

ServMark: A Framework for Testing Grid Services

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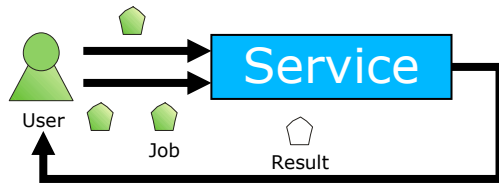
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SERV MARK

"Testing grid services as a service"

Grid service



- "Black-box" that receives requests (jobs) from the user, and outputs results
- A job queue

Current grid services in practice

- **Failure rates**
10-45% CERN LCG, Grid3, etc.
- **Functionality problems**
one every three test batteries fails
- **Performance problems**
much higher wait times than simulation studies predict

SiteName	TOTAL
CERN LCG jobs	
74.71% successful	
25.29% unsuccessful	
INFN-T1	19066 vs 6042 (75.94%)
NIKHEF-ELPROD	5994 vs 22270 (21.21%)
RAL-LCG2	21631 vs 22391 (49.14%)
Taiwan-LCG2	18254 vs 9246 (66.38%)
USCMS-FNAL-WC1	101542 vs 8623 (92.17%)
pic	12851 vs 6627 (65.98%)
TOTAL	495281 vs 167668 (74.71%)

Source: dboard-gr.cern.ch, May'07.

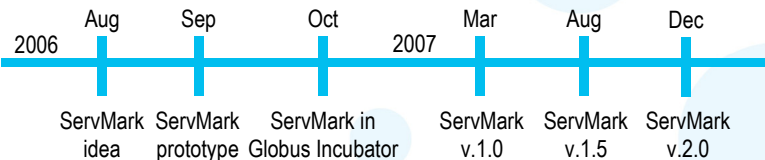
Industry practice: Use testing to...

- **Understand** how real grid services behave under load
- **Assess** functionality
- **Identify** performance bottlenecks
- **Perform** realistic testing

Problems in grid services testing

- How to **test a large-scale** and (grid-)service-based **environment**?
 - Dynamic environment
 - Heterogeneous environment
 - Large-scale environment
- How to **generate realistic workloads** for a wide range of testing scenarios?
 - Functionality testing
 - Reliability testing
 - Performance testing

Timeline

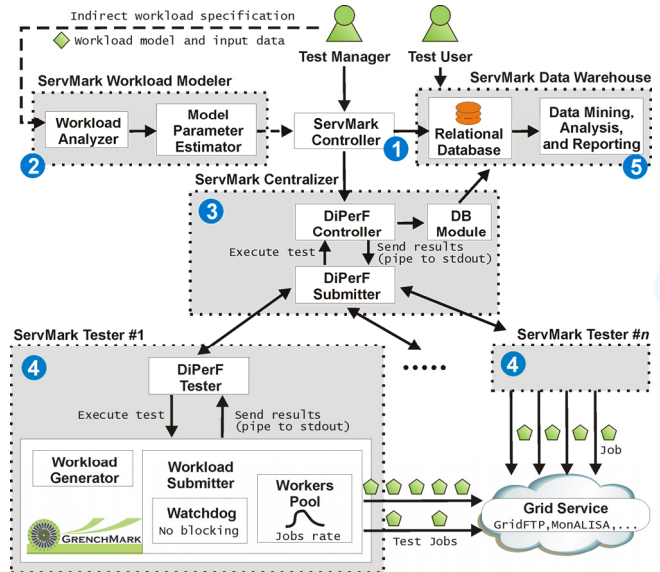


ServMark: testing grid services

ServMark is a framework for testing grid services. Selected features:

- **Distributed testing**
 - Multi-source testing
 - Test large-scale environments
- **Generate realistic workloads**
 - "Realism" depends on testing scenario
 - Replay existing grid traces
 - Generate new workloads
- **Automated results analysis**
 - Provide ready-to-use results to the tester
 - Promote results sharing within the community

Real Tool Available!



We have used ServMark

- **Functionality testing and system tuning**
Grid3, TeraGrid, DAS, PlanetLab, Condor U.Wisc.-Madison
- **Assess the performance of grid middleware**
Globus v.3/4: MDT, GridFTP, WS GRAM, Condor, 3rd party-tools: Koala, DI-GRUBER, Falkon

You can use ServMark

- **Research in grid resource management**
testing your grid services, e.g., scheduler, monitoring system
- **Grid maintenance and operation**
daily functionality checks, long-term maintenance, realistic tests, stress tests, reliability tests, design adequacy tests etc.
- **Grid design, procurement, and performance evaluation**
comparing grid settings, "what if?" scenarios, grid benchmarking



dev.globus.org/wiki/Incubator/ServMark

Download ServMark!



Core GRID

Technische Universiteit Delft

