

# SiEPICFAB SHUKSAN CADENCE PDK

2021-11-15 Version 0.0

## REVISION

Version	Description	Author	Date
0.0	Initial release	Sean Lam	2021-11-15

## INSTALLATION

### 1. Licensing and Tools

Check that you have the following licenses and tools:

1. RedHat® Enterprise Linux® 6, 7 (64-bit editions only)
2. Cadence Virtuoso (ICADVM18.1.500.1100 or later) with additional licenses:
  - a. Option 1: Virtuoso® Photonics Platform
  - b. Option 2: Virtuoso® Photonics Option + Spectre® Classic Simulator + Virtuoso® ADE Explorer
3. Cadence ADE-Explorer
4. Cadence Spectre
5. Spectre181, ISR5 to ISR11
6. Spectre191, ISR6 or later
7. Lumerical v202 or later with additional licenses:
  - a. Option 1 (licenses sold by Lumerical): INTERCONNECT + INTERCONNECT-Virtuoso Interoperability
  - b. Option 2: Ansys-Lumerical INTERCONNECT
  - c. Option 3: Ansys Enterprise

### 2. Installing ShuksanPDK

To install the ShuksanPDK and set up the libraries:

1. Clone or copy the SiEPICfab\_Shuksan\_PDK repository to your system
2. Navigate to the SiEPICfab\_Shuksan\_PDK/cadence directory
3. Set up Virtuoso, Spectre, and Lumerical by configuring your Linux environment \$PATH. You can check by entering in the Terminal:

```
>> which interconnect  
>> which spectre  
>> which virtuoso
```

If your Linux environment is set up properly, the above commands should result in a path to the installation of the respective software.

4. Edit the .cdsinit file by setting the INTERCONNECT\_HOME environment variable to the installation path of Lumerical.

```
1 ;*****
2 ; This is the .cdsinit file for Cadence-Interconnect integration.
3 ; The installation script determines the INTERCONNECT installation directory and updates this file as necessary
4 ; If INTERCONNECT is not installed in the default directory, the user must define the environment shell variable
5 ; "INTERCONNECT_HOME" as the INTERCONNECT installation home directory before running Virtuoso.
6 ;*****
7 ;*****
8
9 ; Define the OASIS classes and methods
10 asiAnalogAutoloadProc()
11 loadContext(prependInstallPath("etc/context/asimenv.cxt"))
12
13 ; set INTERCONNECT_HOME environment variable to Lumerical installation
14 setShellEnvVar("INTERCONNECT_HOME" "/CMC/tools/lumerical/v211")
15
16 ; Get INTERCONNECT_HOME environment variable for INTERCONNECT integration
17 let( (INTERCONNECTHOME)
18     INTERCONNECTHOME = getShellEnvVar("LMLHOME") || getShellEnvVar("INTERCONNECT_HOME")
19     if( isDir(INTERCONNECTHOME)
20         then
21             load(strcat(INTERCONNECTHOME "/interfaces/cadence/virtuoso/INTERCONNECT.ini"))
22             loadContext(strcat(INTERCONNECTHOME "/interfaces/cadence/virtuoso/INTERCONNECT.cxt") t)
23             callInitProc("INTERCONNECT")
24         else
25             fprintf(stdout "*** ERROR *** Could not locate the directory for INTERCONNECT integration.\n")
26         )
27     t
28 )
29
```

 **Edit Here**

5. Set the following environment variables via Terminal to enable the photonic options in Virtuoso:

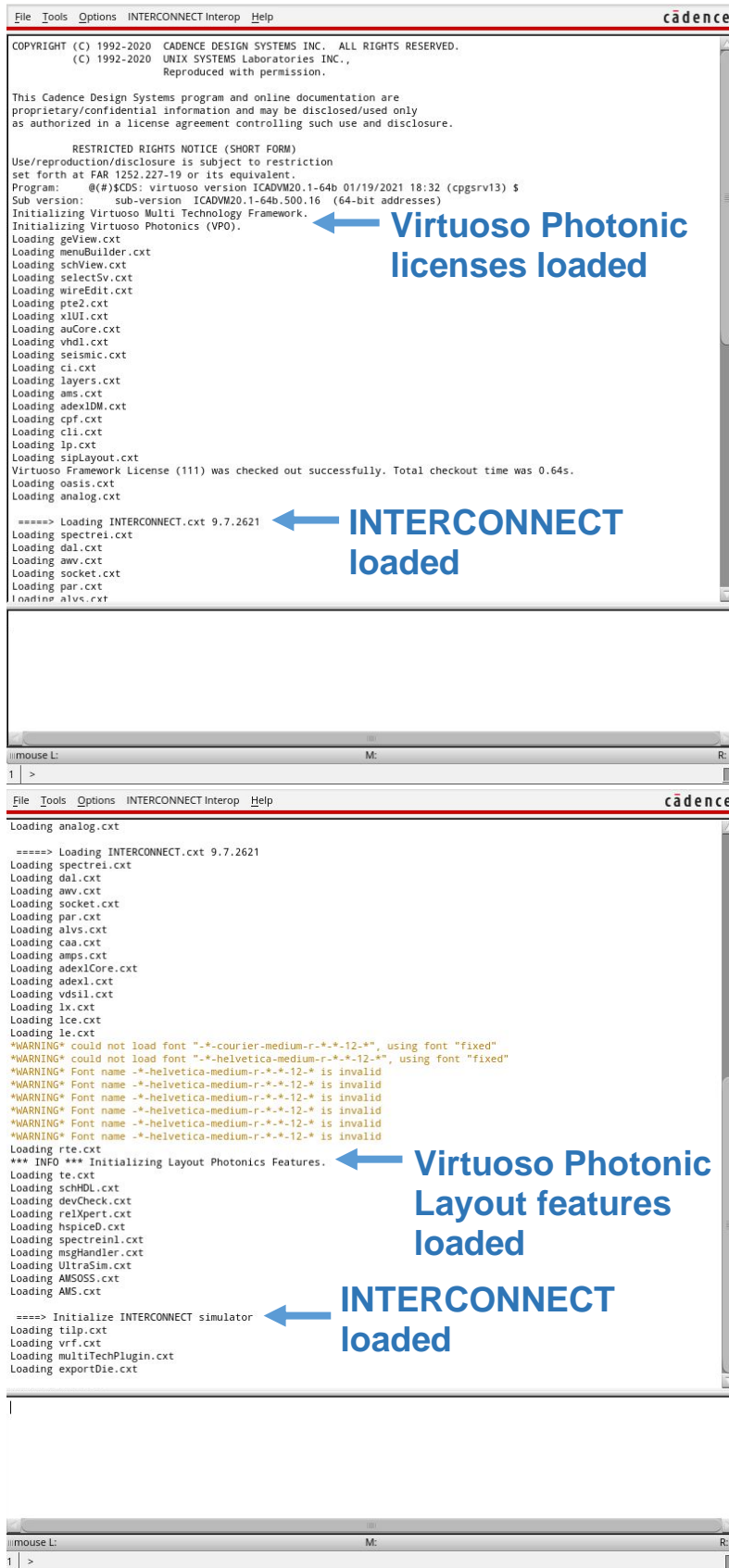
```
>> setenv Virtuoso_Photonics_Option 1
>> setenv Virtuoso_MultiTech 1
```

6. Launch Virtuoso

```
>> virtuoso &
```

A log window will show up. Note the following sections that show up that ensure you have installed the software and licenses properly:

## INTERCONNECT Interoperability loaded



```
File Tools Options INTERCONNECT Interop Help cadence
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set forth at FAR 1252.227-19 or its equivalent.
Program: @(#)SCDS: virtuoso version ICADVM20.1-64b 01/19/2021 18:32 (cpgrsv13) $
Sub version: sub-version ICADVM20.1-64b.500.16 (64-bit addresses)
Initializing Virtuoso Multi Technology Framework.
Initializing Virtuoso Photonics (VPO).
Loading geView.cxt
Loading menuBuilder.cxt
Loading schView.cxt
Loading select5v.cxt
Loading wireEdit.cxt
Loading prt2.cxt
Loading xUI.cxt
Loading auCore.cxt
Loading vhd1.cxt
Loading seismic.cxt
Loading ci.cxt
Loading layers.cxt
Loading ams.cxt
Loading adexIDW.cxt
Loading cpf.cxt
Loading cli.cxt
Loading lp.cxt
Loading siLayout.cxt
Virtuoso Framework License (111) was checked out successfully. Total checkout time was 0.64s.
Loading oasis.cxt
Loading analog.cxt

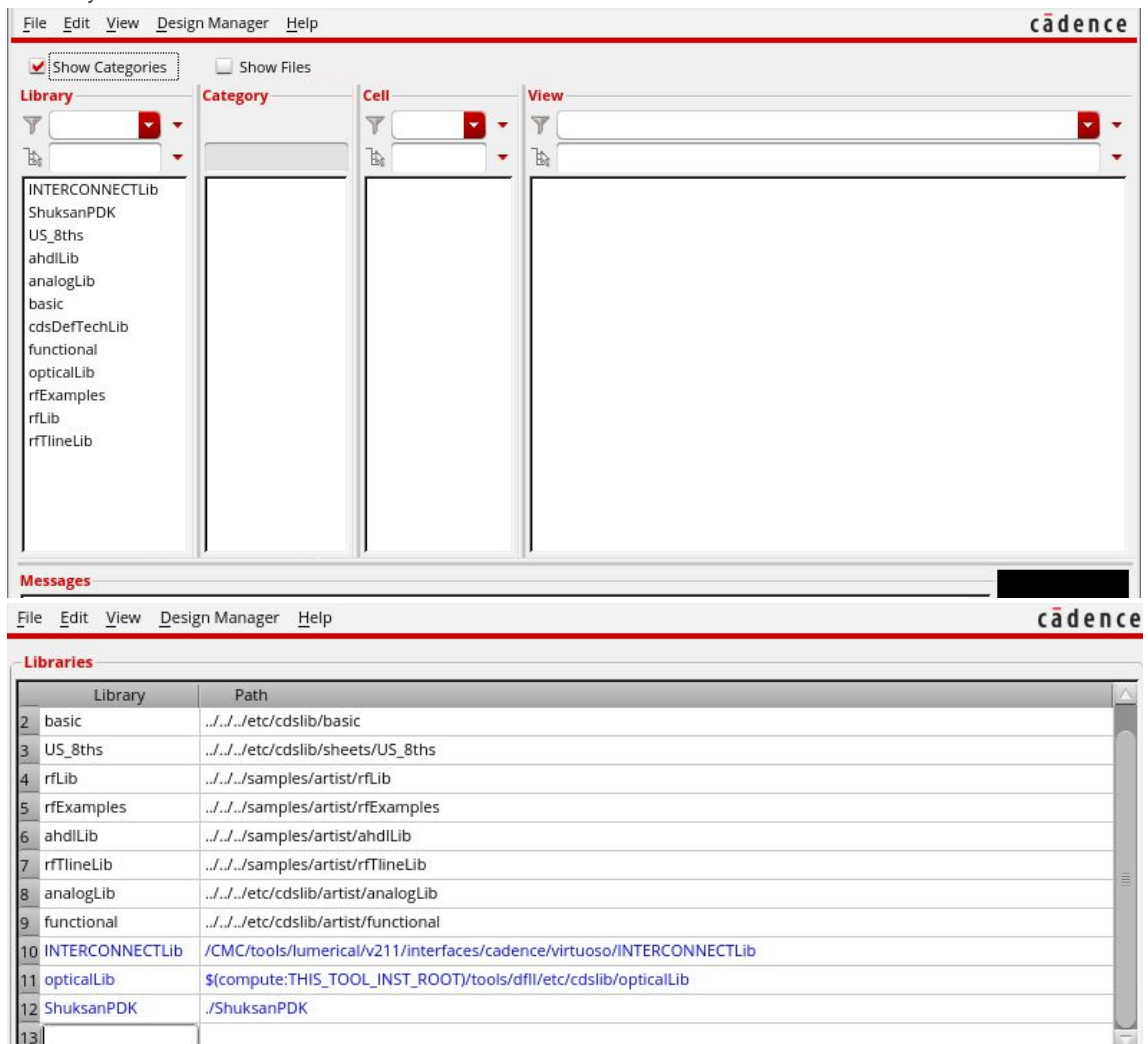
====> Loading INTERCONNECT.cxt 9.7.2621
Loading spectrei.cxt
Loading dal.cxt
Loading awv.cxt
Loading socket.cxt
Loading par.cxt
Loading alvs.cxt

Loading analog.cxt

====> Loading INTERCONNECT.cxt 9.7.2621
Loading spectrei.cxt
Loading dal.cxt
Loading awv.cxt
Loading socket.cxt
Loading par.cxt
Loading alvs.cxt
Loading caa.cxt
Loading amps.cxt
Loading adexlCore.cxt
Loading adexl.cxt
Loading vdsil.cxt
Loading lx.cxt
Loading lce.cxt
Loading le.cxt
*WARNING* could not load font "-*-courier-medium-r-*-*12-*" using font "fixed"
*WARNING* could not load font "-*-helvetica-medium-r-*-*12-*" using font "fixed"
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
*WARNING* Font name "-*-helvetica-medium-r-*-*12-*" is invalid
Loading rte.cxt
*** INFO *** Initializing Layout Photonics Features.
Loading te.cxt
Loading schMDL.cxt
Loading devCheck.cxt
Loading relXpert.cxt
Loading hspiceD.cxt
Loading spectreinl.cxt
Loading msgHandler.cxt
Loading UltraSim.cxt
Loading AMSOSS.cxt
Loading AMS.cxt

====> Initialize INTERCONNECT simulator
Loading tilp.cxt
Loading vrf.cxt
Loading multiTechPlugin.cxt
Loading exportDie.cxt
```

7. Navigate to Tools→Library Manager and check that the libraries are set up. The main libraries needed are INTERCONNECTLib, opticalLib, basic, analogLib, and ShuksanPDK. If you do not see ShuksanPDK, you can navigate Edit→Library Path in the Library Manager window and add the path to the ShuksanPDK directory.



## TUTORIALS

Schematic, simulation, and layout tutorials can be found in:

<https://qdot-nexus.phas.ubc.ca:25683/s/toRG2JCmzywqb2N>