



Testbed Management and Monitoring WP-5 report

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Responsibilities



- Development:
 - Grid infrastructure status monitoring tools
 - Administrative portal co-development
- Management:
 - Testbed
 - Portals
- Support for software developers

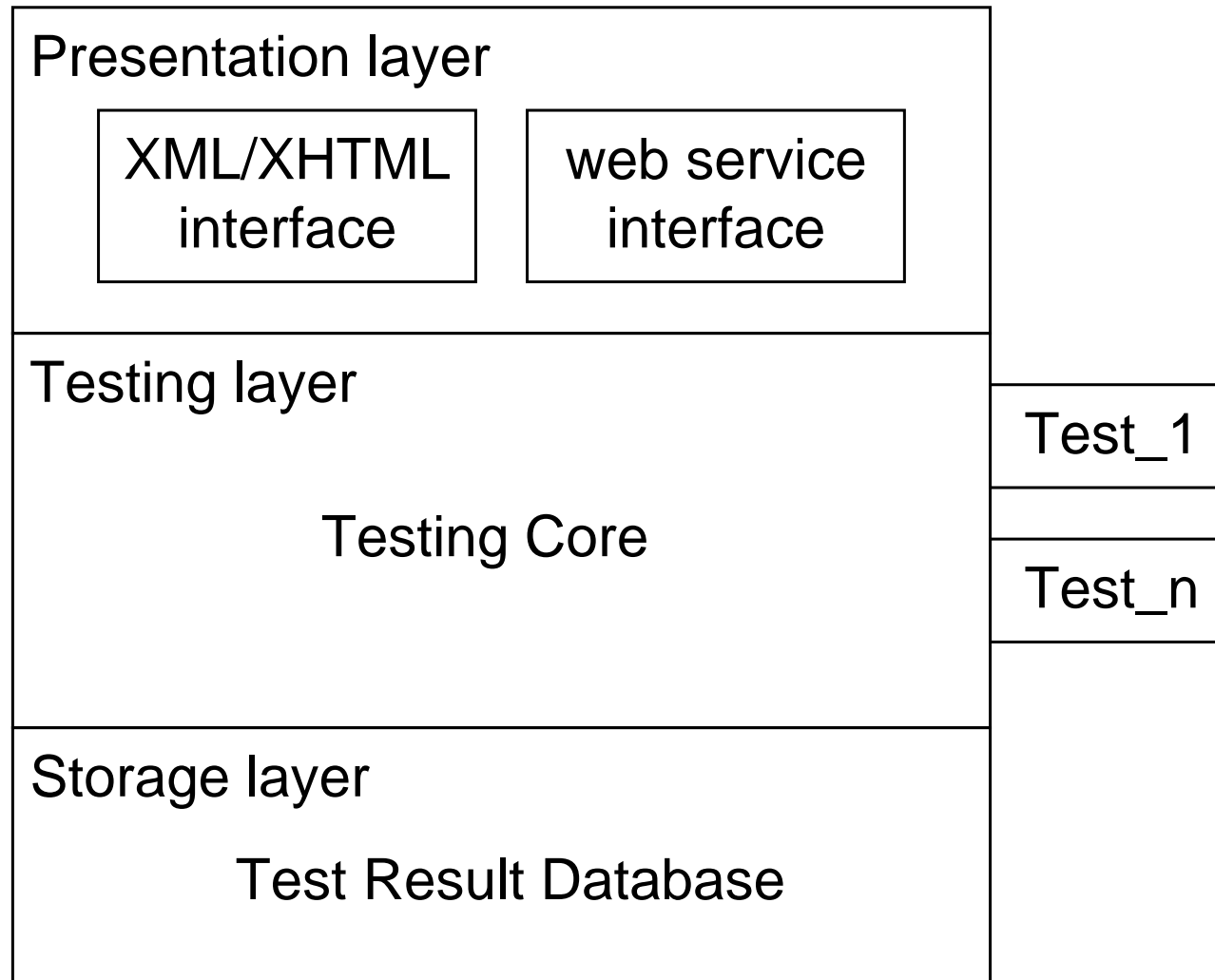


Infrastructure monitoring tool



- Centralized approach (one site starts all tests)
- User-defined degree of parallelism
(full parallelism equals infrastructure DoS attack)
- Written in Java, configurable using XML
- Clean layered infrastructure

Architecture overview





Test layer



- Tests are programming language independent
 - Java CoG or small C wrapper for Globus 2 tests
 - Solves problems with firewalls (TCP SYN packets swallowing)
 - On-demand tests
 - Use user supplied identity (authenticity based problems)
- Tests are inter-dependent
 - Overhead reduction (don't perform useless tests)
 - Currently hand coded prerequisites for each test
 - General language for dependency description under development



Storage layer



- Keeps test history
- Any JDBC supported database
 - Currently PostgreSQL



Presentation layer



- Both static and dynamic web pages supported
 - Static: converted to XML and transformed to XHTML using XSLT
 - Dynamic: use GridSphere portal
 - Supports history browsing
- Web service interface
 - Can be used as a specific information service
 - Almost OGSA compliant (SOAP over GSI-HTTP)



Simple tests



- Globus 2 tests: GRIS, GridFTP, GSI-SSH (on port 2222), Gatekeeper (including MPI job tests), *G/IS*
- MPI C and MPI Fortran compilers availability
- Job manager tests
 - Of all known to information services
 - Test normal and MPI jobs



GridLab specific tests



- Accepted CAs
- grid-mapfile integrity and completeness
- GridLab Mercury
- GridLab MDS Extensions and MDS web service
- Required software installation and usability
- Performance:
 - 15 mins for 17 services on 19 hosts with 6 concurrent threads
 - most CPU time for authentication and encryption in GSI



Tests on Web Services



- On GSI-enabled web services using HTTPG protocol
- Almost OGSA—portType inheritance missing on C-based tests
- Two stages: responsiveness and *functionality*
 - getServiceDescription()
 - GRMS, Adaptive service, Meta-data service, Replica Catalog, *Data Movement*, Data Browsing, Authorization, Message Box Service, Testbed Status
- Performance:
 - 9 secs for all 9 tested services



Matrix tests



- Data Movement
 - N-to-N tests
 - N^3 tests possible (third party initiated data transfer)
- GSI-SSH
 - M-to-N tests (only subset of machines initiate SSH connections)
- Performance
 - 2 hours to test 19×19 matrix of data transfers
 - 1 MB per transfer (361 MB in total)
 - Most time spent of timeouts due to firewalls
- Not scalable, but closest to end user experience with Grid



Plans for 2004



● Monitoring tool

- New testing modules
- Test inter-dependencies (description, full utilization)
- Non-centralized (e.g., peer-to-peer) approaches
 - Higher fault tolerance

● Passive tests

- GAT instrumentation
- Combination with the active tests (esp. matrix tests)

● Monitoring *worm*

- GAT based

Berlin ● Travels through the Grid and reports problems



Testbed Management



- Currently 16 machines (from up to 23)
- Very heterogeneous hardware and operating systems
- No automatic software installation tools
- Globus 2.2.4
 - Full OGSA compliant middleware on all sites not available
- Grid operation centre (Brno)
 - Problem detection, escalation, administrators' support, ...



Administrative Portal



- Two supported versions
 - Based on “classical” technologies
 - Available at
<http://www.gridlab.org/WorkPackages/wp-5/testbed.html>
 - GridSphere based version
 - More customizable
 - Available at <http://portal.gridlab.org>



Administrative Portal — purpose



● Users

- Contact information
- Account management
- Support

● Site administrators

- Specific site and user information

● Testbed administrators

- Status
- Problem escalation
- General management



Conclusion



● 2003

- WP5 responsible for both development and testbed management
- Grid infrastructure status monitoring package
- Administrative portal based on GridSphere
 - Dynamic, configurable

● 2004 plans

- Further Grid infrastructure monitoring extensions
 - Monitoring worm
 - Increased robustness
- Full transfer to the new portal architecture
- Publications and dissemination