

# **Workshop on virtualization and multi-core technologies for LHC**

## **Report of Contributions**

Contribution ID: 0

Type: **not specified**

## Welcome and Introduction

*Monday, 14 April 2008 14:00 (30 minutes)*

**Presenter:** Dr MATO, Pere (CERN)

**Session Classification:** Welcome and Technology session

Contribution ID: 1

Type: **not specified**

## **Moving from Single-Core to Multi/Many-Core Computing: Opportunities and Challenges**

*Monday, 14 April 2008 14:30 (30 minutes)*

**Presenter:** CORNELIUS, H (Intel)

**Session Classification:** Welcome and Technology session

Contribution ID: 2

Type: **not specified**

## **Virtualization using VMware technology**

*Monday, 14 April 2008 16:00 (45 minutes)*

**Presenter:** GARSTHAGEN, Richard (VMware)

**Session Classification:** Welcome and Technology session

Contribution ID: 3

Type: **not specified**

## **From Application to Appliance - Building Software Appliances with rPath's rBuilder**

*Monday, 14 April 2008 16:45 (45 minutes)*

**Presenter:** GERLA, Tim (rPath)

**Session Classification:** Welcome and Technology session

Contribution ID: 5

Type: **not specified**

## **ATLAS experiences running athena and TDAQ software**

*Tuesday, 15 April 2008 09:30 (30 minutes)*

**Presenter:** WIEDENMANN, Werner (High Energy Physics)

**Session Classification:** Experience and plans on adapting software for multi-core

Contribution ID: 6

Type: **not specified**

## **CMS experience and plans**

*Tuesday, 15 April 2008 11:00 (30 minutes)*

**Presenter:** Dr ELMER, Peter (PRINCETON UNIVERSITY)

**Session Classification:** Experience and plans on adapting software for multi-core

Contribution ID: 8

Type: **not specified**

## First Results in a Thread-Parallel Geant4

*Tuesday, 15 April 2008 11:30 (30 minutes)*

We have taken the TOP-C parallelization of Geant4 (based on MPI), to semi-automatically create a thread-parallel Geant4 based on event parallelism and a master-worker style of parallelism. We currently address two issues:

- 1) detecting global variables and data structures, which must be made thread-local. We modify the parser of the gcc compiler to do this.
- 2) handling of random generator engines from CLHEP. This is needed to create reproducible results by assigning known random seeds to each distinct thread.

The very preliminary tests show linear speedup with the number of cores, up to the four cores of a quad-core processor. Future work will consider moving some of the thread-local data back into process-global data, in order to reduce the image size (eliminate separate copies per thread), and to further ensure scalability for large experiments. We have also demonstrated that our checkpointing package, DMTCP, works in this thread-parallel environment operating in CERN 64-bit Scientific Linux.

**Presenters:** COOPERMAN, Gene; XIN DONG (Northeastern University, Boston, USA)

**Session Classification:** Experience and plans on adapting software for multi-core



Contribution ID: 9

Type: **not specified**

## **Comparison of Virtual Machine Performance running ATLAS software**

*Tuesday, 15 April 2008 15:30 (30 minutes)*

**Presenter:** YAO, Yushu (LBL)

**Session Classification:** Virtualization in Experiments

Contribution ID: 12

Type: **not specified**

## **ALICE experience and plans**

*Tuesday, 15 April 2008 15:00 (30 minutes)*

**Presenter:** BOETTGER, Stefan (Kirchhoff-Institut fuer Physik (KIP)-Ruprecht-Karls-Universitaet)

**Session Classification:** Virtualization in Experiments

Contribution ID: 13

Type: **not specified**

## **Peer-to-Peer Technology in Grid Computing - The Igor File System and Beyond**

*Monday, 14 April 2008 17:30 (30 minutes)*

**Presenter:** Prof. FUHRMANN, Thomas (TU Munich)

**Session Classification:** Welcome and Technology session

Contribution ID: 14

Type: **not specified**

## Introduction to CernVM project

*Tuesday, 15 April 2008 14:00 (1 hour)*

**Presenter:** BUNCIC, Predrag (CERN)

**Session Classification:** Virtualization in Experiments

Contribution ID: 15

Type: **not specified**

## **Performance measurements on multi-core**

*Wednesday, 16 April 2008 09:00 (1h 30m)*

**Presenters:** DZIEDZINIEWICZ, Katarzyna Maria (Warsaw University of Technology); Mr JARP, Sverre (CERN)

**Session Classification:** Hands on and Demo session

Contribution ID: 17

Type: **not specified**

## **rBuilder Demo**

*Wednesday, 16 April 2008 11:00 (2 hours)*

**Presenter:** RPATH

**Session Classification:** Hands on and Demo session

Contribution ID: 19

Type: **not specified**

## Introduction to the R&D project

*Tuesday, 15 April 2008 09:00 (30 minutes)*

**Presenter:** INNOCENTE, vincenzo (CERN)

**Session Classification:** Experience and plans on adapting software for multi-core

Contribution ID: 20

Type: **not specified**

## Virtualisation in gLite certification

*Tuesday, 15 April 2008 17:30 (30 minutes)*

**Presenter:** UNTERKIRCHER, Andreas

**Session Classification:** Virtualization in Experiments



Contribution ID: 21

Type: **not specified**

## **Proof: experience and plan**

*Tuesday, 15 April 2008 12:00 (30 minutes)*

**Presenters:** RADEMAKERS, Fons (CERN); GANIS, Gerardo (CERN)

**Session Classification:** Experience and plans on adapting software for multi-core

Contribution ID: 22

Type: **not specified**

## HEP Applications in Virtual Machines

*Tuesday, 15 April 2008 17:00 (30 minutes)*

**Presenter:** BLOMER, Jakob

**Session Classification:** Virtualization in Experiments

Contribution ID: 23

Type: **not specified**

## **The issues facing CERN and HEP in the many-core computing era**

*Monday, 14 April 2008 15:00 (30 minutes)*

**Presenter:** Mr JARP, Sverre (CERN)

**Session Classification:** Welcome and Technology session

Contribution ID: 24

Type: **not specified**

## **ATLAS experience and plans**

*Tuesday, 15 April 2008 16:30 (30 minutes)*

**Presenter:** FARBIN, Amir (European Organization for Nuclear Research (CERN))

**Session Classification:** Virtualization in Experiments

Contribution ID: 25

Type: **not specified**

## **Experience in parallel programming using Python in LHCb**

*Tuesday, 15 April 2008 10:00 (30 minutes)*

**Presenter:** Dr MATO, Pere (CERN)

**Session Classification:** Experience and plans on adapting software for multi-core

Contribution ID: 26

Type: **not specified**

## **Multi-core: summary and discussion**

*Wednesday, 16 April 2008 14:00 (1 hour)*

**Presenter:** INNOCENTE, vincenzo (CERN)

**Session Classification:** Discussion and Sum up session

Contribution ID: 27

Type: **not specified**

## Virtualization: Summary and Discussion

*Wednesday, 16 April 2008 15:00 (1 hour)*

**Presenter:** BUNCIC, Predrag (CERN)

**Session Classification:** Discussion and Sum up session

Contribution ID: 28

Type: **not specified**

## CernVM Support Infrastructure

*Tuesday, 15 April 2008 18:00 (20 minutes)*

**Presenter:** AGUADO SANCHEZ, Carlos (CERN)

**Session Classification:** Virtualization in Experiments