

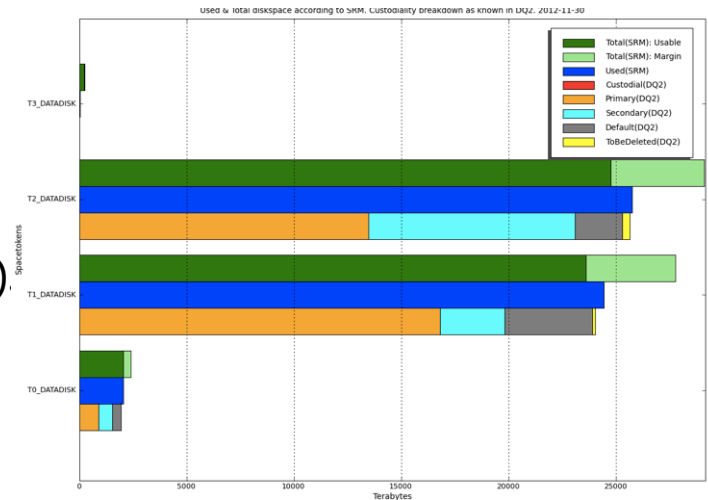
ATLAS Status

Hans von der Schmitt
Borut Kersevan

General Overview



- Atlas Distributed Computing performing very well.
 - Constantly high CPU usage at Tier-1s and Tier-2s.
 - Our disks getting full; especially Tier-1 disks, we need to watch and optimize our disk space usage but we will manage.
 - Our monitoring is continuing to improve so we can make more informed choices (e.g. cleaning policies of our ‘buffers’)
- We started the reprocessing of ~2B of our data with an updated software release and then switched it also at Tier-0
 - Ongoing for a month now, almost done.
 - Planning for reprocessing of Delayed Streams.
- Planning the LS1 activities in more detail:
 - Software plans to gain speedup, lower memory footprint...
 - Optimizing our Analysis workflow.
- Some of the LS1 plans already under development:
 - New Distributed Data Management System (Rucio)
 - New Production System layer (JEDI)



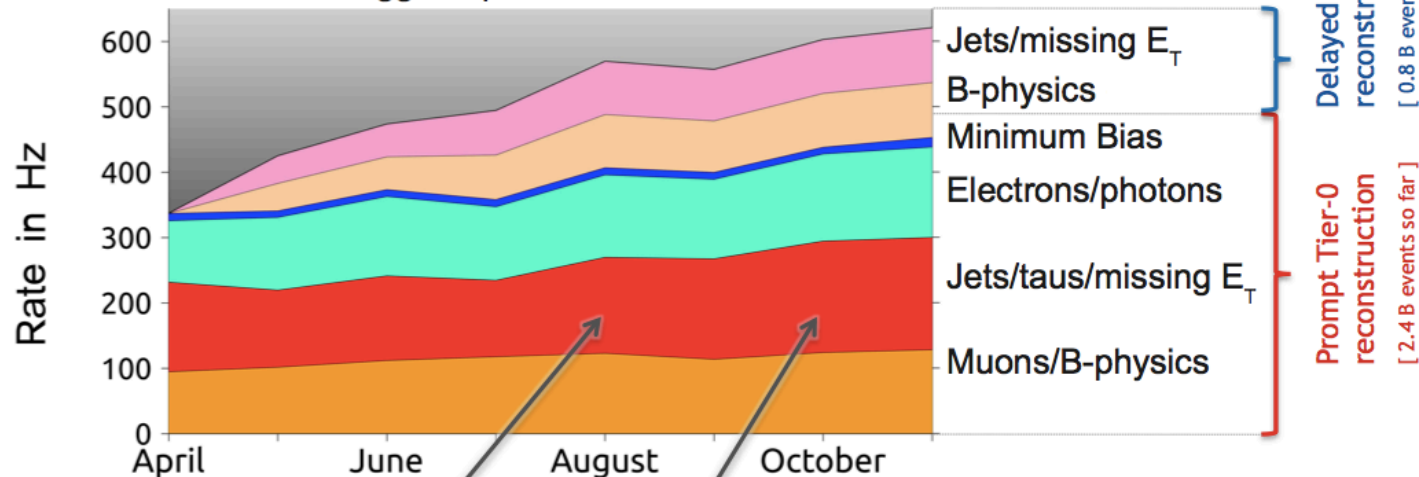
Prompt Reconstruction



Average trigger rate during stable beam:

Spare DAQ capacity used for lower priority triggers with delayed offline processing

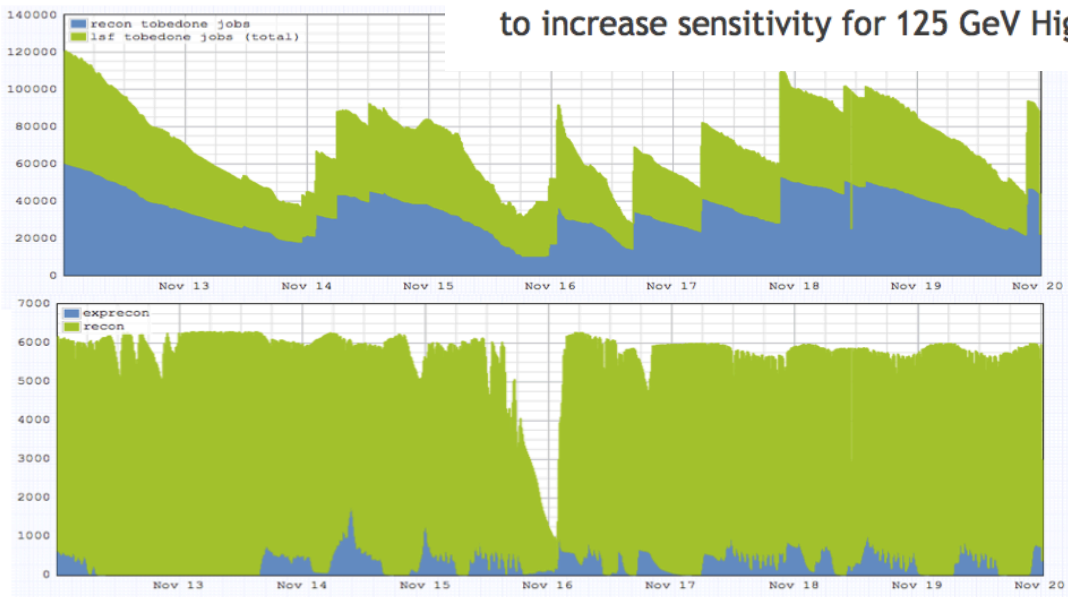
ATLAS Trigger Operation 2012



- Using all available Tier-0 resources and overspill into the public share when needed, satisfying the prompt trigger streams.

Additional / looser MET & tau as well as VBF triggers added to increase sensitivity for 125 GeV Higgs in bb and $\tau\tau$ modes

Average rate of 400 Hz over 2012 run for prompt trigger streams (~1700 stable beam hours)

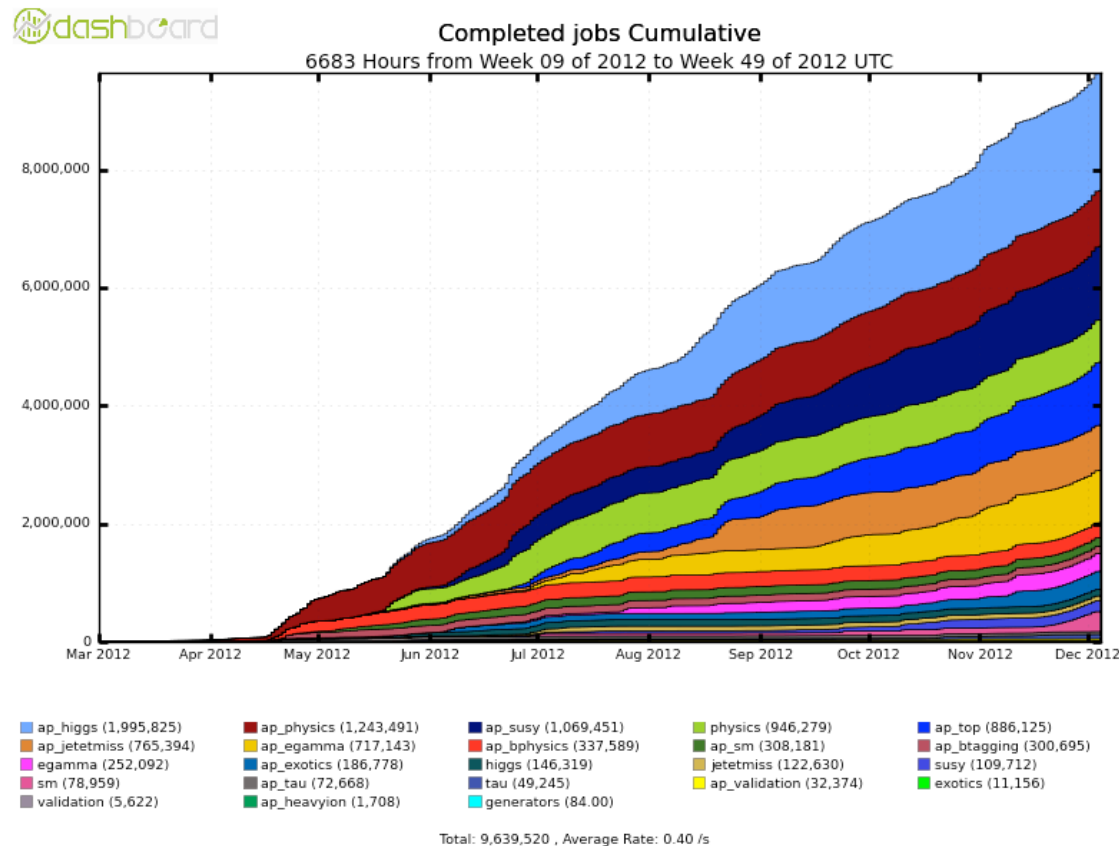


Tier-0 Occupancy on a recent busy week

MC Production



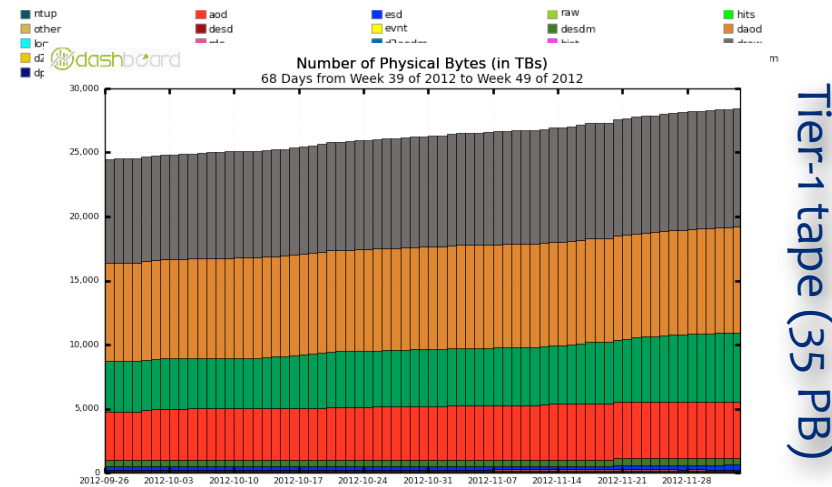
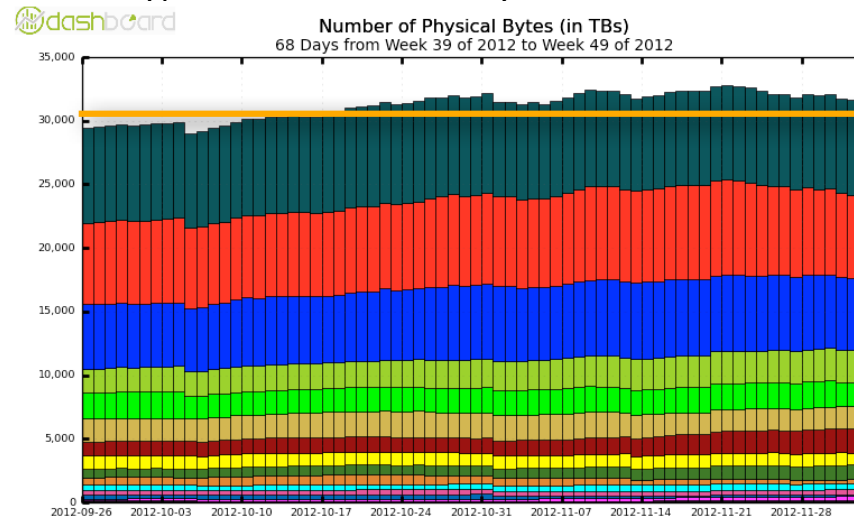
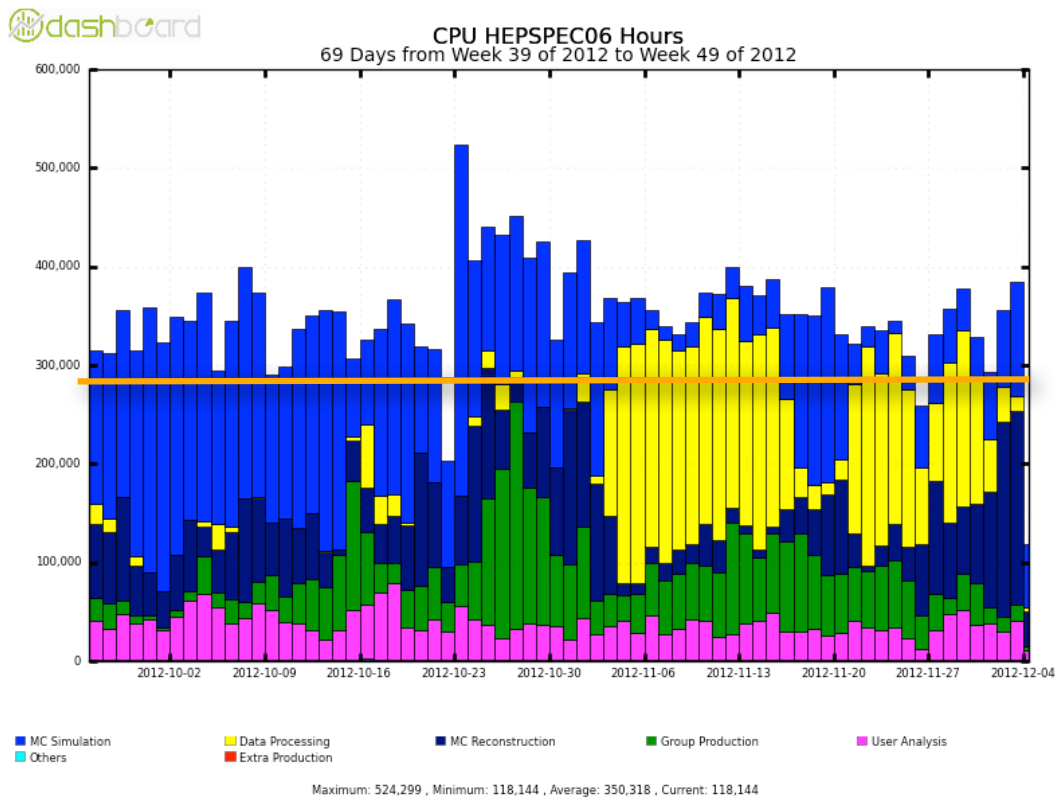
- Progressing well, using all resources we have available:
 - 2.5 billion events in Full simulation, 1.2 billion events in Fast simulation @ 8 TeV so far.
 - Many other smaller activities (Upgrade etc..)
 - **A strong push towards the use of Fast simulation (Atlfast-II)**



Current Tier-1s Status



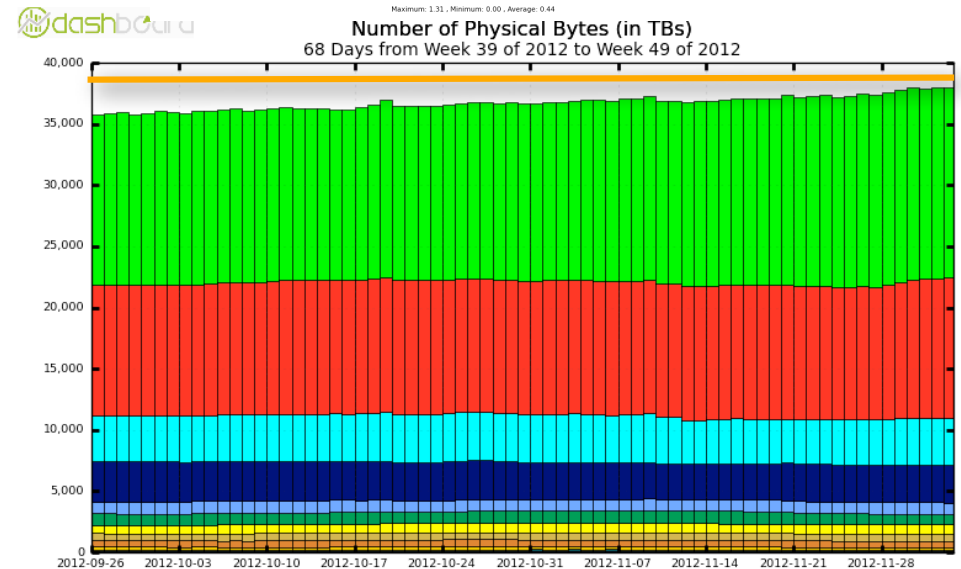
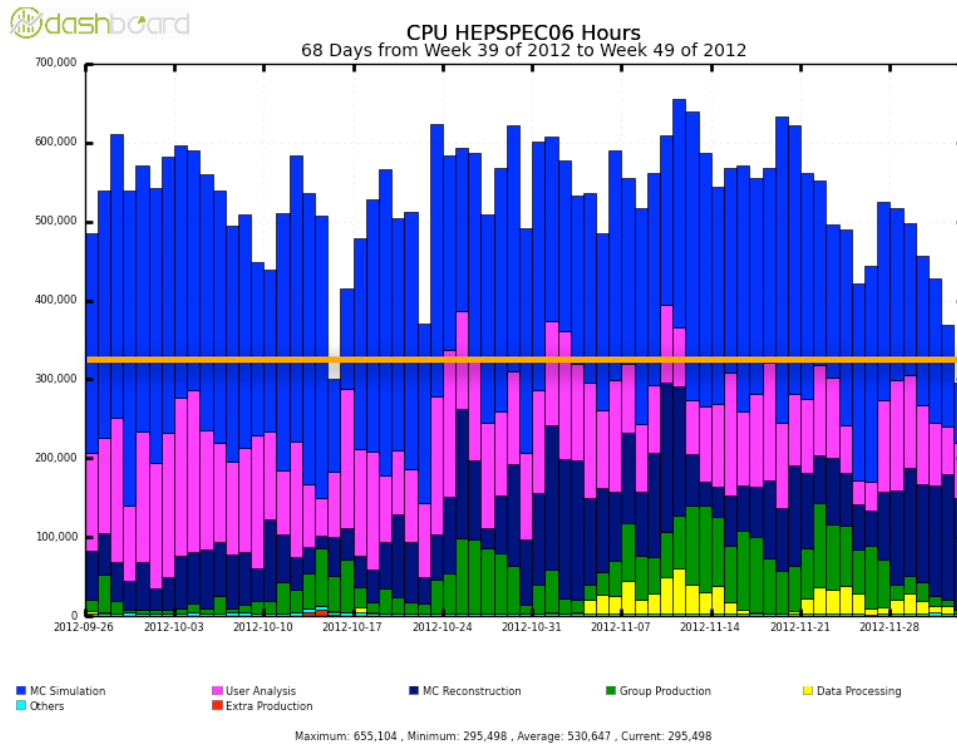
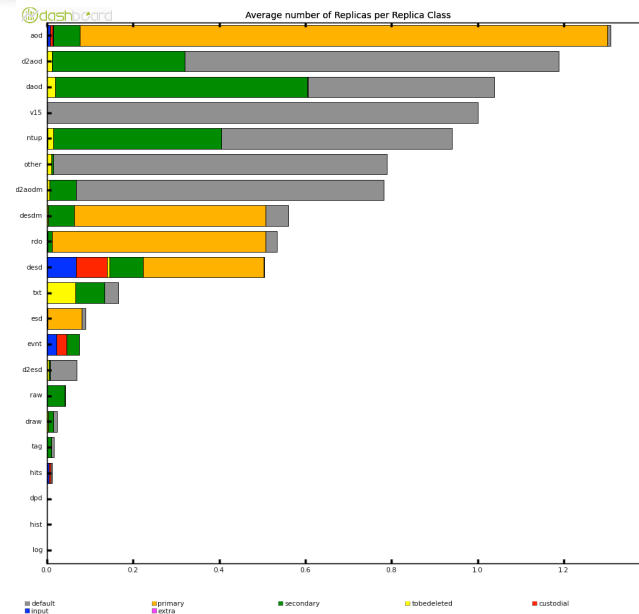
- ATLAS Grid activities at Tier-1s:
 - As stated, we are running **data reprocessing**, taking most of our Tier-1 CPU in the last month, along with the regular activities of MC and group+user production.
 - Tier-1s Performing very well!
- We are preparing a plan for the resource demands of p-Pb running and increased Group+User activities for the Winter conferences.



Current Tier-2s Status



- Tier-2s:
 - Successful running of digitization and reconstruction, implemented beginning of the year
 - now also successful running of data reprocessing on selected Tier-2s
 - Taking a big part in group (D3PD/NTUP) production.
 - Repositories for all 'active' data and MC.
 - About 30% of disk space used for 'dynamic data buffers':
 - Popular data (group production NTUPs , AODs..) replicated dynamically by PD2P.



Comp. Resource Usage in 2013-2015



- Brief outline of our resource planning guidelines for 2013-2015:
 - **In 2013:**
 - there will be one full reprocessing of 2010-2012 data and MC to further improve the quality of our reconstruction and simulation.
 - (More) new MC for analysis will be produced.
 - Very active group/user analysis.
 - **In 2014:**
 - Largish MC samples for high energy running will be produced and related physics group/user analysis.
 - The final full reprocessing of 2010-2012 data and MC, foreseen to use the evolved event formatting/data model/data distribution prepared for 2015 high-energy data taking.
 - **In 2015:**
 - Processing and reprocessing of new high energy data.
 - Related production of MC samples matching the data.
 - Increased group/user activity.

Progress on Plans for LS1



- **Just a selection of topics:**
- **Software:**
 - **Improvements/simplification of the Event Data Model (EDM)**
 - Some of the C++ classes designed at the time are not well suited for modern CPU architectures
 - Data components scattered over memory: bad for memory cache usage
 - And bad for vector-unit usage: compilers can't auto-vectorize
 - ⇒ Design simplified EDM, for usage within algorithms; start with tracking algorithms
 - **Concurrency: usage of many-core designs with small memory footprint**
 - Multi-core used since a while with multi-process software (not multi-threaded); memory footprint reduced to $\sim 1/3$, still too big for many-core
 - Multi-threaded designs being tackled algorithm by algorithm
 - Need some support in the software framework: underway
 - **benefitting from collaboration with IT/OpenLab, PH-SFT and CMS in these and related fields.**
 - **Simulation: Integrated Simulation Framework (ISF)**
 - Selection of full/fast/parametrized mode per sub-event.
 - Concurrency within event.
 - Plus benefit from reconstruction speedup.
- **Computing:**
 - **New Distributed Data Management system (DDM) being implemented (Rucio)**
 - **WAN data access and data caching (file level, event level)**
 - **Applications-driven usage of networks**
 - **New MC production system (JEDI)**
 - **Aiming at an improved Analysis Model.**
 - **Preparing the HLT farm to be used on the grid.**
 - ...