

# INtime® Software Development Kit

A comprehensive development environment for INtime® software

## Highlights

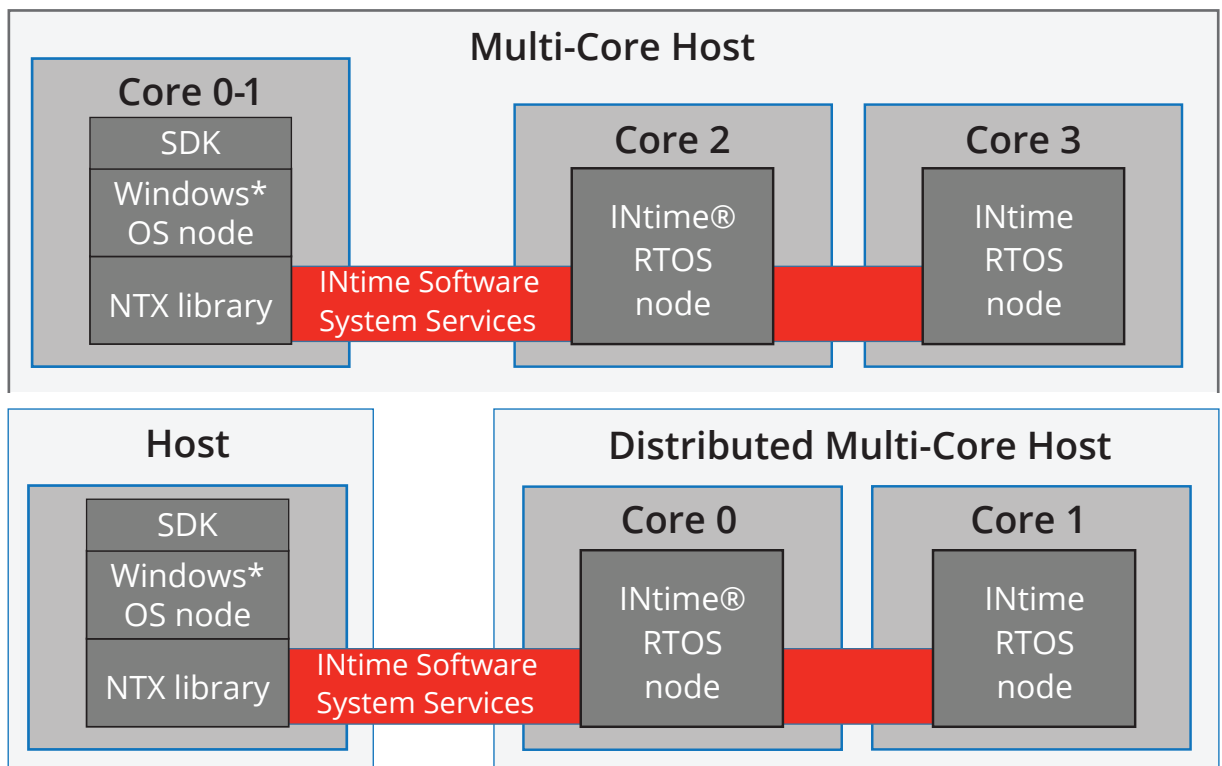
- Single development environment for any INtime® software deployment
- Contains low-level debugger, multi-thread debugger, hardware debugger, dynamic object browser, system timing analyzer, and fault analyzer
- Integrates with Microsoft\* Visual Studio\* IDE
- C or C++ with Standard Template Library
- Supports Boost C++ libraries
- SIMD support for Intel\* Integrated Performance Primitives and Intel\* oneAPI Math Kernel Library
- Quick-start code wizards and sample projects included
- Supported by Microsoft Visual Studio's IntelliSense context-aware documentation

Developers increasingly find themselves pressured by time-to-market demands and exacting resource constraints. An obvious area to alleviate that pressure is in software testing, which accounts for 20-40% or more of total project development time.

In real-time or critical applications where cutting corners is not an option, developers often look to their toolchain to realize efficiencies across the development lifecycle. The TenAsys® INtime® Software Development Kit (INtime SDK) was built with those engineers in mind, providing a comprehensive environment that supports the entire software development lifecycle (SDLC)—from code entry to debugging, runtime analysis, and optimization.

## Built into Your Existing Environment

An extension of Microsoft\*'s Visual Studio\* integrated development environment (IDE), the INtime SDK runs on any Windows\* PC platform and supports development and debug of software running on any version of INtime. Users can attach the toolkit to running systems, link system state and performance characteristics for precision analysis of operational details, and debug applications hosted locally or on remote targets via LAN.



The INtime® SDK can be used to develop and debug INtime applications on the same local host or separate, remote hosts.

With Visual Studio as the core resource utility for writing and debugging INtime software applications and a companion suite of SDK wizards, developers can streamline the SDLC and accelerate software creation, debug, and optimization in a familiar environment. No new licenses or tools required.

### Build, Analyze & Deploy Scalable Software for Hard Real-Time Requirements

The INtime SDK integrates precision real-time development tools directly into Microsoft Visual Studio to help engineering organizations offset technical resource constraints and time-to-market pressures:

- Software Debugger
- Multi-Thread Debugger
- Hardware Debug Monitor
- Dynamic System Monitor
- Timing Analyzer
- Fault Manager
- And More

### INtime® Software Debugger for Microsoft\* Visual Studio\*

An integrated source-level debugger for Microsoft Visual Studio provides real-time process and variable monitoring as well as debugging. Real-time faults

automatically trigger a choice of debug tools for addressing divide-by-zero errors, bad pointer accesses, page faults, stack faults, and other CPU exceptions.

Other powerful features of the INtime debugger include conditional breakpoints, variable and register inspection, source-level stepping, and watch variables.

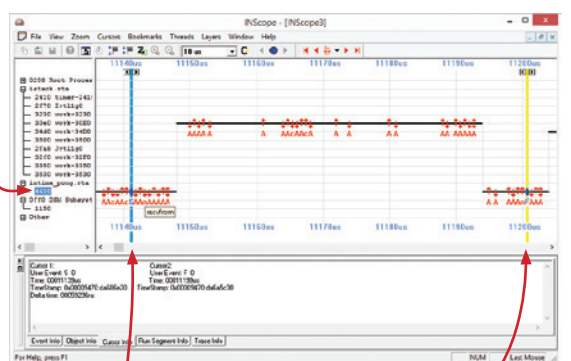
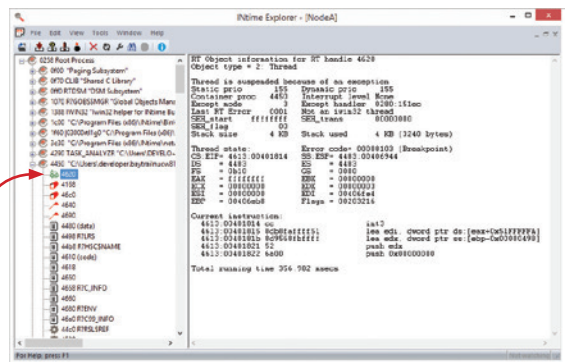
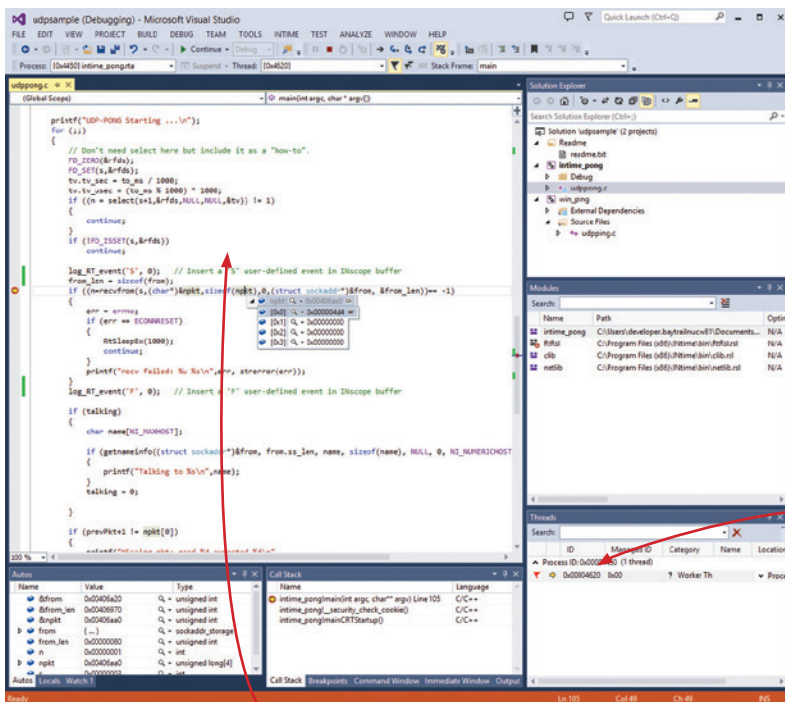
### Multi-Thread Debugger, "Spider"

Spider is a secondary debugging resource for source-level and symbolic debugging of real-time applications. It permits granular control over single threads without affecting the execution of other threads.

### Low-Level Hardware Debug Monitor, SDM

The System Debug Monitor (SDM) is a hardware debug monitor for disassembling code, setting and executing breakpoints, displaying or changing microprocessor registers, and displaying or changing the contents of memory.

SDM is accessed from the serial console and displays information about INtime kernel objects such as processes, threads, and mailboxes. It can be used to interpret data structures maintained by the INtime kernel, such as INtime software system calls, stacks, and the Global Descriptor Table (GDT).



### Dynamic Object Browser, INtime® Explorer

The Dynamic Object Browser, INtime Explorer, is a convenient way to view and interact with runtime processes, threads, and object states via an intuitive GUI. Through it, users can:

- Browse and inspect object details
- Interactively control objects by deleting, signaling, and suspending or resuming threads while debugging the system

A system statistics monitoring function displays per-thread and per-process CPU usage, while a general monitoring and reporting function generates a post-crash report for analyzing unhandled exceptions.

### Real-Time System Analyzer, INscope

INscope is used to verify the operation of time-critical code and the proper sequencing of real-time events. It displays details like precise application timing, thread switches, system library calls, and interrupts in a familiar, logic analyzer-type graphical trace.

An API is included that allows user-defined events to be added to the trace log for precision control of trigger points, like starting and stopping a trace.

### Fault Manager

The Fault Manager provides a choice of actions, including debug tools, to use after a fault. It can be used on both local and remote nodes.



## INtime® SDK: Speeding Time to Real-Time

The INtime SDK provides everything a development team needs to monitor and analyze applications developed on INtime software. To get started, contact your local INtime software distributor and reference one of the order codes below.

- **INTIME6-DK-HWKEY (INtime Development Kit)** – The INtime Software Development Kit (SDK) includes sample projects, C/C++ libraries and header files, TCP/IP and USB stacks, select device drivers, INtime Explorer, INscope, the Spider Debugger utilities, one each of the INTIME-MCRT and RTOS-MCRT run-time licenses, and one year of technical support with updates and upgrades.
- **INTIME6-DK-NETSRV (INtime Network Development Kit)** – The network starter package contains six (6) INtime SDK seats. Network license server software is also included.
- **INTIME6-DK-ADDNET (Network Licenses Increment)** – Add a single incremental INtime SDK seat to an existing INTIME6-DK-NETSRV installation.
- **INTIME-DK-MAINT** – Extend an existing INtime SDK maintenance and support contract for one (1) additional year. One maintenance extension per INtime SDK license is required. All updates and upgrades issued during the covered period are also included.

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