

Freescal Processor and the AdvancedTCA[®] Form Factor

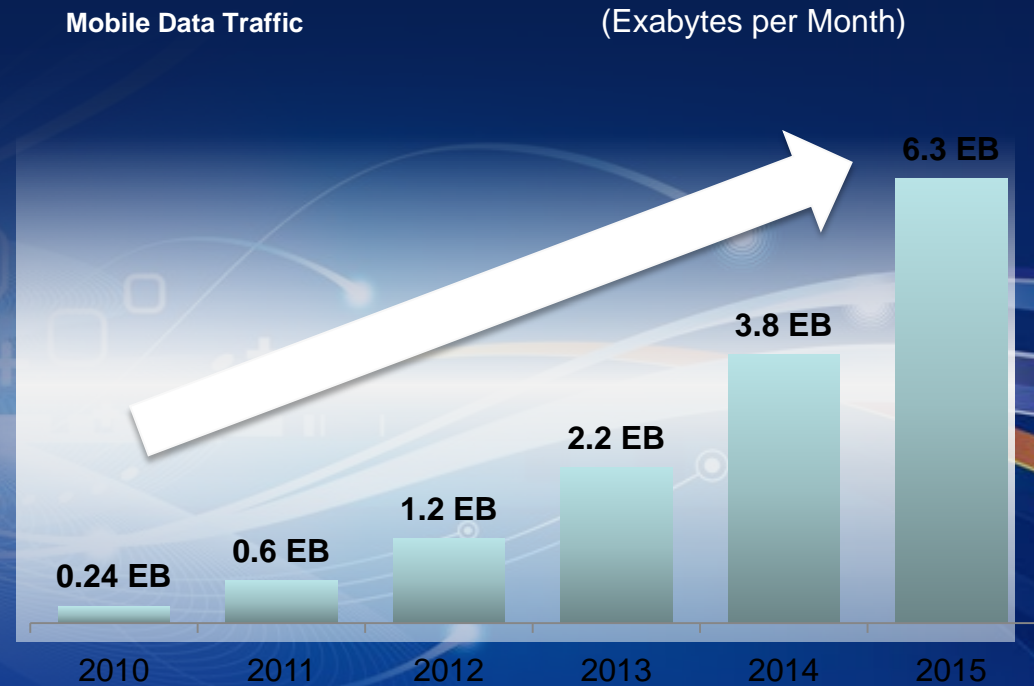
Toby Foster

Network Processing Division

Freescal Semiconductor

Mobile Internet Traffic Exploding

- Globally, mobile data traffic will **double** every year through 2015
- Mobile data traffic growing 4x faster than fixed broadband
- Over 7 billion connected devices by 2015
- Moving from voice to data to services centric
- Growth in data traffic placing enormous strain on mobile networks globally
- Instant access to information in the cloud anytime/anywhere



Challenges for Next Generation Networking Systems

- Moore's Law can't keep up with processing demands for **exponentially increasing IP traffic**
- Multicore processors need to **balance number of cores** with **power consumption**
- **Need for scalability** to build multiple products on a common architecture
- **Reduce software complexity** improve productivity and speed implementation

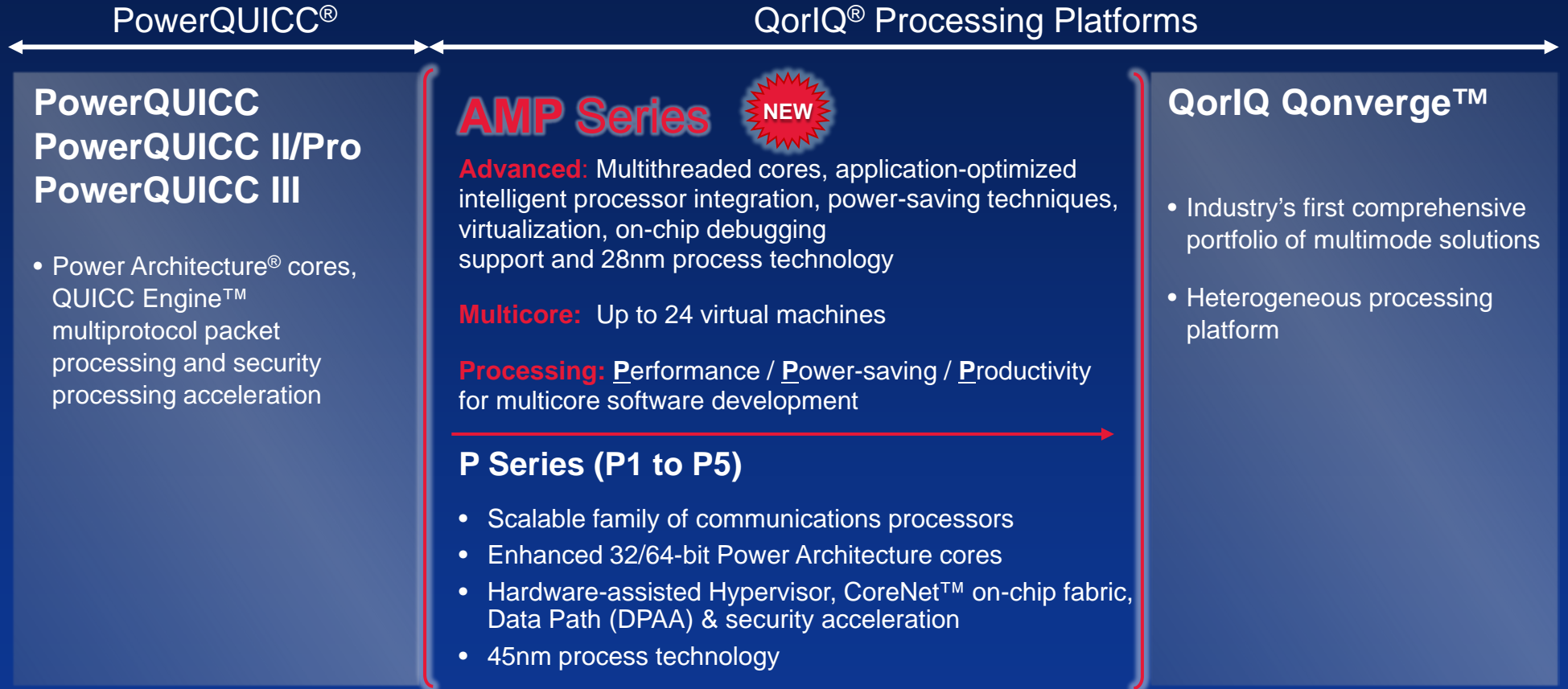


ATCA Benefits – Open, Flexible, Efficient

- The only open, industry managed standards-based bladed compute architecture available
 - No vendor lock in allows for flexibility in supply and choice of service and integration options
 - Similar compute power compared to enterprise equivalents in NEBS configurations
- Vibrant supporting ecosystem provides choice
 - 35 major blade/system vendors and more than 150 suppliers total providing network equipment vendors a combined portfolio of near 200 AdvancedTCA (ATCA) products (Source: IDC – April 2007; Components Insider – April 2007)
- Power effective – architecture simplifies power distribution and improves efficiency
 - Up to 10% better than other bladed servers
 - Up to 30% better than rack mount servers
- Highly reliable – certified to meet telco 5NINES and 6NINES infrastructure
 - A proven foundation for mission critical applications



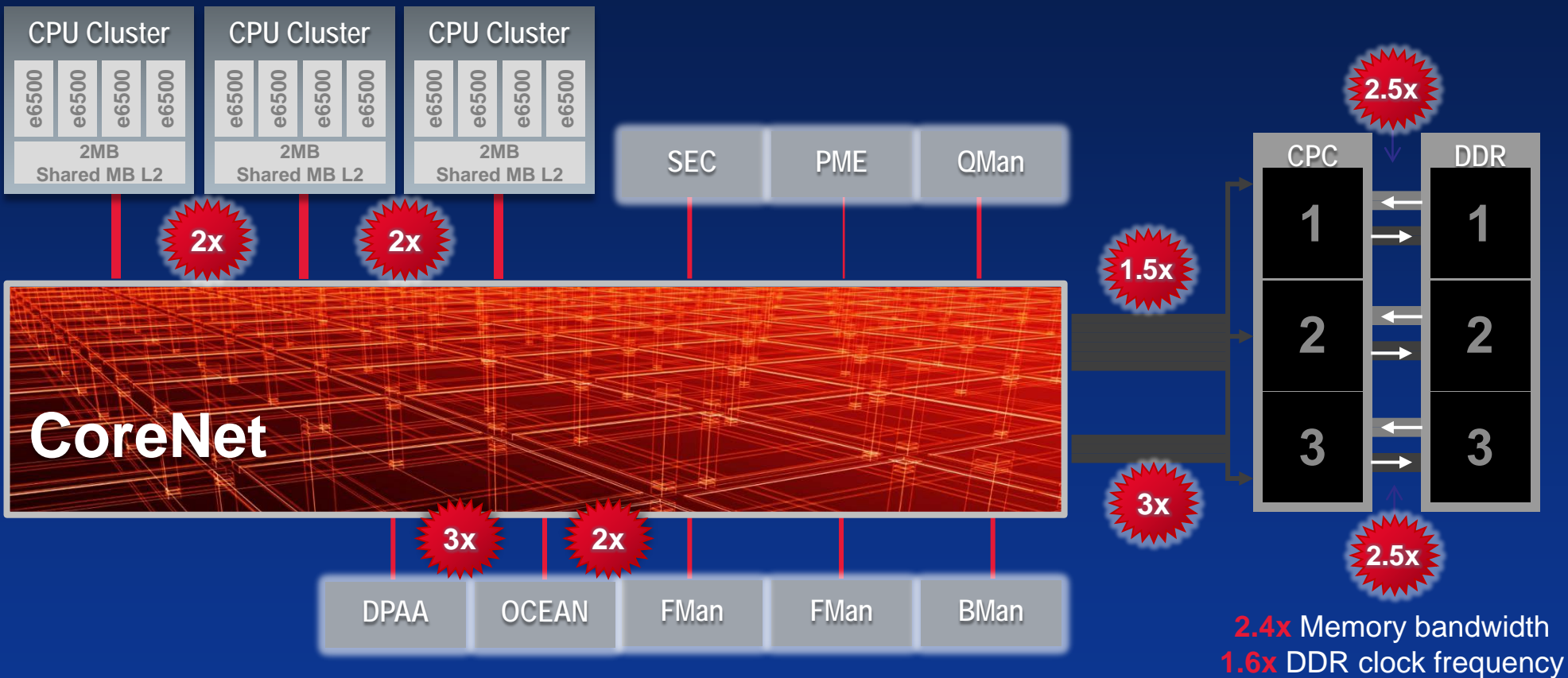
Expanding the Industry's Leading Networking Portfolio



- Broad portfolio with on-time, on-specification release track record
- Software and tools ecosystem catering for Tier1 and broad market customers
- Common software tool sets including CodeWarrior[®] Development Suite
- Open, rich third-party ecosystem for operating system, tools and application software



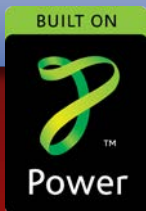
QorIQ T4240 System Performance: Acceleration, Memories and Interconnect



Optimized for Multicore System Bandwidth and Latency

Programmable Performance: New Advanced Multithreaded e6500 Core

Improvement of DMIPs per Thread	X	Dual thread Efficiency	X	Frequency	X	Number of Cores
2.4x				1.3x		1.5x
IPC Improvements		Multithreading		Frequency Improvements		Multicore
<ul style="list-style-type: none"> • 64-bit architecture • AltiVec Technology: 240 GFLOPS • 1TB physical address • Accelerate Hypervisor performance with LRAT 		<ul style="list-style-type: none"> • Dual Thread • Each with separate front end, branch unit and LSU • Larger amount of onboard cache per core 		<ul style="list-style-type: none"> • New process and e6500 core allowing increased frequency 		<ul style="list-style-type: none"> • Up to 24 virtual cores • Large 2 MB shared L2 cache within a cluster of 1 to 4 cores • CoreNet cache-coherent fabric with multiple clusters to scale from 1 to 8 clusters • Virtualization



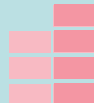
**Up to 4x Performance Improvement
 over Previous Generation**



QorIQ AMP Unleashes AltiVec® Technology

AltiVec on T4240

- 128-bit SIMD engine
- Executes on every clock cycle
- Improved load/store to ease bit alignment
- New instructions for video analytics



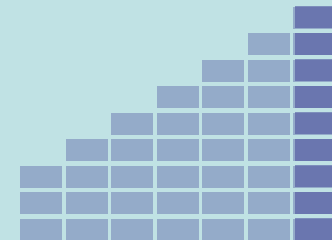
QorIQ AMP with AltiVec

- Every e6500 core has an AltiVec unit
- Increase in performance with multithreading; no wasted cycles waiting on instructions
- Implemented across the QorIQ AMP family T1 - T5



T4240 with AltiVec

- 12 AltiVec units
- Algorithms and data protected by trust architecture
- 240 GFLOPS of performance
- Utilizes multi-threading



Expand the possibilities:
250 GFLOPS of performance

Comprehensive Solution, Rich Ecosystem

Tools, Operating Systems and Debuggers



WIND RIVER

Applications & Reference Designs



D2 Engineering



Worldwide Expert Support

- 1000's of third party engineers
- 1000+ sales people
- 1000 software engineers
- 500 support engineers
- 200 applications engineers



ATCA/AMC and OS on Power



See www.freescale.com/sbc for more information

Unbounded Scalability

1

Migrate up and down in performance and application, standard building blocks for both the Hardware and software solutions: Larger range of solutions, Internal and 3rd Party

2

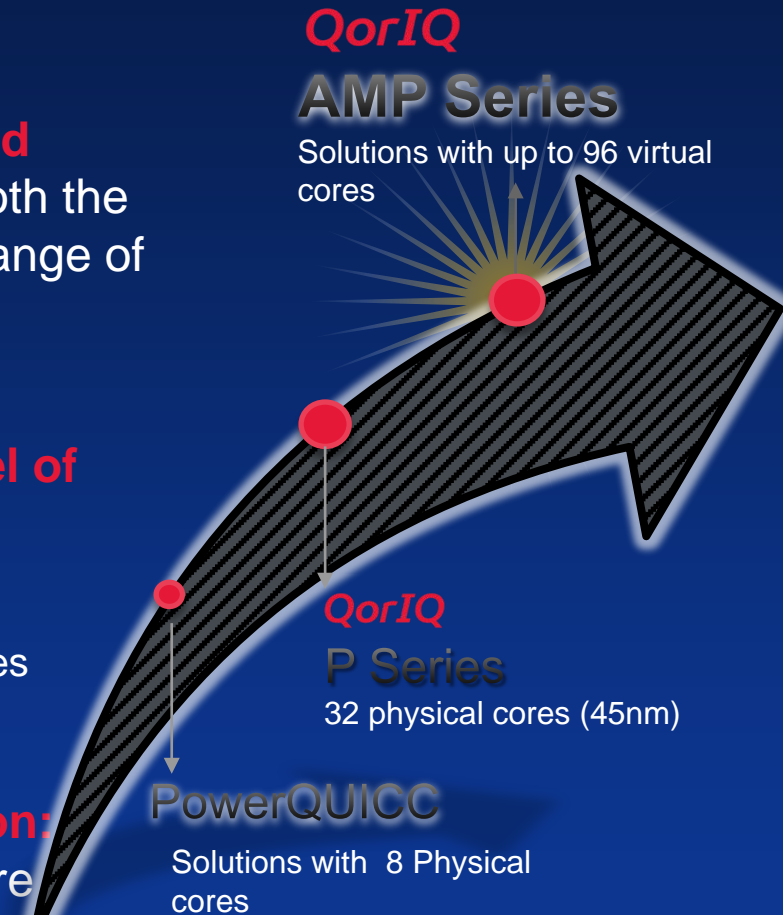
New product can offer much higher level of performance/flexibility

- Much higher system performance
- High performance blades offer flexibility in services

3

Software Compatibility and Virtualization:

Hardware can scale along with the software applications. Each card supports multiple service offerings that can be virtualized



Q&A