



ObjectAda

Real-Time **RAVEN**

DO-178B Level A Certification

Aonix Record As A Supplier For Safety Critical Development

- Aonix has one of the longest records for supporting safety critical development and supplying fully certified kernels.
- Aonix currently has the largest list of safety critical customers!
- Aonix has by far the most experience in the industry in supplying safety critical certified kernels and supporting safety critical development.

Aonix DO-178B Level A Certified Run-Time Systems:

Ada83 Sequential Kernels for:

- Motorola 68k processors
- Intel 16 and 32 bit processors
- eMIPS processors
- SPARC ERC32 processors

Ada95 Sequential and Full Tasking Kernels (RAVEN) for:

- Motorola PowerPC processors
- 32 bit Intel processors
- SPARC ERC32 processors

RAVEN Real-Time Kernel Features:

- Small size
- Fast execution
- Deterministic behavior
- Bounded memory usage
- Safety-Critical certifiability to the highest levels of criticality
- Ada 95 Protected Object support
- Interrupt support

ObjectAda® RAVEN™: The best choice for DO-178B and Safety Critical Development

ObjectAda RAVEN provides kernels certified to DO-178B Level A and all the support tools necessary to certify your application. This includes a complete development environment and tool set with: command line and graphical IDE, compilers, linkers, debuggers, language sensitive editor(s) and library management facilities. It also supports full configuration management (CM) integration, full source level test and reporting tools as well as the required DO-178B Level A machine level test and reporting capability.

ObjectAda RAVEN contains all the tools as well as the certification material for the kernel "you" need to certify your safety critical application.

What is DO-178B and Level A?

DO-178B Guidelines

RCTA DO-178B discusses those aspects of airworthiness certification that pertain to the production of software for airborne systems and equipment used on aircraft or engines.

The purpose of RCTA DO-178B is to provide guidelines for the production of software for airborne systems and equipment that performs its intended function with a level of confidence in safety that complies with

airworthiness requirements. The guidelines are in the form of:

- Objectives of software life cycle processes
- Description of activities and design considerations for achieving these objectives
- Description of the evidence that indicate that the objectives have been satisfied

DO-178B Levels of Criticality

DO-178B then defines specific levels of criticality. These are:

- Level A--Catastrophic-prevent continued safe flight or landing
- Level B--Hazardous/Severe-Major-potential fatal injuries to a small number of occupants
- Level C--Major-impairs crew efficiency, discomfort or possible injuries to occupants
- Level D--Minor-reduced aircraft safety margins, but well within crew capabilities
- Level E--No Effect-does not effect the safety of the aircraft at all





DO-178B Level A Certification

Why DO-178B is Important

DO-178B is one of the strictest safety critical standards defined today. It is required for any commercial flight critical software system. As one of the strictest safety standards, satisfying DO-178B Level A allows Aonix kernels and your application to meet other less stringent standards. These can be for: high-speed rail, space, and nuclear shutdown systems just to name three. This also means that all Aonix safety critical products also meet these other safety standards. Mapping documents can be provided to the safety standard that you need.

How RAVEN supports DO-178B

ObjectAda RAVEN is a complete development environment for hard real-time applications needing the highest criticality levels, as those specified by the FAA's airborne standard DO-178B Level A. Where hard real-time systems also require the same type of speed and determinism as safety critical systems do, RAVEN is an ideal match for these development efforts. When safety is of concern, ObjectAda RAVEN supplies the complete environment,

tool set and safety critical materials to fully satisfy such efforts.

Development Environment

ObjectAda RAVEN comes with a complete development environment with:

- Command line and graphical IDE
- Compilers
- Linkers
- Debuggers
- Language sensitive editor(s)
- Library management facilities
- Full configuration management (CM) integration

VectorCAST Testing Facility

It also comes with the VectorCAST source level testing facility which supports:

- Test harness generation
- Test case generation
- Test data definition
- Source level coverage reports in both an ASCII and graphical, color coded, formats

AdaCover Utility

DO-178B Level A requires that 100% coverage be obtained not only at the source level, but also at the machine code level. ObjectAda RAVEN comes

Other DO-178B Certification Support:

- Flexible toolset packaging for every level of development need
- BSP sources provided for user customization
- Real-time kernel sources available
- Certification materials for runtime environment
- Professional services available including certification expertise

with the AdaCover tool to satisfy these requirements. AdaCover provides:

- Data collection of machine instructions executed on the actual target
- Data transfer back to the host machine
- Machine level coverage reporting
- Merge and summary reporting options

AdaCover is well proven by the many Aonix customers that have used it in the past, as well as by Aonix where we use it to certify all our kernels to DO-178B Level A.



To obtain more information, please contact Aonix at www.aonix.com or your local Aonix office.

North America

Phone: (800) 97-AONIX
Fax: (858) 824-0212
E-mail: info@aonix.com

United Kingdom

Phone: +44 (0) 1491 415000
Fax: +44 (0) 1491 571866
E-mail: info@aonix.co.uk

**Germany**

Phone: +49 (0) 721 98653-0
Fax: +49 (0) 721 98653-98
E-mail: info@aonix.de

France

Phone: +33 (0) 1 4148-1000
Fax: +33 (0) 1 4148-1020
E-mail: info@aonix.fr

Sweden

Phone: +46 (0) 8 6 01 94 91
Fax: +46 (0) 8 6 01 94 99
E-mail: info@aonix.se