

PolySpace™ Server for Ada 4.2

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

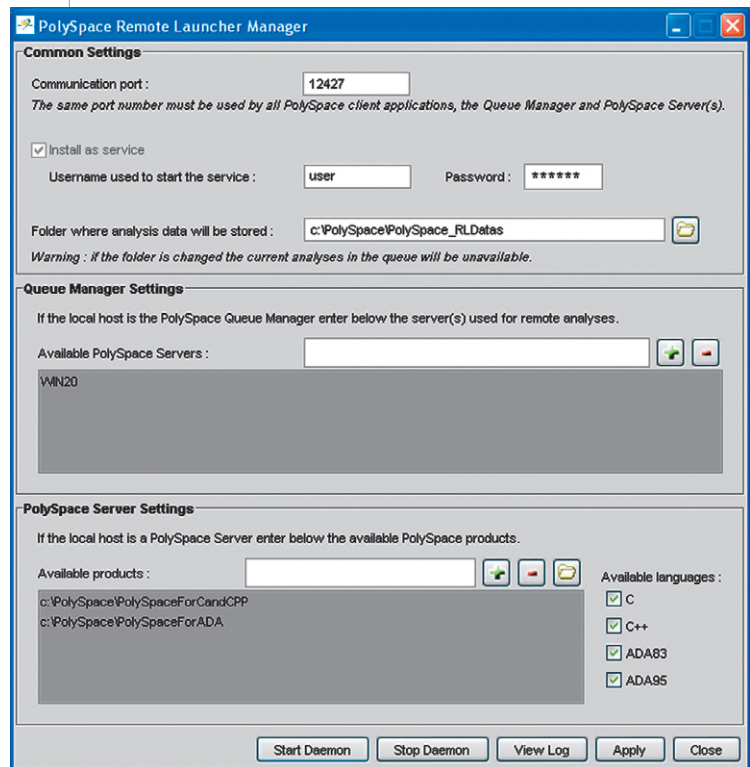
PolySpace™ Server for Ada, together with PolySpace™ Client for Ada, provides a code-based verification tool that proves source code reliability and detects run-time errors in source code without requiring you to execute or modify the code.

PolySpace Server for Ada is the computation engine of PolySpace™ products for Ada. You can use it to run jobs posted by PolySpace™ Client for Ada (available separately) and to manage multiple servers.

PolySpace Server for Ada and PolySpace Client 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
- Produces verification results
- Generates HTML reports



Remote Launcher Manager, showing configuration options for PolySpace Server for Ada. Options include setting user permissions and selecting available products.



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
- Concurrent access to shared resources (multitask application)
- Dead code

Working with PolySpace Server for Ada

You can use PolySpace Server for Ada with PolySpace Client for Ada to support three key stages 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 Server for Ada and PolySpace Client 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.

Verifying Program Dynamics

Static analyzers, which return only a small number of 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 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™ Client 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/polyspaceserverada ■

Resources

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