



The University of New Mexico

FAST-OS PI/BOF Meetings

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Scalable Systems Lab



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”

FAST-OS PI Meeting, June 9-10, 2005

