

# Knowledge Base

Information



## How can I perform Boolean operations on node and element sets in Abaqus/CAE?

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**Portfolio / Domain:** SIMULIA Abaqus Unified FEA / n/a  
**Product:** n/a

QUESTION

I would like to perform Boolean operations, such as unions or intersections, on sets - similar to the functionality in the Display Group manager. Is there a tool in Abaqus/CAE for this task?

ANSWER

(The following applies to Version 6.8 and higher)

An Abaqus/CAE plug-in application for this purpose is attached below. The plug-in can be used, for example, to make a set containing only interior nodes or elements of a solid mesh, or to remove boundary condition nodes from contact nodes. The plug-in works for native Abaqus/CAE meshes (i.e., dependent part meshes) and orphan meshes, and for all element types.

**Installation**

To install the plug-in, save the attached archive file to one of the following directories:

- abaqus\_dir*\abaqus\_plugins where *abaqus\_dir* is the Abaqus parent directory
- home\_dir*\abaqus\_plugins where *home\_dir* is your home directory
- current\_dir*\abaqus\_plugins where *current\_dir* is the current directory

Note that if the abaqus\_plugins directory does not exist in the desired path, it must be created. The *plugin\_dir* directory can also be used, where *plugin\_dir* is a directory specified in the abaqus\_v6.env file by the environment variable **plugin\_central\_dir**. You can store plug-ins in a central location that can be accessed by all users at your site if the directory to which **plugin\_central\_dir** refers is mounted on a file system that all users can access. For example,

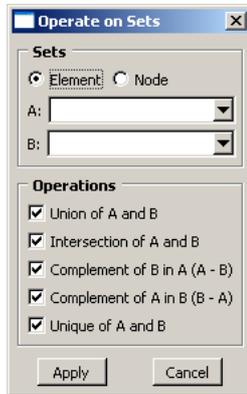
```
plugin_central_dir = r'\\fileServer\sharedDirectory'
```

On Windows platforms, right click on the archive file and select **WinZip** → **Extract to here**. On Linux platforms, type **unzip setOperation.zip** at the command prompt. A folder named abq\_SetOperation and a file named setOperation\_plugin.py will be extracted. Note that the plug-in will not function properly if this procedure is not followed.

**Usage**

The plug-in requires two node sets or two element sets. We will refer to one as set A, and the other as set B. The Boolean operation(s) selected will be performed on sets A and B and the resulting set will be created.

From the Part or Mesh modules, select **Plug-ins** → **Tools** → **Operate on Sets...** to open the following dialog:



Select **Node** or **Element** for the set type. Browse to select set A and B. Select the desired operation. For each operation selected, a new set will be created with a descriptive name.

**Notes**

1. If the resultant set is empty, it is not created.
2. The drop-down lists do not show geometry sets.

**Revision History**

20 Feb 10	Release of Version 1.1-1
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**Disclaimer**

The attachments to this article are subject to certain usage conditions. Please [click here](#) for details.

KEYWORDS

3636

ATTACHMENT

- setoperation.zip
- answer\_3636\_figure1.png

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