Necessary files

* Download and unzip [CACTUS Modeling Software](http://energy.sandia.gov/wp/wp-content/gallery/uploads/CACTUS_V1_1.tar.gz) source code from <http://energy.sandia.gov/?page_id=16734>
* Download and unzip [LAPACK\_3.1.1\_for\_Windows\_VS.zip](http://icl.cs.utk.edu/lapack-for-windows/VisualStudio/LAPACK_3.1.1_for_Windows_VS.zip) from <http://icl.cs.utk.edu/lapack-for-windows/VisualStudio_install.html>

Compiling Cactus with Visual Studio Command Prompt

Open a Visual Studio command prompt: (this may vary by machine)

* Start Menu -> Intel Parallel Studio XE 2013 -> Command Prompt -> Parallel Studio XE with Intel Compiler XE v13.1 Update 1
  + Click on either “IA-32 Visual Studio 2010 mode” or “Intel 64 Visual Studio 2010 mode”

cd to …\CACTUS\Rel1\_1\

Type “nmake /F Makefile.win”

“CACTUS.exe” should be in the bin directory

“nmake /F Makefile.win clean” will clean the directory and remove compilation files

Compiling Cactus in Windows with the Visual Studio GUI

If the VS solution and project files (CACTUS.sln, CACTUS.vsproj) already exist in the CACTUS directory:

* Open the solution file (CACTUS.sln) in Visual Studio
* From the top menu: Build –> Build Solution
* Wait

The executable (CACTUS.exe) will be in the bin directory.

If the VS files need to be regenerated:

* Open Visual Studio
* From the top menu: File -> New… -> Project
  + Intel Visual Fortran -> Console Application -> Empty project
    - Name it CACTUS and click OK
  + Close Visual Studio and move the CACTUS.sln and CACTUS.vproj files into the CACTUS root directory.
    - This will make the relative references in the following section accurate…
  + Double click on CACTUS.sln to reopen in Visual Studio

A new project will be created with three folders: “Header Files”, “Resource Files”, and “Source Files”

* In the drop down at the top change “Debug” to “release”
* From the top menu: Project -> Properties
  + Configuration Properties -> General
    - Set the value of “Output Directory” and “Intermediate Directory” to “bin” to build the executables into the bin directory.
  + Configuration Properties -> Fortran -> Data
    - Set the value of “Default Real Kind” to “8 (/real\_size:64)”
  + Configuration Properties -> Linker -> Input
    - set “Additional Dependencies” to “LAPACK.lib BLAS.lib extras.lib MATGEN.lib”
  + Click OK
* From the top menu: Tools -> Options
  + Intel Composer XE -> Visual Fortran -> General
    - Set value of “Sources” under Free Format Extensions to “.f90;.f95” (to make visual studio recognize .f95 files as Fortran)
  + Intel Composer XE -> Visual Fortran -> Compilers
    - Edit the value of “Libraries” and add the directory containing the LAPACK libraries (either the lib/win32 or lib/x64 directory in the LAPACK folder) on a new line.
* In the Solution Explorer window, click on the Source Files folder
  + In the Properties window, add “f95” to the Filter field to treat .f95 files as source files.
* From the Cactus download, drag every “.f95” file from “.\CACTUS\Rel1\_1\src\” “.\CACTUS\Rel1\_1\mod\” and “.\CACTUS\Rel1\_1\mod\util\” to the “Source Files” folder of the project
* From the top menu: Build –> Build Solution
* Wait

The executable (CACTUS.exe) will be in the bin directory.