

Applied Dynamics Releases ADvantage Framework Version 9

August 23, 2017. Ann Arbor, Michigan.

Applied Dynamics (ADI) today announced the commercial release of the ADvantage Framework version 9 (V9), which includes the following major updates:

1. Full Linux desktop support for the entire set of ADvantage development and management tools
2. 64-bit Linux target support for servers performing real-time model execution
3. High performance parallel computing support for CUDA graphics processing units (GPUs)
4. Improved architecture for communications between desktop tools and real-time server networks with a focus on efficiency and scalability for distributed models and applications

Linux Desktop Tools

The ADvantage Framework desktop applications have been completely rewritten to use WxWidgets for consistent support across both the Windows and Linux operating systems. WxWidgets allows the same application source code to be compiled for either Windows, Linux or macOS. ADI may support macOS in a future release of the ADvantage Framework if there is sufficient demand.

64-bit Linux Servers

With V9, the ADvantage Framework development tools and run-time server software now support compilation and execution of models for 64-bit Linux targets / servers. Free Linux operating systems delivering higher performance and more time determinism with every release. The ADvantage Framework V9 now allows users to take full advantage of the benefits of Linux for real-time computing.

High Performance Parallel Computing

Support for CUDA GPUs allows ADvantage Framework models to target execution of parallel tasks to high performance processing cores. This enables server applications to harness processing power that has never before been this accessible. The additional processing capacity allows real-time execution of higher fidelity and multi-physics models to speed up development cycles and enable previously unattainable hardware-in-the-loop (HIL) applications.

Improved Architecture

In 2013, ADI began a clean-sheet redesign of the real-time server-side codebase. This redesign allowed the team to improve the efficiency of communication between the ADvantage Framework desktop tools

and the real-time server targets. This eliminated previous bottlenecks for scalability and network configurations. Now with V9, the ADvantage Framework desktop tools can directly communicate with any real-time server in the network, eliminating the need for a master node and allowing any node to come up and down independently.

One top priority design consideration for V9 was enabling the implementation of seamless and highly scalable distributed computation architectures. Xeon servers are interconnected using Ethernet, shared memory, bus-extensions, or other high-speed data interconnect approaches and ADvantage lets you connect data sources, algorithms, network interfaces, data storage services, Human-Machine-Interfaces (HMI) with drag-and-drop, allows you to stream data from across the deployment, and provides unmatched real-time determinism.

“We are proud of what the ADI team has accomplished with the release of version 9 and very excited by the overwhelmingly positive market response.” Said Scott James, ADI’s President and CEO. “The ability to deploy distributed, mixed-processor architecture, time-deterministic computation and data handling infrastructure with relative ease is a game-changer for demanding Industrial IoT applications.”

About the ADvantage Framework

The ADvantage Framework provides a real-time usability layer on top of Linux (and other real-time or non-real-time operating systems), and is used to manage data handling, execution of analytics algorithms, control algorithms, simulations, data acquisition, and a range of other real-time computational tasks.

The ADvantage Framework is used throughout the global A&D industry to build and deploy real-time data facilities used to verify and type certify aircraft systems, jet engines, satellites, military ground vehicles, and submarines. With few exceptions, nearly every major commercial aircraft program is making significant use of the ADvantage Framework. In recent years, ADvantage Framework users have deployed real-time installations to interconnect a ubiquity of small, low-cost, real-time compute capability for industrial applications where time-based-performance of the data infrastructure is critical.

The ADvantage Framework is used by the US Air Force, the US Navy, the US Army, and NASA and is being used on advanced real-time and accelerated-computation multi-physics innovation research projects. ADvantage has been very popular across the A&D industry due to its open architecture, open API’s, and feature-rich capability to support Model Based Systems Engineering (MBSE) methods and to interface with advanced Product Lifecycle Management (PLM) systems. Coded in C/C++ and built upon best-in-class open source software, e.g. GNU, Linux, Python, WxWidgets, V9 offers unmatched performance.

ADvantage supports more than two-dozen real-time network interface types including Modbus, CAN, RS-4xx, UDP Ethernet, ARINC-664, SCRAMnet, Reflective Memory, and MIL-1553B and provides easy-to-use desktop tools for configuring data handing within the various network types and protocols.

About Applied Dynamics

Applied Dynamics helps companies make better use of modeling assets through all stages of product development, verification testing, demonstration, training, and maintenance. Applied Dynamics flagship product, the ADvantage Framework, is a real time, industrial Internet of Things (IoT) model based systems engineering software platform providing an agile, feature-rich environment for supporting the



product development lifecycle through development, integration, verification, and certification. ADvantage embraces an open architecture and allows its users to leverage best-in-class COTS and open source technologies. The ADvantage user base includes more than 50% of the Fortune 500 A&D companies and extends into marine, power systems, oil & gas, and the automotive industry.

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