ENEA® OPTIMA OSE®ck

Profiling, Tracing and Kernel Awareness Tools for the Enea OSE®ck Real-Time Operating System

Enea® Optima is a suite of powerful system debug, profiling, and tracing tools for the Enea OSE®ck real-time operating system. Based on the standard open source Eclipse™ platform, Enea® Optima integrates with hardware assisted C/C++ development tools from the device designers to provide a complete integrated software development environment for embedded systems.

Explore and Manage the System

As the amount of software required in modern multi-DSP and multi-core embedded systems increases, it becomes more and more difficult to get the understanding of system structure needed to be effective developing, testing and maintaining the software. To help solve this problem, Enea Optima tools let the user raise the abstraction level and get one coherent view of the entire system.

Enea Optima System Browser allows users to navigate, search for, and find information in large, distributed applications and then drill down into details to find problems like deadlocks and resource leaks. Enea Optima System Browser also allows users to configure and manage target applications using a range of operations, from configuration changes (like setting environment variables),to starting, stopping and terminating threads and services.

Analyze and Optimize Memory Usage

Enea Optima Pool Browser present a wide range of information on application and kernel memory usage, from usage overview charts, to details about individual allocated buffers, including pinpointing problems like buffer overruns and memory corruption.

Explore Kernel and Application State in a Halted System

Enea Optima Kernel Awareness Plugins allow the all the capabilities of the System and Pool Browsers to be used to explore and analyze kernel and application state, even when the target system is halted, such as in a hardware assisted C/C++ debug scenario.

Enea Optima Kernel Awareness Plugins integrate with hardware assisted debug solutions device vendors. This allows users of these environments to take full advantage of Optima tools to provide more powerful presentation capabilities than seen in traditional kernel awareness packages for C/C++ debug solutions.

Analyze Processor Usage Over Time

Enea Optima System Profiler allows developers, support engineers, testers or automated test scripts to monitor processor usage over time.

Enea Optima System Profiler provides full access to the profiling mechanisms of the Enea OSEck operating system. The profiling system can be used to track processor usage on total load, per thread, or per thread priority basis.

These capabilities allow Enea Optima System Profiler to provide a single uniform infrastructure for controlling and presenting the processor load statistics needed to find performance problems in embedded software. Information collected can be presented in either two- or three-dimensional charts, with advanced filtering, statistics calculation and analysis tools, or in tabular text format.

Record Kernel and Application Events

Enea Optima Log Manager allows developers, support engineers, testers or automated test scripts, to record behavior and to debug applications at the level of system or application events, rather than as individual source code lines, even while the system is in use and stopping it is not an option.

Enea Optima Log Manager provides full access to the automatic event action mechanisms of the Enea OSEck operating system. The event action system supports operating system events such as thread creation and termination, message transactions, context switches and error conditions.

Using Enea Optima Log Manager,

ENEA

ENEA® OPTIMA OSE®ck

the Enea OSEck kernel can be set to record information in a buffer in target memory each time an event matching the associated filter criteria occur. Information written to this buffer can be uploaded to the Optima tools in runtime to produce a continuous long term trace or recovered after a core restart.

These capabilities enable the Optima Log Manager to provide a single, uniform infrastructure to control and present all of the operating system related trace and log information required to understand the behavior of software in an embedded system, from application level to device drivers.

Visualize and Analyze Kernel and Application Events

The Optima Log Analyzer provides automated facilities for importing logs, collecting and refining log data, filtering and searching logs, fusing and managing multiple logs, and mapping recorded information to high-level models. Using the built in importer wizard or importer API, all existing log information can be incorporated, regardless of format.

These advanced logging exploration and post processing facilities bring order to the analysis and debug process, making it easier to study complex behavior and pinpoint insidious faults.

The Optima Log Analyzer can manage multiple logs collected at different times in the same system, or from different versions of the software, and allow the user to compare the results. Or the logs can come from different nodes in a distributed, multicore system and be merged into a coherent single system image.

The Optima Log Analyzer allows you to explore the information in the logs using Gantt charts, sequence charts, plots and textual views. The Optima Log Analyzer provides advanced

search and filtering capabilities for analyzing log contents and synchronizing search results with other views.

Through assertions, developers can also take advantage of automatic identification of faults, risks and negative trends.

Full Insight into Heterogeneous Systems

Enea Optima tools support simultaneous connections to multiple processors in Enea LINX distributed clusters. This, together with the fact that Enea Optima supports not only Enea OSEck, but also the Enea OSE real-time operating system for CPUs, and Linux systems, gives users a complete view of a distributed application, without having to start and manage multiple tools or multiple instances of the same tool.

Because Enea Optima tools communicate using regular Enea LINX communication mechanisms, there is no need for dedicated communication software or hardware on each processor in order for the tools to be able to connect. If Enea Optima tools can reach one processor in a cluster, they can reach all processors in the cluster. The initial host to target cluster connection can be made over any media that the Enea Gateway protocol supports, such as TCP/IP. Template code to enable Enea Gateway communication over custom media is included in OSE and Optima releases.

Automate Measurements and Export the Information

Information is of little value to software testers, support engineers or developers if it cannot be shared. Enea Optima tools provide several mechanisms that allow users to save and share captured information. All tables support desktop clipboard mechanisms, so wherever information is presented in a table, the user can select the relevant lines and paste them into an email or problem

report. Enea Optima System Profiler and Enea Optima Log Manager can save and open data as binary dump files or in XML format. Both formats are public and documented to allow other tools access to the data.

All the capabilities on the target system and all code to handle the file formats that Enea Optima uses are available in a public and documented API, featuring a complete object model of the target system. This can be used to implement custom tools that plugin to Enea Optima to present application specific information. The API is also accessible from script environments, providing a solid and feature rich foundation for automated test and measurement scripts, without the need for dedicated test code on the target, or fragile printout pattern matching code in the test scripts.

Eclipse and Open Source Standards

Enea is committed to the vision of Eclipse as a platform to enable users to run different tools from different vendors, without sacrificing the benefits of an integrated environment. Enea Optima releases, apart from featuring a preconfigured Eclipse installation, include a separate package containing the Enea Optima tools in the Eclipse update site format. This package allows users to integrate the tools into their own custom Eclipse environment or into Eclipse based tools platforms from other vendors.

PRODUCT FEATURES

- System Browser
- Pool Browser
- System Profiler
- Log Manager
- Log Analyzer
- Kernel Awareness Plugins

ENEA

ENEA® OPTIMA OSE®ck

PRODUCT BENEFITS

- Increases developer productivity as well as reduces risk, since kernel awareness plugins provide presentation of kernel and application state, without direct dependencies between kernel data structures and partner debug environments or scripts.

- Shortens development time, since the need to implement trace and log infrastructure in the application can be eliminated.

- Maximizes, being based on a standard Eclipse platform, freedom of choice of compatible tools, from the vast eco system of Eclipse products, commercial and open source.

- Lowers cost, since the open source base and flexible license model allows customers to purchase what is needed and nothing else, be it support on open source parts, or licenses for commercial plugins for use in other Eclipse based environments.

- Increases end product quality and performance, as a result of the insight provided to testers and developers, even into complex multi-processor and multi-core systems.

SUPPORTED TARGET OPERATING SYSTEMS

- OSEck

SUPPORTED TARGET ARCHITECTURES

- TI C6000™
- LSI® StarPro®
- Freescale™ StarCore™
- OSEck Soft Kernel

SUPPORTED HOST OPERATING SYSTEMS

- Microsoft® Windows® XP / Vista / 7 (x86-32/64)
- SUSE® Linux Enterprise Desktop / Server (x86-32/64)
- Red Hat® Enterprise Linux Desktop / Server (x86-32/64)
- Solaris™ (SPARC®)

SUPPORTED PARTNER DEBUG ENVIRONMENTS

- Freescale™ CodeWarrior™
- TI Code Composer Studio™

ENEA