EMC Plus and Charge Plus

Linux Installation Guide

November 2023

Getting Started

1. Download the latest version of the Linux installer for EMC Plus and Charge Plus from the [EMC Plus and Charge Plus Quick Start Page](#).

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 EMC_PLUS_Charge_Plus_2023R2_FDTD_Linux_solver_v<**VERSION**>.tgz

    b. e.g. *tar -zxvf EMC_PLUS_Charge_Plus_2023R2_FDTD_Linux_solver_v7_5_11.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

    e. installer_ansys.sh_ORIG

    f. l_mpi_oneapi_p_<**MPI VERSION**>_offline.sh

5. From this subdirectory, execute the installer with the following command:

    a. sudo ./installer_ansys.sh

6. Follow the on-screen prompts to select the location of the installation directory and whether to install Intel MPI.

NOTE: If Intel MPI is already installed, the following message will be displayed:

*Cannot install 'intel.oneapi.lin.mpi.product,v=<**MPI VERSION**>'. It is already installed.*

If this is the case, MPI must be uninstalled before proceeding. See the section on Uninstalling Intel MPI for instructions.

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. Alternatively, the following command can be run:

    a. source /etc/profile

Setting Environment Variables

1. Environment variables are set using the *export* command. Each environment variable required for the installation can be set by copying the corresponding name and value displayed on the screen after running the installer, pasting it after the *export* keyword, and running the command.

    a. e.g. *export PATH=/opt/EMA/EMA3D_LINUX_ANSYSv7.5.11/binaries:/opt/EMA/MPI/mpi/2021.9.0/libfabric/bin:/opt/EMA/MPI/mpi/2021.9.0/bin:$PATH*

2. The user is prompted to set the environment variable *ANSYSLMD_LICENSE_FILE=<port number>@<License Server>.* The values of *<port number>* and *<License Server>* should correspond to the actual port number and hostname of the server that holds the user's licensing information.

    a. e.g. *export ANSYSLMD_LICENSE_FILE=1055@10.10.10.122*

Uninstalling Intel MPI

1. In some cases, installation of EMC Plus and Charge Plus cannot proceed if attempting to install Intel MPI while it is already installed on the machine. If this occurs, Intel MPI must be uninstalled.

    a. The following message will be displayed when running the installer if this is the case:

        *Cannot install 'intel.oneapi.lin.mpi.product,v=<**MPI VERSION**>'. It is already installed*

2. Remove the existing Intel MPI by running the following command and following the prompts:

    a. /<**YOUR DIRECTORY**>/l_mpi_oneapi_p_<**MPI VERSION**>_offline.sh

    b. e.g.

        /opt/EMA/EMA3D_LINUX_ANSYSv7.5.11/l_mpi_oneapi_p_2021.9.0.43482_offline.sh

3. Remove the Intel installation by running the following command:

    a. rm -r $HOME/intel

4. Remove the EMC Plus and Charge Plus home directory by running:

    a. rm -r /<**YOUR DIRECTORY**>

    b. e.g. *rm -r /opt/EMA*

5. Follow instructions to install EMC Plus and Charge Plus again, choosing to install Intel MPI when prompted.

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. Run the following command:

    a. ema3d <**NAME OF INPUT FILE**>.<**FILE TYPE**>

    b. e.g. *ema3d shielding_box_demo_complete.emin*

3. Time stepping should proceed and be displayed on the screen.