A Monitoring and Testing Framework for Critical Off-The-Shelf Applications and Services

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Outline

• Context and motivation
• Framework Design
• Ongoing implementation
• Conclusions
Standards offer the possibility of using OTS SW in critical systems e.g., relying on wrappers or qualification and assessment processes. Assessment processes for OTS components calls for methods, strategies and tools able to:

• validate a SW OTS component adequately, while keeping cost and delivery time low.

We present our ongoing work towards a framework for testing of critical SW OTS applications and services.
Monitors variables while applying diverse forms of testing over the application.

**CBox-Node.** Monitoring environment:
- kernel of the OS and the middleware are instrumented

**CBox-Toolset.** Adaptable OTS tools for:
- application testing
- data storage, and
- data analysis
CBox-Node. Monitoring probes collect data, stored temporarily in log files.

CBox-Toolset. Generates different types of tests

• dependent on the type and domain of application

Values stored in a DBMS, built from a template following the star schema model from OLAP

• automated processes to build the repository, and transform and load the raw data

• data analysis algorithms use ad-hoc queries
Ongoing implementation

CBox-Node. CentOS variables are monitored using system tap, JBOSS variables using JMX.

CBox-Toolset. Third-party testing tools, first targeting Web Services. A DBMS with scripts to automate data population and retrieval.

Two use cases:

• Liferay Portal 6.0.6 on JBOSS AS and CentOS. Robustness, functional and penetration testing.
• Synergy on CentOS. Functional testing, robustness testing.
Conclusions

Increasing interest in using software OTS components in critical systems

• Cost-effective techniques and tools to assess their quality

We presented a reusable and adaptable framework for testing critical OTS applications

• Instrumented box for extensive monitoring
• A testing toolset
• Tools for data storage and analysis

Ongoing work is devoted to the implementation and execution of two case studies.
THANK YOU for your attention