

OASIS Integration Project

The purpose of this document is to inform customers about the OASIS project for integrating simulators into the Cadence Analog Design Environment

This document is designed to give you an overview of the Open Analog Simulator Integration System or OASIS project for any 4.4.5 or higher release version of Cadence software and to answer questions that you may have regarding the process.

1.0 What is OASIS

OASIS is a product that lets you integrate proprietary simulators into Cadence's Analog Design Environment (formerly known as Analog Artist). OASIS represents a robust and sophisticated circuit design environment that includes a waveform calculator, extensive waveform analysis capabilities and extensions to run Optimization on your analog circuitry. OASIS contains documented, supported, and stable procedural interfaces (PI). These PIs will make it easier to integrate your simulator and easier to maintain the integration from one release to the next. Please note, if you have already done a "socket" integration in a previous release of software, you will need to upgrade that integration in order to take advantage of many of the new features inside the environment.

2.0 What do I get in the Development Kit?

The Development Kit will contain all of the source and object code and libraries required to integrate a simulator into the environment, a

hardcopy manual entitled *OASIS Integrator's Guide*. In addition, you may find it useful to access the *Affirma Circuit Design Environment SKILL Language Reference*

Additionally, the integrators will have access to Methodology Services for consultation, questions and general help. Integrators are required to be thoroughly familiar with their simulator and Cadence SKILL™ Language.

3.0 How much does an integration cost?

The integration costs \$120K (US) for the integration software and support plus any additional OASIS simulation licenses that are required (see Section 6). Support from Cadence is typically provided via phone or email and is provided for one year after the start of the project. Cadence also provides required bug fixes and agreed upon enhancements as appropriate.

Usually, you can do the work yourself with our assistance.

However, customized services can be provided at additional cost depending on customer needs. Custom service packages might include one-on-one support time, taking ownership of specific parts of the integration work to be performed or extending our support period.

4.0 What if I have already done a Spice Socket Integration?

All older socket integrations should be updated to the new OASIS Direct methodology. The 4.3.4 and earlier integrations are no longer supported and there are no guarantees that older SKILL code has not changed which may disrupt some portions of your existing integration. Additionally, existing cdsSpice licenses that are no longer needed can be traded in for OASIS keys. Maintenance charges will be assessed accordingly and on the full value of the product.

5.0 Which Products/Licenses do I need to do an OASIS Integration

To complete the integration you should have the licenses for the following products:

TABLE 1.

Products Necessary for an OASIS Integration

License	Product Name
32100	Cadence Analog Oasis Run-Time option
32102	Virtuoso OASIS Integration Toolbox
95100 or 95115	Virtuoso Schematic Composer
95200, 95210 or 95220	Cadence Analog Design Environment
900	Cadence SKILL Development Environment

6.0 What is the OASIS Simulation License-Product 32100?

With the introduction of OASIS, the necessity for cdsSpice keys to complete the integration and run your simulator was removed. Instead, a run-time license (32100) is needed to run your simulator inside of the analog environment. If you have existing cdsSpice keys which you were using for this feature, you may trade them in for the new OASIS license. Otherwise, you must purchase the new license before being able to run your simulator. The price and configuration of the license is shown below:

TABLE 2.

OASIS Licensing

Product	License Type	Price	Maintenance
32100	SUL	\$5000	\$600
32100	SUF	\$6250	\$750

Please note that this license is not required to run cdsSpice or Spectre which have different licensing requirements.

7.0 Commercially Available Simulators

If you are a vendor who will be selling your simulator interface to mutual customers upon its completion, you are required to be a member of Cadence's Connections Program before the software will be released to your company. The Connections Program allows you access to Cadence software in a timely manner and has the protections and safeguards built-in to protect Cadence proprietary code and your own. If you are not a member of the Connections Program and would like more information, please contact your local Cadence salesperson for more information.

Once the Connections Agreement is signed (please let them know that you will be doing an OASIS integration), the Cadence software can be shipped to you along with the code necessary for a successful integration.

Due to past customer concerns about the interface changing drastically between various simulators that they use, we request that changes to the interface be kept to a minimum. We do understand that your simulator may have additional capabilities that are not present in the standard

interface. We encourage you to include these features on existing pull-down menus rather than adding additional menus or modifying the simulation window itself. Additionally, we have a few requirements:

- Your simulator must support Parameter Storage Format (PSF). The integrator's guide will give you the details on writing this waveform database. You may write out other formats for your own waveform tools if you wish, but you still must support PSF.
- The environment has the ability to annotate schematics with simulation data. Your simulator must support both the annotate and print capabilities within the environment. If you can annotate/print more or less than the standard environment, you may modify the menu picks to reflect your capabilities.
- We expect that you will maintain and support your interface and update it appropriately as new features are added to your simulator. Cadence will inform you of changes that may effect your integration as early as possible.
- Cadence views the product structure in the following way:

TABLE 3.**Customer Product Structure**

Purchase from Cadence	Purchase from Vendor
Cadence ^(R) Analog Design Environment (34510)	Simulator
Cadence ^(R) Analog Oasis Run-Time Option (32100)	Simulator Interface

Your decision to sell other tools at additional cost would be up to you and your marketing group.

8.0 Known Issues

There are several known issues and problems related to using the direct integration method. Access to some of your native advanced tools (such as Monte Carlo) may not be accessible through the direct integration. If you have native statistics, you may have to create the netlist within the environment, run the simulation outside the environment, and depend on other waveform or analysis tools to look at your data. Other design environment features which work with Spectre, may not be accessible to the direct integrator (i.e. Circuit Conditions).

RF and microwave simulators are not supported through the direct integration. Substantial changes must occur to the environment to support these types of simulators, and that capability simply isn't present. Also, Verilog-A and AMS have limited accessibility through the direct integration method.

Direct integration is only designed to work with the analog design environment. The direct integration is not intended to work with Cadence AMS Designer or other Cadence tools outside the standard IC front to back design flow.

9.0 How do we get Started?

If you are not a commercial vendor, please contact your sales representative to arrange for the latest code to be delivered to your company and to work out any financial arrangements. If you are a commercial vendor, please ensure that your Connections Agreement has been completed.

The integration can take a few weeks to a couple of months depending on the level of integration desired. If you are a new customer, you should expect to take 4 to 6 weeks to do a basic integration of simple Spice 2G.6 like features. Since Cadence will be providing you assistance during the integration, we ask that you do not start one until you have dedicated both the time and resources to working on this project. Using a Start-Stop approach makes completing the integration much more difficult.