HyperLynx® 3D EM

Guide on HyperLynx 3D EM /AGIF Integration with Cadence Virtuoso and Allegro Package Designer

Software Version 15.2

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Contractor/manufacturer is:
Mentor Graphics Corporation
8005 S.W. Boeckman Road, Wilsonville, Oregon 97070-7777.
Telephone: 503.685.7000
Toll-Free Telephone: 800.592.2210
Website: www.mentor.com
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This document discusses how to integrate IE3D/AGIF with Cadence Virtuoso on Linux platforms, and Cadence Allegro Package Designer on Windows-series operating systems. In case you have any questions or problems, please contact our support team at: zeland_support@mentor.com or visit http://supportnet.mentor.com.

1. Install IE3D-AGIF on Linux Platform

IE3D/AGIF Linux installation is tested on *Redhat Enterprise Linux WS 4.0, Redhat Enterprise Linux WS 3.0, Redhat 9.0, Redhat 8.0, Redhat 7.2, SUSE Linux Professional 9.3*. The integration steps are tested on *Cadence Virtuoso IC6.1.4.485*. The installation involves two steps: IE3D installation and integration with *Cadence Virtuoso Layout Editor*.

Step 1. Install IE3D on Linux

Please refer to the installation guide for Linux operating systems to install IE3D on your computer or workstation.

Step 2. Integration with Cadence Virtuoso Layout Editor

Before you can run IE3D simulator from within Cadence Virtuoso layout editor, Cadence Virtuoso has to be installed and license file .cshrc should be sourced before starting the integration. Please follow the steps below to get IE3D integrated in Cadence Virtuoso:

1. Set environment variable ZELAND_SITE to the directory where the IE3D is installed, for example:

   export ZELAND_SITE=/<install_dir>/SDD_HOME/IE3D/bin32/
   export PATH=$PATH:$ZELAND_SITE

2. Let Cadence Layout Editor load IE3D skill functions automatically when invoked. Find your working ***.cdsinit*** file. This file comes with Cadence install, and usually located in */Cadence/tools/dfII/samples/local/.cdsinit*. Copy this file into your home directory, for example: */root/*. Use a script editor, such as *gedit*, to append following lines to .cdsinit:

```
; Load customized functions from Zeland Software, Inc.
(if getShellEnvVar("ZELAND_SITE")
then
  load(strcat(getShellEnvVar("ZELAND_SITE") "/ie3dlnx.ile"))
else
  printf("The environment variable ZELAND_SITE is not set correctly.\n")
)
```

   The sample file is located in *<install_dir>/SDD_HOME/IE3D/bin32/.cdsinit_sample*. Please compare the sample file to your ***.cdsinit*** file, and learn how to change it.

3. Add a menu item to Cadence Virtuoso Layout Editor.

   Locate the ***layEdit.menus*** file, which is usually stored in *./Cadence/tools.lnx86/dfII/etc/tools/menus/* directory. Use a script editor, for example *gedit*, to append following lines to the ***layEdit.menus*** file:

```
;*************************************************************
; Create your own pull-down menu and Item
;*************************************************************

MyItem = '(My_Item
        "Simulate Current Layout"
        "menuSimCurLayout"
)

MyPulldownMenu = '(My_Menu "IE3D" (
   MyItem
)
)



;*************************************************************
; Define list of all pulldowns, Add MyPulldownMenu to the banner.
;*************************************************************
lecAllPulldownMenus = '(
   lecDesignMenuR ;File
   lecDesignMenuW
   lecDesignMenuV
   lecEditMenu
   lecWindowMenu ;View
   lecCreateMenu
   lecLayoutOnlyVerifyMenu
   lecVerifyMenu
   lecConnMenu
   lecOptionsMenu
   lecUtilToolsMenu
   lecSessionWindowMenu
   MyPulldownMenu
   lecHelpMenu
)
```

   The sample file is located in *<install_dir>/SDD_HOME/IE3D/bin32/layEdit.menu_sample*. Please compare the sample file to your file, and learn how to change it.

4. Set the following environment variables:
   MGLS_LICENSE_FILE=1717@license_server
   export MGLS_LICENSE_FILE
   LD_LIBRARY_PATH=$install_dir/SDD_HOME/IE3D/lib32/

export LD_LIBRARY_PATH
MGLS_HOME=$ install_dir/SDD_HOME/common/linux/mgls
export MGLS_HOME
MGC_HOME=$install_dir/SDD_HOME/
export MGC_HOME

After changing the above two files, when *Cadence Layout Editor* is invoked, the following lines should appear in the *Command Interpreter Window* (CIW) (see Figure 1):

Loading IE3D from Zeland Software, Inc.
Setting environment variables
Zeland IE3D integration is ready to run

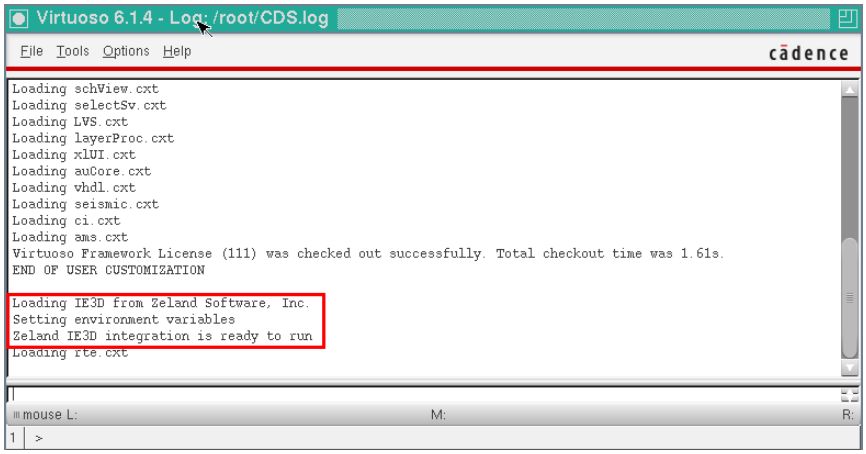

Figure 1. Cadence Command Interpreter Window (CIW)

When you open a Virtuoso layout, a new IE3D pull down menu should be added to the menu bar (see Figure 2).

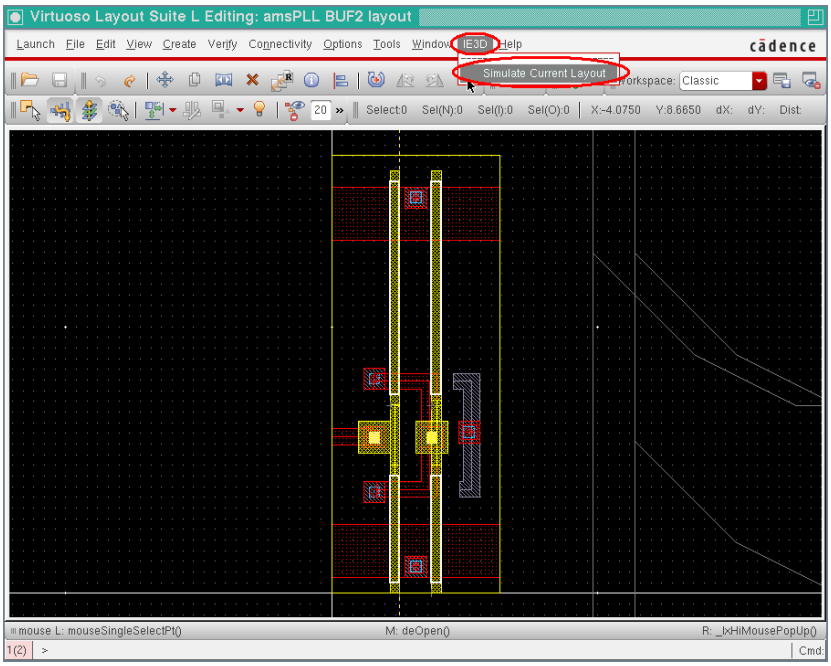

Figure 2. Cadence Virtuoso Layout Editor

After you click *Simulate Current Layout*, the following window should appear and ask for layer map file as well as AGIF template file:

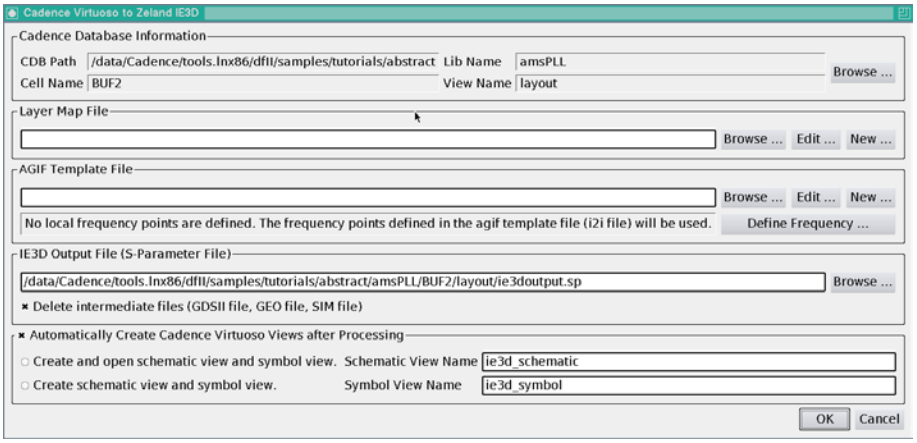

Figure 3. Cadence to IE3D EM Simulation Parameter Window

2. Install IE3D/AGIF for Windows Platform

The IE3D/AGIF integration with *Cadence Allegro Package Designer (APD)* is tested on *Windows XP SP3* and *Cadence APD v16.3*. Similar procedure can be applied to other Windows operating systems and *Cadence APD*.

1. Set IE3D Directory in Allegro Initialization File

Install IE3D on your PC. After the installation, the IE3D installation directory will be automatically registered in Windows environment variable as ZELAND_SITE. Typically the value of ZELAND_SITE is: *\MentorGraphics\15.2IE3D\SDD_HOME\IE3D* as shown below for Windows XP:

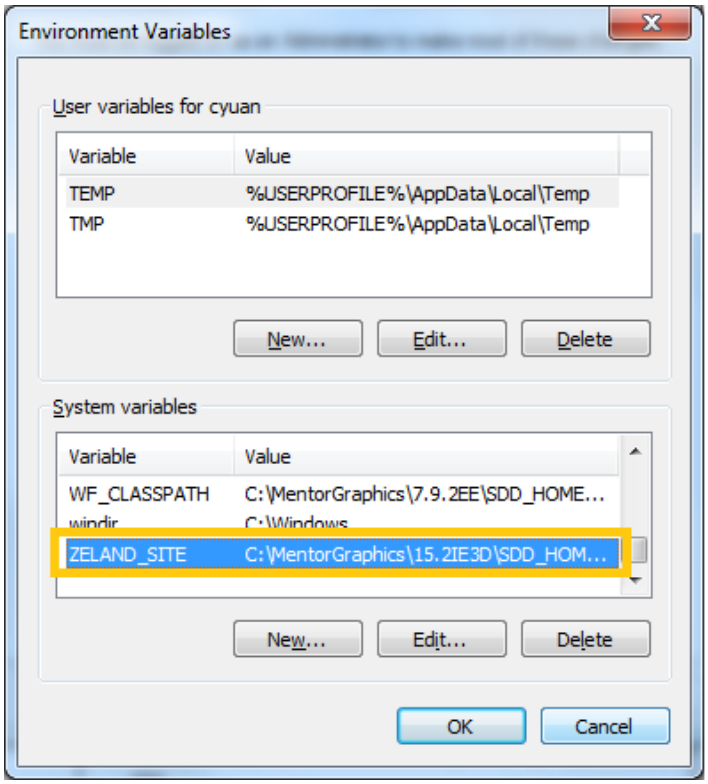

Figure 4. Windows Environment Variables

Before you add IE3D tag on the main menu of *Cadence APD*, the IE3D installation directory must be registered as an Allegro environment variable, which used to be added in ***allegro.ilinit*** file in the *pcbenv* directory. Starting from Cadence APD v16.3, the ***allegro.ilinit*** file does not exist in the *pcbenv* directory any more so that it has to be manually created from a sample *.ilinit* file:

1. Go to *X:\Cadence\SPB_16.3\share\local\pcb\skill*, where *X* is the hard drive where *Cadence APD* is installed.
2. Use any text editor, such as *UltraEdit*, to open the ***example.ilinit*** file in the above directory.
3. Append the following lines to the end of the file:

```
; Load customized functions from Mentor Graphics Corp.
(
if getShellEnvVar("ZELAND_SITE")
  then
```

```
    load(strcat(getShellEnvVar("ZELAND_SITE") "\\exe\\ie3dlnx.ile"))
else
  printf("The environment variable ZELAND_SITE is not set correctly.\n")
)
```

4. Save the file as ***allegro.ilinit*** in *X:\SPB_Data\pcbenv*

A sample file, ***allegro.ilinit_sample***, is located in *<install_dir>\SDD_HOME\ie3d\exe* directory as a reference when creating your own ***allegro.ilinit*** file.

2. Add IE3D Menu on APD Main Menu

1. Go to *X:\Cadence\SPB_16.3\share\pcb\text\cuimenus*.
2. Right click the ***apd.men*** file, and uncheck the Read Only option.
3. Use a text editor to open the ***apd.men*** file.
4. Append the following lines to the end of the file:

```
POPUP "IE3D"
BEGIN
  MENUITEM "Build IE3D Model…", "skill menuSimCurDesign"
END
```

5. Save the file
6. Right click the apd.menu file, and enable the Read Only option

A sample file, ***allegro.men_sample*** , is located in *<install_dir>\SDD_HOME\ie3d\exe* as a reference for creating your ***apd.men*** file.

After the above steps, the following lines should appear in the *Command Interpreter Window* when starting *Cadence APD*:

Loading IE3D from Zeland Software Inc.
IE3D/APD integration is ready to run

And, a new IE3D pull down menu should appear on the menu bar:

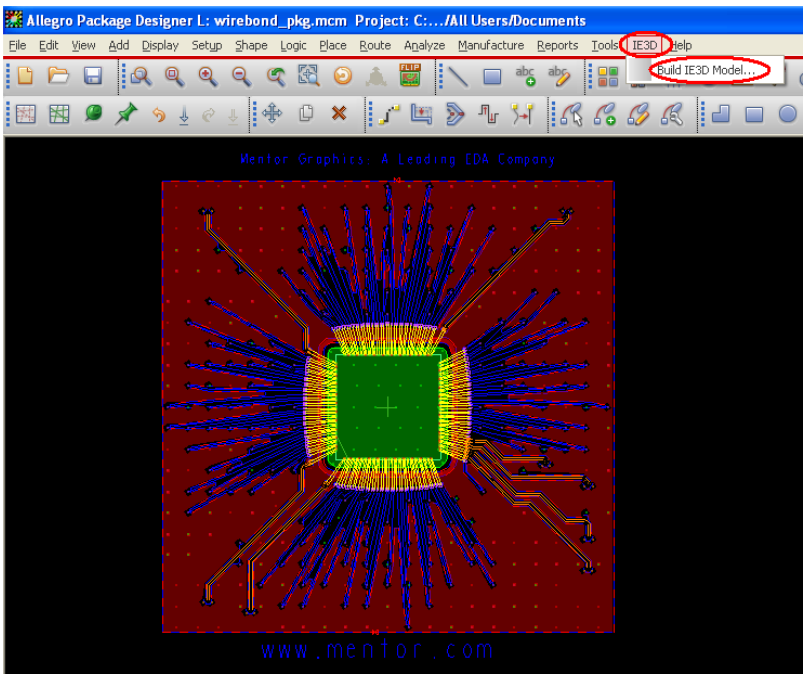

Figure 5. Cadence Allegro Package Designer

After clicking the *Build IE3D Model*, the AGIF window should show up. You may follow the AGIF user manual to build the EM model for your design.