

## *ptc apexada® v5.2 Embedded for ApexAda Exec/Intel64 is now Shipping!*

### *PTC releases a new 64-bit embedded Ada compiler and ApexAda Exec runtime supporting “bare” hardware execution on Intel X86\_64 processors*

Needham, MA – May 18, 2018 — PTC (NASDAQ: PTC) today announced its latest release of full 64-bit code generation capability for embedded applications in the PTC® ApexAda product line. With this release of PTC ApexAda v5.2 for Linux host-based development targeting Intel x86\_64 processors running the ApexAda Exec bare-board runtime, PTC adds another new capability to its extensive line of native and cross compilers for Ada application development. Included with the 64-bit embedded compiler is the PTC® ApexAda v5.2 64-bit compiler for Linux native application development. Also included is the integrated ApexAda 64-bit C/C++ compiler which facilitates seamless development of mixed-language applications written in Ada, C, and C++. ApexAda V5.2 Embedded compilers provide a complete cross-development toolchain hosted from Linux distributions including RedHat Enterprise Edition, CentOS, and SUSE.

PTC ApexAda V5.2 Embedded for Linux/Intel64 to ApexAda Exec/Intel64 is a new 64-bit release of the ApexAda Exec bare board runtime for Intel X86\_64 processors. Features and functions included in ApexAda Exec/Intel64 bare board runtime are:

- New support for 64-bit embedded target execution on Intel X86\_64 processor-based systems
- The ApexAda Exec runtime implements services, such as support for interrupts, time, and multiple threads of control (Ada tasks) directly over the hardware without a requirement for any other operating system or runtime components.
- Two basic versions of the ApexAda Exec kernel or runtime executive are provided: a default kernel with complete tasking support and a smaller kernel without tasking support. Included with the ApexAda Exec runtime for Intel X86-64 processors is a ready-to-use Board Support Package (BSP) which can be used on general-purpose PCs with an Intel X86\_64 processor. You can customize this provided BSP or develop your own BSP for a custom configuration using the facilities provided by the ApexAda Embedded tools.
- The ApexAda Exec Target Debug Monitor (TDM) is an extension of the ApexAda Exec runtime which supports downloading and debugging of application images using the ApexAda Embedded toolset/environment and ApexAda debugger running on a Linux/Intel64 host system.
  - The TDM is provided in two configurations: Serial TDM which uses RS232 serial ports for host/target communication and Network TDM which uses UDP/IP protocols over Ethernet for host/target communication.
- EneT TCP/IP networking component that provides for programs to communicate over a network. Also includes a socket-style application program interface (similar to Unix sockets) to the TCP and UDP networking protocols and the underlying network device driver provided by the BSP.
- Tasking Logic Analyzer allows the Apex Ada programmer to trace task execution and analyze it using saved event files or, by using the debugger, to examine the most recent events. The Trace tool is provided to display event data in such a way as to help in understanding the behavior of the tasks in a number of different ways.

“This new 64-bit embedded cross compiler release for PTC ApexAda V5.2 adds to the ApexAda family along-side the ApexAda 64-bit VxWorks 7/Intel64 product PTC released last year. The new Apexada Exec/Intel64 runtime implementation is a substantial upgrade to prior runtime versions which have historically been the foundation for significant deployments in satellite communications, avionics, weapons control systems, and a myriad of other mil/aero applications.” stated Shawn Fanning, Software Development Director at PTC. “The new 64-bit ApexAda Exec runtime will allow our customers to leverage the computational power and large memory addressing capabilities of modern Intel X86\_64 processor-based systems as they look to modernize existing deployed applications while mitigating risks through continued use of the same time-proven and industrial-strength ApexAda compiler technology.”

### About the PTC Family of Ada Products

PTC ApexAda together with PTC ObjectAda product lines of native and cross development tools and runtime environments provide host development and execution support for the most popular environments including Windows, Linux and various UNIX operating systems. PTC cross development tools hosted on Windows, Linux or UNIX systems target PowerPC and Intel target processors in support of “bare” hardware execution or in conjunction with popular RTOSs.

### Shipping and Availability

PTC ApexAda V5.2 Embedded for Linux/Intel64 to ApexAda Exec/Intel64 is immediately available. License pricing is available on request.

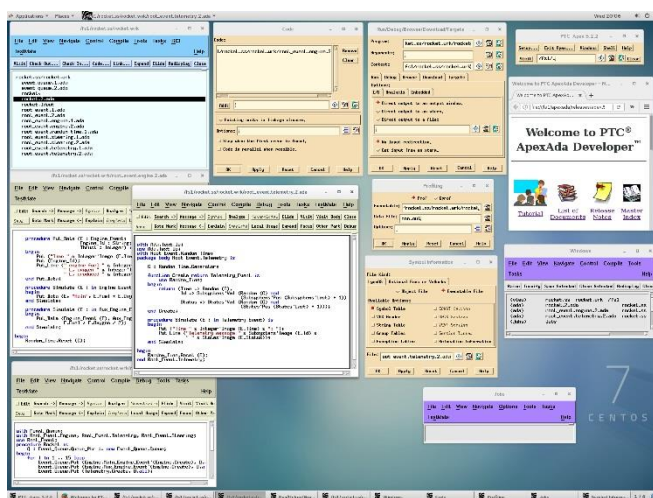
## Full Product Details

# PTC ApexAda®

PTC ApexAda provides a single, scalable host development environment that integrates design, implementation, testing, configuration management, and process management for native or cross development projects.

More than just a set of loosely integrated development tools, PTC ApexAda Developer products are designed specifically for large-scale team development of long lifecycle applications. Such applications can survive only when they are developed using sound software engineering best practices, and PTC ApexAda Developer is built on the fundamental principles that govern large-scale modern software engineering.

The software also provides architectural control features that are essential for developing and managing large-scale applications. These applications are already difficult to design, but when they are improperly architected they are even more difficult to maintain. PTC ApexAda Developer helps protect the architectural integrity of application design throughout the software development lifecycle.



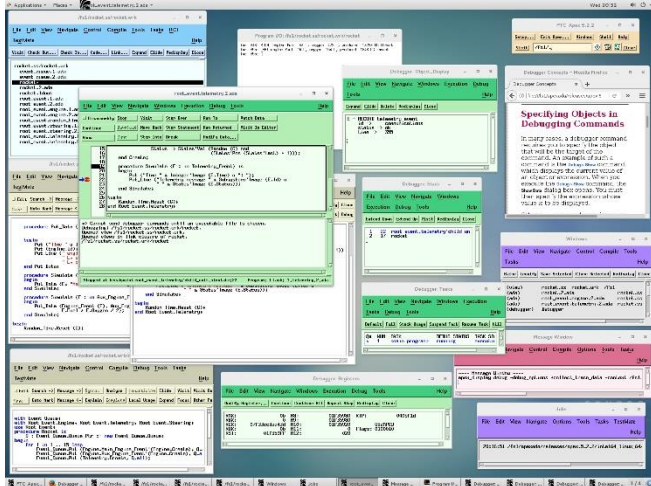
Large applications typically have special needs for configuration management. Managing change becomes extremely complex with the addition of

more development staff. PTC ApexAda Developer includes technology for controlling versions and configurations in such an environment, leveraging architectural subsystems that reside above the programming language constructs.

### Key Benefits

- Leverages best practices for large-scale application development
- Supports a controlled iterative development so that smaller increments of change can be edited, built, tested and deployed
  - Reduces risk and improves time-to-market
- Delivers encapsulation restricting access and manipulation to only meaningful operations
  - Simplifies communication about real-world constructs and improves the reliability of accessing and changing data
- Includes facilities for creating software architectures (subsystems) larger than that provided by the programming language itself
  - Fosters large-scale software reuse and creates software that is adaptable in response to changing operational conditions.
- Provides testing tools directly within the development environment to facilitate frequent developer-led testing
  - Allows bugs to be found sooner and corrected more cost-efficiently
- Manages parallel development simply and without high overhead due to configuration management commands and facilities being built into the development environment
  - CM is more transparent to developers and less intrusive to work activities

- Supports embedded cross-compilation as well as native compilation
  - Seamlessly extends the host-based development tools to allow software to work directly on the target execution platform
- Results in less redundancy in development tools, higher productivity, and less rework from modification



### Capabilities and specifications

- Full development lifecycle in one common IDE with integrated coding and debugging tools
- Architectural control for developing and managing large-scale applications
- Version control and configuration management
- Automated tooling that goes beyond compilers and debuggers and supports all lifecycle of development needs, from conception to testing
- PTC ApexAda Developer Enterprise Edition contains:
  - PTC ApexAda (IDE for host-based Ada05, Ada95 and mixed Ada/C/C++ development)
  - Integrated coding and debugging tools (language-based editor, program browser, incremental compiler, and comprehensive, integrated debugging facility)
  - Configuration Management and Version Control (CMVC)
  - Test Mate (test management system for native and cross development including unit, integration, system test, and coverage analysis, including modified condition/decision coverage)

- PTC ApexAda Developer Base Edition contains:
  - PTC ApexAda (IDE for host-based Ada95, Ada83, and mixed Ada/C/C++ development)
  - Configuration Management and Version Control (CMVC)
- PTC ApexAda Embedded Developer Enterprise Edition further extends the PTC ApexAda Developer Enterprise Edition tool chain with Instruction Set Simulation (ISSIM), Ethernet Support (ENet), and Patching Linker

### Platforms and system requirements

- PTC ApexAda Developer Enterprise Edition runs on the following host platforms:
  - Solaris®/SPARC
  - Solaris/x86
  - Linux®/x86
- PTC ApexAda Embedded Developer Enterprise Edition runs on the following host platforms:
  - Solaris/SPARC
  - Linux/x86
- PTC ApexAda Embedded Developer Enterprise Edition targets Power PC processors with the following real-time operating systems:
  - PTC ApexAda Exec
  - Wind River® VxWorks®
  - Lynx Software Technologies LynxOS®
- PTC ApexAda Embedded Developer Enterprise Edition targets x86 with the following real-time operating systems:
  - PTC ApexAda Exec
  - Wind River® VxWorks®

For more information, visit: [PTC.com/Developer-Tools/ApexAda](http://PTC.com/Developer-Tools/ApexAda)

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