

T 76: Computing 1

Zeit: Mittwoch 16:45–18:45

Raum: VG 0.111

T 76.1 Mi 16:45 VG 0.111

A live statistics monitoring system for the ATLAS distributed data management system — ●THOMAS BEERMANN¹, PETER MÄTTIG¹, and GRAEME STEWART² — ¹Bergische Universität Wuppertal — ²CERN

DQ2 is the distributed data management system of the ATLAS experiment. It manages more than 80 petabytes of experiment data on over 120 grid sites in the Worldwide LHC Computing Grid. The DQ2 system provides a common interface allowing interactions with ATLAS data without knowledge of the heterogeneous grid systems. It maintains a central catalogue of all data stored on the ATLAS grid. Many users are working concurrently on the system, putting in new or accessing existing data. Each operation on the system is traced and there are multiple use cases where the system would benefit from live statistics computed over this data, e.g. dynamic data placement based on the popularity of datasets. This talk will present a new live statistics monitoring system for DQ2 that is currently in development.

T 76.2 Mi 17:00 VG 0.111

ATLAS job distribution: Status and Evolution — ●ROD WALKER¹, ADIL AKTAS², ANTON GAMEL², TORSTEN HARENBERG³, SERGEY KALININ³, GEN KAWAMURA⁴, KAI LEFFHALM⁵, JOERG MEYER⁶, ANDREAS PETZOLD⁷, CEDRIC SERFON¹, JAN ERIK SUNDERMANN², and GUENTER DUCKECK¹ — ¹LMU Muenchen — ²U Freiburg — ³BU Wuppertal — ⁴U Mainz — ⁵Desy — ⁶U Goettingen — ⁷KIT Karlsruhe

We will first give an overview of the current status of ATLAS worldwide production and analysis, with the main focus on the German sites. We will then briefly present several recent or ongoing developments. An important issue is to maximize the available resources by using non-dedicated sites which have special constraints or do not provide the standard Grid setup. The manpower load for a site is very much reduced by not requiring a local storage element (SE), and we describe how sites can share a network-near SE. ATLAS software effectively demands a particular OS, and many shared sites will not provide this. We discuss how virtualization is being investigated to address this. Lastly, it is anticipated that an increasing amount of resources will be economically accessible via Cloud APIs - we present prototype usage of the StratusLab reference cloud.

T 76.3 Mi 17:15 VG 0.111

Data access at Tier2s in ATLAS — ADIL AKTAS¹, GUENTER DUCKECK², ANTON GAMEL¹, TORSTEN HARENBERG³, ●SERGEY KALININ³, GEN KAWAMURA⁴, KAI LEFFHALM⁵, JOERG MEYER⁶, ANDREAS PETZOLD⁷, CEDRIC SERFON², JAN-ERIK SUNDERMANN¹, and RODNEY WALKER² — ¹Uni Freiburg, Freiburg im Breisgau — ²LRZ/LMU, München — ³BUW, Wuppertal — ⁴Uni Mainz, Mainz — ⁵DESY-ZN, Zeuthen — ⁶Goegrid, Göttingen — ⁷KIT/SCC, Karlsruhe

The LHC experiments have developed very complex and powerful data distribution systems which provide detailed information on overall data distribution and usage. However, this covers the actual data usage only partially, since access from locally submitted jobs is not included. A set of tools has been developed at Bergische Universität Wuppertal and Ludwig-Maximilians-Universität München to fill this gap for sites which use dCache as the storage system. These tools also provide means to obtain filtered accounting information and reveal data access patterns which are not available in the standard dCache monitoring. We will present the typical usage patterns for two Tier2 sites (BUW, LRZ) for the case of ATLAS but also other VOs active at BUW.

T 76.4 Mi 17:30 VG 0.111

Cloud Monitoring für die ATLAS-DE Cloud — GEORG JAHN, EREKLE MAGRADZE, ●JÖRG MEYER, ARNULF QUADT und CHRISTIAN WEHRBERGER — II. Physikalisches Institut, Georg-August-Universität Göttingen, Deutschland

Für den Betrieb einzelner ATLAS Tier-1/2 Zentren sowie der gesamten deutschen Cloud sind verschiedenste Monitoring Informationen relevant, die aus unterschiedlichen Quellen stammen. Das sogenannte Cloud Monitoring ist ein Projekt, das alle wichtigen Informationen für die ATLAS-DE Tier-1 und Tier-2 Zentren übersichtlich zusammenfasst und auf einer Webseite darstellt. Das Projekt wird vorgestellt und die

Struktur im einzelnen erklärt. Es werden Erfahrungen und Weiterentwicklungen gezeigt, da das Projekt ständig an neue Monitoring-Anforderungen angepasst wird.

T 76.5 Mi 17:45 VG 0.111

Validation of ATLAS distributed analysis resources using HammerCloud — ●FEDERICA LEGGER, PHILIPPE CALFAYAN, GUENTER DUCKECK, JOHANNES EBKE, JOHANNES ELMSHEUSER, CHRISTOPH ANTON MITTERER, DOROTHEE SCHAILE, CEDRIC SERFON, and RODNEY WALKER — Ludwig-Maximilians-Universität München

Data from the LHC (Large Hadron Collider) are routinely being analysed over the grid. More than 100 sites worldwide are used daily for ATLAS data reconstruction and simulation (centrally managed by the production system) and for distributed user analysis. Frequent validation of the network, storage and CPU resources is necessary to ensure high performance and reliability of such a complex infrastructure. We report on the development, optimization and results of an automated functional testing suite using the HammerCloud framework. Functional tests are short light-weight applications covering typical user analysis and production schemes, which are periodically submitted to all ATLAS grid sites. Sites that fail or are unable to run the tests are automatically excluded from the PanDA brokerage system, therefore avoiding user or production jobs to be sent to problematic sites. We show that stricter exclusion policies help to increase the grid reliability, and the percentage of user and production jobs aborted due to network or storage failures can be sensibly reduced using such a system.

T 76.6 Mi 18:00 VG 0.111

Überwachung von Festplattenlesefehlern an einem Tier-2-Zentrum — ●JENNIFER STOLL¹, ANDREAS NOWACK¹ und ACHIM BURDZIAK² — ¹III. Phys. Institut B, RWTH Aachen — ²I. Phys. Institut B, RWTH Aachen

Die RWTH Aachen ist ein Tier-2-Zentrum im Worldwide LHC Computing Grid (WLCG). Das Grid-Cluster verfügt über mehr als 1500 Festplatten, auf denen Daten gespeichert und abgerufen werden können.

Gelegentlich treten auf einigen dieser Festplatten Lesefehler auf, die vorerst nicht kritisch sind, da die Daten durch RAID-Systeme redundant gespeichert sind. Kritisch wird es erst, wenn für diese Festplatten ein besonders schneller Anstieg der Lesefehler zu verzeichnen ist.

Für die Vorbeugung von Datenverlusten und die Überwachung der Festplatten ist es nützlich zu wissen, wie sich die Lesefehler einer oder mehrerer Festplatten entwickeln. Hierfür wird ein Programm vorgestellt, welches die Eigenschaften der einzelnen Festplatten – z.B. Seriennummer, Hostname, Größe, SATA-Version, Firmware – sowie die Historie der Lesefehlerzahl, der Lesezugriffe und der Betriebszeiten der Festplatte in eine Datenbank schreibt. Diese Datenbank kann graphisch ausgewertet werden und zur Prognose von Festplattenausfällen verwendet werden.

T 76.7 Mi 18:15 VG 0.111

Learning and Decision-making Monitoring System for Grid Sites — GEORG JAHN, ●EREKLE MAGRADZE, JÖRG MEYER, ARNULF QUADT, and CHRISTIAN WEHRBERGER — II. Physikalisches Institut Georg-August Universität Göttingen, Deutschland

Large scale computing systems, such as WLCG have a very complex infrastructure with more than hundred scientific computing centers - called sites. The sites define the computational and storage power of WLCG. Each computing center by itself is a complex system with different components and each of them is monitored for characteristics and status of resources. Monitoring of site systems and central services of WLCG is a lively research area.

Nowadays there are numbers of monitoring tools dedicated for retrieving the statuses of site infrastructure and central services of WLCG. As a result, there is a big flow of monitoring information from the tools, which is analysed daily by site and central services administrators. Automatisation of analytical processing of the information from various monitoring sources and consequently issuing appropriate actions to solve particular problems appearing at sites, or among the central services, is a promising way to increase the site performance and availability.

A first meta-monitoring system with features of learning and decision-making for the administration of sites will be presented. The tool is being developed and tested at the WLCG ATLAS Tier-2 center Goe-Grid. The technical approach based on Artificial Neural Networks and Fuzzy Sets Theory will be discussed.

T 76.8 Mi 18:30 VG 0.111

Accessing dCache with standard protocols — ●OLEG T_{SIGENOV} and ANDREAS NOWACK — III. Physikalisches Institut B, RWTH Aachen

The dCache storage management software is used extensively and successfully at many German high energy physics Grid Tier sites. A permanent development is necessary to accomplish the adoption of the software to react on changing models of data processing. Also tools for the users to facilitate the handling of their data sets stored at the Grid are necessary.

This talk will present how users can use the standard protocols like WebDAV and NFS4.1 to manage data stored on dCache pools along with an overview about new features in dCache foreseen for the future.