

# **RedHawk-SC Electrothermal Installation Guide Semiconductor Business Unit**

**CPS Team**

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# Introduction

The **RedHawk-SC Electrothermal** software program operates on Linux type computer platforms. Use of **RedHawk-SC Electrothermal** requires an Ansys license. To download and install the **RedHawk-SC Electrothermal** program, perform the following steps:

- Download software from the ANSYS Customer Portal website
- Perform the installation
- **RedHawk-SC Electrothermal** software license Information
- Set up **RedHawk-SC Electrothermal** environment

# / Downloading Redhawk-SC ElectroThermal Software

Download release tar ball.

Go to Ansys Customer Portal using below link:

[https://support.ansys.com/AnsysCustomerPortal/en\\_us/Downloads/Semiconductor+Products](https://support.ansys.com/AnsysCustomerPortal/en_us/Downloads/Semiconductor+Products)

**Note:** the release package includes **RedHawk-SC\_ElectroThermal\_Eval\_Package\_v2020R3.0.tar.gz**, and **MAPDL\_2020R1.1.tar.gz**.

RedHawk-SC ElectroThermal Downloads			
Product Name	Size (Bytes)	md5sum	Details
<a href="#">RedHawk-SC ElectroThermal 2020R3.0 Evaluation Package</a>	1,786,354,380	fadd346e9c94e2114b56f0104a2292f3	
<a href="#">RedHawk-SC ElectroThermal 2020R2.2 Evaluation Package</a>	1,471,454,062	a53cb39a5482fd4cd4fa58d2e127984a	

RedHawk-SC Electrothermal Solver Downloads			
Product Name	Size (Bytes)	md5sum	Details
<a href="#">Electronics Package</a>	108,299,105	ca06df03df64c7abee4a73d6fdefd159	
<a href="#">RedHawk-SC Electrothermal CPA Engine v2020R3 Package</a>	547,503,450	104048276a6d3120cdcade2ad9557bfd	
<a href="#">Mechanical Engine 2020R1.1 - Linux64</a>	1,249,324,626	ff0b9a309d4c585072c1a843a28baeb5	

# Program Installation

Download the software in the `<tarball_directory>`, such as `/disk1/ecad/`, from where you want to install **RedHawk-SC Electrothermal**.

Follow the instructions below.

- **% cd `<tarball_directory>`**
- **% tar -xzvf RedHawk-SC Electrothermal\_`<platform>`\_`<version>`.tar.gz, tar -xzvf MAPDL\_2020R1.1.tar.gz**
- **% Using below command to add mapdl link**  
`cd <RedHawk-SC Electrothermal Installation Directory>/solver/`  
`ln -s /home/user/Mechanical_Engine_2020R1.1/mapdl/v201 mapdl`
- **% set environment**

After installing the **RedHawk-SC Electrothermal** software, the following directory structure will be created in the **<RedHawk-SC Electrothermal Installation Directory>**

Directory	Partial Contents
bin/	Contains all the RedHawk-SC Electrothermal related executables, such as “flow setup” and utilities <i>3DPostprocessing</i>
lib/	Machine-dependent libraries
solver/	Third-Party software, for TI flow, user needs to create a <b>mapdl</b> link to link to mechanical engine.
doc/	Software release notes and the latest user guide

# / Add MAPDL and AEDT Icepak Link through GUI

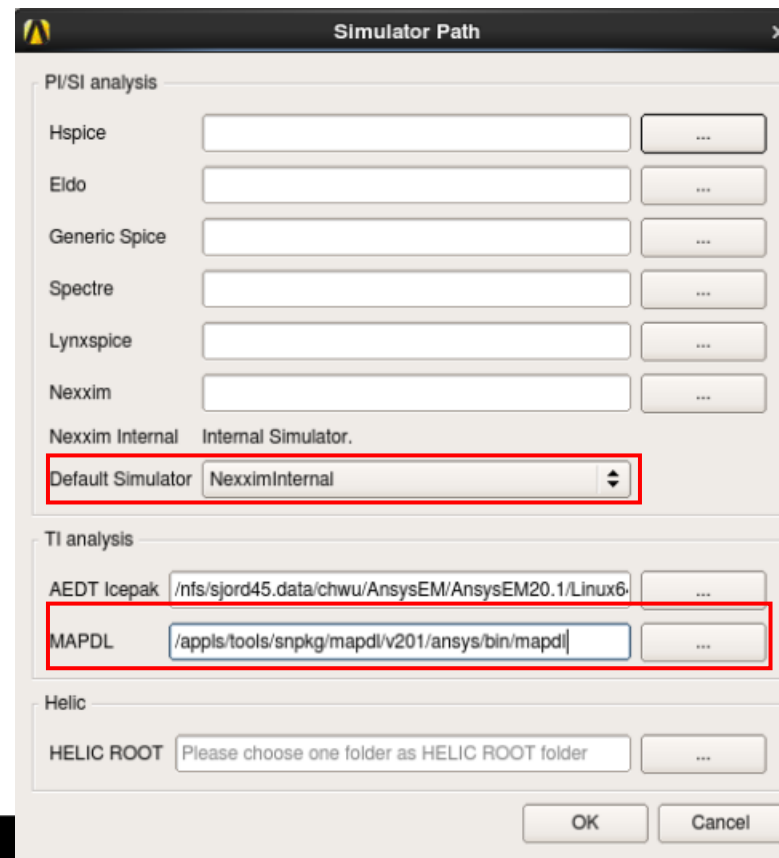
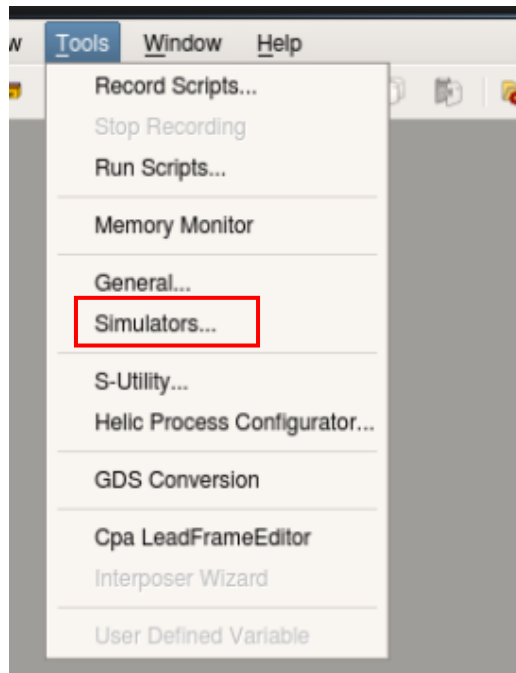
User can also set the MAPDL link by the following steps.

1.Click "Tools" -> "Simulators" to open Simulator Path dialog box.

2.Enter the MAPDL path , for example, “/appls/tools/snpkg/mapdl/v201/ansys/bin/mapdl”

And set the default simulator to NexximInternal, then click OK

3.For the AEDT Icepak usage, please refer document “Icepak Boundary Condition Usage In RHSC-ET.pdf”.

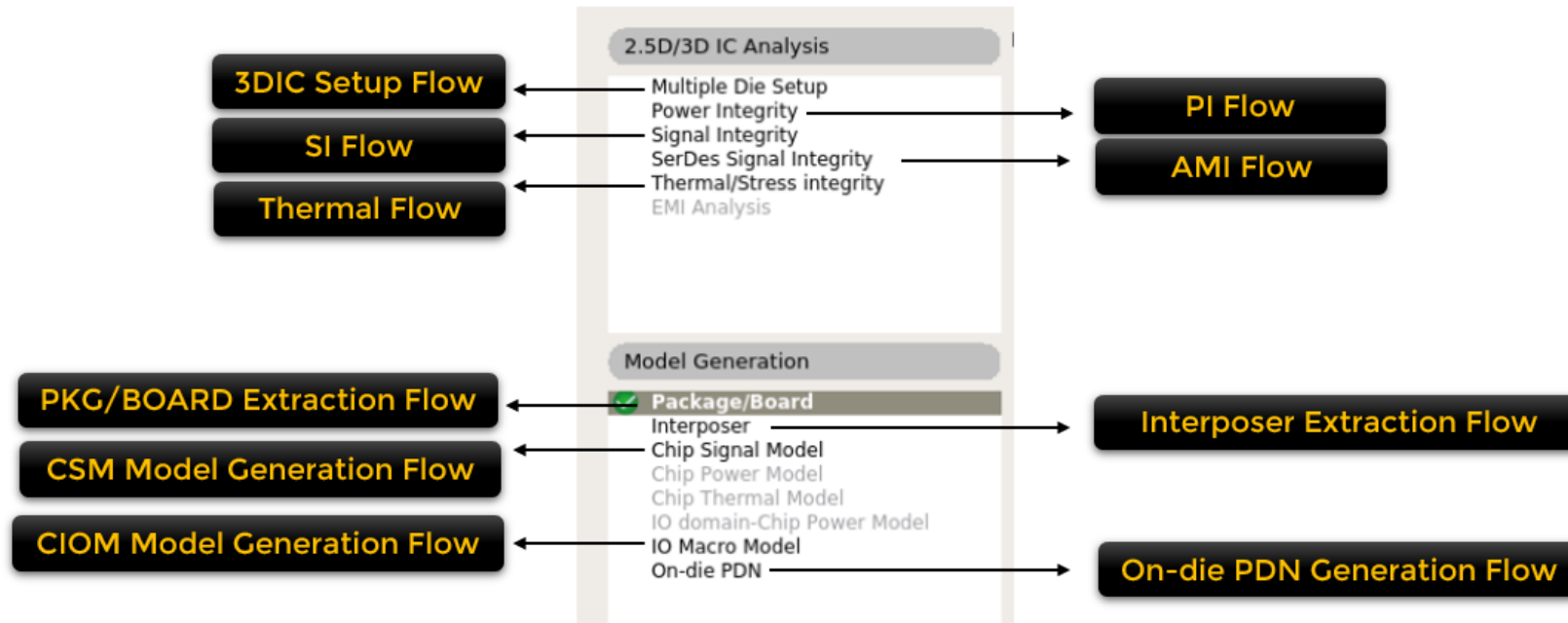


# License Package Information

## Required license:

- For digital chip design: redhawk\_cpa, redhawk\_3d, redhawk\_cta, redhawk\_cta\_ex or redhawk\_sc\_electrothermal and redhawk\_sc\_token
- For thermal flow, redhawk\_cta and redhawk\_cta\_ex can only run 2D flow, redhawk\_sc\_electrothermal can run 3D flow.
- According to different license, CPS feature is different.

**Note:** for SI and PI flow, please download CSM and CMA package.



# License Package Information - Thermal Flow

## Thermal Flow licenses:

Feature Name	Description	<u>redhawk_cta</u>	<u>redhawk_cta_ex</u>	<u>redhawk_sc_electrothermal</u>
Basic	Basic license required to run CTA	y	y	y
Multi-core, Multi-threading	Enable multi-threads		y(4 threads at max)	y(unlimited)
Import HTC from Icepak	Import HTC from both Classic and AEDT <u>Icepak</u>			y
Stress analysis		y	y	y
Line element	Line model for bump/via/TSV	y	y	y
Smart mesh	High resolution in Z direction		y	y
Multiphysics support	Joule-heating effect		y	y
Detailed CTM flow	Support foundry's thermal tech file and build detailed model for die/interposer		y	y

# / Setting Up the Environment

- **Set RedHawk-SC Electrothermal path and license:**

- `setenv CPSROOT <choose the version installed on your server>`
- `set path = ( $CPSROOT/bin $path )`
- `setenv LM_LICENSE_FILE <To your redhawk_cta, redhawk_cta_ex or redhawk_sc_electrothermal license>`

- **To execute RedHawk-SC Electrothermal:**

- `$CPSROOT/bin/redhawk_sc_et -3dic &` (3D flow)
- `$CPSROOT/bin/redhawk_sc_et &` (2D flow)

- **For Cadence package layout formats .mcm and .sip, environment variable CDSROOT needs to be set as shown below:**

`setenv CDSROOT /appls/cadence/SPB166`

`set path = ($path $CDSROOT/tools/bin $CDSROOT/tools/pcb/bin)`

Cadence layout file translation is performed by a Cadence utility. The environment variable **CDSROOT** needs to be set properly before launching ET.



# Ansys License Server Migration

All products from Semiconductor Business unit of Ansys will support checking out licenses from the new Ansys License Manager (CVD), please upgrade to new license daemon at any point after July 7, 2020.

## Migration Steps

1. Get the Ansys License Manager kit from below:

[https://support.ansys.com/AnsysCustomerPortal/en\\_us/Downloads/Current+Release](https://support.ansys.com/AnsysCustomerPortal/en_us/Downloads/Current+Release)

**Current Releases -> Tools -> ANSYS Enterprise License Manager**

Or please check with your Sales or Technical Account Manager to get this kit.

2. Send an internal notification to the Ansys tool users.

3. Stop the **apacheda** license server using **lmdown** command from FlexLM.

4. Use new license file which issued after July 7, 2020, and it has VENDOR line **ansyslmd**.

5. Restart the license with step1.

If you have two or more daemons out of **ansyslmd**, **apacheda**, **hclmd** etc, you can do:

- a. Shut down all the **apacheda** daemons.
- b. Merge these license files into one by keeping up to the VENDOR line only ONCE and then append other FEATURE/INCREMENT lines on to it.

 **Ansys**

