CoreDX™ DDS

TWIN OAKS COMPUTING INC.™

PRACTICAL MIDDLEWARE EXPERTISE

CoreDX DDS: Communications Middleware

Super-small and blazingly fast, CoreDX DDS is the leading Publish-Subscribe middleware available for small-footprint and embedded systems.

CoreDX DDS Connects the Industrial Internet

CoreDX DDS is the proven communication middleware for the Industrial Internet and IoT systems. It integrates the diverse components of a system together, providing low-latency data connectivity, a scalable architecture, and secure communications, making it ideal for business critical industrial applications from smart energy, to manufacturing, to healthcare.

CoreDX DDS:

- Performs to meet your requirements: extremely low latencies for large volume quick periodic updates
- Robust, Reliable, Quality-of-Service driven communications, extensively tested and utilized in critical applications across multiple vertical domains
- Scales to connect thousands of devices and systems while spread across multiple continents and in space
- Guarantees secure communications with an advanced and comprehensive security plug-in model
- Connects all devices in your system, including Intel-based processors, mobile devices, FPGA's, DSP's, PLC's, and microcontrollers.

CoreDX DDS Secures Open Architecture Infrastructures

CoreDX DDS is the proven communications middleware for mission critical systems. CoreDX DDS is the secure, portable, small-footprint implementation of The Data Distribution Service (DDS) standard from the Object Management Group (OMG). CoreDX DDS is ideal for complex systems including distributed sensor networks, ground stations, airborne assets, ground vehicles, surface and subsurface ships; enabling high-performance dynamic communications for all these systems.

CoreDX DDS:

- Implements the DDS / RTPS / Security / X-Types / RPC Open Standards
- Interoperable and Portable with multiple DDS products
- Results in flexible, dynamic system architectures
- Guarantees secure communications with an advanced and comprehensive security plug-in model
- 100% created and owned by Twin Oaks Computing, all development in the US by US citizens
- Supports a wide variety of desktop, RTOS, embedded, and mobile environments, including safety certified RTOS's

Twin Oaks offers Free CoreDX DDS™ IR&D Licenses to qualified research projects and institutions.

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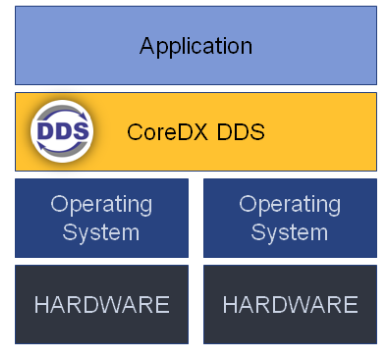
What is Communications Middleware?

Communications Middleware is a software component that sits between the operating system and system applications that facilitates data communications. The purpose of Communications Middleware is to simplify the design, programming, and managing of software applications by streamlining the way these applications receive and process data.

CoreDX DDS communications middleware provides enormous **flexibility** during all phases of your software development project. From the fine-grained controls that configure communication behavior, to the **standardized** API across operating systems and programming languages, to the **dynamic** deployment models, CoreDX DDS allows you to change and extend your system, during development and after deployment, with reduced project schedule and budget.



Security for Military & Industrial Systems

CoreDX DDS is a state-of-the-art security solution providing robust security to meet the demanding requirement of today's military and industrial systems.

A wide range of control and configuration options enable flexible deployment scenarios. CoreDX DDS security encompasses all aspects of secure data communications, including:

- Authentication
- Access Control
- Integrity
- Confidentiality

CoreDX DDS security features are fully integrated into the DDS algorithms and protocols, and are available for standard desktop and safety certified RTOS's. Built on a pluggable interface, the system developer may use the CoreDX DDS defined security modules or build custom modules.

Standardized Interfaces

CoreDX DDS is an implementation of the Object Management Group's (OMG) Data Distribution Service (DDS) standards. The open architecture design of DDS reduces software lifecycle costs and risks associated with systems that must be maintained over many years.

OMG WE SET THE STANDARD

DDS

CoreDX DDS portability and interoperability is mission proven with customers across DoD and commercial domains actively using multiple DDS products or replacing their existing DDS with CoreDX DDS.

> "The first thing I noticed after plugging in CoreDX DDS [to our existing infrastructure] was how all the unit test cases just worked, without any special tuning of the DDS product."

Features for Safety Critical Systems

CoreDX DDS is designed to meet the safety, performance, and complexity requirements of real-time, embedded, time-critical, and mission-critical systems. Safety-critical systems require rigorous testing, documentation, and certification.

CoreDX DDS features for Safety Critical systems include:

- Support for safety-critical RTOS: INTEGRITY-178, LynxOS-178, LynxOS-SE, VxWorks-653, DeOS
- Low Software Line of Code (SLOC) counts
- 100% created and maintained by Twin Oaks Computing, in the US, by US citizens
- Includes security plug-in architecture

CoreDX DDS supports a variety of safety critical environments, including multi-core safety critical operating systems.

Minimal Resource Requirements

CoreDX DDS contains all the features of the standardized DDS protocols in a small footprint with minimal operating system dependencies: perfect for safety-certified RTOS's and deeply embedded devices.

CoreDX DDS is light on resources, requiring minimal memory, CPU, and network bandwidth. CoreDX DDS is designed to adapt to the run-time environment, providing good, reliable performance on a wide variety of target architectures.

> "Our development saw an immediate 30% reduction in image sizes after replacing our old DDS solution with CoreDX DDS. In addition, our build time is significantly reduced using the CoreDX DDS libraries."

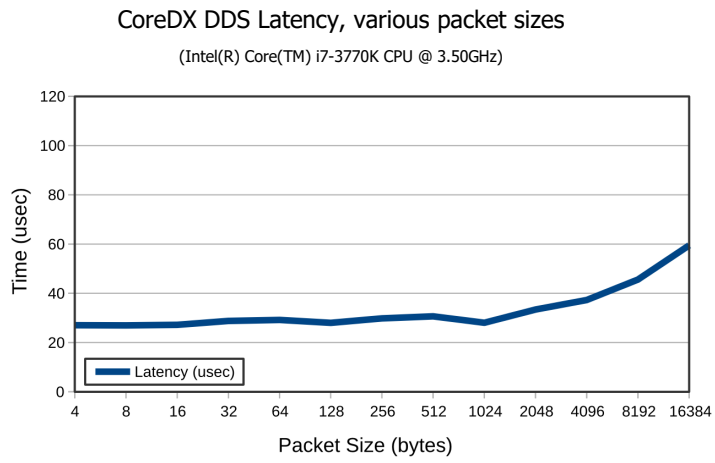
Additional configuration options allow further optimizations on single core systems, systems with slow memory management, and extremely CPU and memory limited systems.

High Performance Data Communications

CoreDX DDS meets the real-world performance requirements of industrial systems, including large volume collection systems and systems with real-time feedback loops.

CoreDX DDS latencies are measured at < 20 µsec on platform; and < 50 µsec over a 1Gbit Ethernet network. The standard deviation in these latency measurements is exceptionally small, less than 2 µsec.

With very low overhead and configurable parameters to optimize latency, throughput, and scalability, CoreDX DDS achieves throughputs of up to 1000 Mbps on a 1Gbit Ethernet network, and delivers up to 1 million messages per second.



Connect all your Devices

CoreDX DDS runs on your devices, where you need secure, high performance data communications. CoreDX DDS has been built for hundreds of target architectures, and its small size and minimal operating system dependencies makes it easy to continuously add new target support.

Currently supported platforms include:

- Desktop & Servers: Linux, Windows, Mac OSX
- Deeply embedded environments: DSPs, FPGAs, PLC, microcontrollers, MIPS, ARM
- Mobile devices: Android, iOS, Windows Phone
- Real-time Operating Systems (RTOS's): INTEGRITY, VxWorks, LynxOS, Thread-X, RTOS32, QNX, FreeRTOS
- Safety Critical RTOS's: INTEGRITY-178, LynxOS-178, LynxOS-SE, VxWorks-653, DeOS, PikeOS

Customer Satisfaction

100% of customers indicate they are either satisfied or very satisfied with the customer service provided by Twin Oaks Computing and CoreDX DDS.

CoreDX DDS features customers find most useful:

- Minimal run time memory footprint
- Ease of use
- Full library size <500KB, with smaller options available

Twin Oaks Computing customers report saving up to a year's worth of development time and a significant amount of money by using CoreDX DDS.

Give us a call or send us an email to find out first hand how we can take care of you!

Industries Served

- Aerospace and Defense
- Cloud Computing
- Communications
- Consumer Electronics
- Embedded Systems
- Energy
- Financial
- Healthcare
- Medical Device
- Simulation
- Transportation
- Unmanned Vehicles
- Wireless

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About Twin Oaks Computing:

Twin Oaks Computing, Inc. is dedicated to developing and delivering quality software solutions. For more than 15 years we have leveraged our extensive world-class technical experience to provide innovative and useful communication software systems to our clients. We build the software that collects, manages, and distributes information in a wide range of mission and business critical systems around the world.

At Twin Oaks Computing, our staff focuses on two primary goals:

1. Developing robust, quality software that may be confidently used in business-critical, mission-critical, and safety-critical systems, and
2. Treating our customers, evaluators, and partners with the upmost respect in all our business and technical interactions.

With well over 2 million deployments around the world and in space, spanning multiple commercial, industrial, government, and military systems, we have integrated our middleware technologies into real-world, complex information systems.

Our clients unanimously agree the support they receive from Twin Oaks Computing is responsive, informative, and useful. Whether you are evaluating our software, exploring a research project, or dealing with critical deadlines, we will always provide prompt, professional responsive support.

At Twin Oaks Computing, we are realizing our vision of a world where complex distributed systems work *well*.

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Ordering Instructions

Get started by visiting our website and downloading the 30-day Full Featured CoreDX DDS™ Evaluation software. During the download process, you can indicate that you are interested in the University or IR&D License Program.

Download an evaluation: http://www.twinoakscomputing.com/coredx/download