

PolySpace™ Client for Ada 4.2

Detect run-time errors and prove code correctness before compile time

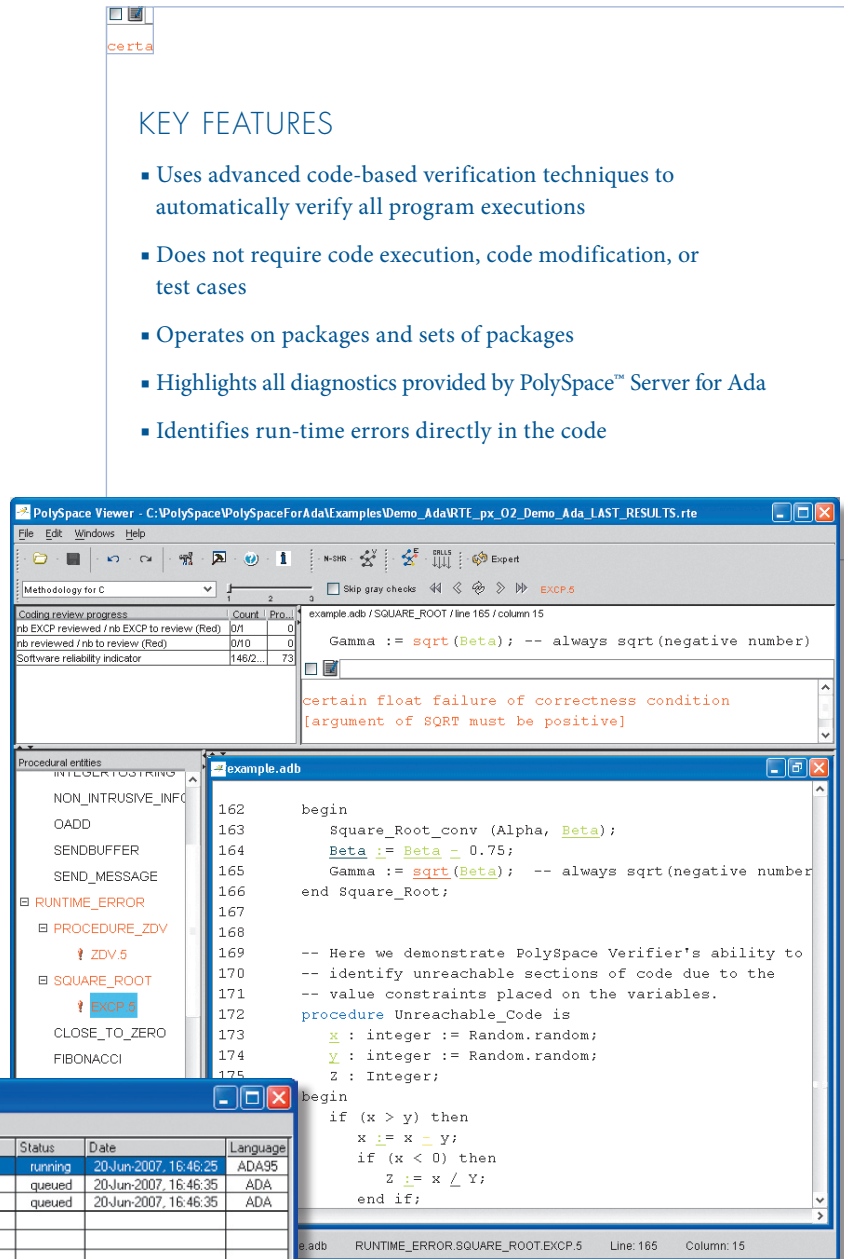
PolySpace™ Client for Ada, together with PolySpace™ Server for Ada, provides a code-based verification tool that proves source code reliability and detects run-time errors in source code without requiring you to execute or modify the code.

PolySpace Client for Ada is the management and visualization tool of PolySpace products for Ada. You use it to submit jobs for execution by PolySpace Server for Ada (available separately) and to review verification results.

PolySpace Client for Ada and PolySpace Server for Ada use abstract interpretation techniques to verify all possible executions of a source program. As a result, they prove which operations are free of run-time errors, including overflows, divisions by zero, out-of-bounds array indexes, or read access to noninitialized data. They also identify where run-time errors will or might occur and which portion of code is unreachable (dead code). PolySpace products for Ada use color-coding to highlight all elements in source code that have no errors, might have errors, definitely have errors, or cannot be reached. With this information, they generate metrics and reports that let you monitor and improve source code reliability.

KEY FEATURES

- Uses advanced code-based verification techniques to automatically verify all program executions
- Does not require code execution, code modification, or test cases
- Operates on packages and sets of packages
- Highlights all diagnostics provided by PolySpace™ Server for Ada
- Identifies run-time errors directly in the code



PolySpace Viewer showing color-coding for each file, procedure, and line of Ada code.

PolySpace Queue Manager Interface listing jobs posted to PolySpace Server for Ada.

Typical Run-Time Errors Detected

Overflows and underflows

Division by zero and other arithmetic errors

Out-of-bounds array access

Read-only access to noninitialized data

Dangerous type conversions

Dead code

Working with PolySpace Client for Ada

You can use PolySpace Client for Ada with PolySpace Server for Ada to support three key activities in the software development workflow. You can:

- Verify and monitor code correctness at all stages of the software development process
- Find and correct run-time errors during coding
- Verify overall application integrity and quality levels

Together, PolySpace Client for Ada and PolySpace Server for Ada can be flexibly deployed within your group. For example, you can use one client with multiple servers to accelerate code verification, or use one server with multiple clients to enable several individuals or teams to view server results at the same time.

PolySpace Client for Ada provides graphical user interfaces that let you:

- Import the source code (Ada 83 or Ada 95)
- Customize a project by target, cross-compiler, and other options
- Monitor the status of jobs submitted to the server
- Download and visualize verification results

You can also interact with PolySpace Client for Ada from the command line.

Verifying Program Dynamics

Static analyzers, which return only a small number of significant warnings, and dynamic testing, which uses a very small number of test cases, can miss many errors, reducing your level of confidence in the code.

PolySpace products for Ada bridge the gap between these two approaches. They verify all executions of each instruction, taking into account all the possible values of every variable at every point in the code. They then provide a formal diagnostic for each operation in the code, as follows:

Green: Proven reliable under all operating conditions

Red: Proven faulty each time the operation is executed

Grey: Proven unreachable (may indicate a functional issue)

Orange: Unproven code section (a run-time error might occur under certain operating conditions)

By thoroughly examining program dynamics, PolySpace products for Ada prove the presence or absence of run-time errors, regardless of coding technique. The percentage of code designated green is an indicator of source-code reliability that you can use to set quality objectives.

Required Products

PolySpace™ Server for Ada

Related Products

PolySpace™ Client for C/C++

PolySpace™ Server for C/C++

PolySpace™ Model Link SL (for Simulink®)

PolySpace™ Model Link TL (for dSPACE® TargetLink)

PolySpace™ UML Link RH (for Telelogic® Rhapsody®)

Platform and System Requirements

For platform and system requirements, visit www.mathworks.com/products/polyspaceclientada ■

Resources

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