

OpenAmeos

Release Notes

Release Notes

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Product Description

Ameos is the next generation modeling tool from Aonix, with unique support for UML 2.0 profiles and MDA-based model transformation.

Ameos/UML comprises the following product elements:

- UML graphical tools
- UML 2.0 profile support
- Document generation
- ACD (Architecture Component Development)
- MDA templates for C++, C, Ada95, RAVEN, Java, and Java real-time code generation
- XML import/export
- Reverse engineering for C++, Ada 95, RAVEN, and Java
- Documentation

System Requirements

Ameos system requirements are listed in the table below.

Processor speed	Minimum: 700 MHz Recommended: 1.3 GHz
Operating system	♦ Windows 2000: Service Pack 4 recommended ♦ Windows 2003: ♦ Windows XP: Service Pack 2
RAM	Minimum: 256 MB Recommended: 512 MB
Free disk space	Minimum: 150 MB Recommended: 720 MB [Note 1]

[Note 1] Disk space needed for a full installation with Sybase is about 720 MB and without Sybase is about 110.

Features

Aonix has a long history in developing modeling tools. Aonix has also been an OMG member since 1992 and has a clear commitment to OMG standards such as UML and Model Driven Architecture (MDA). Ameos is the next-generation modeling tool of Aonix.

This section gives a brief overview of the main features of Ameos. To summarize, Ameos:

- Fully supports UML
- Supports UML 2.0 profiles.
- Provides a scalable multiuser repository for large projects.
- Offers a viable configuration management solution through its open architecture.
- Provides an MDA-based model transformation that allows you to produce applications from high level UML models according to the OMG's MDA approach.

The latter feature is called Architecture Component Development – ACD. With ACD:

- The model is implementation independent.
- You can generate code for multiple programming languages, such as Ada 95, C++, Java, etc., from the same UML model.
- You can customize ACD templates to generate applications for any real-time operating system, programming language, or target architecture. Unsupported examples for EJB, C, COM, Corba, and VisualBasic are provided as well.

New Features in This Release

High Integrity Profile (HIP)

Ameos now provides a High Integrity Profile (HIP) for real-time Java implementations. The HIP consists of UML 2.0 compliant profile packages and an accompanying code generator. The code generator provides real-time extensions to normal Java source code and uses classes from RT-Java standards. The UML profile is target language independent and the code generator can be adopted to other languages like C++ and Ada. For a detailed discussion on the usage of the Java HIP, refer to [Chapter 3](#) of *Using ACD Templates*.

CVS Integration

Ameos now provides an interface to CVS, the dominant open-source network-transparent configuration management (CM) system. Information on the setup and use of the integration is addressed in the "[Baselining and Version Control](#)" chapter of *Advanced Modeling Concepts*.

Performance Improvements

Ameos 9.1.5 shows performance improvements in all areas of approximately 30%. In areas of focus, improvements are much higher, as shown below:

- Opening classes in the Repository View, 8 times faster
- Opening class diagrams, 5 times faster
- Use of property sheets, 3 times faster
- Zooming, 3 times faster
- Drawing aggregations, 3 times faster

Features Implemented

New C Templates for Real-Time Environments

Ameos 9.1 introduced all new ACD templates that generate code compliant with the MISRA standard. The new C templates are described in detail in the "Using C Templates" of *Using ACD Templates*. An example system is discussed in that chapter that illustrates the usage of these templates.

Eclipse Integration

In 9.1, Ameos provided directional navigation between Ameos and Eclipse. The integration is discussed in the "Third-Party Tools" chapter of *Advanced Modeling Concepts*.

Features Implemented

Support for UML 2.0 Profiles

Profile support is the key to extending the UML and adopting it to domain- or project-specific needs. UML 2.0 has taken this into account and describes how to model profiles. Aonix has therefore extended its profile support in Ameos.

The profile editor of Ameos allows the modeling of profiles in UML notation; this ensures that the used profiles are documented. Users can choose which profile should be used for the current project by importing profile definitions into new or existing systems. Use of a specific profile ensures that the entire development team uses the same extensions to the UML. Profile definitions are used via extended stereotype and tagged values properties for the various UML elements.

The Ameos distribution includes predefined profiles – for example, there is a profile to target RAVEN™, the DO-178B certifiable kernel for safety-critical applications. For more information on the profile editor, refer to the "Ameos/UML Profile Support" chapter of *Advanced Modeling Concepts*.

MDA Support

Aonix has been promoting the transformation of UML models to the target environment for more than six years. We are therefore highly experienced with this approach: Our transformation engine ACD has proven itself in many successful real-world projects.

ACD supports OMG's MDA. It allows automatic transformation of UML models into source code that is tailored to your needs and the target architecture.

Ameos provides a set of standard templates for ACD. They can be used "as is" or modified to meet your system requirements. There are templates for:

- Java
- C++
- Ada 95
- Raven (an Aonix product based on a subset of Ada 95 specifically designed for creating real-time, safety-critical applications)

Refer to the *ACD Programming Guide* for detailed information on the ACD approach.

ACD Metamodel

The ACD metamodel is based on the UML metamodel and supports use case diagrams, class diagrams, sequence diagrams, and state diagrams.

Model-to-Model Transformation

Model-to-model transformation is a key concept of OMG's MDA. Ameos takes this into account by providing special functionality to extend the model during the transformation process. New model elements can be added to the metamodel to provide needed information – for example, by adding classes to implement a certain pattern. The new elements of the metamodel are then handled as modeled information, and the mapping to the target environment follows the same transformation rules.

New ACD Templates for Raven

The “Ravenscar profile” is an industrial standard for designing safety-critical real-time systems in Ada. Ameos introduces all new templates for this platform that make use of the Raven profile designed with the new profile editor. An example system is provided that illustrates the usage of these templates.

Color to Visualize Semantics

Ameos uses color to visualize semantics, because this leads to much easier-to-read UML diagrams. Color has a big impact on our daily life. We often automatically assign a color to a certain concept. The color red, for example, is widely used to indicate some sort of danger or to attract attention. Since we use profiles in UML models to describe certain concepts, it makes sense that the use of profiles be combined with the use of color. For example, you can assign a certain color to a stereotype during profile modeling. Then, as soon as the stereotype is used, the model element will show up in the assigned color. This makes stereotype usage much more obvious than does, for example, the <<stereotype_name>> identifier.

The combination of MDA, UML 2.0 profiles, and color builds a powerful approach to meet the modeling needs necessary to describe modern and complex software systems.

HTML Report Generation, Including SVG Graphics

HTML reports have been completely redesigned; they loosely follow the JavaDoc structure now. Diagrams are now generated in SVG format, which provides scalable diagrams that make use of the browser's SVG plug-in as well as hyperlinks to/from modeling elements.

XMI Import/Export

XMI generation was updated in 9.0 to support OMG's XMI 1.2/UML 1.4. It continues to be implemented with ACD and can thus be extended by the user. The same is now true for XMI import, which has been reimplemented with XSLT. This also allows extension of XMI import capabilities – that is, by adding support for user-defined extensions in the stylesheet. Refer to the “XMI Import/Export” of *Advanced Modeling Concepts* for more information.

StP/UML to Ameos/UML Migration Tool

Repositories created with StP have to be migrated to Ameos. Migration works for all StP versions starting with 2.6. A migration wizard will guide the user through the migration process. Repositories migrated to Ameos can no longer be used with StP.

New Java Reverse Engineering

Java reverse engineering was reimplemented entirely in 9.0; it is now based on JavaCC in conjunction with the Java 1.4 grammar and adds support to parse JAR and class files as well as regular Java code.

Refer to the "Reverse Engineering" chapter of *Advanced Modeling Concepts* for more information.

Integrations with Third-Party Tools

Ameos provides bidirectional navigation integrations (model to generated code and vice versa) with Eclipse, JBuilder, SNIFF Plus, and ObjectAda. Requirements can be tracked in DOORS and linked to Ameos model elements. For version control, Ameos baselines can be maintained in ClearCase. Refer to the "Third-Party Tools" chapter of *Advanced Modeling Concepts* for more information.

Rose2Ameos Bridge

The Rose2Ameos bridge is a tool for converting models created with Rational Rose versions 98/98i/2000/2001 into Ameos UML models. This conversion includes all the graphical information of the original model. Refer to the *Rose2Ameos Conversion Tool* document, located in *documentation/Rose2Ameos/Rose2Ameos.pdf* for more information on the tool.

Important Changes in This Release

This section lists the important changes not noted in the Features section that have been made since the previous release. For Ameos 9.1.5, important changes are listed in the Features section.

However, many changes have occurred between StP and the first release of Ameos. These are discussed in ["Appendix B: Important Changes Between StP and Ameos" on page 26](#)

Software Compatibility

This section discusses compatibility of Ameos 9.1.5 with respect to the supported Windows platforms and MS Jet, with Sybase, with FLEXlm, and with systems created with earlier versions.

Compatibility with Windows and MS Jet

Ameos is designed to operate on Windows 2000 SP 4, on Windows 2003, and on Windows XP SP2. Ameos is compatible with the MS Jet version provided with these operating systems.

Compatibility with Sybase

This version of Ameos includes Sybase Adaptive Server Enterprise (Sybase ASE) version 12.5, which is the officially supported platform for this release of Ameos. Older Sybase versions (i.e., version 12) are known to work as well, but we no longer provide maintenance for these versions. The Sybase Adaptive Server is a relational database that acts as a repository for Ameos.

Note: The default port of Sybase is 6100.

Refer to *Installing Ameos for Windows Platforms* for more information on installing Sybase; refer to the *Ameos Administration Guide* for information about Sybase in general.

Compatibility with Previous Versions

With Ameos 9.x

There are no known incompatibilities with Ameos 9.x.

With StP

Running StP and Ameos on the same machine is discouraged. However, it is possible to maintain two versions with the following caveats:

- Sybase should be upgraded to 12.5.
- Make sure the message daemon port numbers (ToolInfo variable `msgd_port`) do not conflict.

Please be aware that if you uninstall StP, you *must reboot before you reinstall Ameos*. Otherwise, problems with the `msgd` service may result.

Data Compatibility

Systems created with StP must be migrated to Ameos. Migration works for all StP versions starting with 2.6. When you attempt to open a system with Ameos that requires migration, Ameos will tell you that the system needs to be migrated first. Refer to *Migrating to Ameos 9* for general information on migration.

Documentation

This section lists the documentation provided with Ameos.

Online Help

Ameos provides online help for desktop and editor commands. The online help is accessed by selecting **Help > Help on Commands** from the desktop and editors. It can also be accessed from the Start menu (**Programs > Aonix Ameos <version> > Online Help**).

Context-sensitive help is available for dialogs; such help is accessed by pressing the **Help** button present on each dialog.

Online PDF Documents

The online PDF documents are accessed by selecting **Help > Online PDF Documentation** from the desktop or editors. They are also accessible from the Start menu (**Programs > Aonix Ameos <version> > Online PDF Documentation**).

Note: We assume that you have Adobe Acrobat reader installed on your system. If you do not, you can download a copy from the Adobe website, www.adobe.com.

Documents delivered with this release are listed below. The categories of documents listed below (e.g., "Release Documentation") reflect the categories in the online document "catalog," *<Ameos>/documentation/ONLINE/List.pdf*.

Release Documentation

- Release Notes
- Installing Ameos for Windows Platforms
- Migrating to Ameos 9

Modeling Guides

- A Quick Tour of Ameos/UML
- Advanced Modeling Concepts

Model Transformation Guides

- ACD Programming Guide
- Using ACD Templates

Reference Information:

- Ameos Administration Guide (which incorporates Sybase information)
- Query and Reporting System (QRS)
- Object Management System (OMS)

Note: Documentation on the Rose2Ameos bridge is also available, in the *documentation/Rose2Ameos* directory.

Useful Information

This section addresses topics of general interest to users of Ameos that do not appear elsewhere in the document set.

Font Properties

Ameos allows you to set font properties.

Static-defined font properties. In the rule definitions of the node you can define one or more of the following boolean values: `FontBold`, `FontItalic`, `FontUnderline`. For example:

templates/uml/rules/uclassd_symbols.rules:

```
NodeSymbol Package
{
  { FontBold True }
  { FontItalic True }
}
```

In this case, when the class diagram editor is started, all package symbols will have a bold-plus-italic label.

Dynamic font properties. In the rules definition of an editor node, a QRL function can be specified in the `FontPropsFunc` property. The function will return an 'or'-ed combination of 0, 1, 2, 4 as an integer value. The normal, bold, italic, and underline flags are defined as follows:

```
FONT_NORMAL = 0
FONT_BOLD = 1
FONT_ITALIC = 2
FONT_UNDERLINE = 4
```

To specify a bold-plus-italic font, the QRL function returns 3 (`FONT_BOLD | FONT_ITALIC`)

For example:

```
NodeSymbol Package
{
  { FontPropsFunc "package_font_func()" }
}
```

The `package_font_func()` is defined as follows:

```
int package_font_func(gde_node node)
{
  return 3;
}
```

Networking Issues and the Ameos Message Daemon

A port number specification is necessary for certain network configurations, especially when using firewalls.

To configure network firewalls, it is useful to understand Ameos interprocess communication. Assuming that *msgd* is running on a Windows server with a specified port of 4444, the flow of packets during Ameos startup is as follows:

Client	Server
Ameos@1411(>1024)	--- <i>udp</i> ----> msgd@4444
Ameos@1411(>1024)	<---- <i>udp</i> --- msgd@4444
Ameos@1412(>1024)	--- <i>tcp</i> ----> msgd@1083(>1024)

Every subsequent Ameos client (GDE, etc.) opens a new >1024 port on the client and performs the same sequence above during startup.

If the message router is shut down and restarted, it will be assigned a new TCP port, while the UDP port it is listening on is defined in the ToolInfo variable `MSGD_HOST`.

The firewall should be configured such that the specified UDP port and any TCP port > 1024 can be accessed through the firewall.

UNIX vs. Windows File Names

If you share files between any UNIX or Windows operating system, you may encounter problems with Ameos. Almost all instances will be due to how the respective operating system interprets characters. For example, in Windows, characters in file names are case insensitive, whereas this is not true for UNIX. This lack of operating system “interoperability” can lead to problems in using Ameos and in installing Ameos and migrating systems.

To reduce the possibility of file name conflicts, we suggest that you establish and enforce file naming conventions – for example, use underscores instead of spaces, use upper case only for names, etc.

Note: Various file conversion tools exist that allow you to convert text files from UNIX to DOS and vice versa. One example is the standard UNIX tool, *unix2dos*.