Automated Coverage Tester for the Oracle Archiver of WinCC OA

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Introduction

Archiving is a critical component
- Online control system debugging.
- Conditions data for off-line physics analysis.
- Post-mortem investigation of failures.

Challenges
- Cope with different versions of components (e.g., Oracle, OS, Win CC OA).
- Cover systematically all supported data types.
- Test of all query features of WinCC OA (e.g., API, trend, alarm history).
- Check alarm life-cycle.
- Deal with a large number of archiver parameters.

Approach
- Generic and adaptive tester.
- Generation based on templates.
- Parallel execution.
- Global reporting.

Single test process

Test generation

- Over 300 scripts produced from 8 templates.
- On the fly generation.
- Fast integration of new test cases.
- Full coverage of relevant test cases.

Overview panel
- New test creation.
- Test triggering (single and all).
- Execution monitoring.
- Reporting.

Test suite progression

Test result details

Archiver status

Overview panel

Parallel execution

- Pool of managers.
- A manager = An OS process.
- A scheduler distributes test scripts.
- Use datapoints as inter-process communication.
- A panel allows for easy mass-reconfiguration of the pool.

Results

- An issue in flushing mechanism.
- Scalar: 7 issues detected, reported and fixed.
- Array: 9 issues detected.
- Status bits and alarms: No issue.

Conclusion

- 2009 run made smoother.
- Built-up our confidence in the archiver.
- This automatic coverage tester deemed to be the right approach for the problem.
- Components of this tester are reusable for other testing purposes.