FAST-OS PI/BOF Meetings

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FAST-OS Introduction

• FAST-OS: Forum to Address Scalable Techniques for runtimes and Operating Systems

• Program in DOE Office of Science
  – Fund Research to Address OS and Runtime Issues for HEC
  – 12 funded research groups, 3 years (FY2004/5-2006/7)
  – Program Manager: Fred Johnson

• Yearly PI Meetings
  – 2005: June 9-10, Rockville, MD; SC BOF
  – 2006: May 30-31, Boston, MA @ USENIX 2006
Variety of OS-Related HEC Issues

- Virtualization
- Commodity versus Specialized Kernels
  - Development Effort, Services in Commodity Kernels
  - Performance, Determinism in Specialized Kernels
- Kernel/Runtime Issues
  - Fault Tolerance
  - Single-System Image
  - System and Configuration Management
  - Adaptation
Projects

• Kernel Construction, Measurement
• Specialized Kernels
  – Config/OS - Sandia, LSU, UNM
  – K42 - LBL, IBM, UNM, Toronto
• Commodity Kernels
  – Rightweight Kernels - LANL
  – ZeptoOS - Argonne, UOregon
Projects (cont’d)

• Runtime Services and Systems
  – University-Led
    • DAISES - UTEP
    • SmartAPPS - Texas A&M
  – Lab-Led
    • COBALT - Argonne
    • Colony - LLNL, IBM, Illinois
    • MOLAR - ORNL, LaTech, NCSU, OSU
    • Petascale SSI - ORNL, HP, Rice
    • Scalable Fault Tolerance - PNNL, Illinois
Other Topics at PI/BOF Meetings

- Testbeds
- Virtualization (e.g. Xen, etc.)
  - OS Development Environment
  - Could enable Testbeds
  - Support both Specialized and Commodity OSes on one system
  - Doesn’t yet support OS bypass, Zero-copy NICs
- “Burton Talks About Whatever He Wants”