Cell/B.E. System Hardware and Software

- Revealed first Cell/B.E. specs
- Announced Cell/B.E. processor commercialization with Sony
- IBM SDK for Multicore Acceleration 3.0 announced
- BladeCenter QS21 and IBM SDK for Multicore Acceleration 3.0 announced
- SDK 1.0 (beta)
  - Linux® OS
  - C compiler
- SDK 1.1 (beta)
  - GNU toolchain
  - Performance enhancements
  - Linux® OS
  - C compiler
- SDK 2.0 (beta)
  - IDE
  - Library enhancements
  - GNU toolchain
  - Performance enhancements
  - Linux updates
  - XL C/C++
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

- **IBM XL C/C++ compiler** *
  - Optimized compiler for use in creating Cell/B.E. optimized applications. Offers:
    - * improved performance
    - * automatic overlay support
    - * SPE code generation

- **GNU tool chain**

- **Libraries and frameworks**
  - **Accelerated Library Framework (ALF)**
  - **Data Communication and Synchronization (DaCS)**
  - **Basic Linear Algebra Subroutines (BLAS)**
  - **Standardized SIMD math libraries**

*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)