System-level Solutions for Embedded Multicore
2. Scope and Scale
3. Customer Intimacy and Support

## Market Leading Position

#1 in Embedded Processors in Wired and Wireless Communications<sup>1</sup>

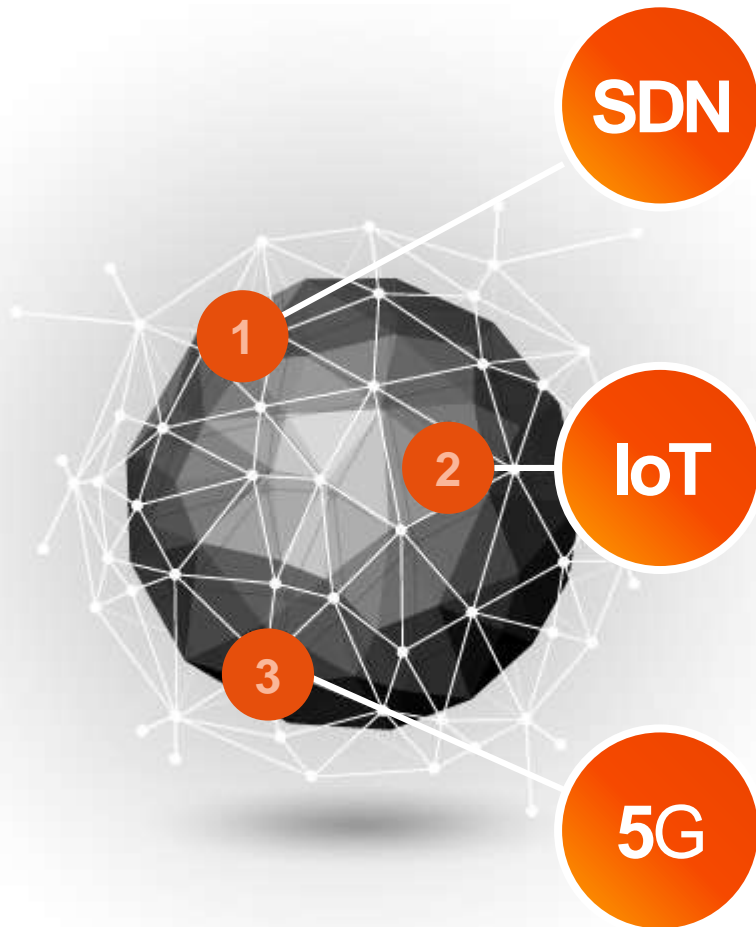
#2 Embedded Processors

<sup>1</sup>Source: Gartner, Apr 2013, *Market Share: Semiconductor Applications, Worldwide, 2012*, "Total Microprocessor Embedded in Wired + Wireless Communications" (excludes DSP)



# The New Virtualized Network

Before NFV/SDN, Freescale has innovated on similar workloads for decades



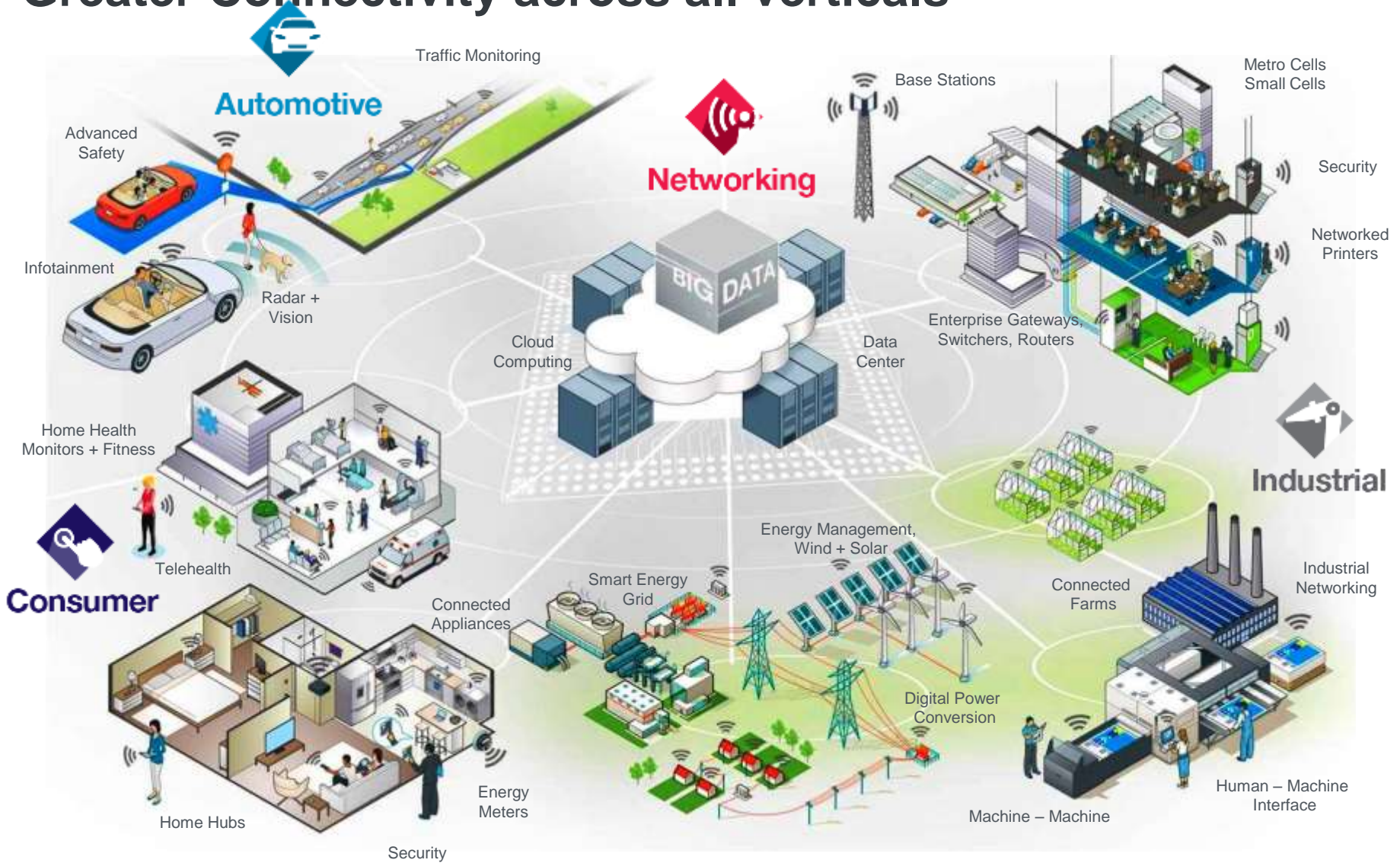
The world's networks are **increasingly virtualized**, giving rise to **SDN** and other **software-based approaches** to network infrastructure

The **Internet of Things** is dramatically growing the number of network endpoints, adding to the worldwide **flood of data** which must be **secured, analyzed and transported**

**5G is emerging**, not just with requisite performance enhancements, but also with the requirement to support **exponentially more devices** and network endpoints



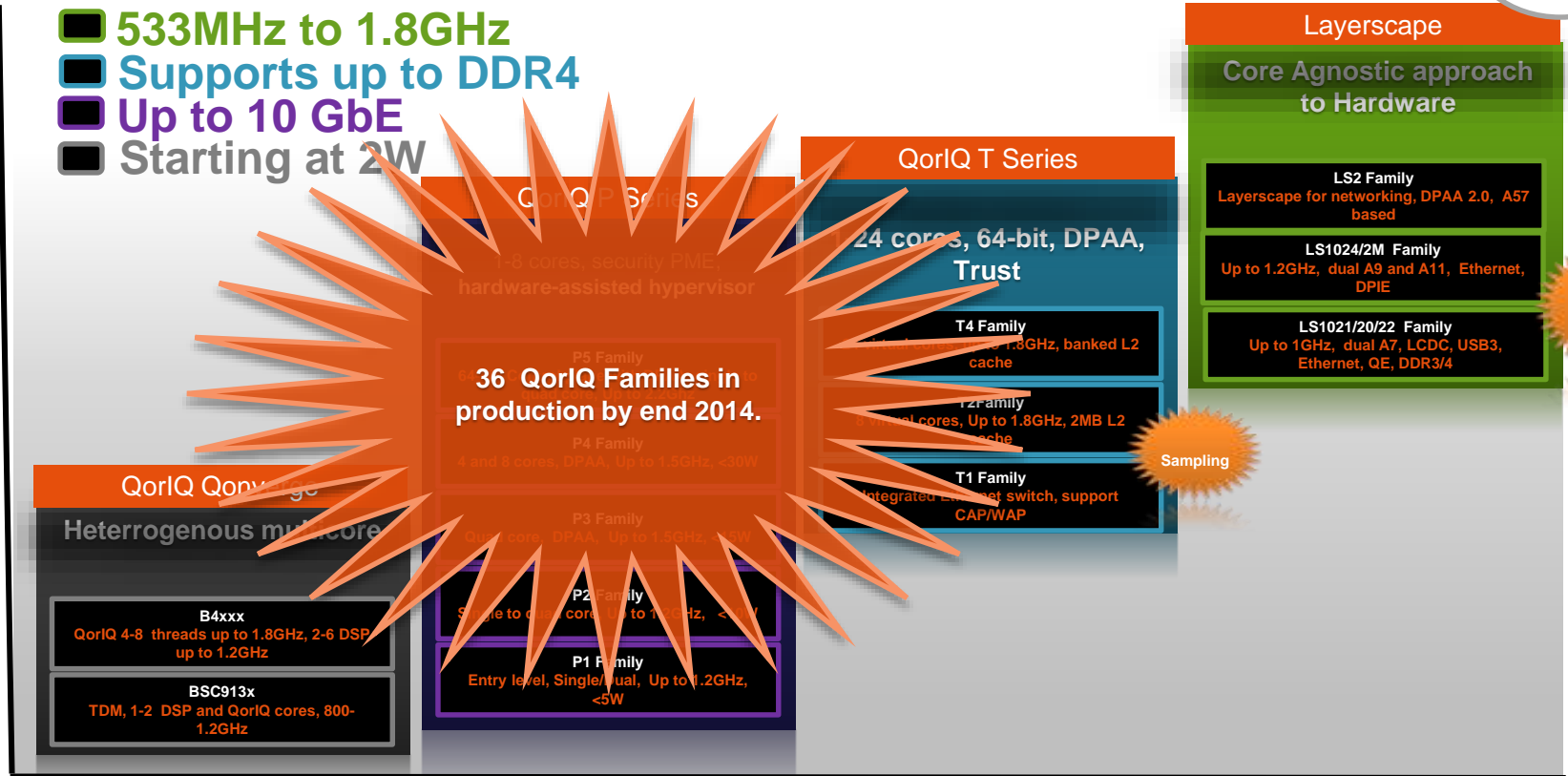
# Greater Connectivity across all verticals



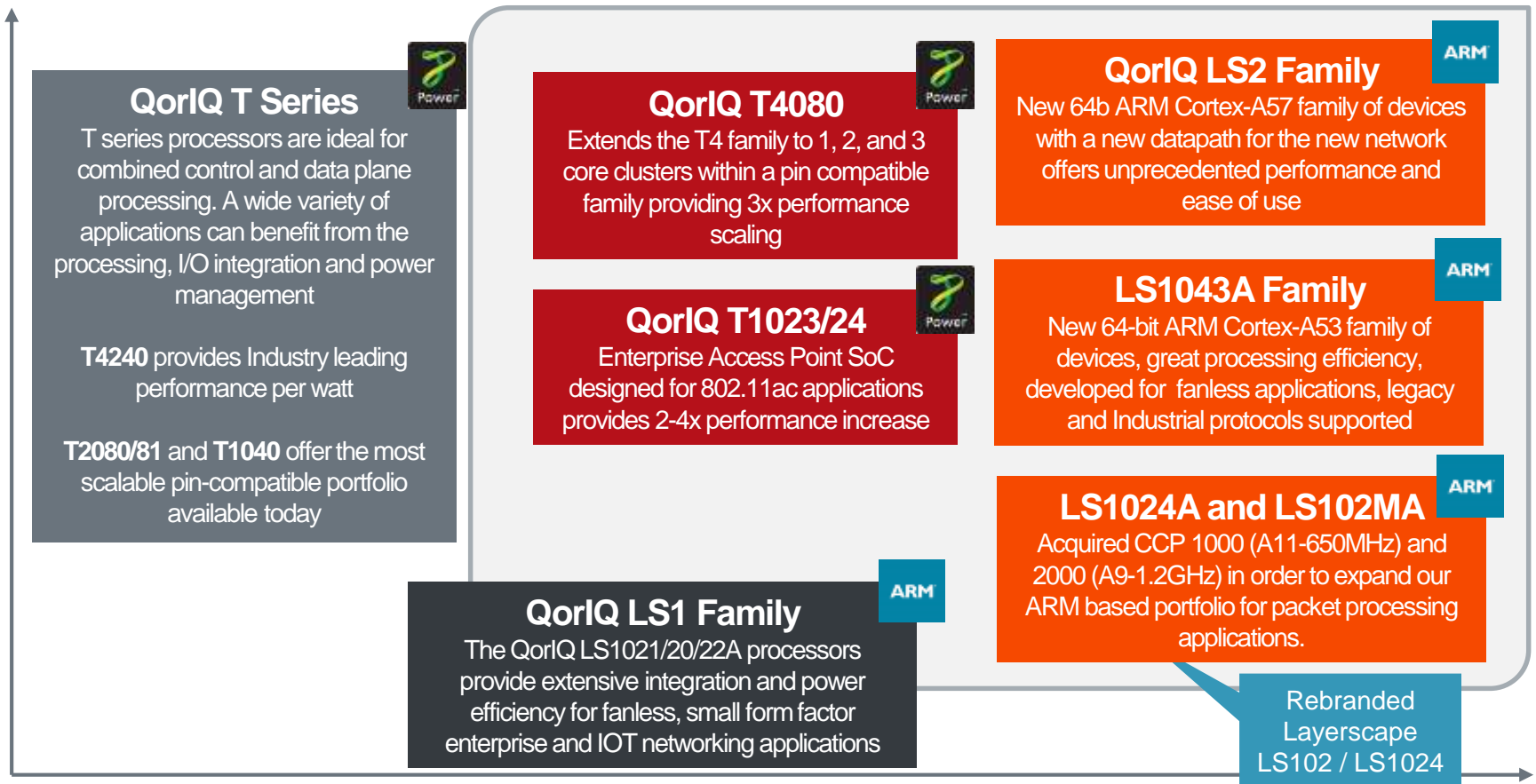
# Industry's Broadest, Most Scalable Portfolio



- 533MHz to 1.8GHz
- Supports up to DDR4
- Up to 10 GbE
- Starting at 2W



# QorIQ What's New.....



← **Leading Performance - Low Power - Scalability - Industrial-grade reliability & temp** →

← **Linux Enablement Software, Linaro Leadership, upstream to kernal.org, comprehensive ecosystem** →

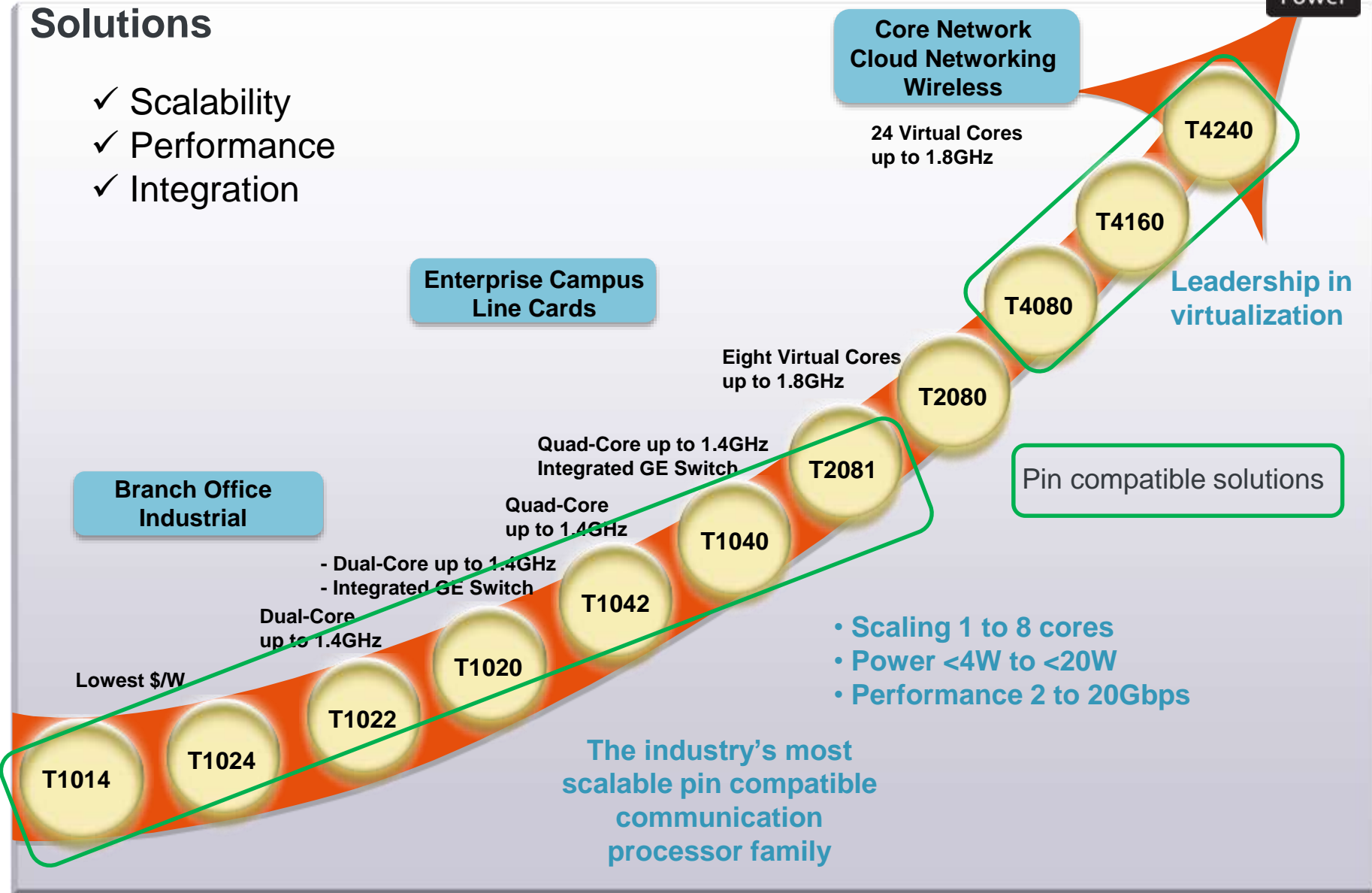
**Freescale has infrastructure in place to support both Power and ARM**





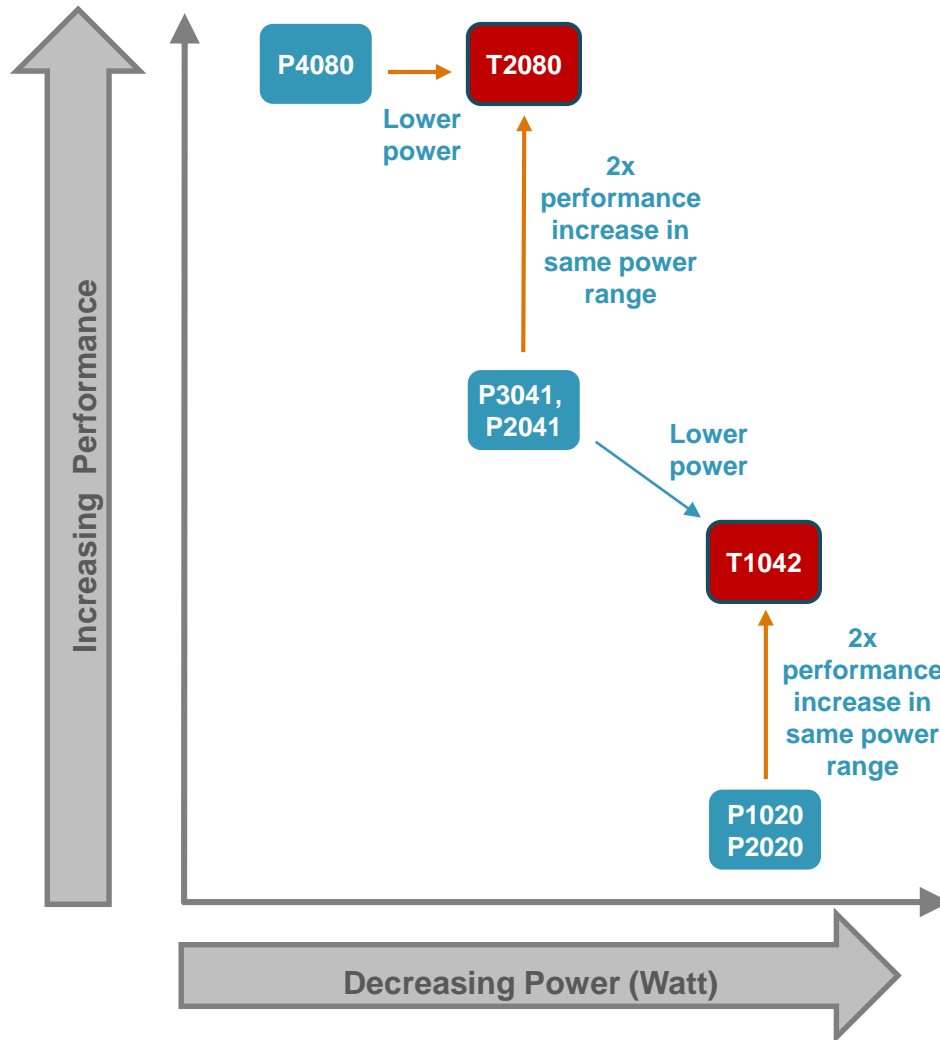
# Continuing the Leadership: Power-based SoC Solutions

- ✓ Scalability
- ✓ Performance
- ✓ Integration





# Migration Path to T Series



- **2x Performance per Watt** over QorIQ P Series
  - T2080 doubles P3041 performance at same power
  - T2080 matches P4080 performance at  $\frac{1}{2}$  the power
  - T1042 doubles P1020/P2020 performance at same power
  - T1042 provides near equivalent performance of the P2041 at significantly lower power

# QorIQ T1024/23 Processors

## Continuing Power Architecture Innovation



### Smart Edge Access

- Leading headroom for branch router & WLAN services
- Hardware offload for secure edge tunnels



### Industrial Automation

- Industrial protocol support
- LCD for HMI support
- 10yr life & extended temp



### Control Plane & Printing

- 64bit ISA & high performance memory for fast computing
- Wide, Fast interfaces
- Deep sleep & wake for printing

## Performance Leading SoC

- Dual or Single e5500 CPUs, 64b, up to 1.4GHz
- Low latency, 256KB per core & 256KB w/ECC shared caches
- Future Proof, Low Power Memory 36/72b DDR3L/4

## Advanced Packet Processing

- Packet Parse/Classify/Distribution engines
- Lossless flow control & granular traffic management
- Single-pass en/decryption engine

## Fast, Flexible Network Interfaces

- 4x GbE with 2.5G option, 10GbE XFI, QSGMII or 10G-KR options
- MACsec supported on all ports
- QUICC Engine for legacy protocols

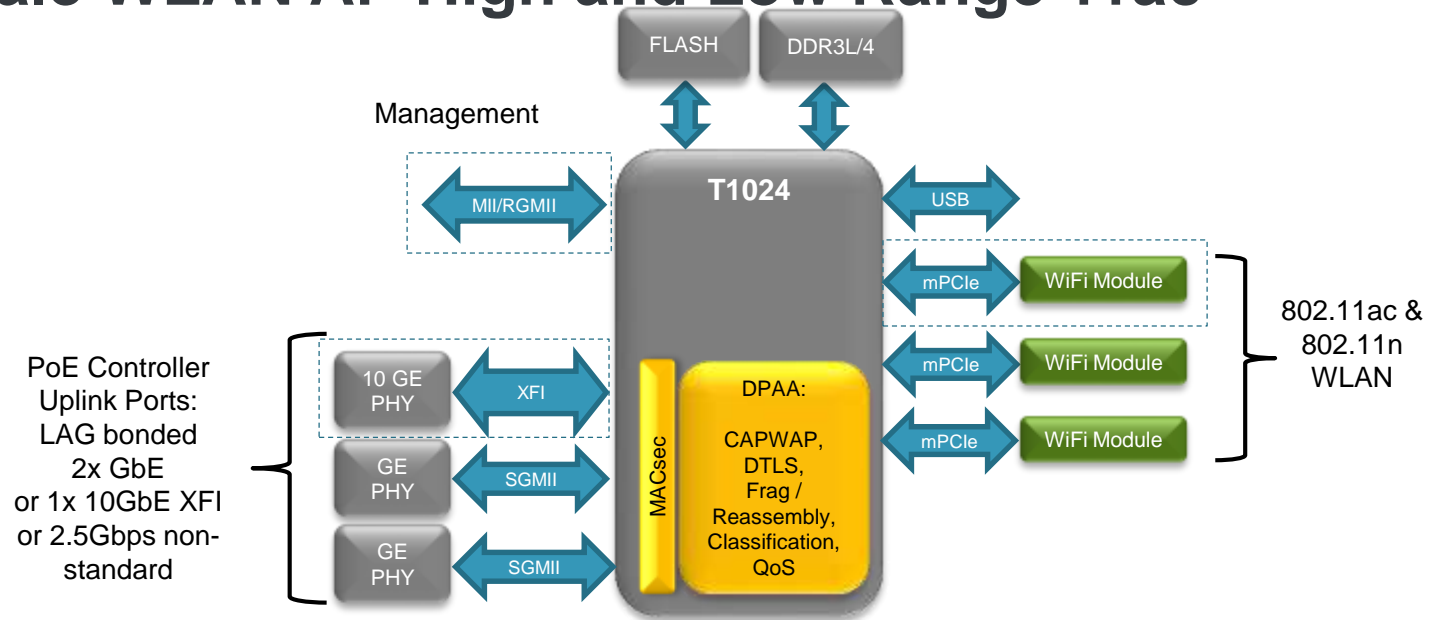
## Highest Processing Efficiency

- Up to 10K Coremarks at 5 watts
- New e5500 nap, sleep & doze core functions
- ½Watt AC, lossless deep-sleep & wake for printing

**Best CPU headroom in its class for Smart Edge virtual Branch Router & WLAN applications**



# Freescale WLAN AP High and Low Range 11ac



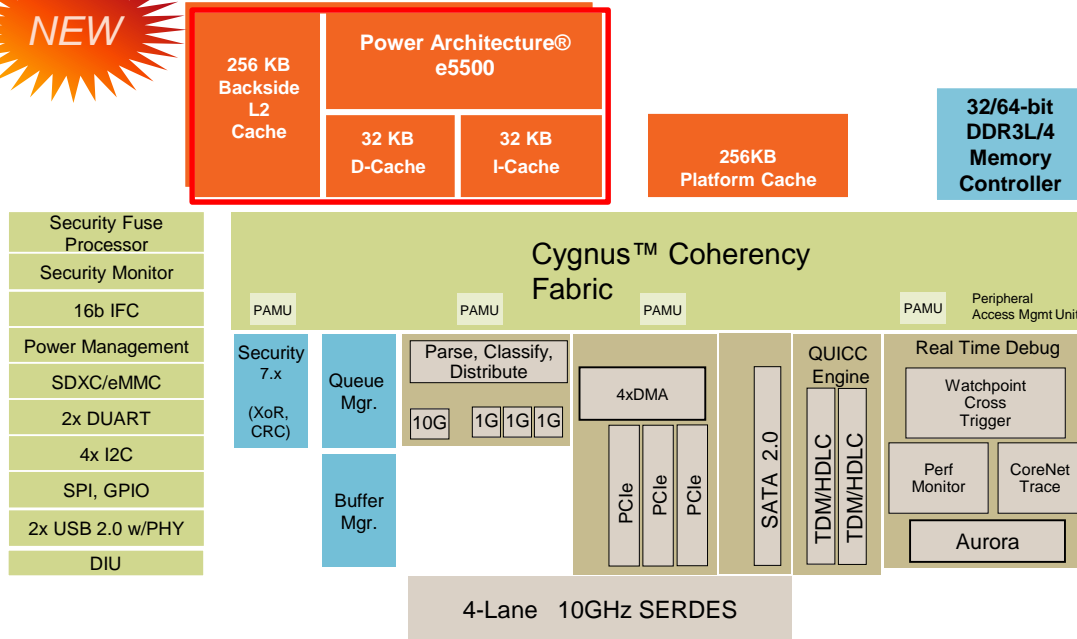
## T1024

- Performance: 50% CM over P1020 with offload
- Offload = 2.5Gbps L2/3 tunneling, PCD & Reassembly at small packet
- Headroom for advanced services AIS (BYOD) Software
- Power 3-4W

## LS1020A

- Performance 20% CM improvement over P1020
- Offload = leading SEC engine
- Headroom for advanced services AIS (BYOD) Software
- Power 3W

# T1024/14: Extending Industry's Most Scalable Pin Compatible Multicore Family



## Processor

- 2x e5501, 64b, up to 1.4GHz
- Each with 256 KB backside L2 cache
- 256KB Shared Platform Cache w/ECC
- Supports up to 64GB addressability

## Memory SubSystem

- 36/72b DDR3L/4 Controller up to 1600MT/s

## Cygnus Switch Fabric

### High Speed Serial IO

- 3x PCIe Gen2 Controllers
- 1x SATA 2.0, 3Gb/s
- 2 USB 2.0 with PHY

### Network IO

- FMan packet Parse/Classify/Distribute
- Lossless Flow Control, IEEE 1588
- 4x 10/100/1000 Ethernet Controllers
- Or 3x GbE + **1x 1/10GbE**
- MACsec on all ports
- QUICC Engine: HDLC, 2x TDM
- **Green Energy Operation**
- Fanless operation dual-core 1.2GHz
- Packet lossless deepsleep
  - Programmable wake-on-packet
  - Wake-on-timer/GPIO/USB/IRQ

## Device

- 28HPM Process
- 780-pin LCFC package
- 23x23mm, 0.8mm pitch

## Power targets

- Deep Sleep

## Datapath Acceleration

- SEC- crypto acceleration
- Full MACsec/CAPWAP/DTLS offload for WLAN

Best performance per watt with 10GbE under 5W



# QorIQ T1040 Family

## Key Features



Enterprise  
Routers/Switches



Industrial  
Computing and  
Networking



UTM Security  
Appliances

The T1/T2 embedded processor are architected to provide maximum performance per watt

### High performance cores in a low power envelope

- 4x e5500 cores, 1.4GHz, 256KB L2 cache/core
- 256KB L3 platform cache w/ECC
- 32/64b DDR3L/4 up to 1.6GT/s

### Datapath Acceleration Architecture

- 8Gbps Packet processing performance
- Crypto acceleration, Pattern Matching/RegEx
- Quality of Service and Traffic Management

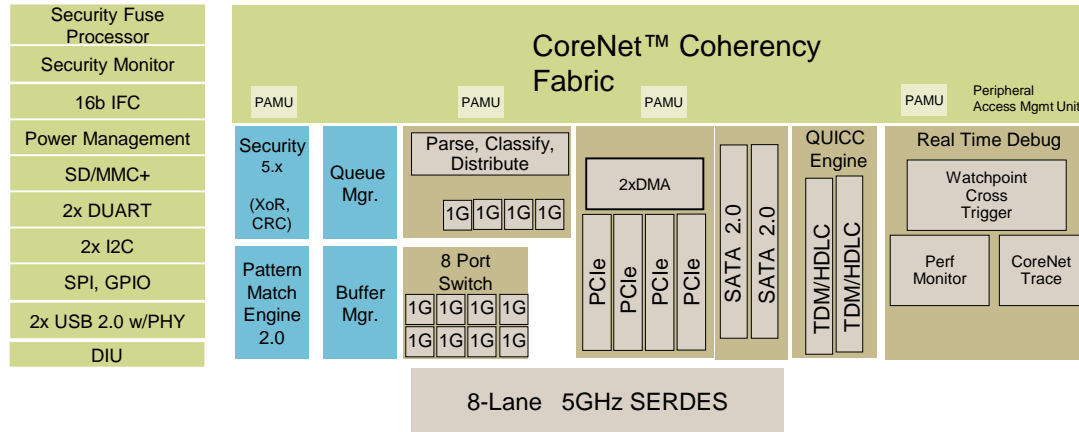
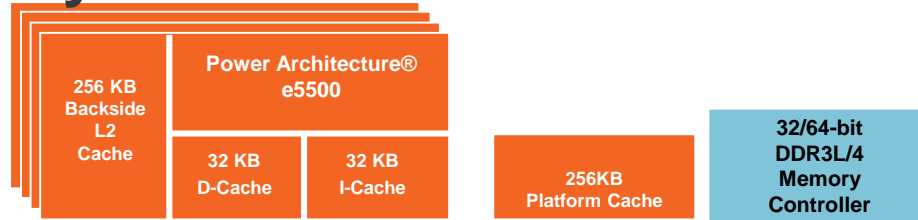
### Leading network I/O integration

- Integrated 8x1GbE Ethernet Switch
- Up to 4x1GbE with support for MACSEC
- 4 PCIe Gen2 controllers
- 2 x SATA 2.0, 2 x USB 2.0 with PHY





# T1040: Industry's Most Scalable Pin Compatible Multicore Family



- **Green Energy Operation**
- Fanless operation quad-core
- Packet lossless deepsleep
  - Programmable wake-on-packet
  - Wake-on-timer / GPIO / USB / IRQ

## Processor

- 4x e5500, 64b, up to 1.4GHz
- Each with 256KB backside L2 cache
- 256KB Shared Platform Cache w/ECC
- Supports up to 64GB addressability (36 bit physical addressing)

## Memory SubSystem

- 32/64b DDR3L/4 Controller up to 1333MHz

## Cygnus Switch Fabric

## High Speed Serial IO

- 4x PCIe Gen2 Controllers
- 2x SATA 2.0, 3Gb/s
- 2x USB 2.0 with PHY

## Network IO

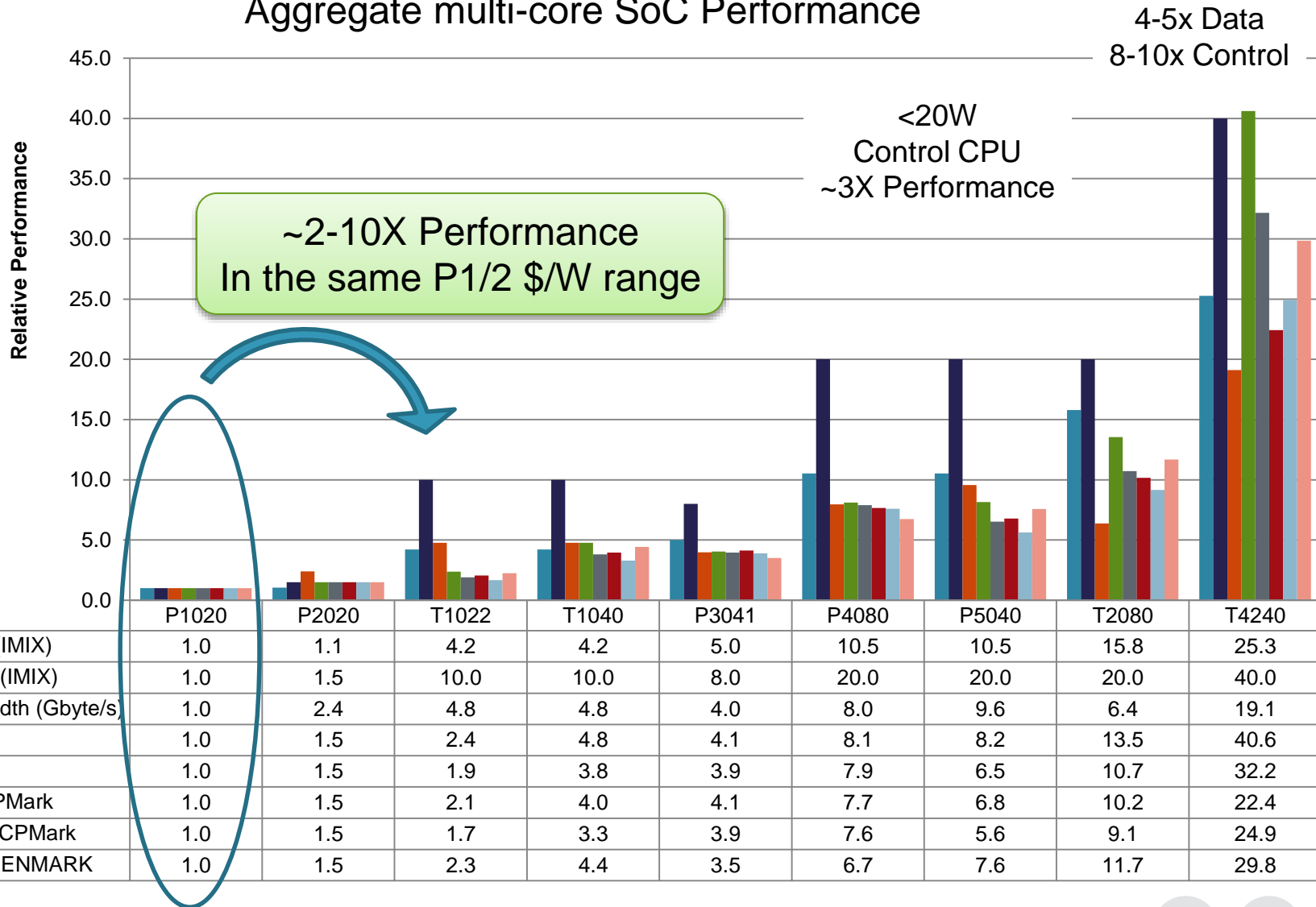
- FMan packet Parse/Classify/Distribute
- Lossless Flow Control, IEEE 1588
- 3x 10/100/1000 Ethernet Controllers
- **8-Port Gigabit Ethernet Switch**
- QUICC Engine: support HDLC, 2x TDM
  - SEC- crypto acceleration
  - PME- Reg-ex Pattern Matcher

T1040 – Sampling since Nov.2013; Progressing to qualification



# Performance Upgrade P-Series to T-Series SoC

## Aggregate multi-core SoC Performance



# QorIQ T2080 Family

## Key Features



**SDN/NFV  
Switching**



**Data  
Center**



**Wireless  
Access**

Unprecedented performance and ease of use for smarter, more capable networks

### High performance cores with leading interconnect and memory bandwidth

- 4x Power Architecture e6500 dual threaded cores, 1.8GHz, 2MB L2 cache, w AltiVec SIMD
- 512KB L3 platform cache w/ECC
- 64b DDR3 up to 2.133GT/s

### Industry's Most Scalable, Pin-Compatible Communications Processor Family

- T2081 and pin compatible T1042 provide 2 core thru 8 virtual core options delivering 6X performance range.
- T series family comprised of T1, T2, T4 series processor with 2 core thru 24 virtual core options delivery optimal price/power/performance solution on a consistent 64b Power Architecture platform

### Leading network I/O integration

- 4x1/10GbE + 4x1G,
- Integrated L2 switching capability for significant cost savings
- 4 PCIe Gen 2/3 controllers, SR-IOV support
- 2 x SATA 2.0, 2 x USB 2.0 with PHY

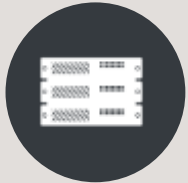


# QorIQ T4080

## Key Features



**Base Station,  
EPC, RNC**



**Data Center –  
intelligent NIC**



**Aerospace /  
Defense**

Enables 3x performance scaling in  
T4 family within a single pinpoint

### Efficient dual threading

- 4x e6500 dual threaded cores to 1.67GHz, 2MB L2 cache, with AltiVec SIMD
- 1MB L3 platform cache w/ECC
- 2x 64b DDR3/3L up to 1.866GT/s

### A high performance accelerators

- Crypto acceleration to 40Gb/s
- Data compression/decompression to 20Gb/s
- Pattern matching (DPI) to 10Gb/s

### High Performance I/O

- 2x 10GE (XAUI, XFI, 10Gbase-KR) with DCB
- 13x 1GE (SGMII, RGMII, QSGMII)
- 3x PCIe up to Gen3
- 2x SRIO 2.0
- 2 x SATA 2.0, 2 x USB 2.0 with PHY
- Interlaken LA-1 to 10GHz





## QorIQ Reference Designs



# T1024/T1023 Reference Designs

- Enterprise Access Point
- Enterprise/Branch Office Router
- UTM Security Appliance
  - OpenWRT
  - Linux
  - HW based Virtualization – KVM, LXC
  - Integrated L3/L4 Ethernet Switching
  - Security (IPSec VPN)
  - Intrusion Detection/Prevention

	T1024	T1023
CPU Cores	2	2
Frequency	1.0 to 1.4GHz	1.0 to 1.4GHz
TDP Power	4-6W	4-5W
DDR controller	DDR3L	DDR4
1G Enet I/Fs	4	2
IPv4fwd	4Gbps	4Gbps
L2/3 Tunneling	2.5Gbps	2.5Gbps
WLAN	1.7Gbps	1.7Gbps



T1024 RDB Q3 2014



T1024 RDB Q4 2014

# T1040 Reference Design

- Enterprise/Branch Office Router
- UTM Security Appliance
- OpenWRT
- Linux
- HW based Virtualization – KVM, LXC
- Integrated L3/L4 Ethernet Switching
- Security (IPSec VPN)
- Intrusion Detection/Prevention

	T1040
CPU Cores	4
Frequency	1.2 to 1.4GHz
Worst Case Power	6W-10W
64 bit DDR cntr	DDR3L/4
1G Enet I/Fs	12
IPv4fwd	8Gbps
IPSec	5Gbps
Pattern Matching	10Gbps



# T2080 Evaluation / Reference Designs

## T2080RDB

- General purpose reference design
- Development platform for Smart I/O devices such as iNIC and host adapters
- PCIe form factor
- T2080 CPU & C29x crypto coprocessor
- 1x SO-DIMM
- 2x 1000Base-T, 2x 10GBASE-, 2x XFI
- x4 PCIe plug, x4 PCIe connector



## T2080QDS

- General purpose software and hardware evaluation platform
- T2080 CPU
- 2x uDIMMs
- 2x 1000Base-T
- 4x XFI
- 2x SATA
- Rich set of PCIe, SGMII and SRIO combinations



# T4080 Reference Designs

- T4080 Reference Design Board
- 4x XFI + 8x SGMII
- 1U rack-mount
- Available as a white box production solution
- T4080 PCIe card with T4080 + C293
- SSL Proxy
- Man in the middle
- Big Data Offload
- Open vSwitch
- SR-IOV
- T4080 QorIQ Development System
- Highly flexible development platform
- Can exercise all I/O configurations



# T2080 Smart NIC Reference Design

- PCIe cards providing enhanced L3/L4+ functionality
  - IPSEC
  - Katsumi
  - TCP offload
  - Compression/decompression
  - Security (SSL/IPsec, SRTP),
  - SDN
  - Software switch
  - SR-IOV I/O virtualization

	T2080	T4240
CPU Cores	4 (8 threads)	12 (24 threads)
Frequency	1.2 to 1.8GHz	1.2 to 1.8GHz
Worst Case Power	15W-28W	48W-60W
Frame Managers	1	2
64 bit DDR3 cntr	1	3
10G Enet I/Fs	4	4
IPv4fwd	24Gbps	50Gbps
IPSec	10Gbps	35Gbps
Data Compression	17.5Gbps	20Gbps
Pattern Matching	10Gbps	10Gbps
SR-IOV	128 VF	128 VF



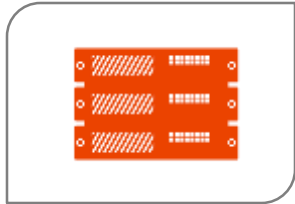
**T2080 PCIe Card**





## QorIQ Layerscape Announcements

# Scalable LS1021A Family of ARM Cortex-A7 Processors



## Enterprise Networking

- High-speed interfaces
- Security engine
- ECC-protected caches



## Industrial Automation and Control

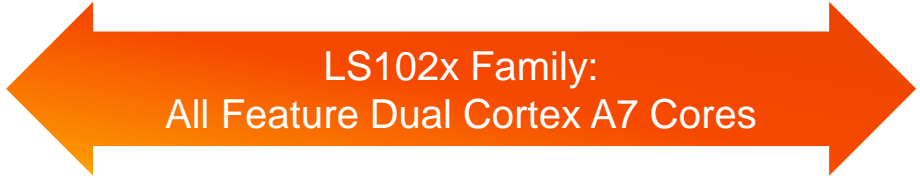
- Industrial interfaces
- LCD for HMI support
- Industrial protocol support



## IoT Gateways

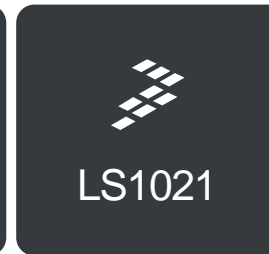
- Multi-protocol support
- High-bandwidth LAN/WAN support

The LS1 processor family extends Freescale's market leadership



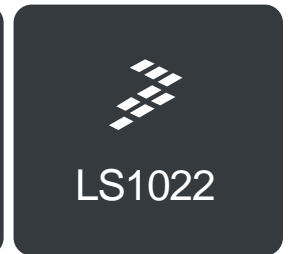
## Networking

- Up to 1GHz  
2.1W Typ.



## Industrial Printing

- UP to 1GHz  
2.2W Typ.
- Adds LCDC
- Adds CAN



## Entry Consumer & Industrial

- Up to 600MHz  
1.6W Typ.



# LS1 Family Overview



Extending our customer reach

**ECC**      **Virtualization**      **Efficiency**      **Integration**

**Highly Efficient**

- Delivers 6,000 CoreMark® in under 3 W (Typ)
- QUICC Engine for protocol offload

**High Reliability**

- ECC protection on L1/L2 and all SRAM
- Dual ARM Cortex-A7 cores for redundancy

**Unmatched Integration**

- DDR3L / DDR4, LCD controller, USB 3.0 w/PHY, SD/MMC, CAN , 10x UARTs and SATA 3

**CPU Core**  
Dual ARM Cortex-A7  
Cores

**High Reliability**  
ECC protection

**Ease of Use**  
Services, ARM and  
Code Warrior tools

**Robust Ecosystem**  
Linux SDK, 5 EBS form  
factors, 3<sup>rd</sup> party SW for TTM



# LS102x Product Family Snapshot

	LS1021A	LS1020A	LS1022A
Core Type	ARM Cortex™-A7 MPCore™ + NEON		
Cores/Threads	2 / 2		
Frequency	Up to 1GHz		Up to 600MHz
L1 I/D	32kB / 32kB with ECC		
L2 (Unified)	512kB Shared with ECC		
SRAM	128kB with ECC		
DDR	1x(16/32B +ECC) DDR3L/4 up to 1.6GT/s		DDR3L (8/16B) up to 1.0GT/s
SerDes	4x up to 6.0GHz		1x up to 5GHz
Ethernet	3 x 1GE		2 x 1GE
PCIe	2 x Gen 2.0 (up to 5.0GT/s)		1x Gen 2.0
SATA 3.0	1 up to 6.0GHz		No
USB	1 x USB 3.0 and 1 x USB 2.0		1 x USB 2.0
CAN	Up to 4	No	Up to 4
TDM/HDLC	2		No
UART/I <sup>2</sup> C/SPI	Up to 8 / 3 / 2		
I <sup>2</sup> S	Up to 4		
LCD	1 x Controller		No
Acceleration	SEC,QE		SEC
	Trusted architecture		
	Pin Compatible 19x19mm, 0.8mm pitch		

**LS1020 Family:**  
All feature Dual Cortex A7 Cores




Networking

- Up to 1GHz
- 2.1W Typ.



Industrial  
Printing

- Up to 1GHz
- 2.2W Typ.
- Adds LCDC
- Adds CAN



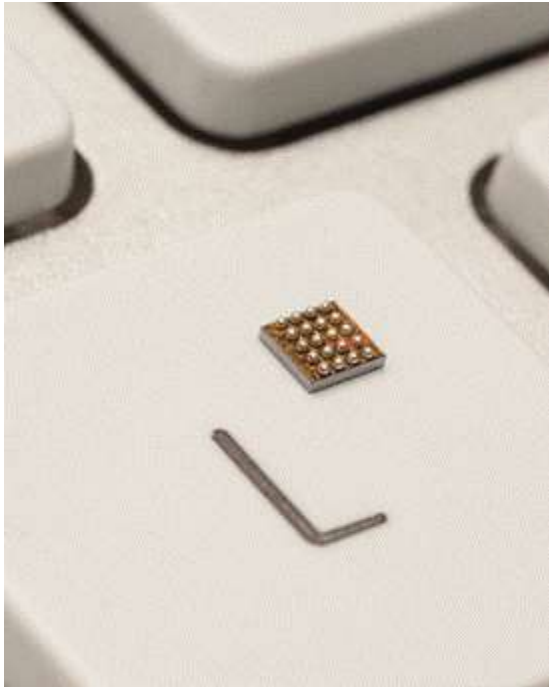
Entry Consumer  
& Industrial

- Up to 600MHz
- 1.6W Typ.

**ECC and Trust on Board**  
Pin & Software Compatibility



# LS1021A Family Development Boards



## TWR-LS1021A Evaluation board



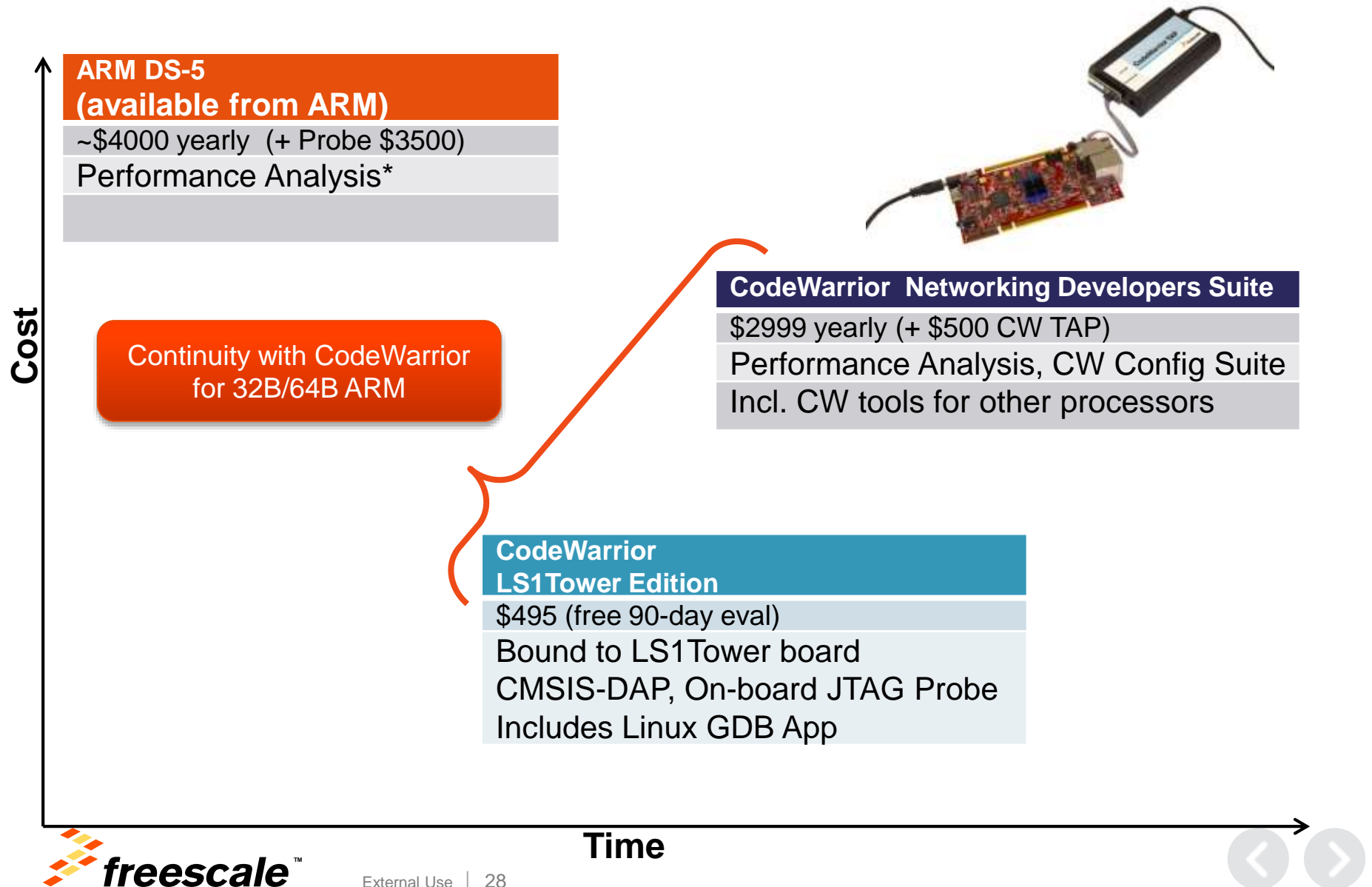
- **Rapid prototyping platform** for Industrial applications
- **Modular design** supports a range of connectivity options
- **Cost-effective**, open source development platform
- Designed to **simplify product evaluation**
- **Available NOW**

## LS1021A-IoT Gateway Reference Design



- **Multi-protocol support** for IoT devices
- **High speed WAN / LAN** for Cloud connectivity
- **Cost-effective**, open source platform
- Designed to **accelerate time to market**
- **Available NOW**

# ARM Development Tools Roadmap for QorIQ Family





# LS1024A & LS102MA Target Markets/Key Features



Broadband Home Router



Networked Attached Storage



Smart Home Gateway



Mobile LTE Router

LS1024A and LS102MA are optimized for low-end applications in a high performance, cost-effective package

- **Lowest power consumption** in its class <sup>1</sup>
- **Offload engines** to manage network routing and address translation
- Hardware security engines provide **accelerated cryptographic processing** that minimizes CPU load
- **Highly integrated** with a comprehensive peripheral set
- **Specialized software packages** for broadband gateway and NAS applications

<sup>1</sup> Power consumption of <3W typ at 900MHz for LS1024A and <2W typ at 650MHz for LS102MA



# Realities of the New Virtualized Network

1 Deployment, configuration, management agility

2 Vendor neutral interoperability

3 Open Standards based



1 Power limitations dominate architectural decisions

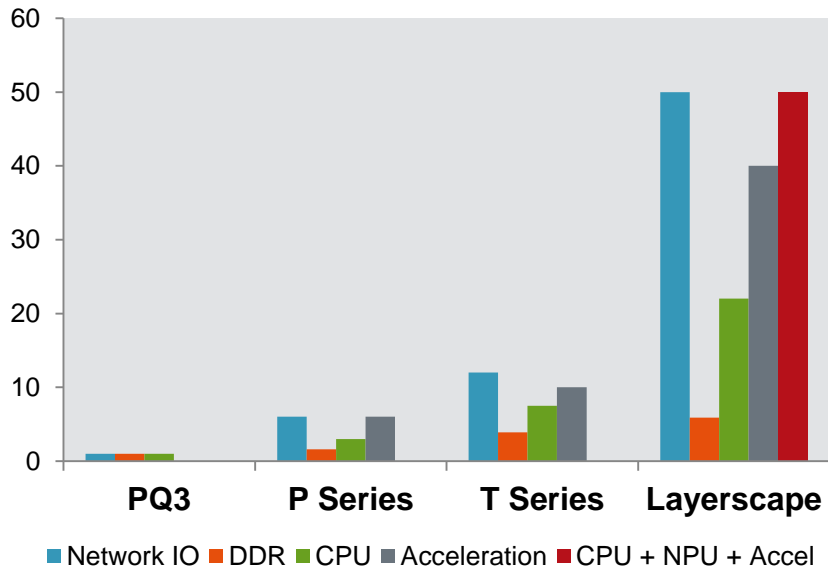
2 IO scaling MUCH faster than CPU integration

3 Multicore scaling has reached limits (HW, SW)

With the Evolving Physics of Networking Implementations ...

**Next-Generation Networks**  
Must Balance Changing Deployment Paradigms

# New Architecture for a New Network



Many-core processor approach is not sustainable due to power, software complexity and integration costs



Need to provide right mix of high performance and programmability

## MUST HAVE:

### Advance Packet Processing

- Tightly coupled accelerators called as C functions
- H/W preloaded task state, headers, stack frame
- Customer programmable
- Run-to-completion model using standard C (C99)



**4-6x Performance**  
over general purpose cores  
in a lower power envelope



# Trends in the Intelligent Edge

1

## **Convergence of access technologies**

drives to common architecture and hardware

2

## **1000x challenge of users/traffic**

means throughput requirements must outstrip Moore's law drive hardware acceleration

3

## **Software-centric world**

removes architecture dependencies imposed by hardware

4

## **Intelligent, virtualized network**

necessitates system-level intelligence/acceleration



# Introducing the QorIQ LS1043A Processor



**The industry's most efficient  
64-bit communications processor based on  
ARM® technology targeting vCPE applications**

- **Targeted performance and power efficiency**
  - 4x ARM® Cortex® -A53 cores, over 16,000 CoreMarks
  - Leading packet processing offload technology: greater than 10Gbps performance
  - Low power: around 5W
- **Purpose-built for fanless, small form factor networking applications**
  - Integrated services branch routers, SDN & NFV edge platforms, industrial PLC and control, security appliances
- **Simplified, adaptable edge presence for reduced opex**
  - Evolves with virtualized services, OVS, NFV-enabled orchestration
  - Offloads advanced and latency sensitive applications such as application ID, QoS & security
  - Flexible software updates with advanced virtualization hardware and Trust Architecture

More info on LS1043A



# Introducing The QorIQ LS2 Family

**Breakthrough, software-defined approach to advance the world's new virtualized networks**

## **New, high-performance architecture built with ease-of-use in mind**

Groundbreaking, flexible architecture that abstracts hardware complexity and enables customers to focus their resources on innovation at the application level

## **Optimized for software-defined networking applications**

Balanced integration of CPU performance with network I/O and C-programmable datapath acceleration that is right-sized (power/performance/cost) to deliver advanced SoC technology for the SDN era

## **Extending the industry's broadest portfolio of 64-bit multicore SoCs**

Built on the ARM® Cortex®-A57 architecture with integrated L2 switch enabling interconnect and peripherals to provide a complete system-on-chip solution



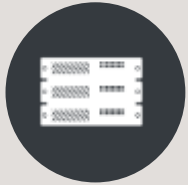


# QorIQ LS2 Family

## Key Features



**SDN/NFV  
Switching**



**Data  
Center**



**Wireless  
Access**

Unprecedented performance and ease of use for smarter, more capable networks

### High performance cores with leading interconnect and memory bandwidth

- 8x ARM Cortex-A57 cores, 2.0GHz, 4MB L2 cache, w Neon SIMD
- 1MB L3 platform cache w/ECC
- 2x 64b DDR4 up to 2.4GT/s

### A high performance datapath designed with software developers in mind

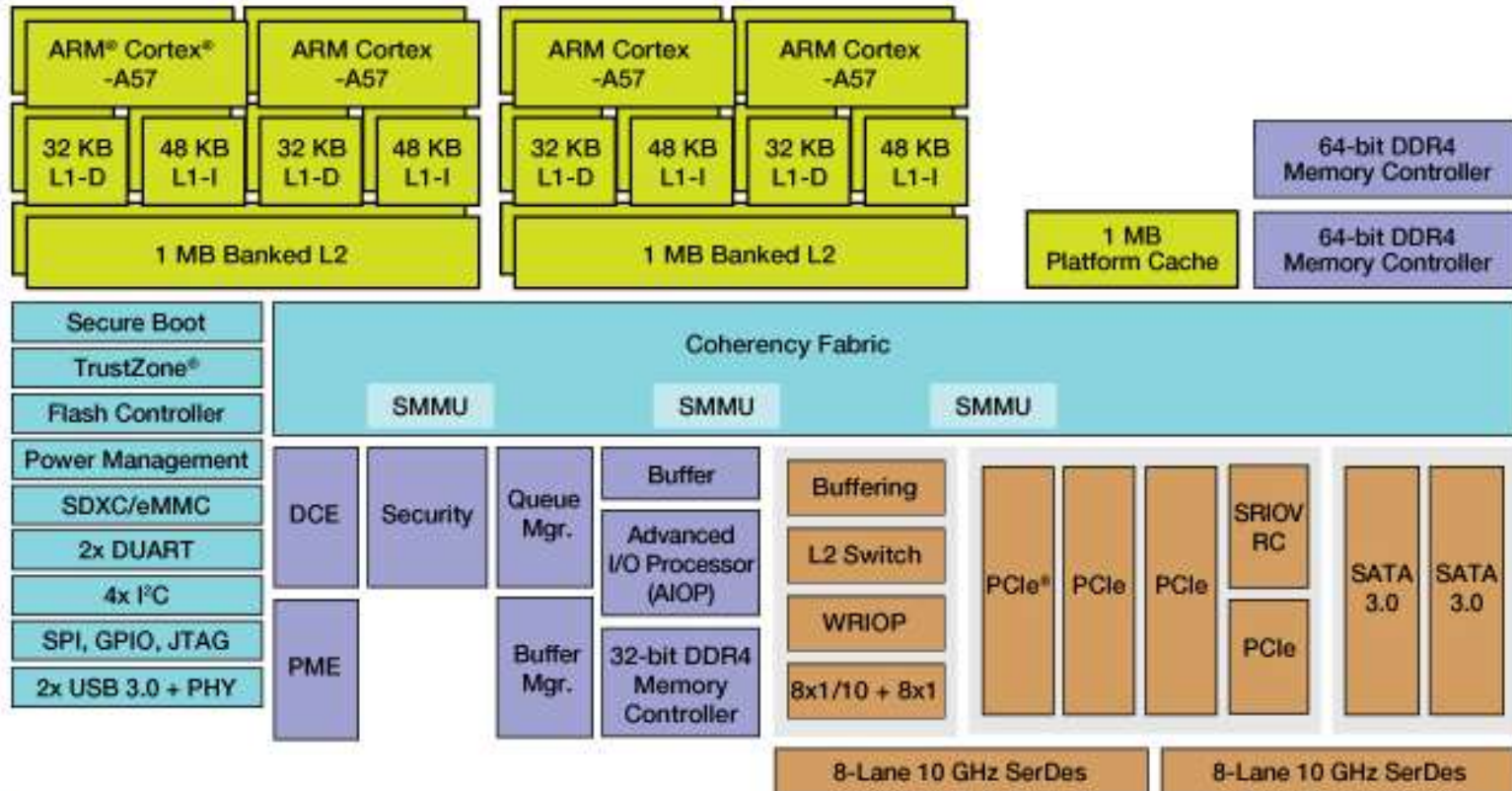
- 20Gbps Packet processing performance (crypto acceleration, Pattern Match/RegEx, Data Compression)
- New datapath hardware and abstracted acceleration that is called via standard Linux objects
- Management complex provides all init/setup/teardown tasks

### Leading network I/O integration

- 8x1/10GbE + 8x1G, MACSec on up to 4x 1/10GbE
- Integrated L2 switching capability for significant cost savings
- 4 PCIe Gen3 controllers, 1 with SR-IOV support
- 2 x SATA 3.0, 2 x USB 3.0 with PHY

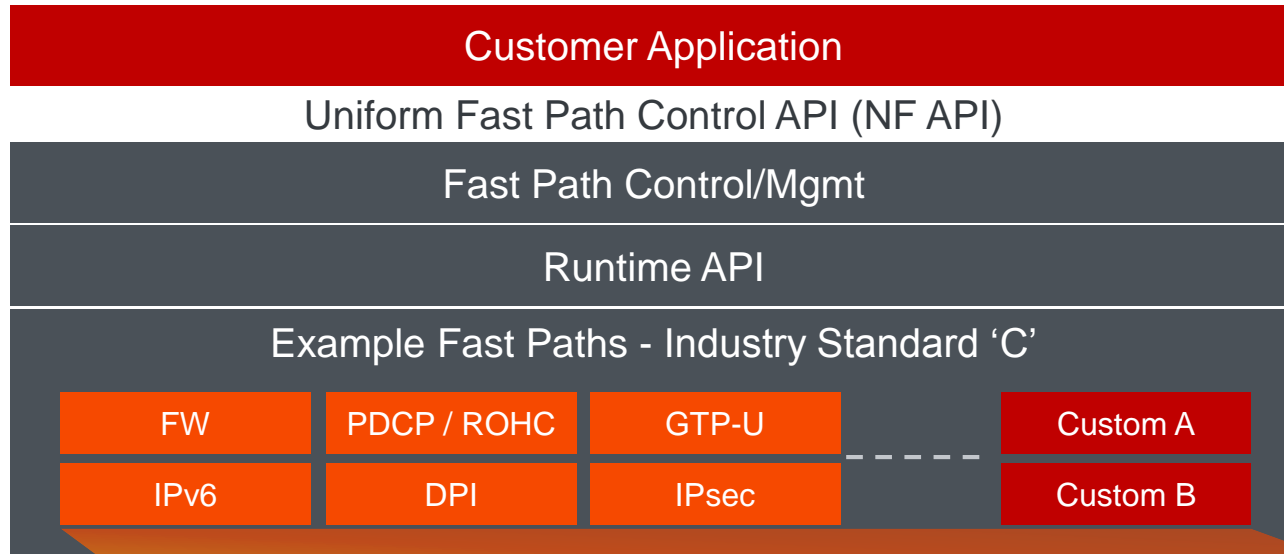


# QorIQ LS2085A Processor Block Diagram



- Networking Elements
- Basic Peripherals and Interconnect
- Core Complex (CPU, L2 and Frontside CoreNet Platform Cache)
- Accelerators and Memory Control

# QorIQ LS2 Family: Ease of Use Toolkit



Data Path Acceleration Kit	Principal Functions			
Routing	IP FWD	Firewall	IPSEC	QoS
SDN/OpenFlow	Openflow-DP	VxLAN	NVGRE	
Switch Supplement	IPFWD	Firewall	IPSEC	QoS
	BFD	Eth-OAM	Netflow	sFlow
Wireless Access	IP FWD	Firewall	IPSEC	QoS
	CAPWAP	DTLS	MACSEC	

# Summary: QorIQ LS2 Series Processors

## Broadest Portfolio for the New Virtualized Network

- ✓ **New QorIQ LS2 family delivers breakthrough data path architecture for enhanced ease-of-use and networking performance**
- ✓ **QorIQ LS2 family is optimized for SDN applications with balanced integration of GPU performance, network I/O and datapath acceleration**
- ✓ **Built on the ARM Cortex-A57 architecture, the QorIQ LS2 family extends the industry's broadest portfolio of 64-bit networking SoCs**



# Networking, Software, and Services

## Development Tools

- CodeWarrior
  - IDE
  - Debug
  - Compiler
  - Trace
- QorIQ Optimization Suite
  - Scenarios Tools
  - DDrV

**CodeWarrior**  
**QorIQ**

## Runtime Products

- Vortiqa Software Products
  - Application Identification Software (AIS)
  - Open Networking Switching Framework
  - Mobile Transport

**VortiQa**

## Solutions Reference

- Storage Controller
- SDN Switch
- Wireless LAN
- Data Concentrator
- Smart Converged Gateway
- Digital Signage



## Linux® Services

- Commercial Support
- Frozen Branch
- Application Specific Hardening
- Feature Acceleration



## Integration Services

- Systems Consulting
- Design Services
- Porting
- Migration



Comprehensive range of software products and services for the Networking market

# Summary

- Freescale continues performance and innovation leadership
  - Complete portfolio of 28nm SoCs
  - T-Series offers widest range pin compatible portfolio
- Layerscape architecture enables performance roadmap for the future
  - Leadership in multicore processors for the next 10 years







[www.Freescale.com](http://www.Freescale.com)