ATLAS Benchmark – CHEP2009

Benchmarking the ATLAS software through the Kit Validation Engine

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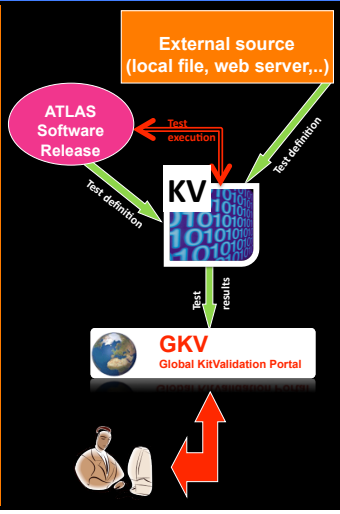
The measurement of the performance of the experiment's software is a very important metric in order to choose the most effective resources to be used and to discover the bottlenecks of the code implementations. ATLAS uses two tools: ***Kit Validation*** **(KV)** **&** ***Global Kit Validation portal*** **(GKV):**

Kit Validation (KV):

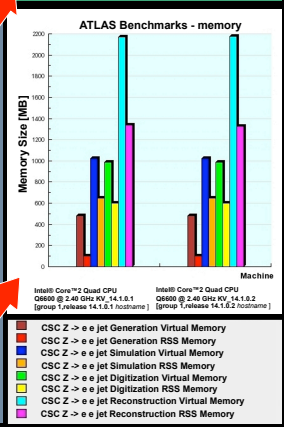
- Installation agent *sw-mgr* is a shell script to install & execute KV to test the full chain ATLAS sw (Generation, Simulation, Digitization, Reconstruction)
- Custom tests available through an xml file with optional automatic Web download
- Send the results to GKV: using curl or an embedded Python posting engine (via http, https) with full proxy support on certified authenticated connections
- Parallel tests on multiple threads
- Used by the whole ATLAS collaboration for both standard and Grid sw installation
- In use since 2004: 203,000 validations tested by the collaboration on 158 different CPU types (32/64 bit), 159 sw releases/versions



Global Kit Validation portal (GKV):

- Collects machine logs & info (CPU architecture, family, speed, mem size)
- Benchmark values and timings obtained from the log files using *perfmon* ATLAS facilities
- Web interface search engine based on *MySQL5* and *PHP5*
- Multiple search options: machine name, CPU type, custom tag, versions, username, OS type
- Dynamic chart generation
- Data aggregation for building tables with benchmarking performance comparisons
- Basic info available to all users
- Full Log & machine details available to certified users only
- Allows comparisons of different sw releases, i.e. mem or CPU used

Perfmon: monitors the different stages of a job using the hooks in the Gaudi framework and retrieves data from Auditors via dedicated tools



https://kv.roma1.infn.it/KV/

GKV Global KitValidation Portal — Global KitValidation Portal

ATLAS BENCHMARK SUMMARY

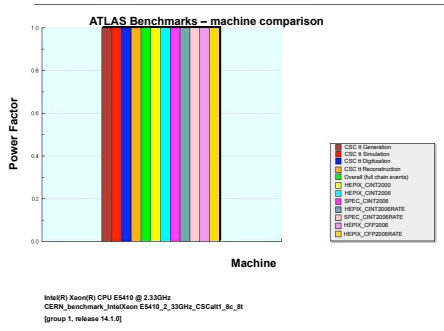
4 records found.

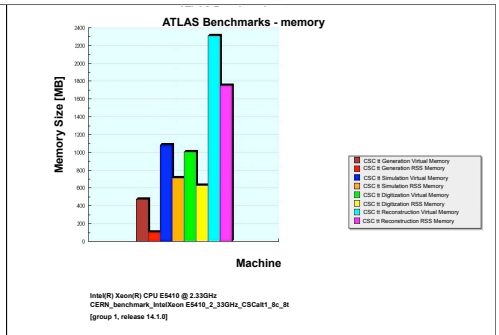
Refresh

Norm	Skip	Group	Entries	Node	CPU	Cores	Kernel	Tag	Release	Test	Events	Max VMem [MB]	Max RSS [MB]	Tot Time [s]	Time/event [s]	Events/s	Events/s (box)
		1	16	Hostname	Intel(R) Xeon(R) CPU 5410 @ 2.33 GHz	8	2.6.9-67.0.15.EL.cernsmp	CERN_benchmark_IntelXeonE5410_2.33GHz_CSCalt1_8c_8t	14.1.0	CSC tt Generation	10000	472	102	1249.30+-1.29	0.1249+-0.0001	8.00449+-0.00823	64.03592+-0.00026
		1	16	Hostname	Intel(R) Xeon(R) CPU 5410 @ 2.33 GHz	8	2.6.9-67.0.15.EL.cernsmp	CERN_benchmark_IntelXeonE5410_2.33GHz_CSCalt1_8c_8t	14.1.0	CSC tt Simulation	10	1084	713	6033.56+-22.67	603.3561+-2.2670	0.00166+-0.00001	0.01326+-0.00000
		1	16	Hostname	Intel(R) Xeon(R) CPU 5410 @ 2.33 GHz	8	2.6.9-67.0.15.EL.cernsmp	CERN_benchmark_IntelXeonE5410_2.33GHz_CSCalt1_8c_8t	14.1.0	CSC tt Digitization	100	1008	627	1602.84+-2.32	1602.84+-0.0232	0.06239+-0.00009	0.49912+-0.00000
		1	16	Hostname	Intel(R) Xeon(R) CPU 5410 @ 2.33 GHz	8	2.6.9-67.0.15.EL.cernsmp	CERN_benchmark_IntelXeonE5410_2.33GHz_CSCalt1_8c_8t	14.1.0	CSC tt Reconstruction	100	2308	1754	2547.12+-10.00	25.4712+-0.1000	0.03926+-0.00015	0.31408+-0.00000
go		1									OVERALL (full chain events)		10	6449.81+-22.69	644.98+-2.27	0.001550+-0.000005	0.012403+-0.000044

Select all

CPU speed normalization

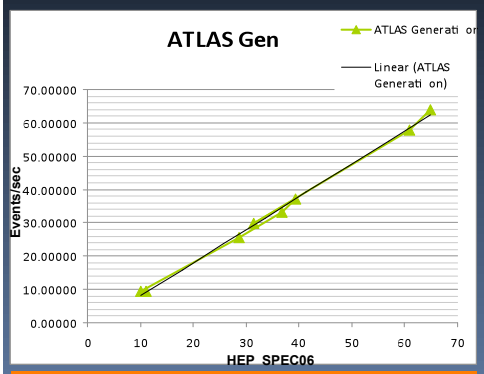


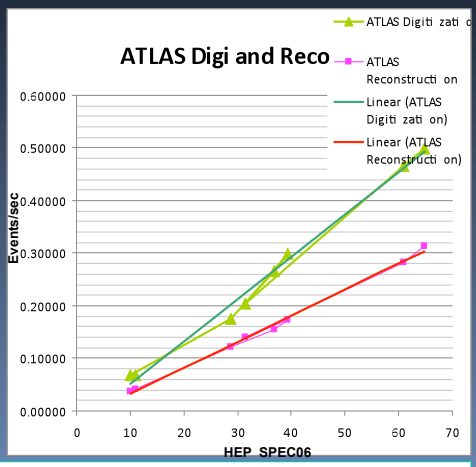


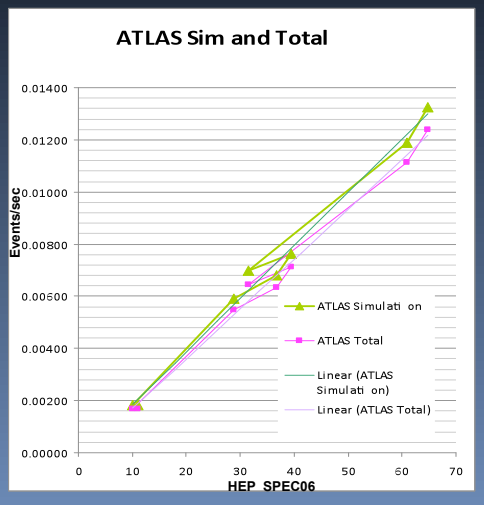
In this chart a test on a dual quad-core 2,33GHz is shown; the benchmark is performed generating 10K events and simulating 100 events.
The results show a good linear scaling with the machine clock speed: about 8 events/sec per core and 64 events/sec per box

The authors represent the ATLAS collaboration in the **Hepix benchmarking group** since 2008

ATLAS tests have been used to define a new CPU benchmark unit for the **WLCG collaboration**-early 2009







Charts courtesy by M. Michelotto
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HEPiX Benchmark Group

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