Understanding and mastering dynamics in computing grids: processing moldable tasks with user-level overlay

Mościcki, J.T.

Citation for published version (APA):

General rights
It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations
If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: https://uba.uva.nl/en/contact, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (http://dare.uva.nl)
Index

agent factory, 64, 81, 87, 126, 130, 137, 138, 140
  heuristic, 82, 84
  hybrid, 85, 87
  simple, 81, 82
Amdhal’s Law, 7
ARC, 64
Athena analysis framework, 102
ATLAS, 27, 102, 103, 146
  VO, 44, 46, 48
BLAST (Basic Local Alignment Tool), 10, 15, 106
Capability Computing, see HPC
Capacity Computing, see HTC
Central Limit Theorem, 50
CERN, 4, 8, 20, 23, 46, 55, 102, 114, 122
CMS
  VO, 46
Condor, 6, 9–11, 34, 64
  M/W, 10, 11
connection management, 71
CORBA, 69, 80
CREAM, 8, 34
degree of parallelism, 3
DEISA, 9
DIANE framework, 48, 55, 59, 63–68, 71–73, 76, 77, 80, 82, 84, 93–95, 97, 99–106, 113, 115, 121, 125, 126, 128, 129, 140, 145, 146, 150, 157, 158
  DIRAC workload management system, 45, 102
divisible load, 42, 50, 86
divisible load, 42, 50, 86
  early binding, 10, 11, 16, 28, 43, 56, 92, 93, 101, 104
  EGEE Grid, 80
evolving jobs, 2
FORTTRAN, 7, 130
  Ganga interface, 59, 63–66, 73–82, 84, 93, 95, 99–107, 113, 115, 121, 126, 140, 145, 146, 150, 157
  Gaudi analysis framework, 102
  Geant4, 91, 97
  VO, 31, 44, 46, 48, 93
glexec, 35
gLite workload management system, 67, 76
Globus, 64
Google
  Summer of code, 106
GSI, 72, 76
Gustafson’s Law, 7
High Performance Computing, 5, 9, 10, 125, 141
High Throughput Computing, 5, 8, 43
HPC, see High Performance Computing
HTC, see High Throughput Computing

in silico experiments, 104
IPython interface, 73

job queuing time, 37, 43–46, 48, 53, 144
dispersion coefficient, 52, 54
job submission, 33, 41, 56, 64, 76, 83, 97, 102, 104, 117

Kerberos, 76, 80

late binding, 10, 11, 16, 41, 43, 48, 53, 57, 61, 62, 89, 101, 105, 121, 144
layering, 67
LHC project, 102
LHCb, 102, 103, 146
VO, 44, 46, 48
LSF, 9, 64, 81

makespan, 14, 43, 50, 54, 98, 102, 116, 144
bound of, 49
distribution, 42, 48
malleable jobs, 2
Many Task Computing (MTC), 5
Massively Parallel Processors (MPP), 9
moldable jobs, 2
Moldable Task Applications, 2, 7
moldable workload, 42
Monte Carlo simulation, 3, 4, 6, 14, 42, 55, 91, 95, 121, 123, 125, 127, 132
monte Carlo simulation, 48
MPI, 7, 10, 13, 15, 66, 76, 92, 139, 140, 146
MTA
see Moldable Task Applications, 2
MTC (Many Task Computing), 5
MyProxy, 35

non-deterministic selection, 82
NWS, 11

omniORB, 66, 71
OpenMP, 7, 66, 139, 140, 146

PANDA workload management system, 11, 27, 102, 103

PBS, 9, 64
pilot jobs, 10
placeholder scheduling, 10
prioritization, 60, 130
Python programming language, 61, 62, 66–69, 73, 75, 83, 96, 107, 125
Quality of Service, 9, 12, 13, 16, 41, 50, 53, 57, 62, 144
metrics, 48, 53
resource discovery, 83
resource heterogeneity metric, 89
resource selection, 62–64, 80, 82, 85
resubmission, 6, 14, 37
deep, 28
shallow, 28
rigid jobs, 2
SAGA, 12, 64, 140
scheduling, 10, 14, 53, 60, 68, 72, 89, 93, 117, 130
security, 5, 11, 12, 72, 76
SGE, 64
software bus, 67
speedup, 7, 53, 57, 81, 85, 88, 89, 97, 104, 110, 140
SSL, 72
Symmetric Multi-Processors (SMP), 9
task paging, 54
taxonomy of parallel jobs, 2
Tera Grid, 9, 139, 140

VOMS, 35

WISDOM, 104, 105
WLCG, 8, 82
WMS, see workload management system
workload balancing, 85–89, 117, 120, 144
effects, 54
workload management system, 12, 21, 27, 35, 44, 81–83