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An ADLINK Industry White Paper

Vortex OpenSplice Commercial Edition



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The Vortex OpenSplice Commercial Edition is a full implementation of the Object Management Group (OMG) Data Distribution Service for Real-time Systems (henceforth DDS) rev1.4 standard (all the DCPS profiles), the -DDSI/RTPS v2.3 interoperable wire-protocol and the DDS Security 1.1 OMG Standards. Vortex OpenSplice is part of the Adlink DDS offering - it is a fully featured DDS implementation targeting enterprise platforms and devices. It is fully interoperable with Cyclone DDS, Vortex Link and Vortex Insight products.

Overview

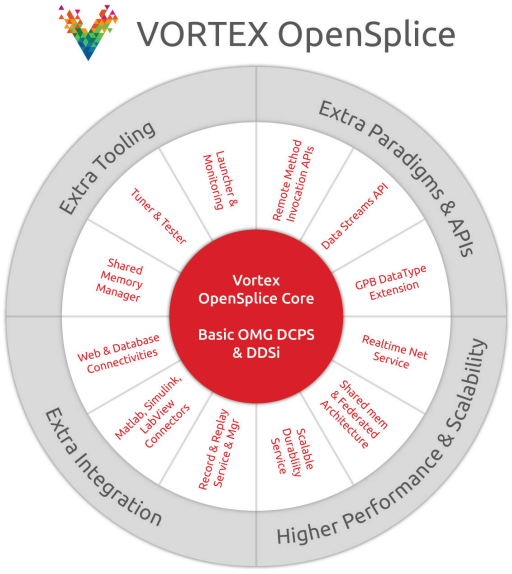
The Vortex OpenSplice Commercial Edition contains the complete DDS feature-set and tools provided by ADLINK. Furthermore, it contains the latest feature improvements, the most effective performance enhancements and the latest bug fixes.

The Commercial Edition is made of the Vortex OpenSplice Core [1] as well as a set of Add-ons and features that are detailed in this document. The Vortex OpenSplice Core is common to both the DDS Community and the Vortex OpenSplice Editions.

The Commercial edition covers a large spectrum of Operating Systems, ranging from many Linux flavours or Windows platforms to more Realtime OSs such VxWorks and partitioned OS hypervisors such as PikeOS. Other OSs can be supported on-demand. To be used, the Vortex OpenSplice Edition requires an active support subscription or an ADLINK Commercial License.

The Commercial Software Add-ons

The Vortex OpenSplice commercial software add-ons list contains, a set of power productivity Tools and Services, extra features to enhance scalability, security, performance and extra APIs to support additional communication paradigms. It also comes with the complete set of connectors to 3rd party technologies.



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The Add-ons list contains:

- The **Tuner Tool**, which helps tune the Quality-of-Services (QoSs), performs white box testing, and visualises all the DDS data, statistics, QoSs as seen by the application. The Tuner helps you create at the runtime, DDS entities to inject or consume data that is published in the DDS data space and tune the Quality of Services.

- The **Tester Tool**, which enables you to monitor all the DDS domain computational objects, data, QoSs, the DDS aware Applications, and dds artefacts at the scale of the entire network. Tester allows you also to perform *black box Testing* through a set of user defined scripts using a simplified dds scripting language.

- The **Configurator Tool** allows you to separate clearly your DDS development cycle from the deployment cycle of your system. This is achieved by gathering all your system, network and the environment details and generating a deployment descriptor in XML. With the Configurator tool, you *write your code once, and you deploy it everywhere.*

- The **Launcher Tool** helps to get started easily with the Vortex OpenSplice product by providing a Control Panel of all the tools and utilities, the DDS examples of the most common application patterns in DDS, as well as the full documentation of the APIs and Tools and deployment tunings.

- The **Record and Replay Service** is a *non-intrusive* DDS service that helps you Record the data you are interested in and Replay it later-on with the same - or with different- characteristics such data dissemination rates, QoSs, and configurations.

- The **Record and Replay Manager**, which is a *graphical user interface* tool to help you configure and monitor the Record and Replay Services.

- The **Federated Architecture deployment feature**, where the DDS infrastructure can be shared as a federation between all applications running on the same machine in order to enhance scalability and determinism. Typically, an *in-memory database* is created within a shared memory segment where data is stored in a *balanced-tree* on behalf of all the collocated applications running on the same machine. In such deployment, A *Network scheduler* will manage all the traffic of the collocated applications to prioritise the data and to allocate the network bandwidth to the most critical and urgent data streams.

- The **Shared Memory monitor tool**, that helps you monitor the Shared Memory database used by OpenSplice in a federated deployment scenario. This tool supports you watching the current state of the shared memory or the memory usage peak reached as well as many other useful statistics.

- The **RMI APIs**. As a polymorphic middleware, Vortex OpenSplice covers both the Data Centric Requirements as well as the Service Oriented Architecture requirements. When your Architecture requires a Request-Reply type of interaction or a pure **RPCs** (Remote Procedure Call), the RMI (Remote Method Invocation) can be used to offer a high abstraction programming model and enhance the productivity of your development teams. You can therefore build an architecture that takes advantage of the service centricity while keep enjoying benefits of the data centricity.

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- The **Streams APIs**. When the application produces continuous data streams at high frequency, batching the data together to lower the I/Os can make the difference in terms of performance and throughput. The stream APIs is a layer built on top of the standard DCPS interfaces that preserves DDS interoperability protocol from any proprietary extension.

- The **Google ProtoBuff data modelling support**. The Protocol buffers are Google's language-neutral, platform-neutral, extensible mechanisms for serializing structured data – think XML, but smaller, faster, and simpler. Vortex OpenSplice supports GPB.

- The **DDS Security support**, allows you to encrypt your sensitive data, authenticate the DDS applications and authorise them to access the DDS data topics and partitions. You can use the default encryption, authentication or access control plug-ins, or provide yours to be integrated.

- The **Ultra-Scalable Durability Service** assures data consistency even in case of faults, crashes or disconnections. The eventually consistent data model is always guaranteed.

- The **Realtime Networking Service Protocol** is a fully interoperable protocol with the OMG ddsi protocol that comes with enhanced features to increase determinism and scalability. Features such as static discovery, traffic-shaping and differentiated services capabilities are provided.

- The **Database Connectors** to federate the real-time DDS Global data space with the on-disk data stored managed by ODBC compliant relational databases.

- The **MATLAB, Simulink and LabVIEW connectors**, to unify the simulation and design worlds with real-time data spaces.

- The **Web Connectivity**, through Javascript Node.js based technology to unify the real-time data spaces to the World Wide Web spaces. With such connector you can produce or get access to data from your preferred web browser, or from any Javascript standalone program.

Vortex OpenSplice is fully interoperable with any ddsi V2.3 implementation, including Cyclone DDS, and fully compatible and operational with the Vortex Link and Vortex Insight Monitoring ADLINK products. Further details on these products and Add-ons can be downloaded separately.

Vortex OpenSplice can be used as a Software Development Kit or it can be integrated with 3rd party MDA (Modern Driven Architecture Tools) that implements UML Profile for DDS applications such as Sparx's Entrprise Architect product or IBM's Rhapsody tools such as Entrprise Architect Sparx product or IBM Rhapsody tools.

Key Benefits of Vortex OpenSplice Commercial Edition

In addition to the benefits of the Vortex OpenSplice Core edition that can be found in a separate datasheet Vortex OpenSplice provides the following advantages:

- **Increased productivity** through a powerful tool such as Tuner, Tester, Launcher, Configurator, and Record and Replay Manager tools.

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- **Secure Data exchange**, through the implementation of the OMG DDS specification
- **Scalable Durability Service** that supports disconnections, and automatic alignment policies to guarantee the *Eventually consistent* model of all the non-volatile data sets within the DDS domain.
- **Better performance, determinism and scalability**, through the use of unique architectural patterns, including the federated architecture patterns, the network scheduling, the traffic shaping and traffic confinement patterns.
- **Extra communication paradigms** such as RMI and Stream APIs.
- **Extra Connectivity**, enabling data to be shared and integrated across a wide spectrum of technologies, including web applications, databases and simulation and modulization environments.
- **A Complete Professional Service offering that includes Consulting, Training & Technical support**, with different levels of committed Service Level Agreements.
- **Longevity support**. Once your product is deployed with Vortex OpenSplice, you may wish to only support the given version in-use rather than the most up-to-date. In that case you can get support on a frozen product version and take only updates you really need.
- **Wide range of Enterprise and Embedded** platform support.

Support/Maintenance

ADLINK provides world class support, delivering a timely, reliable service to ensure every customer's business success. We offer Standard and Silver annual Support and Maintenance Programs for Vortex OpenSplice which can be tailored to a customer's specific requirements if needed.

References and For More Information

For further information regarding Vortex OpenSplice, please e-mail: ist_info@adlinktech.com
or visit: www.adlinktech.com

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