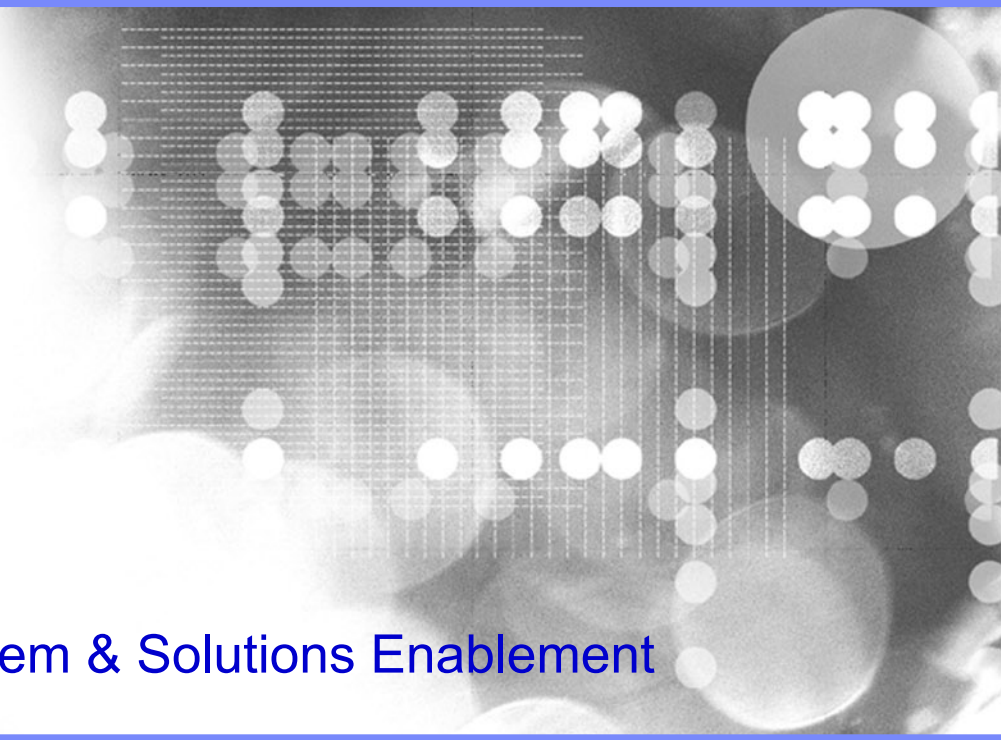
Cell/B.E. @ SC07 BOF



Duc Vianney, Ph. D.
Cell/Quasar Ecosystem & Solutions Enablement

Cell/B.E. System Hardware and Software

BladeCenter QS21 and

IBM SDK for Multicore Acceleration 3.0 announced

SDK 2.0 (beta)
- IDE
- Library enhancements
- GNU toolchain
- Performance enhancements
- Linux updates
- XL C/C++

SDK 1.1 (beta)
- GNU toolchain
- Performance enhancements
- Linux® OS
- C compiler

SDK 1.0 (beta)
- Linux® OS
- C compiler

Introduced the first Cell/B.E. based system BladeCenter QS20

Announced commercialization of IBM Cell/B.E. system

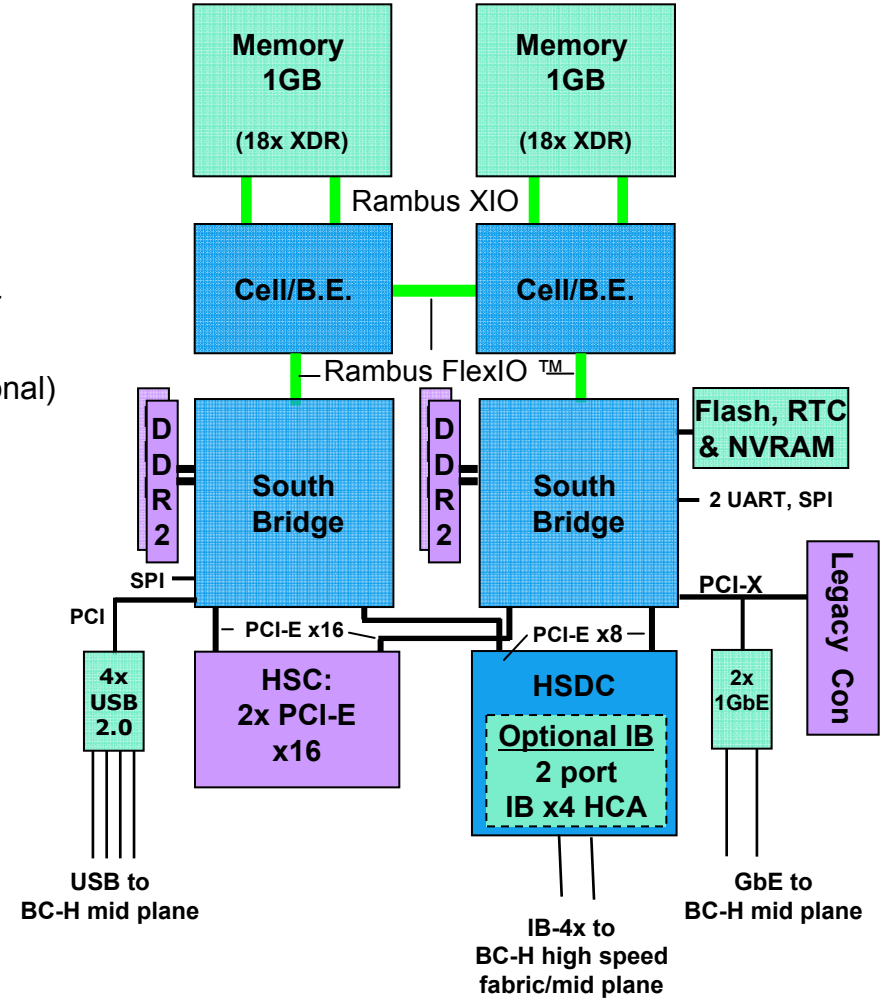
Announced Cell/B.E. processor commercialization with Sony

Revealed first Cell/B.E. specs

2005 2006 2007

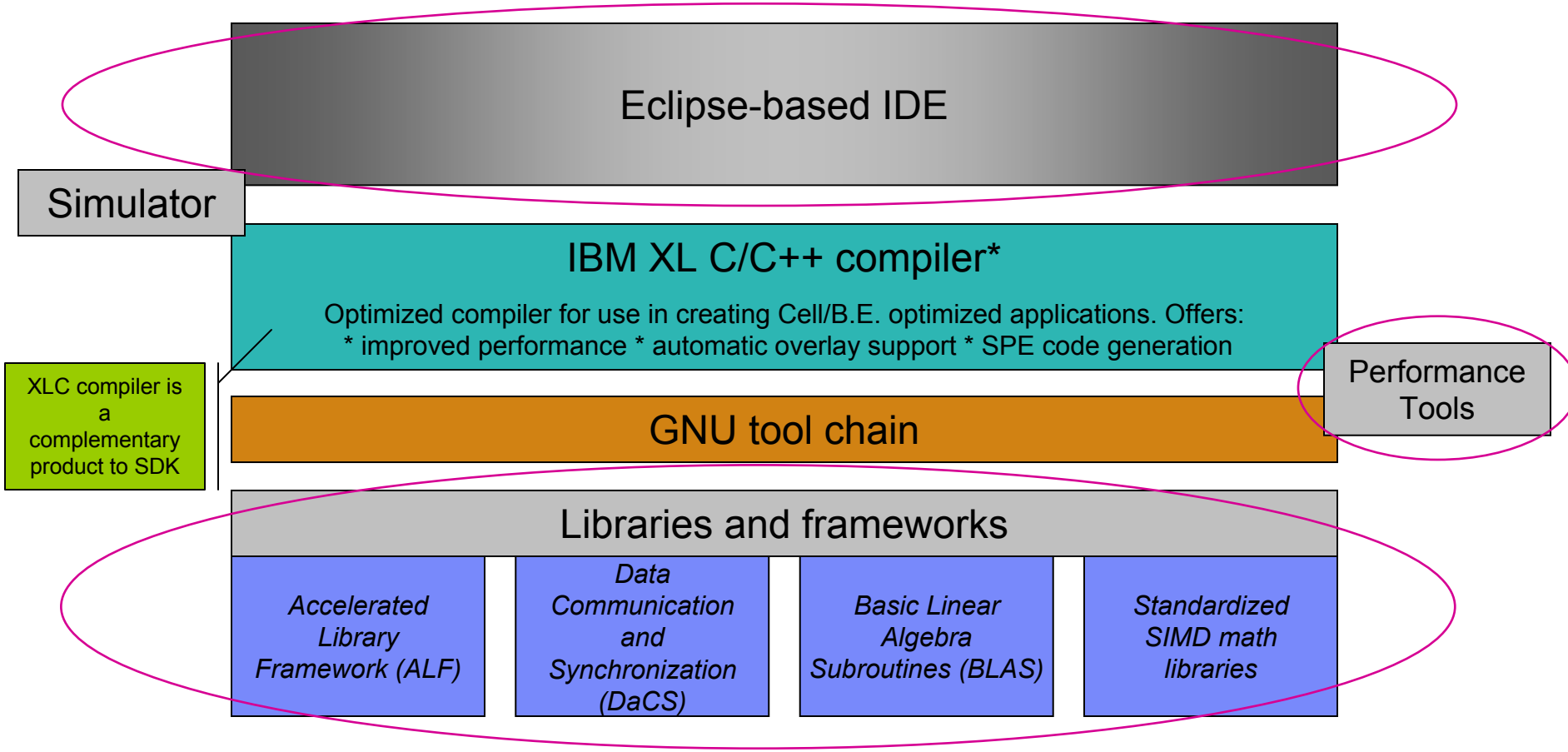
IBM BladeCenter QS21

- **Core Electronics**
  - Dual 3.2GHz Cell/B.E. Processor Configuration
  - 2GB XDRAM (1GB per processor)
  - Dual Gigabit Ethernet (GbE) controllers
  - Single-wide blade (uses 1 BladeCenter H slot)
  - Infiniband 4x channel adapters / (optional)
    - Cisco Systems 4X InfiniBand HCA Expansion Card for BladeCenter (32R1760)
  - Serial Attached SCSI (SAS) daughter card (39Y9190) / (optional)
- **BC Chassis Configuration**
  - Standard IBM BladeCenter H
  - Max. 14 QS21 per chassis
  - 2 Gigabit Ethernet switches
  - External IB switches required for IB option
    - Cisco Systems 4X InfiniBand Switch Module for BladeCenter (32R1756)
- **Peak Performance**
  - Up to 460 GFLOPS per blade
  - Up to 6.4 TFLOPS (peak) in a single BladeCenter H chassis
  - Up to 25.8 TFLOPS in a standard 42U rack



IBM SDK for Multicore Acceleration v3.0

The IBM SDK is a complete tools package that simplifies programming on IBM BladeCenter QS 21



XL C/C++ compiler single source is available in beta,* ***dual* *source is planned to GA on 10/19/07 with an announce on 10/16/07*

IBM SDK for Multicore Acceleration v3.0

- **Product Level Tested**
- **Multiple HW Platform Support**
  - QS20 (CB1) – Fedora Only
  - QS21(CB+) – Production Support
- **Linux Support**
  - Fedora 7 (Kernel level 2.6.22)
  - Red Hat Enterprise Level v5.1 (Kernel Level 2.6.18)
  - Toolchain packages: gcc 4.1.1, binutils 2.17+, newlib 1.15+, gdb 6.6+
- **Programmer Productivity – Performance Tools**
  - VPA – Visual Performance Analyzer
  - PDT – Performance Debugging Tool
  - PEP/Lock Analyzer & Trace Analysis Tools
  - CodeAnalyzer
  - Enhanced Oprofile support
  - FDPR-Pro for Cell
  - Hybrid Code Analyzer
  - Hybrid System Performance and Tracing Facility
- **Programmer Productivity – Development**
  - Eclipse IDE plug-ins
  - Dual source XLC , Dual Source XLF – Fortran (beta), Single Source XLC (beta)
  - Cell and Hybrid HPC software sample code
  - Enhanced GNU toolchain support
    - GNU Fortran for PPE & SPE
    - GNU ADA (GNAT) for PPE
    - gcc autovectorization and performance enhancements
- **Programmer Productivity - Runtime**
  - Product Level ALF and DaCs for Cell
  - Hybrid DaCS/ALF (Prototype)
  - Productization of combined ppe/spe gdb debugger
  - SPE-side Software Managed Cache (from iRT technology)
- **Market Segment Library Enablement**
  - Highly optimized SIMD and MASS Math Libraries
  - Highly Optimized BLAS
  - Highly optimized libFFT
  - Monte Carlo RNG Library
  - Cell Security Technology (prototype/preview)