Powering Innovation That Drives Human Advancement

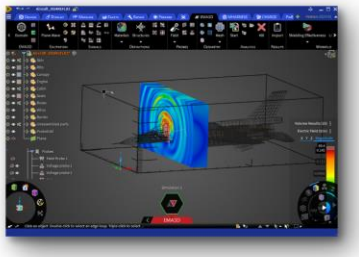
Ansys EMC Plus
Ansys Charge Plus
Quick Start Guide
2026 R1

How to Access Support for EMC Plus and Charge Plus

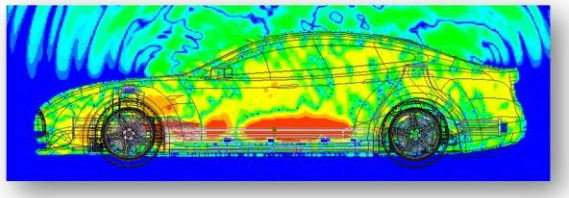
- Check with the Ansys Support Coordinator (ASC) at your company to identify who provides support for your location. Most likely it will be provided by Ansys directly. Regional contact options are listed here.
- If supported via Ansys directly, submit a support request via the Ansys Customer Portal: support.ansys.com. If supported by an Ansys Channel Partner contact your channel partner directly.
- Useful Tips: When inquiring about support, have your Ansys customer number ready in advance (learn how to retrieve your customer number here). Many useful training and instruction resources are available via the Knowledge Resource Search, found on the home page of the Ansys Customer Portal or via the Ansys Resource Center.

EMC Plus – Product Overview

- Ansys EMC Plus is a platform-level electromagnetic modeling and simulation tool that delivers a design-to-validation workflow for EMC



Electromagnetic Environmental Effects (E3)



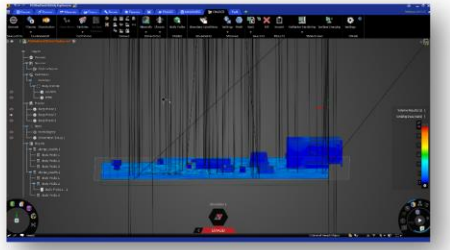
Full-vehicles with Cables and Power Industry

EMI/EMC in Full Devices

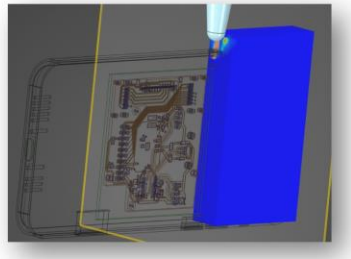
RF De-sense in Devices

Charge Plus – Product Overview

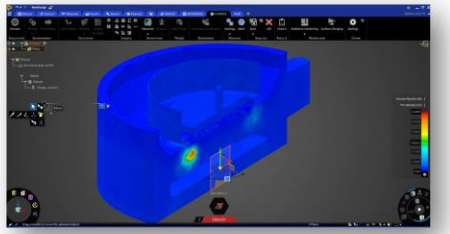
Ansys Charge Plus combines electromagnetic solvers, fluid solvers, and particle physics solvers for an easy-to-use Multiphysics simulation



Space Plasma Environments and Radiation Effects



Electrostatic Discharge (ESD)



Arcing (Plasma in air)

Semiconductor Processing Plasmas

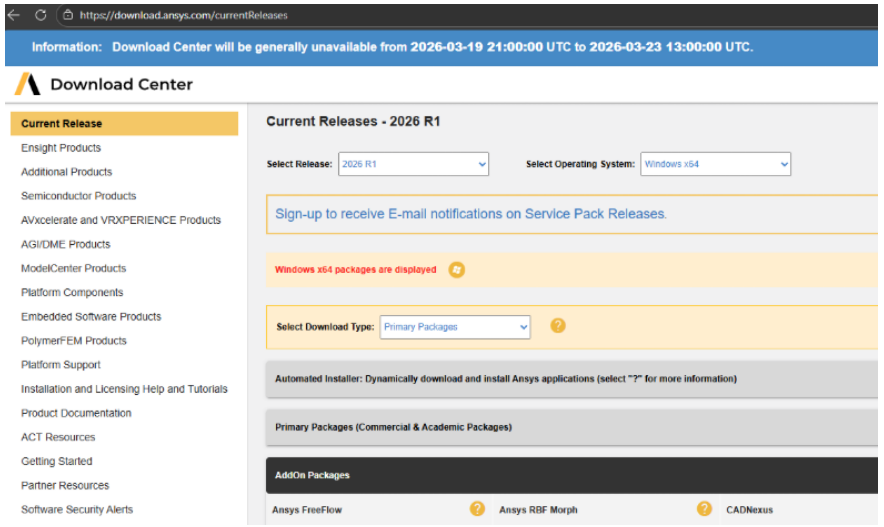
Who is EMA?

https://www.ema3d.com/

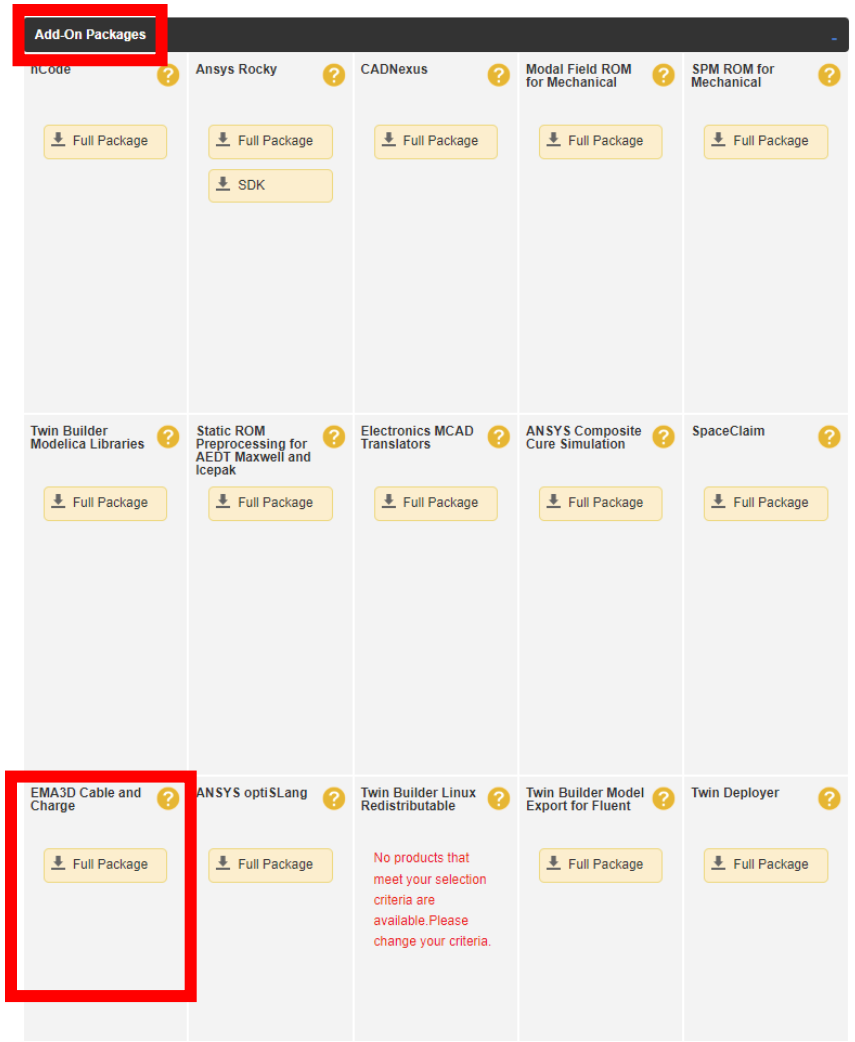
- EMA is an Ansys Technology Partner
- EMA was founded in 1978 and has provided services and developed software technologies for customers around the world
- EMA is the developer behind EMC Plus and Charge Plus
- EMC Plus and Charge Plus are available exclusively from Ansys and Ansys Channel Partners
- EMA Product Managers and Application Engineers often support Ansys customers by providing product overviews, technical support, and training
- More information can be found at https://www.ema3d.com/

How to download the products?

- https://download.ansys.com/
- Move “Selected Release to **2026 R1**”
- Scroll down to “Add-On Packages”
- Download the combined installer for **EMC Plus and Charge Plus**
- **Alternatively, the products, service packs, and patches are available at:** https://www.ema3d.com/quickstart/

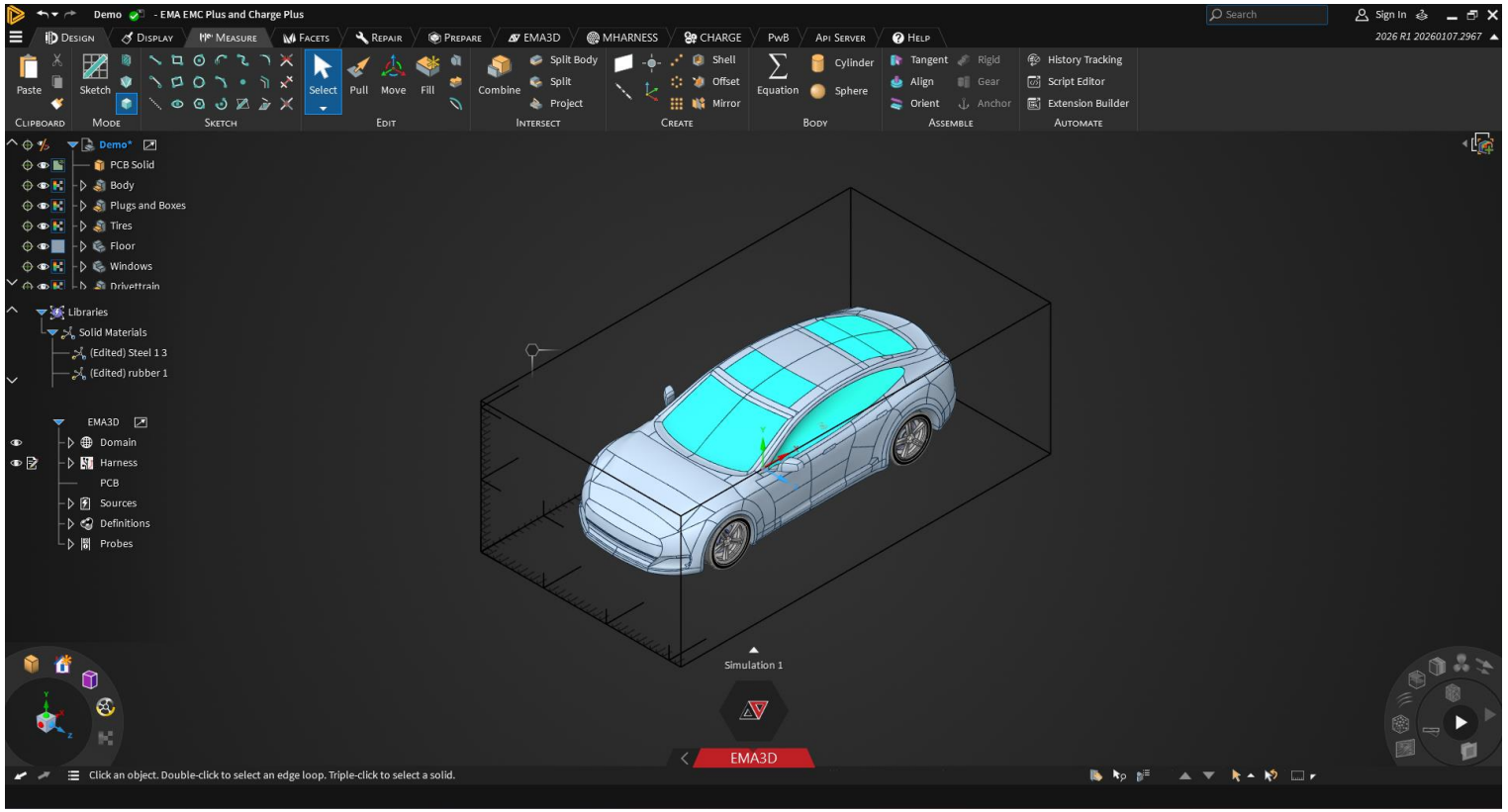


Scroll down to Add-On Packages

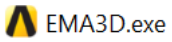


Discovery

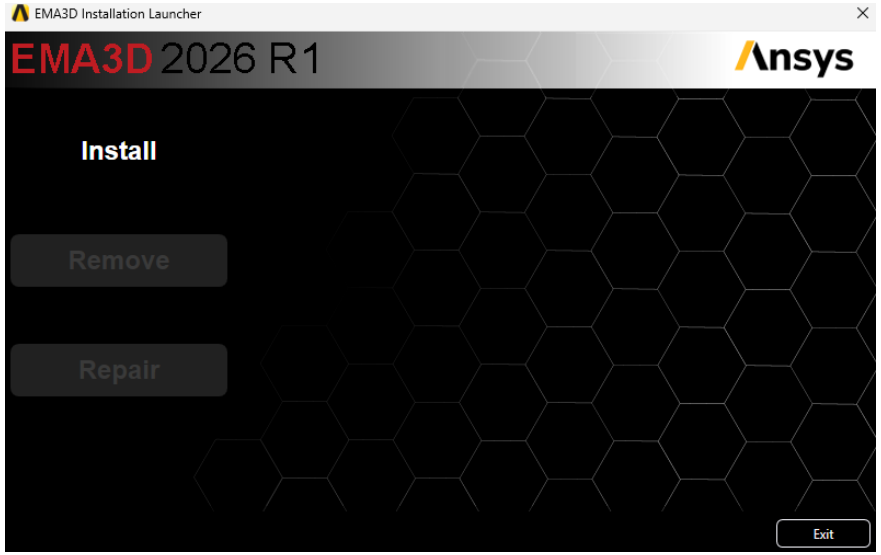
- A special version of Ansys Discovery is included with EMC Plus and Charge Plus
- You do not need to download Ansys Discovery separately. Ansys Discovery is included in the EMA3D installation
- EMC Plus and Charge Plus are implemented as an add-in to the Discovery User Interface

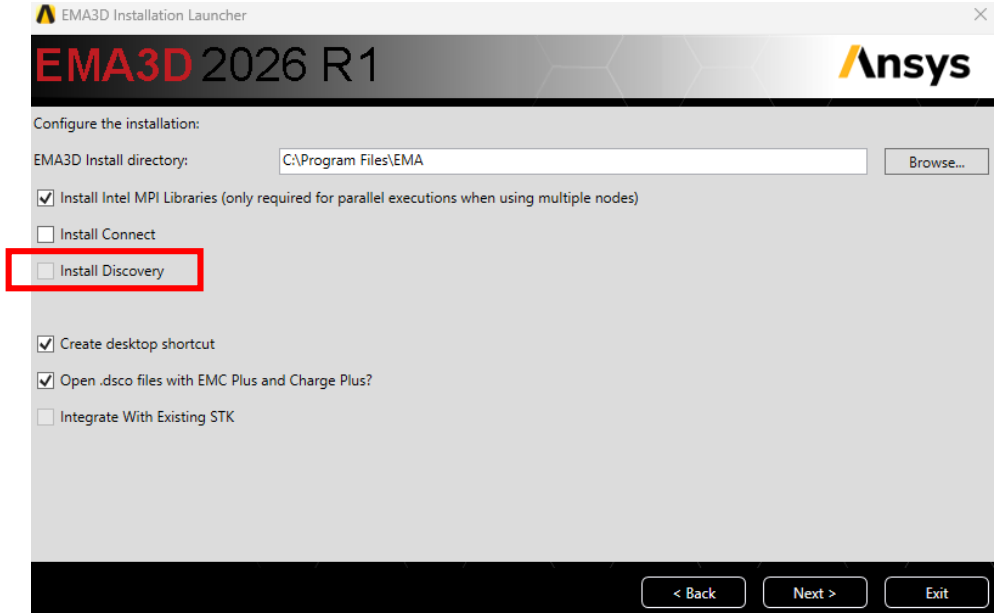


Installation Process 1

- Unzip downloaded file
- Invoke EMA3D.exe 

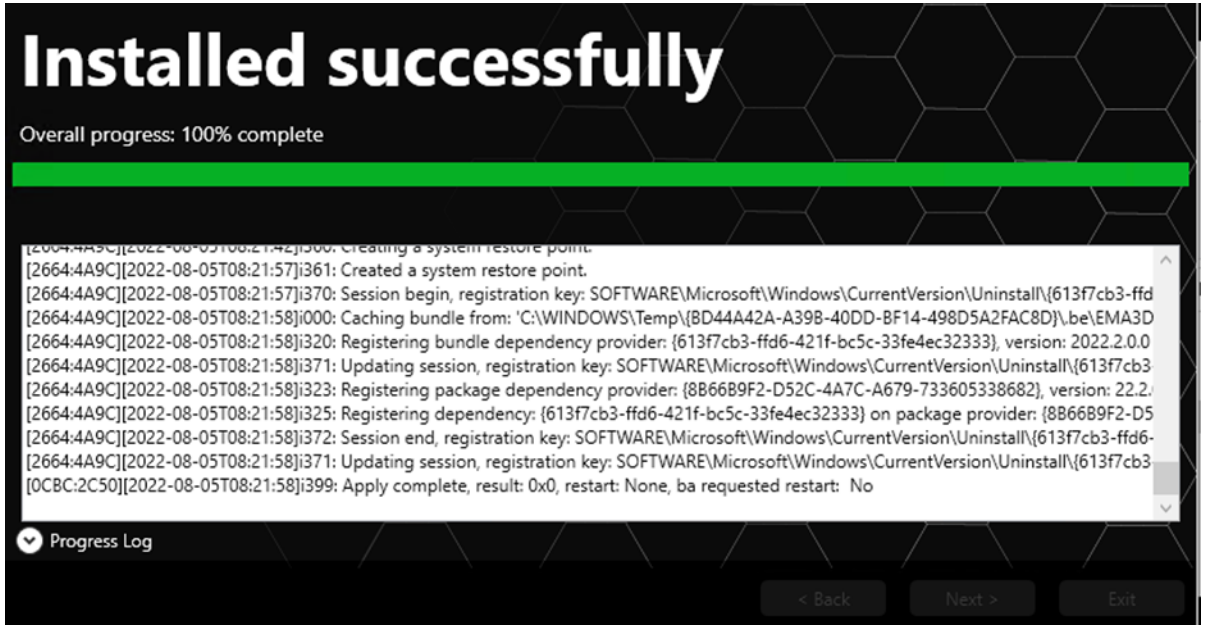
- Select Install
- Agree to EULA
- Select installation location
- Install MPI libraries if planning to run simulations in a cluster configuration
- Select “Install Discovery” unless already installed





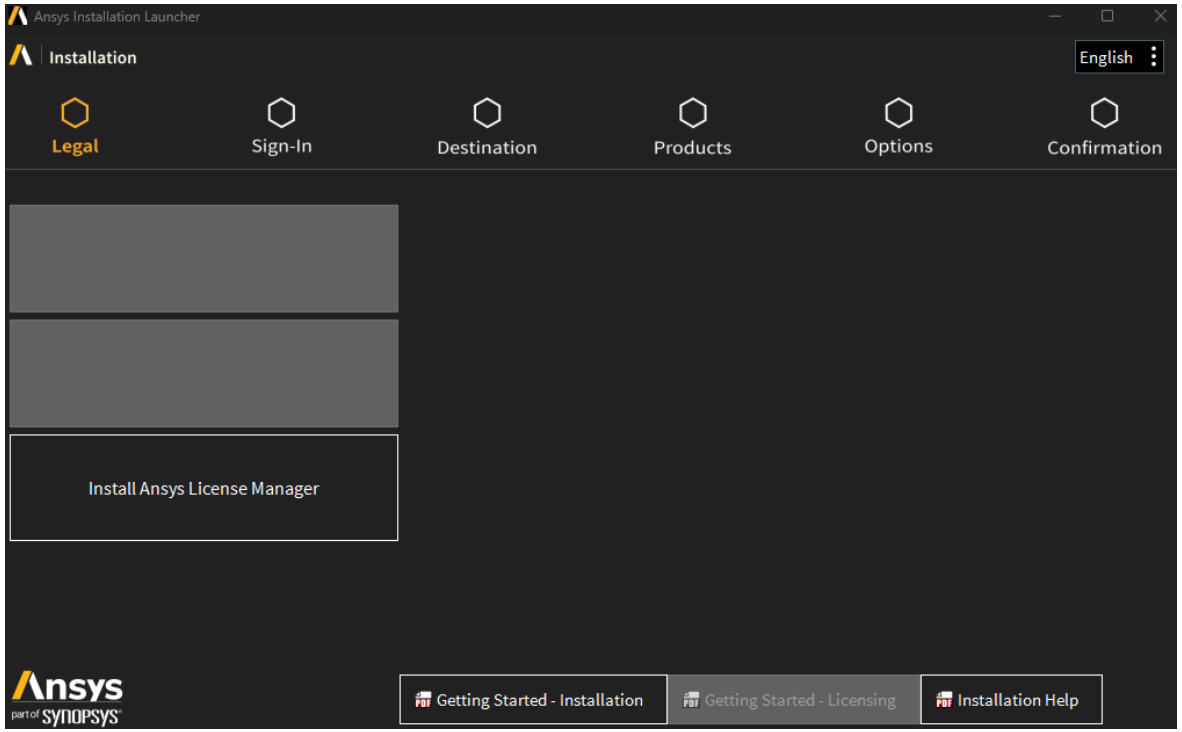
Installation Process 2

If you reach “Installed Successfully” message, close the window



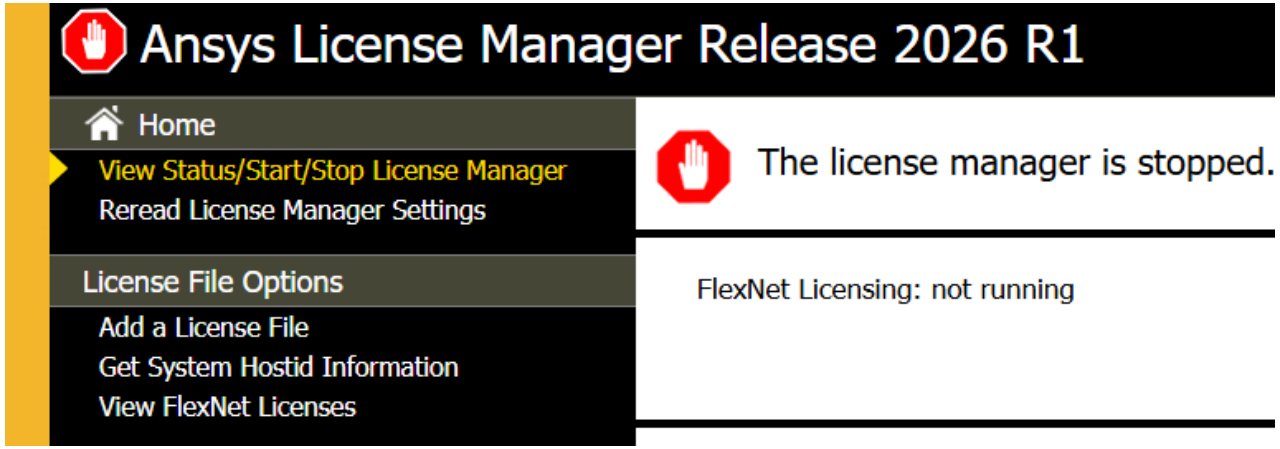
Ansys License Manager Installation (Local License Manager Only)

- Installation of the Ansys License Manager is not needed if a floating license is to be used or if it has been installed by another Ansys product
- In the unzipped folder, navigate to the “Installers” folder and then to the “disco” folder
- Execute “setup.exe”
- Select “Install Ansys License Manager”



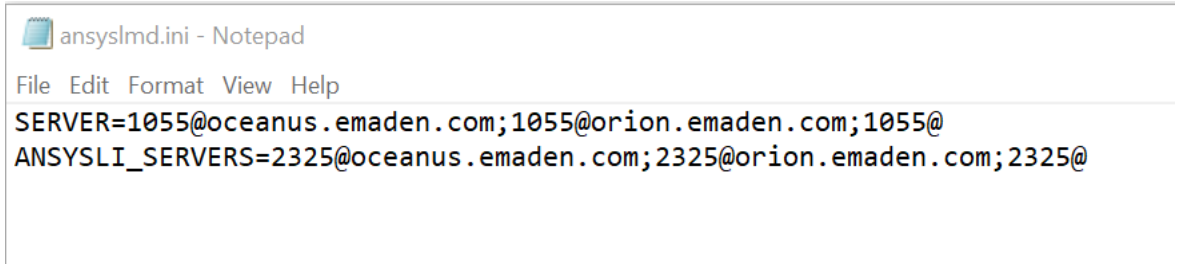
Setting up a license

- During installation, provide the port and server for your Ansys Floating License Server
- If a local license is to be used, specify the local machine as the license server
- If a local license is to be used, open the Ansys License Management Center from the Start Menu
- Navigate to “Add a License File”
- Load the license file provided by your Ansys Account Manager

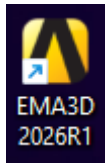


Changing the license server after installation

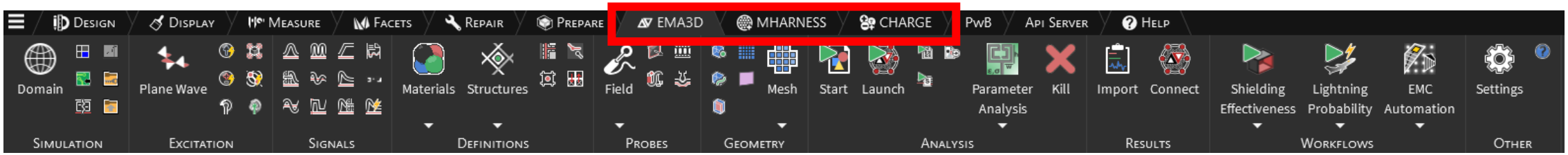
- If you would like to change the license server after installation, edit the file: C:\Program Files\ANSYS Inc\Shared Files\licensing\ansyslmd.ini
- This location cannot be saved in Notepad due to permission restrictions.
  - Copy the file to another location (Desktop)
  - Edit the values to the new port and server location
  - Use Windows Explorer to copy the file to the original location
  - Provide administrator elevation credentials to complete the copy



Starting EMA3D



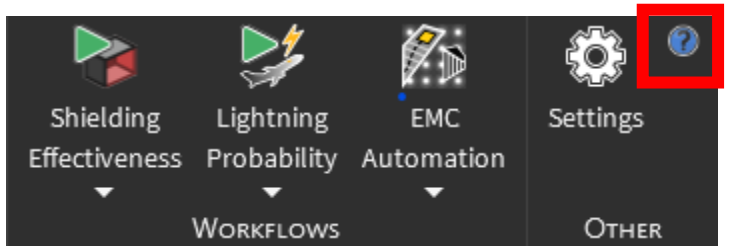
- Click the EMA3D icon on the desktop
- Look for the splash screen “EMC PLUS AND CHARGE PLUS”
- Once open, look for the EMA3D tab in the ribbon
- If you see the splash screens or tabs, the installation and license checkout was successful!
- If the MHARNESS tab is present, the GUI license checkout was successful
- If “Launch EMA3D with Discovery by Default” was selected during installation, you may launch Discovery using its icon and the EMA3D tabs will be present in the ribbon



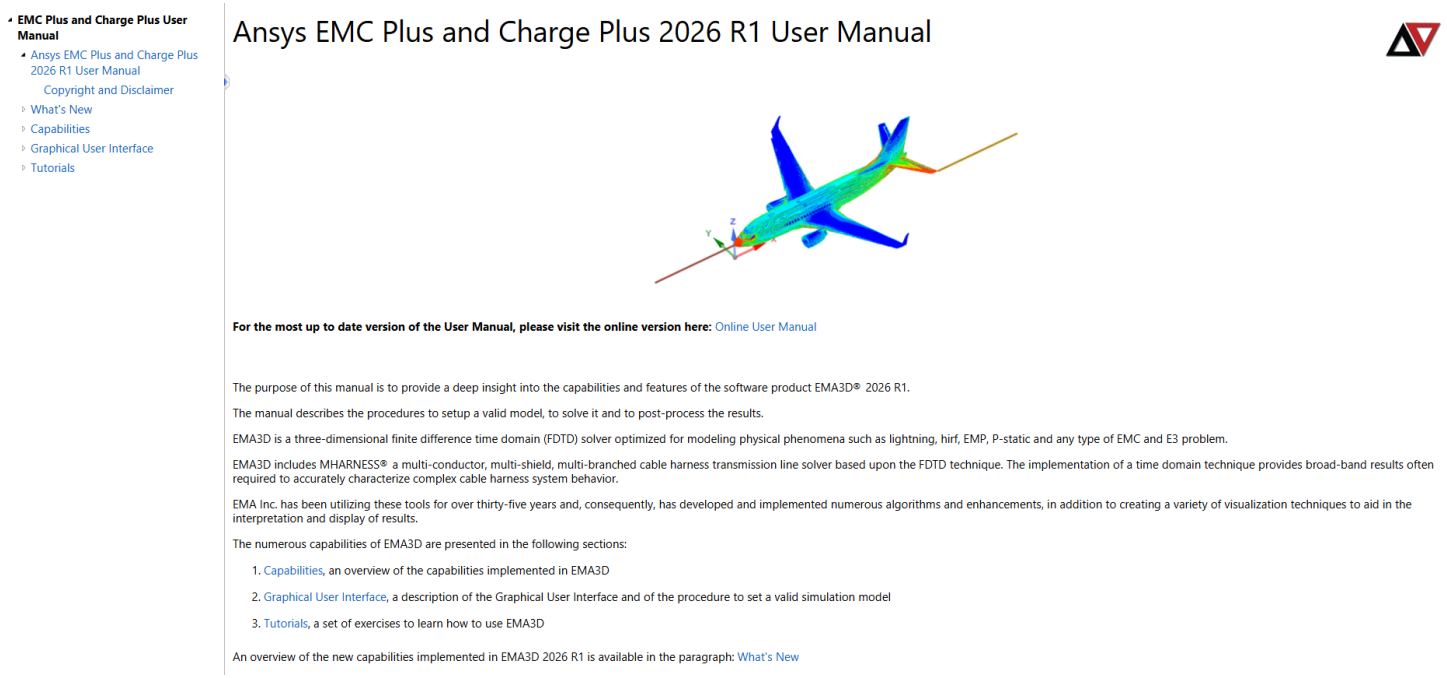
Navigate to EMA3D in the Simulation Information Display

In the Simulation Information Display (SID), click the right arrow several times to advance through “Explore” and “Refine” stages to see the “EMA3D” stage

How to find demo models?



- Click the (?) icon on the far right of any of the EMA3D menus
- This opens the EMA3D User Manual
- The last option is “Tutorials”
- The tutorials include instruction documents with step-by-step guidance
- Some tutorials also include model files and step-by-step videos



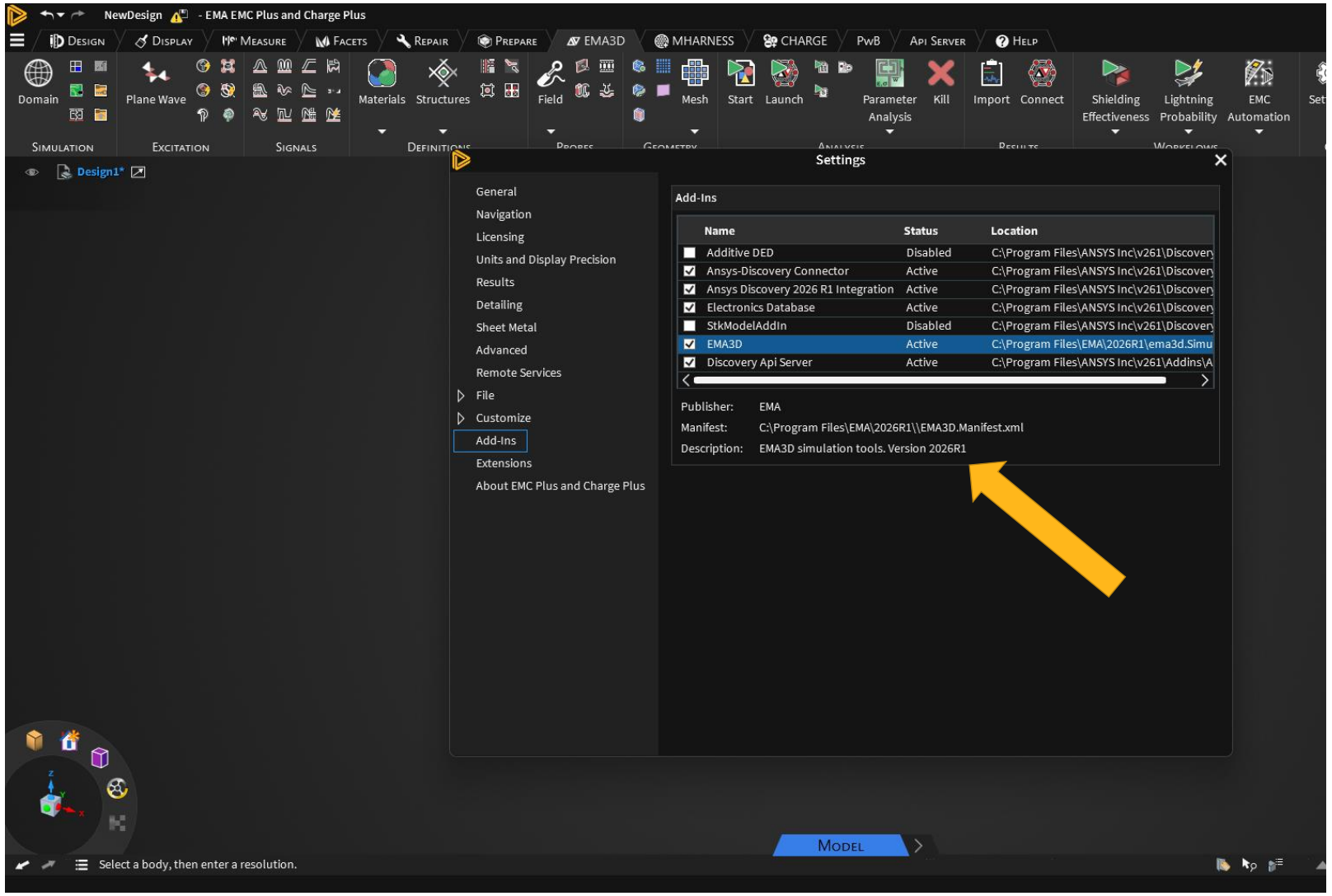
Ansys Learning Hub

- There are two EMC Plus courses on the Ansys Learning Hub (ALH)
- ALH EMC Plus Beginner course: https://jam8.sapjam.com/groups/ocxBxhlNiwVVitFSH21pVh/overview_page/cBkxpVYrCrDyRyXrmf77xz
- ALH EMC Plus Advanced course: https://jam8.sapjam.com/groups/ocxBxhlNiwVVitFSH21pVh/overview_page/dMfZBxSbVSpc793g6jFHJz
- ALH Charge Plus ESD course:

  Coming soon!

Mid-cycle updates

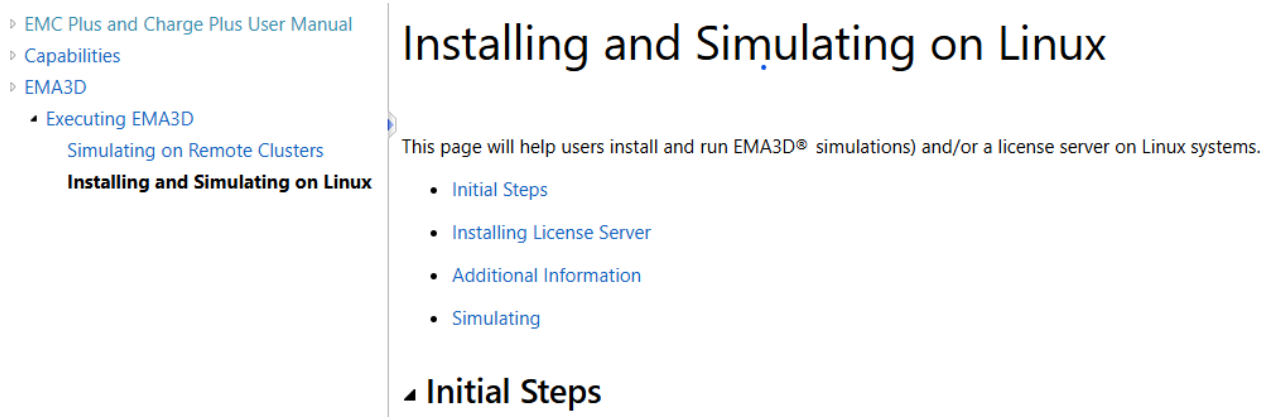
- EMA provides updates between major versions
- They are listed at https://www.ema3d.com/patch-downloads/
- Check which version you have installed by navigating to the main Discovery settings menu, navigating to Add-Ins, and looking under “Description”



Hardware Requirements

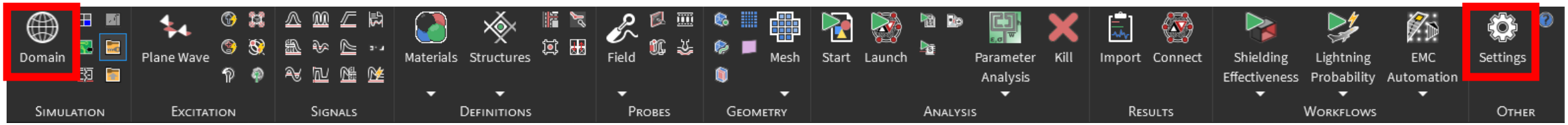
- Minimum requirements for Ansys EMC Plus software are as follows:
  - 64-bit Intel or AMD system, running Windows 10 or Windows 11
  - 16 GB RAM
  - A dedicated graphics card with latest drivers and at least 1GB video RAM, capable of supporting OpenGL 4.5 and DirectX 11, or higher. Use of integrated graphics (e.g. Intel HD/IRIS) is not recommended. Refer to this document for Discovery Graphics Cards.
  - 3 button-mouse
- We recommend the following for the best experience (User Interface):
  - 64-bit Intel or AMD system, running Windows 10 or Windows 11
  - NVIDIA RTX 4090 or higher
  - 64 GB RAM
- For HPC Resources (Solver Only) we recommend:
  - Linux OS
  - Multiple NVIDIA GPUs in the same node

EMA3D Solvers for Linux



1. There is no graphical user interface (GUI) for EMA3D on Linux
2. The FDTD solver in EMC Plus (EMA3D and MHARNESS) and in Charge Plus (EMA3D including non-linear air chemistry) is available on Linux
3. The Nexxim co-simulation is not currently available in a Linux version
4. An EMA3D Solver Linux installer is NOT found on the Ansys Customer Portal Linux Page
5. The file EMA3D.tar.gz contains the EMA3D Linux Solver Installer
6. The Windows Help Document provides further instructions at “Installing and Simulating on Linux”

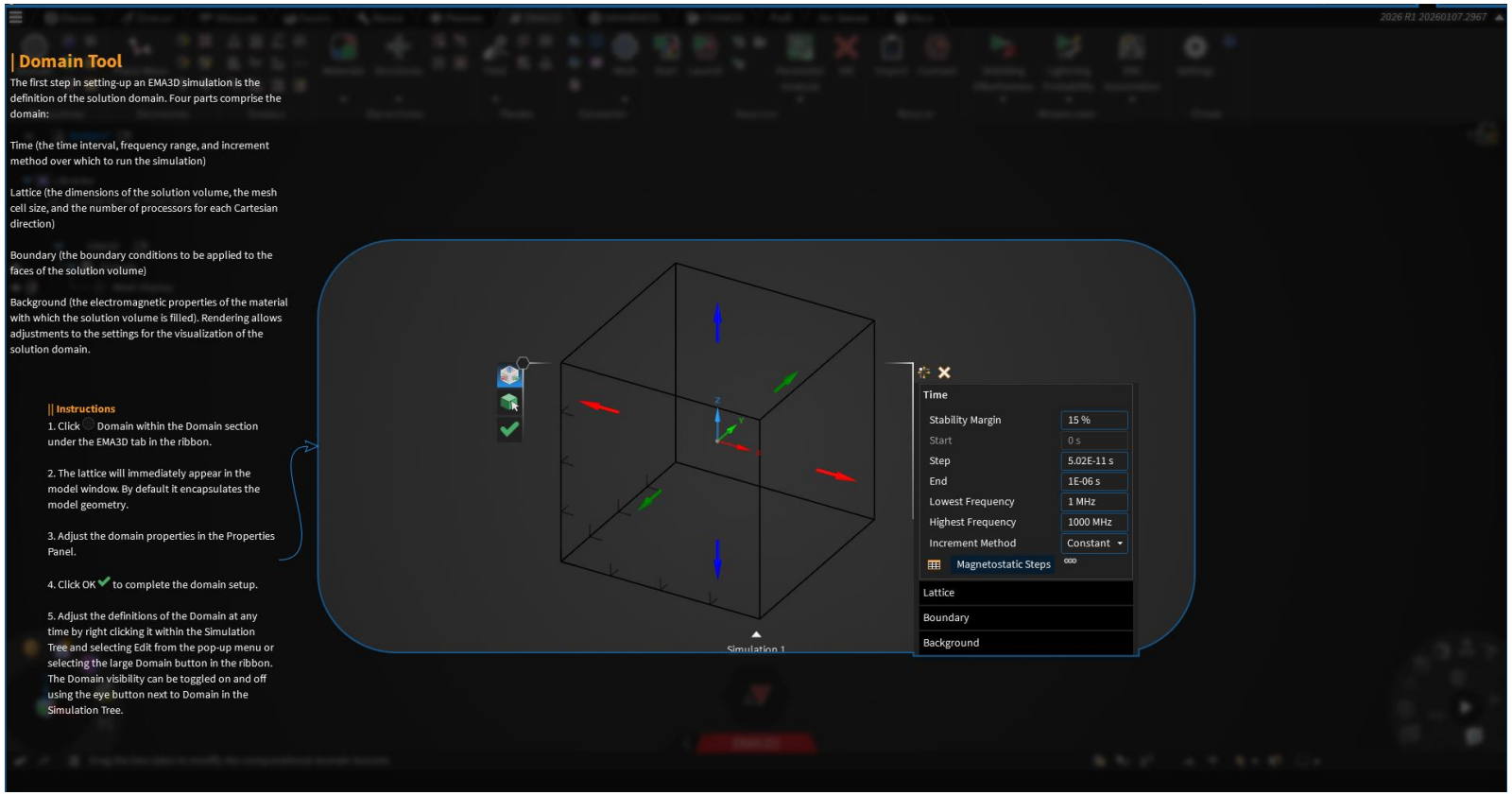
Ansys HPC Licenses in EMC Plus and Charge Plus



- Taking advantage of HPC can dramatically speed up solutions for EMA3D simulations.
- Depending on whether you have ANSYS HPC licenses or ANSYS HPC Pack licenses, a different setting needs to be made in the HPC options, as shown here.
- To open the settings / configuration options menu, click the Settings button under either the EMA3D or MHARNESS tab in the Ribbon within the Other section.
- Parallel License Type: Ansys HPC users can set this parameter to Pool or Pack based on their license type.
- Select “Domain” from the ribbon and select “Divisions”. The options are different depending on the solver selected.
- For the EMA3D FDTD solver, “Divisions” specifies the domain divisions in X, Y, and Z. The product of the numbers is the total number of cores used. For example, 2 x 3 x 4 = 24 cores in this example.
- The core EMC Plus and Charge Plus license includes 4 cores.
- Additional core usage for simulations requires valid Ansys HPC Pack or Ansys HPC Pool licensing.

Overlay Help

- Click F1 in any EMA3D menu
- An Overlay Help menu covers the screen
- You can see documentation of each tool as well as watch instructional animations
- You can change settings while the overlay is active
- Click F1 to exit the Overlay Help



Troubleshooting and Common Issues

Troubleshooting Steps for Installation Issues

- Discovery.exe closes without error message after a few seconds

  Update GPU driver

- Application Failed to Initialize (red screen) when you have two graphics cards:

  In Device manager, disable the integrated graphics card (The discrete graphics card should be enabled)

- Hardware issue?

  C:\Program Files\ANSYS Inc\v261\Discovery\CudaCheck\DiscoveryCompatibilityUtility.exe

- Pull the EMA3D Logs:

  C:\Users\<username>\AppData\Roaming\EMA\Logs

- Pull the Discovery Logs:

  C:\Users\<username>\AppData\Local\Temp\Discovery

- License not found:

  Check that the following file exists:

  C:\Program Files\ANSYS Inc\Shared Files\licensing\ansyslmd.ini

  It should contain the following lines:

  SERVER=1055@<licenseserver>.com

  ANSYSLI_SERVERS=2325@<licenseserver>.com

- License not found but prefer environmental variables to the .ini file:

  Create an environment variable called ANSYSLMD_LICENSE_FILE and set the value to port@<licenseserver>.com

  (optional) Create an environment variable called ANS_FLEXLM_DISABLE_DEFLICPATH and set it to 1. (This disables the use of the .ini file)

Troubleshooting Steps for Installation Issues 2

- The installer hangs:

  Find this registry key: HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Uninstall
  Export it to a notepad document and search for instances of "EMA3D" to get the hashed ID for EMA3D install (in his case it was {8426D991-C3EA-4851-956B-574A0232DBA2}v23.2.0)
  Then go to C:\ProgramData\Package Cache and find *the folder with the same ID name. There is a .msi installer in there that allowed him to repair the EMA3D install.*

- The GPU is not accessible over Windows RDP which does not allow Discovery to load

  https://community.esri.com/t5/implementing-arcgis-questions/enabling-gpu-rendering-on-windows-server-2016/td-p/658522

Silent Install

- This silent install only installs EMA3D. Discovery must be installed separately using its approved silent install method.
- Download and unzip the EMA3D installer.
- Open the “installers” folder and look for EMA3D.msi
- Using admin, execute the following:
  - msiexec /i <path of EMA3D.msi> /qn /l* <path to log file>

Silent install example script

```
Start-Transcript -Path "C:\DesktopStudio\EMA3D-transcript.txt"


# Prequsites
$ExtractionPath = "C:\DesktopStudio\apps\EMA"
Expand-Archive .\EMA3D_2026R1.zip -DestinationPath $ExtractionPath


# Set EMA3D installer
Start-Process -FilePath "msiexec.exe" -ArgumentList "/i C:\DesktopStudio\apps\EMA\Installers\EMA3D.msi /qn /l* C:\DesktopStudio\ema_silent_install_admin.txt" -Wait


# Install Intel MPI Library
$Arguments = "/qn"
$ArgumentList = "/i $FilePath $Arguments"
$MPIExtractionPath = "C:\DesktopStudio\apps\MPIinstall"
$MPIExtractorPath = "C:\DesktopStudio\apps\EMA\Installers\w_mpi-rt_p_5.1.1.110.exe"
$MPIExtractorArguments = "--s --x --f $MPIExtractionPath"
New-Item -ItemType "directory" -Path $MPIExtractionPath -Force
Start-Process -FilePath $MPIExtractorPath -ArgumentList $MPIExtractorArguments -Wait


$MPIInstallerPath = "C:\DesktopStudio\apps\MPIinstall\setup.exe"
$MPIInstallerArguments = "--silent -a install --eula=accept --output=C:\DesktopStudio\APPS\MPIinstall\outputfile"
Start-Process -FilePath $MPIInstallerPath -ArgumentList $MPIInstallerArguments -Wait


#Remove install files
Remove-Item -Path $MPIExtractionPath -Force -Recurse
Remove-Item -Path $ExtractionPath -Force -Recurse


#Add Charge Plus env variable to add Charge tab on Discovery
$Env:EMA_FEATURE = "ema3d.Cable; ema3d.Charge"
```

The wrong add-in is loading, call it manually

- `"%AWP_ROOT261%\Discovery\Discovery.exe" --brand "%EMA2026R1_DIR%\Framework.xml" -p ema_gui`

Check if environment variables are correct (if add-in is not loading)

- EMA2026R1_DIR=C:\Program Files\EMA\2026R1\
- EMA_FEATURE=ema3d.Cable;ema3d.Charge
- EMA_ATTACH=1
- EMA_INSTALL_TYPE=ANSYS