

ECE 60422: Introduction to ADS

Fall 2025

1. What is ADS?

Advanced Design System (ADS) is a circuit simulator provided by Keysight Technologies. It has many practical capabilities, but we will be using it mainly for its RF circuit simulation.

2. Installation

This course covers the fundamentals of RF design. Depending on your computer and personal preferences, you have a few options to access the software:

1. Student License on personal computer
 - a. Most students will choose to request a student license directly from Keysight using [this link](#)¹. Please note that this is not granted instantaneously and can take a couple of days to process so please do this in the first week of the course. You should use the course instructor's name in the professor field.
 - b. See Appendix A: Step-By Step Installation and License Activation for details.
2. Remote Access to ECE Linux computers with ThinLinc
 - a. The instructions to set up remote desktop are found [here](#)².
 - b. Download and fill out the Non-Disclosure Agreement (NDA) available on Brightspace.
 - c. Submit the NDA to the Brightspace assignment, the feedback will contain your course account login credentials. There is no installation required, just login with your Purdue credentials and once you are logged in, switch to your course account.
 - d. See Appendix B: ECE Remote Servers Access for details.
3. Like option 2, you can access these computers physically in the ECE computer lab.

For any specific issues, please refer to the TA.

3. Getting Started

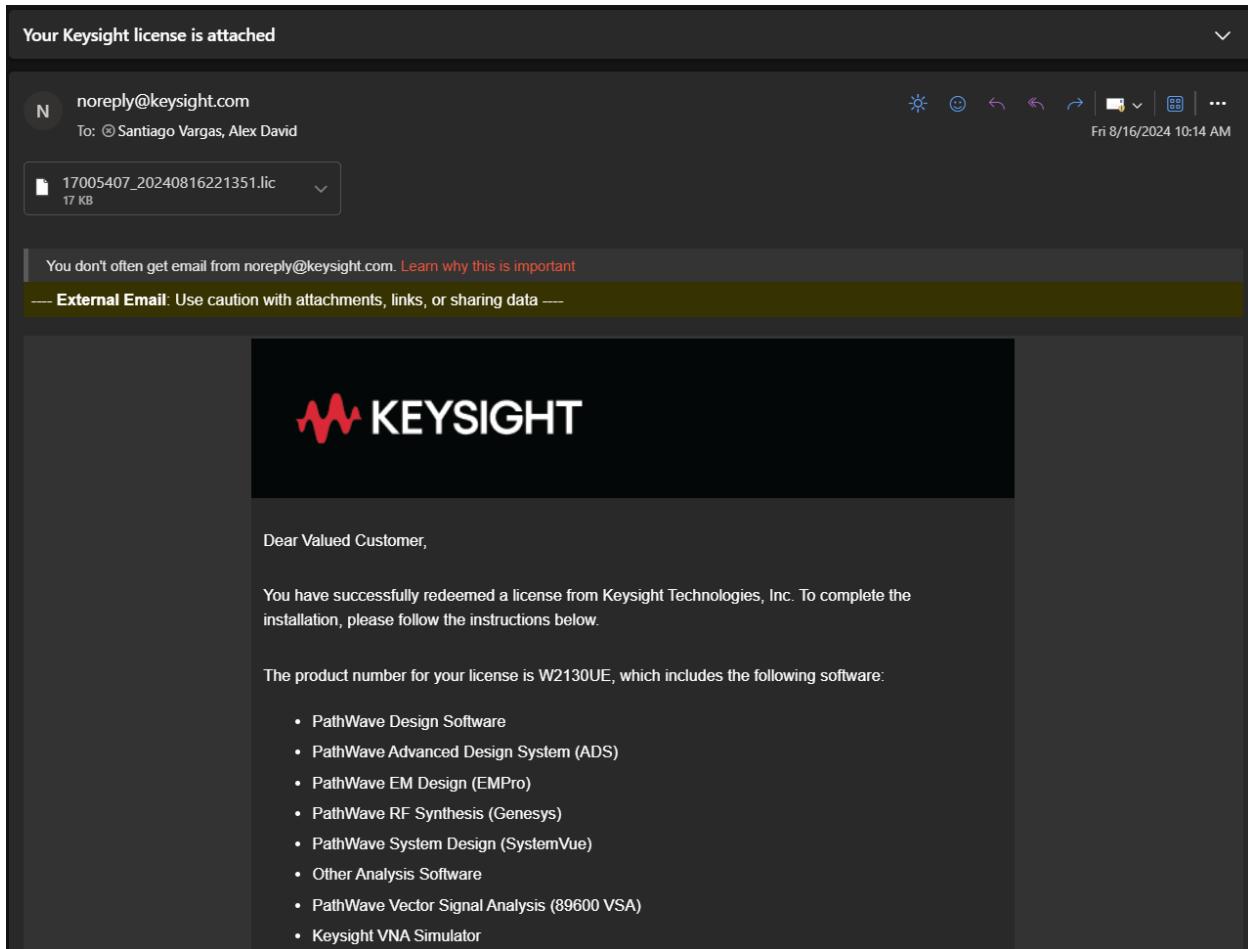
When you first download ADS, please refer to this [tutorial](#) to get started learning ADS. (https://youtu.be/04BfajzXnmM?si=mMJ0_HhTA9gonePM). As ADS is one of the most popular RF circuit simulators, there are plenty of resources online for it. In addition, please contact the TA if you need further simulation assistance.

¹ <https://connectlp.keysight.com/StudentLicense>

² <https://engineering.purdue.edu/ECN/Support/KB/Docs/ECETHinlinc>

4. Appendix A: Step-By Step Installation and License Activation

After filling out the form, you should receive an email with the links to download, install, and set up the license for the current version of ADS (2024 Update 2.0 is used as example). The license file will be attached and ends with a “.lic” file extension, it can be opened as a text file. Save this file to an accessible location (for example, the ADS installation folder or document library).



Following the download link, click on “PathWave Advanced Design System”. On the next page, select the operating system, software version, and click download. Follow the typical installation process for your operating system.

Downloads - PathWave Universe

docs.keysight.com/university/downloads-644202220.html

There are several products available through the PathWave University Program, each available for download on this page. As there are different software versions available worldwide, it can be confusing to find the right download for your license.

Resources

- Knowledge Center
- University Support Home
- Relevant Content
- Licensing
- Downloads
- User Community

If you are a university professor or IT professional...

See the *University License* tab below.

Licenses for universities are generally floating (server-based) licenses. Students can use these licenses when they are on campus and are using the lab computers. If students need a license for off-campus use, they should request a student license ([here](#)) which can be used on their personal computer.

For help with licensing, please see the *Licensing* tab on the left.

If you are a university student...

See the *Student License* tab below.

Students at universities that are part of Keysight's PathWave University Program are entitled to a student license (for their personal computer) that corresponds with the university's product. To request a student license, go [here](#).

Student licenses are node-locked licenses, which means they are locked to one computer.

[University License](#) [Student License](#)

To determine the product number for your license, open the license file and scroll down to the section labeled 'LICENSE SUMMARY'. This is where your product number will be shown (ignore characters after the dash). To see an illustrated example, [click here](#). Click on your license model number on the left to determine which applications are included for your product.

E8900UE / E8900PE	Your license includes: (click to download)
W1460UE	• PathWave Advanced Design System
W2101UE	
W1415UE	
W2011UE	For help installing and licensing this product, check out the installation guide:
W8596UE	• Installing PathWave Design (formerly EEsof) Student Licenses
W2030UE	

www.keysight.com/find/eesof-ads-latest-downloads

Advanced Design System (ADS)

keysight.com/us/en/lib/software-detail/computer-software/pathwave-advanced-design-system-ads-software-2212036.html?jpid=zzfindeesof-ads-latest-downloads

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Choose a Platform: Windows Linux

Keysight recommends using the most current version, which includes the most up-to-date bug fixes and security patches available.

[Current Version](#) [Previous Versions](#)

Release Date	Version	Version Description	FREE TRIAL
2024-04-10	2024 Update 2.0	PathWave ADS 2024 Update 2.0 includes new capabilities for RF/MW, High Speed Digital, Power and Quantum Electronics applications, with powerful enhancements to 3DEM, layout verification, electro-thermal simulation, circuit simulation models, data & design management, and high-performance-computing (HPC).	

Note: The minimum license version required to run this software is 2024.02. If you are a supported customer and your date-based license version is less than 2024.02, please contact the [Keysight EDA Business Support Center](#) for an updated license file. If you are supported and have a numeric license version (i.e. 3.2), login to the [Keysight Software Manager](#) to obtain your updated licenses before installation. For other licensing tasks, see "[How to Obtain a License](#)".

How to Download

- [Downloading Your Keysight EDA Software](#)

How to Install

- [Quick Install and License Setup](#)

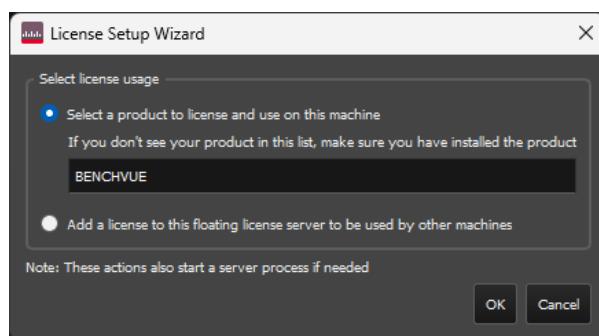
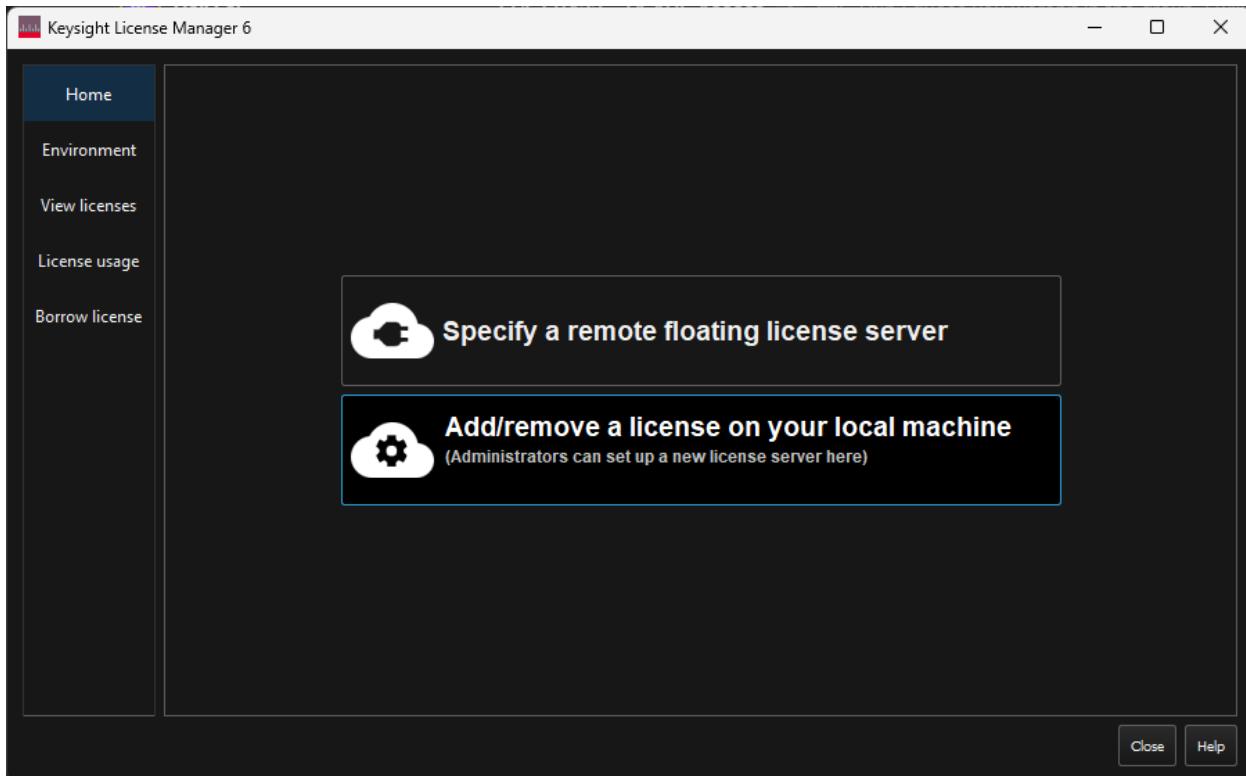
Licensing

[Download](#)

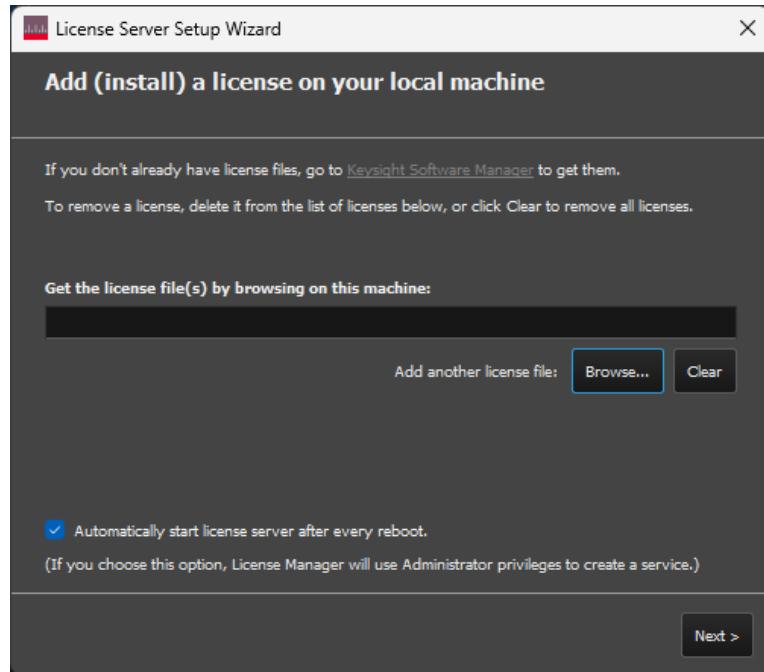
Minor Updates

- [PathWave ADS 2024 Update 2.0 Updates](#)

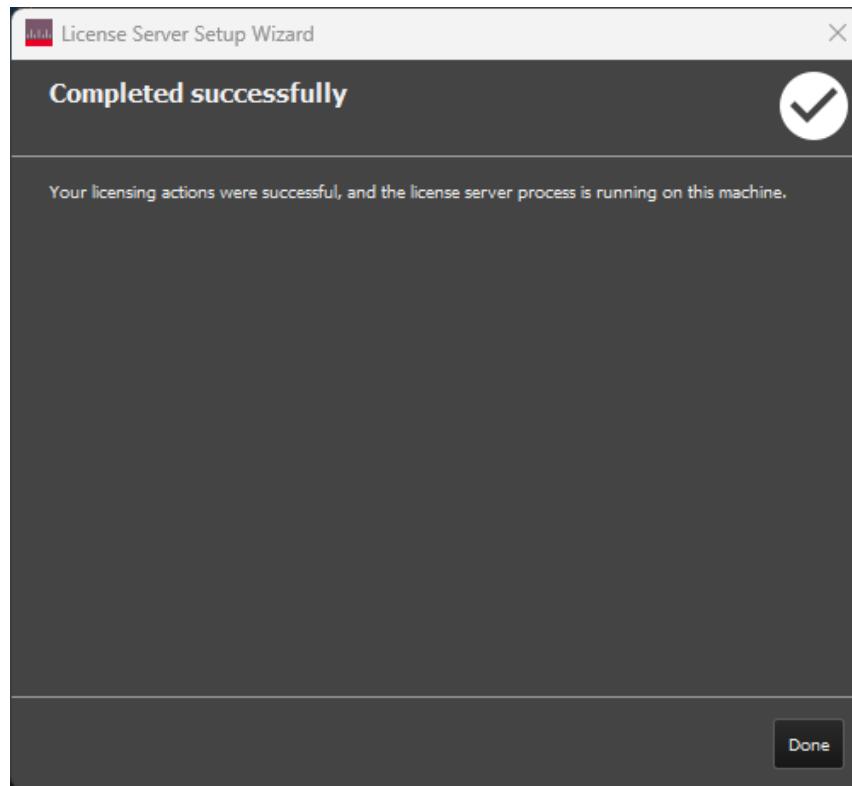
After completing the installation, open the license manager (Keysight License Manager 6). Select Add/remove a license on your local machine and select the product to license.



Browse the path where the license file was saved and select it. Ensure the “Automatically start license server after every reboot” is enabled and click on next. An administrator user access control window may appear when configuring the license server, click on Yes to allow.



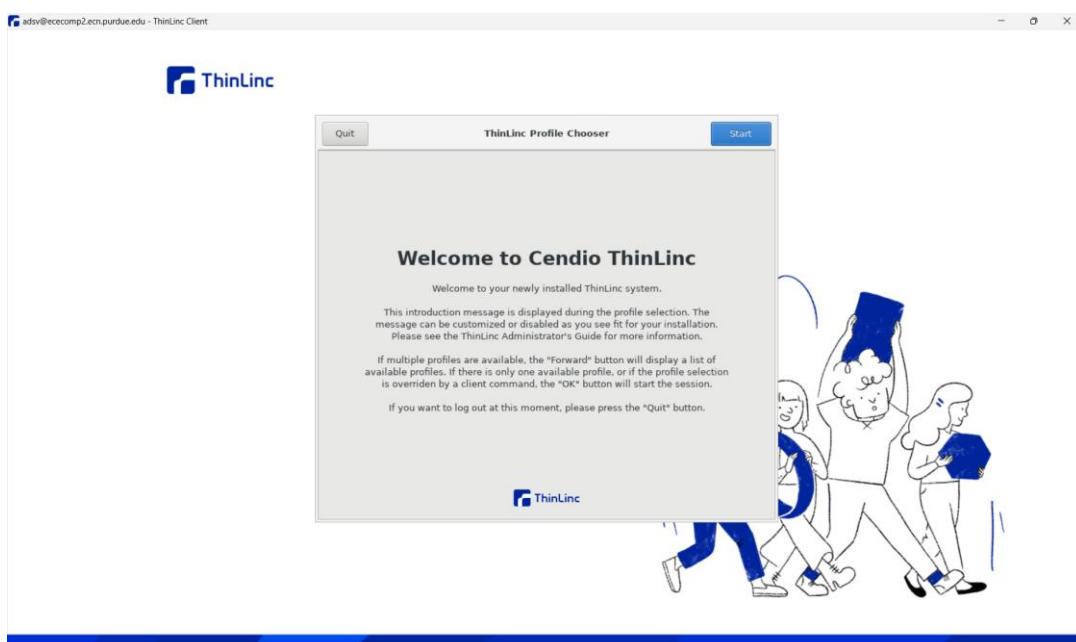
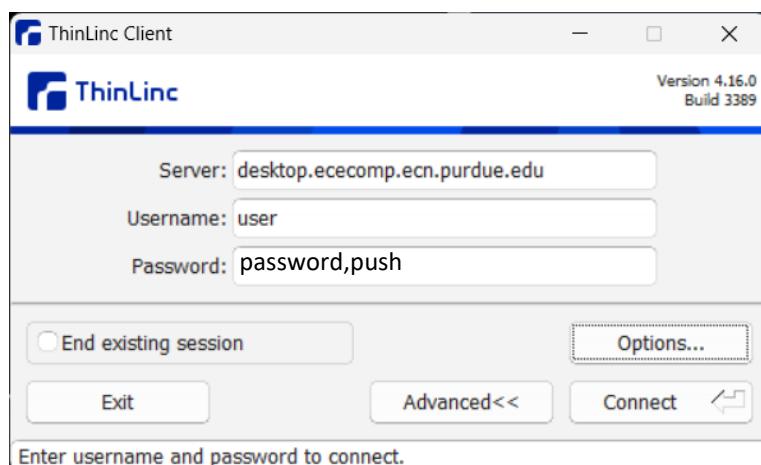
A confirmation window will appear after the license activation is successful, Keysight ADS is now enabled for use and the license valid for one year from the date when you received it.



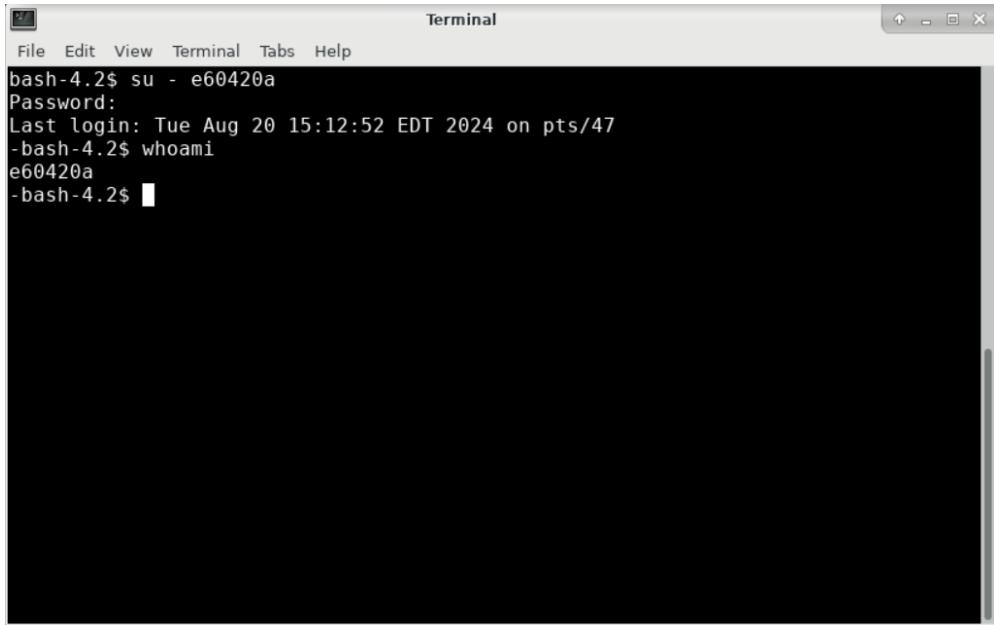
5. Appendix B: ECE Remote Servers Access

To get started, fill out the NDA in the course website following the instructions above. You will receive feedback in the Brightspace assignment with a course account username and temporary password. Then download and install the ThinLinc Client: <https://www.cendio.com/thinlinc/download>. If you have trouble accessing the client, use the web browser and navigate to the server hostname below.

Once ThinLinc is installed, connect to the Purdue VPN (<https://it.purdue.edu/services/vpn.php>), open the client and connect to the ECE server with the hostname *desktop.ececomp.ecn.purdue.edu*. Use your Purdue account username and password followed by „push”. The „push” suffix sends a two factor authentication notification that you will need to approve. Once you log in, click on start to open the session.

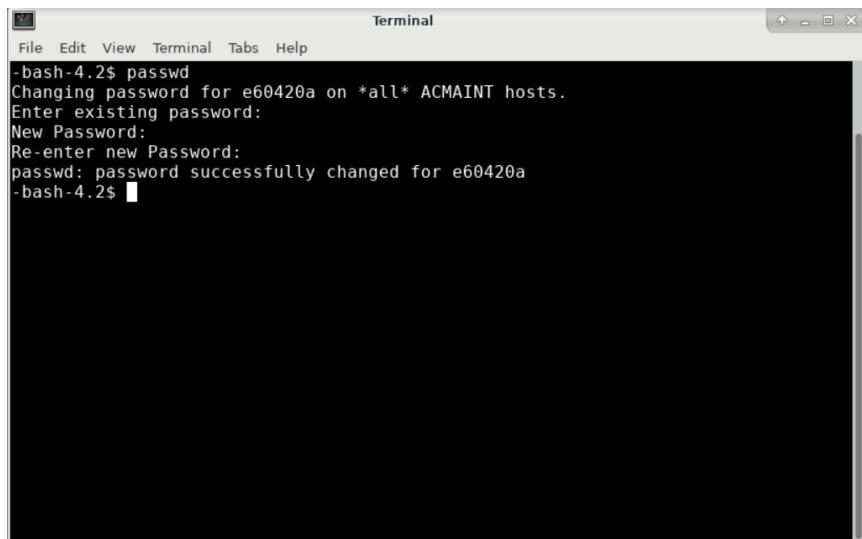


To use ADS, you will need to switch to your course account. To do this, open the terminal and use the `su - account_name` command to change to the course account (`account_name` is the username you received, i.e. e60420 followed by one or two letters). Type out your course account password, which was included when you received the account and click enter. You should see the last login information to confirm you successfully logged in. Another way to confirm you logged in is to use the `whoami` command which displays your current account username. You will need to log into your course account for every new terminal window. To clear up the outputs, use the `clear` command.



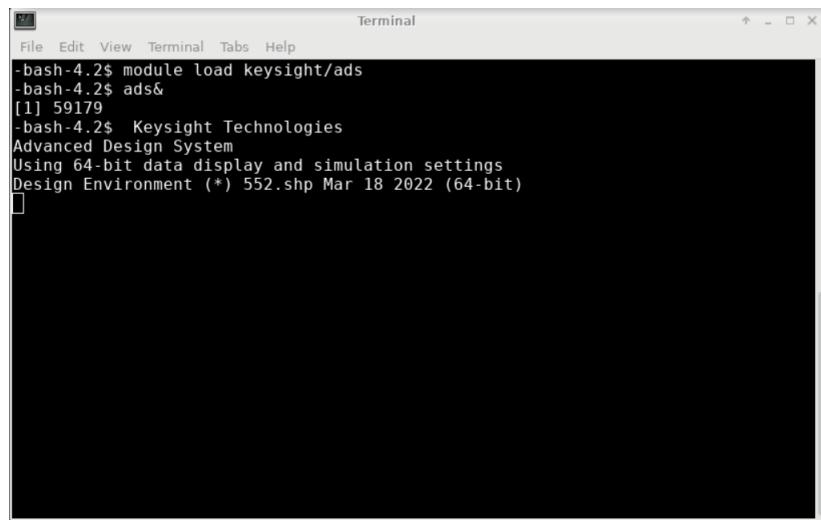
```
Terminal
File Edit View Terminal Tabs Help
bash-4.2$ su - e60420a
Password:
Last login: Tue Aug 20 15:12:52 EDT 2024 on pts/47
-bash-4.2$ whoami
e60420a
-bash-4.2$
```

To change the course account password, use the `passwd` command. Enter your existing password, then enter your new password and confirm it. Now you can access your course account with the new password.



```
Terminal
File Edit View Terminal Tabs Help
-bash-4.2$ passwd
Changing password for e60420a on *all* ACMAINT hosts.
Enter existing password:
New Password:
Re-enter new Password:
passwd: password successfully changed for e60420a
-bash-4.2$
```

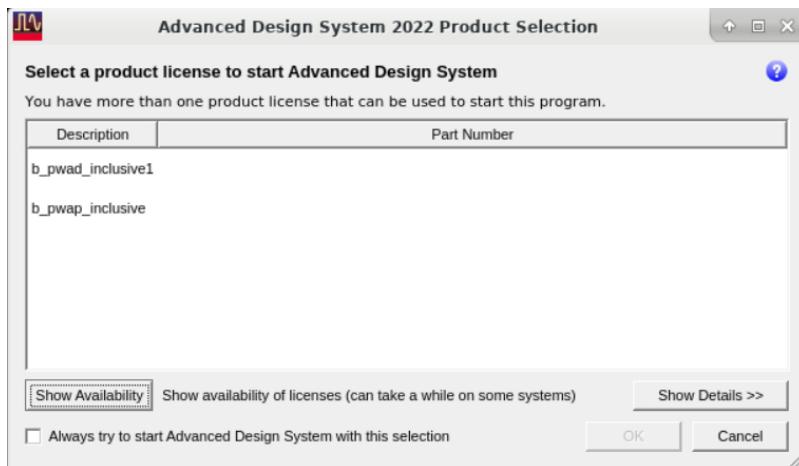
To load ADS, use the *module load keysight/ads* command to load Keysight ADS. To open the main window call *ads&* in the terminal window.

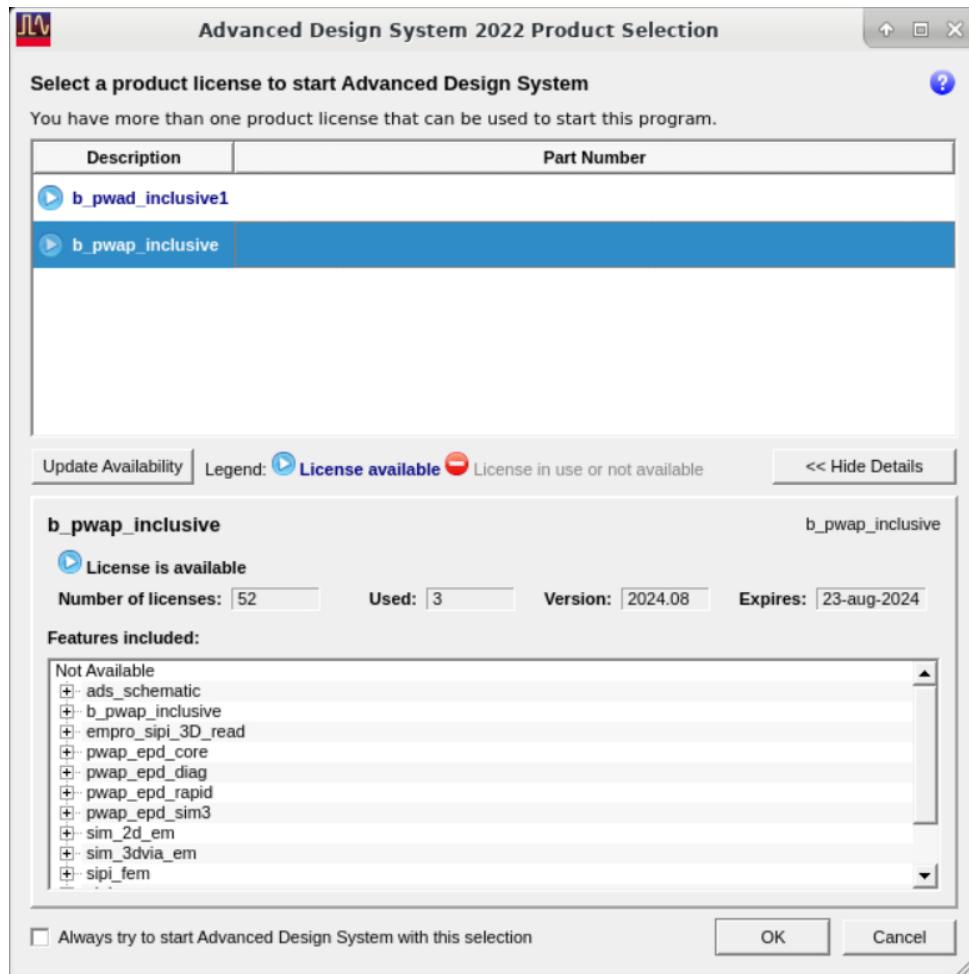


A screenshot of a terminal window titled "Terminal". The window shows a command-line session:

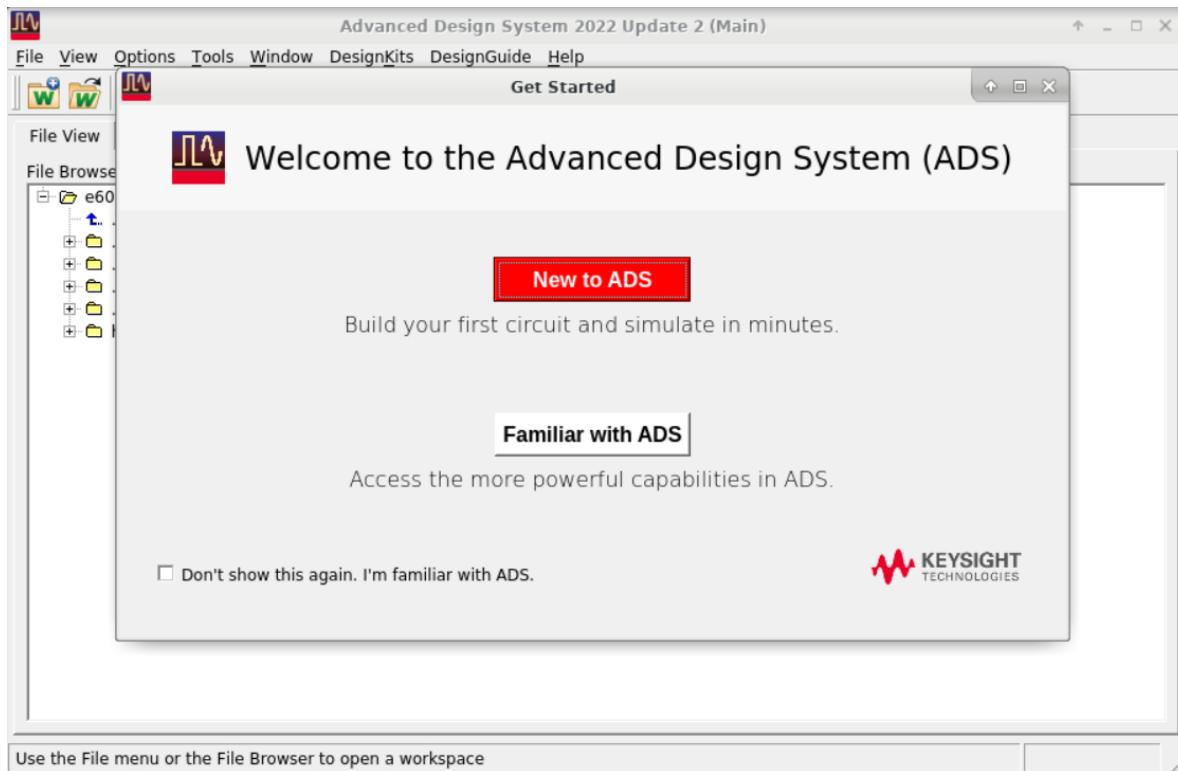
```
-bash-4.2$ module load keysight/ads
-bash-4.2$ ads&
[1] 59179
-bash-4.2$ Keysight Technologies
Advanced Design System
Using 64-bit data display and simulation settings
Design Environment (*) 552.shp Mar 18 2022 (64-bit)
```

On the product selection window, click on *Show Availability* and *Show Details >>*. Select a license that is available and click on OK to start the program.

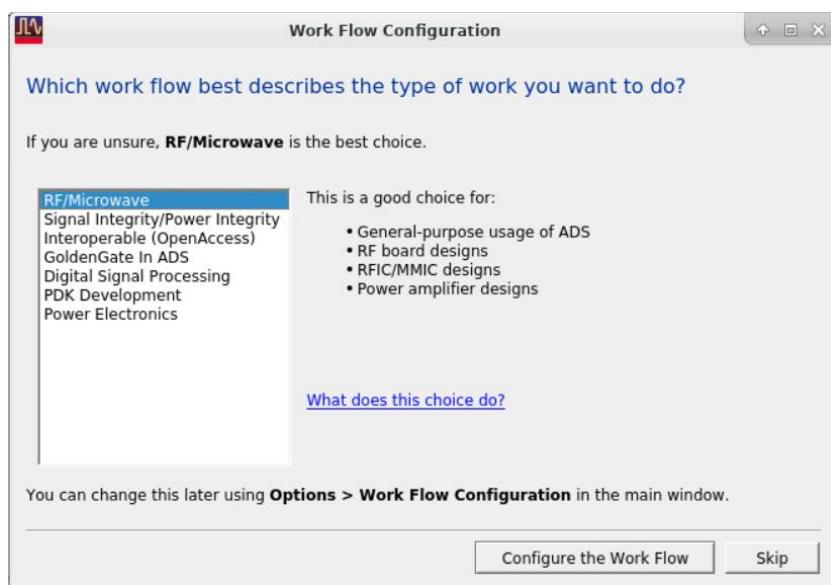




On the Get Started window you can select New to ADS to go though a quick tutorial on how to use the software. To avoid this opening every time once you become familiar with the software, select the *Don't show again*. option in the bottom left corner.



For the workflow configuration window, select the *RF/Microwave* option and click on *Configure the Work Flow*.



Optional: For a faster login into ThinLinc, you can setup SSH access. More info available here <https://www.rcac.purdue.edu/news/2101>.
