EMA 3D Simulation - Consulting - Measurement
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EMC Plus and Charge Plus GPU Version Linux Installation Guide

2024 R1

Getting Started

1. Download the latest version of the Linux installer for EMC Plus and Charge Plus from ema3d.com/quickstart
2. Copy the EMC Plus and Charge Plus zipped archive to the Linux machine on which you would like the program to execute.
3. From the directory in which the zipped archive is located, run the following command:
    a. tar -zxvf Linux_Ansys_EMC_Plus_Charge_Plus_<**VERSION**>_Linux_GPU.tgz
    b. e.g. *tar -zxvf* Linux_Ansys_EMC_Plus_Charge_Plus_2024R1.1_Linux_GPU.*tgz*
4. A sub-directory should now be created called *EMA3D_LINUX_ANSYSv<**VERSION**>* that contains the following items:
    a. ansys/
    b. binaries/
    c. lib/
    d. installer_ansys.sh
5. From this subdirectory, execute the installer with the following command:
    a. sudo ./installer_ansys.sh

(Note that sudo is not required if you are installing into a directory where you have write permissions.)

6. Follow the on-screen prompts to select the location of the installation directory and whether to install Intel MPI.
    a. Choose the installation directory, for example type: /opt/EMA
    b. Choose whether to install the prerequisite “libatomic” (y or n)
    c. Choose whether to install the OpenMPI and CUDA libraries (y or n)
    d. If you selected to install the libraries, type the desired installation directory or type “default”
7. After the installation, follow the on-screen instructions to set environmental variables and run any necessary commands.

NOTE: See the following section for details on this step.

8. For changes to take place, the shell must be restarted.

Setting Environment Variables

1. Environment variables are typically set using the *export* command.
2. To keep the environment variables persistent between terminal sessions, the export command can be set to automatically executes when users open a terminal session. An example for Ubuntu distributions is below. Replace <username> with the home directory user desired:
    a. nano /home/<username>/.bashrc
    b. Append the following five lines to the end of the file and save it. (Replace "v1.1.0" with the current version number and replace "port@server" with the port number and server that is serving the Ansys license.)

```
export  PATH=/opt/EMA110/EMA3D_LINUX_ANSYS_GPUv1.1.0/binaries:$PATH
export LD_LIBRARY_PATH=/opt/EMA110/EMA3D_LINUX_ANSYS_GPUv1.1.0/ansys:$LD_LIBRARY_PATH
export PATH=/opt/MPI/comm_libs/openmpi/openmpi-3.1.5/bin:$PATH
export PATH=/opt/EMA110/EMA3D_LINUX_ANSYS_GPUv1.1.0/binaries:$PATH
export ANSYSLMD_LICENSE_FILE=port@server
```

    c. Save the file and exit the editor
    d. Source the file

```
source /home/<username>/.bashrc
```

    e. The file should auto-source upon restarting the terminal

Running EMC Plus or Charge Plus

1. Navigate to the directory on the Linux machine containing the simulation input files (.EMIN or .CIN files) you would like to run.
2. An example simulation file is available at:

https://ema3d.s3.us-west-1.amazonaws.com/EMC_PLUS_EMA3D_TEST_FILES.zip

3. Unzip the downloaded file
    a. Unzip EMC_PLUS_EMA3D_TEST_FILES.zip
4. Change into the new directory
    a. cd EMC_PLUS_EMA3D_TEST_FILES
5. Run the following command.

mpiexec -n 1 ema3d_gpu_linux_single shielding_box_demo_complete.emin

6. If the machine has more than one GPU, increase the number of compute units. For the example below, we show the steps for two compute units:

    mpiexec -n 2 ema3d_gpu_linux_single shielding_box_demo_complete.emin –mpiblocks 2 1 1