

Welcome to Autoscaffold for Cubicon's documentation!

Autoscaffold for Cubicon is a script for **Magics Automation Module**, which enables fully automated support generation for Stereolithography technology.

Main functionalities are:

- Generating scaffold supports for selected parts or whole platforms.
- Scaffold parameters depending on machine and material selection.

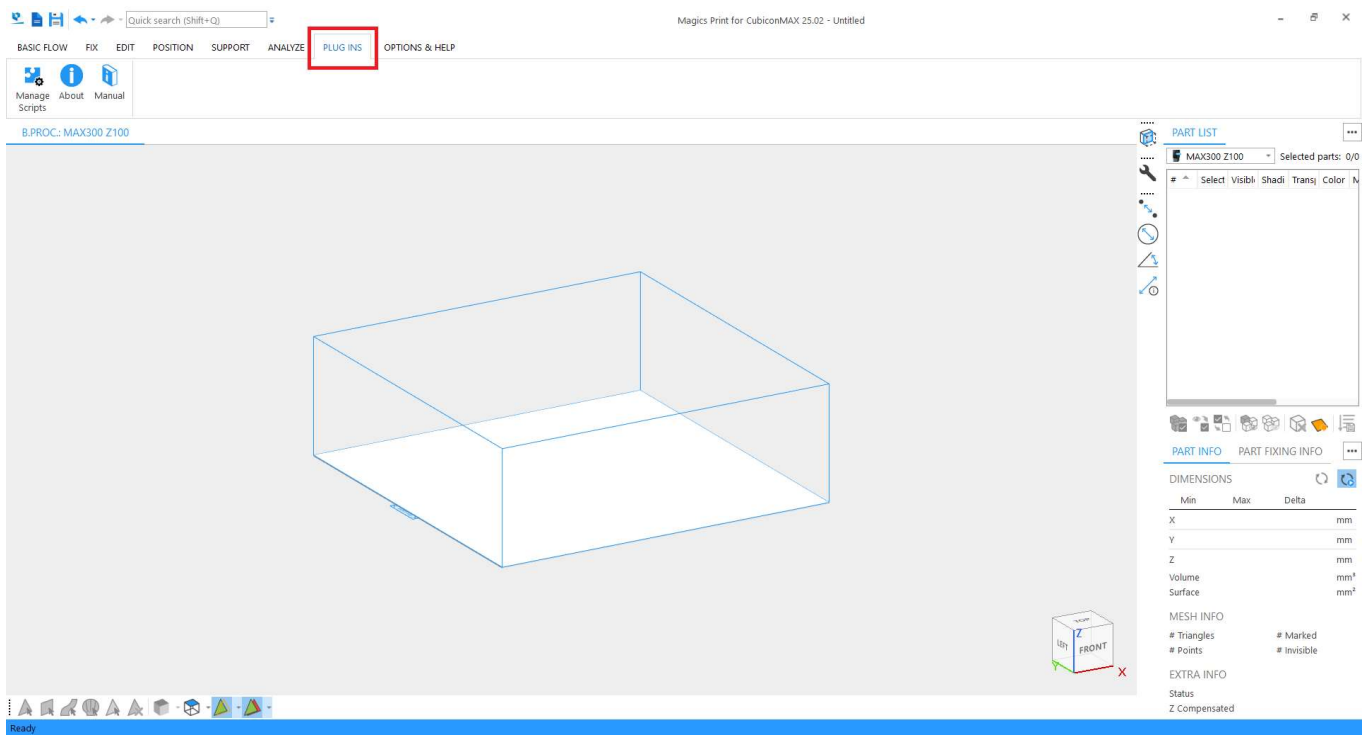
Get Started

After installing *Magics Automation Module* the *Autoscaffold for Cubicon* package must be imported.

Search for *Autoscaffold.wfp* package, open *Magics* and get started.

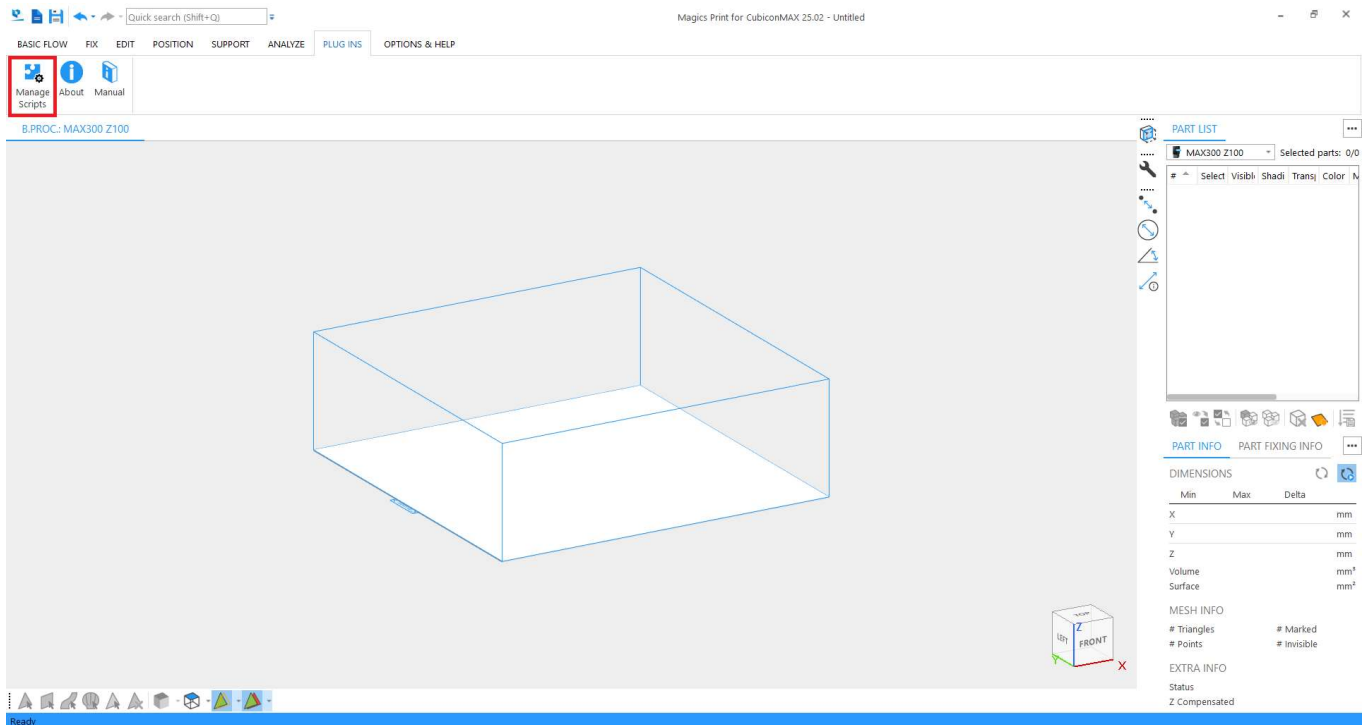
Plug-in

Go to the *PLUG INS* tab in *Magics*.



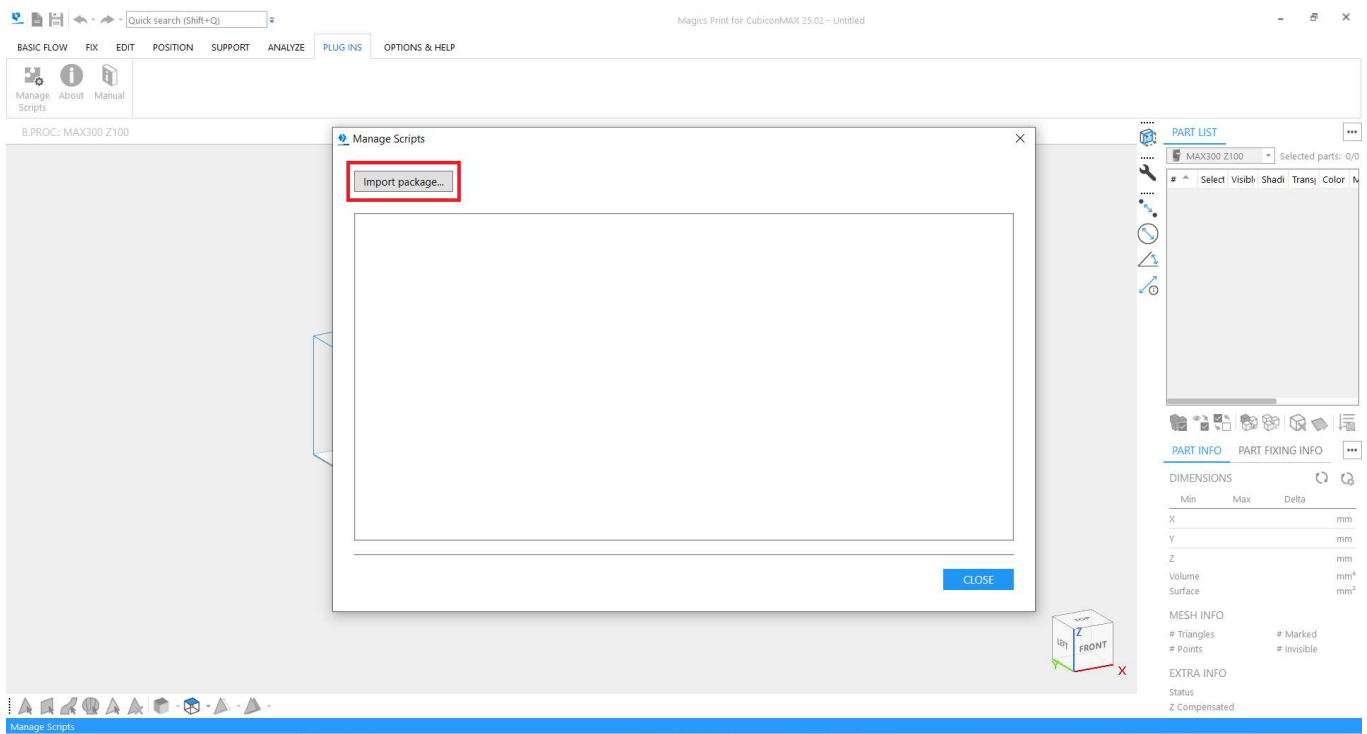
Manage Scripts

Click on *Manage Scripts* button.

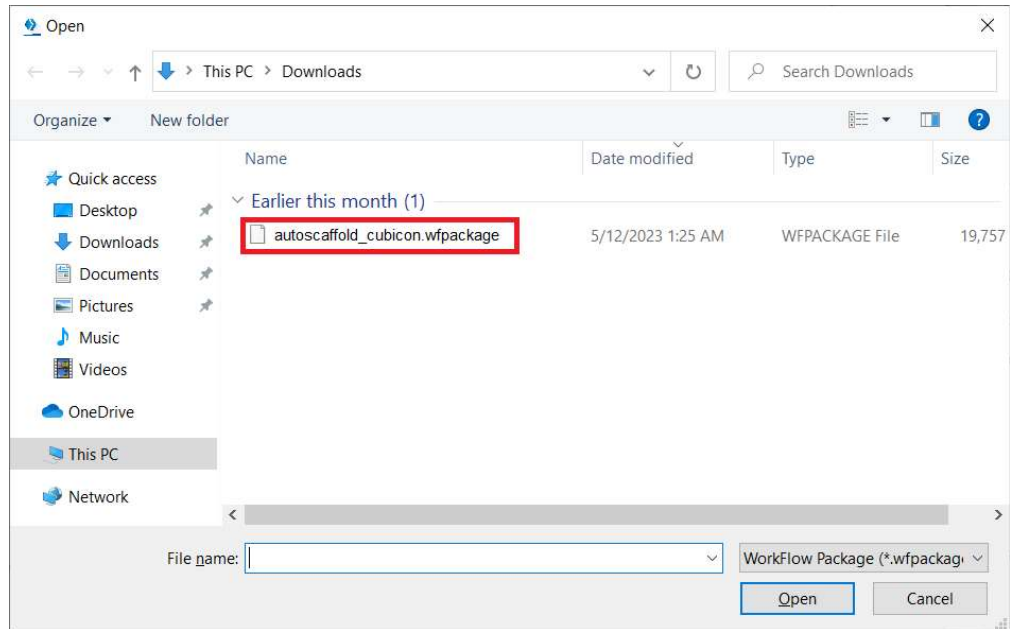


Import package

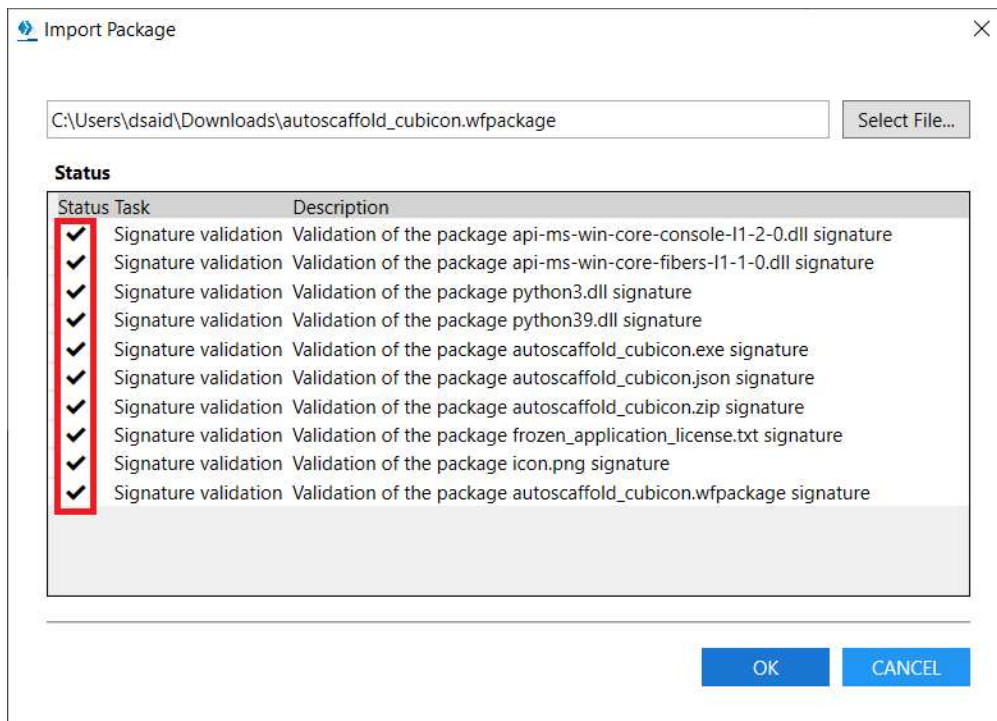
Click on *Import package*....



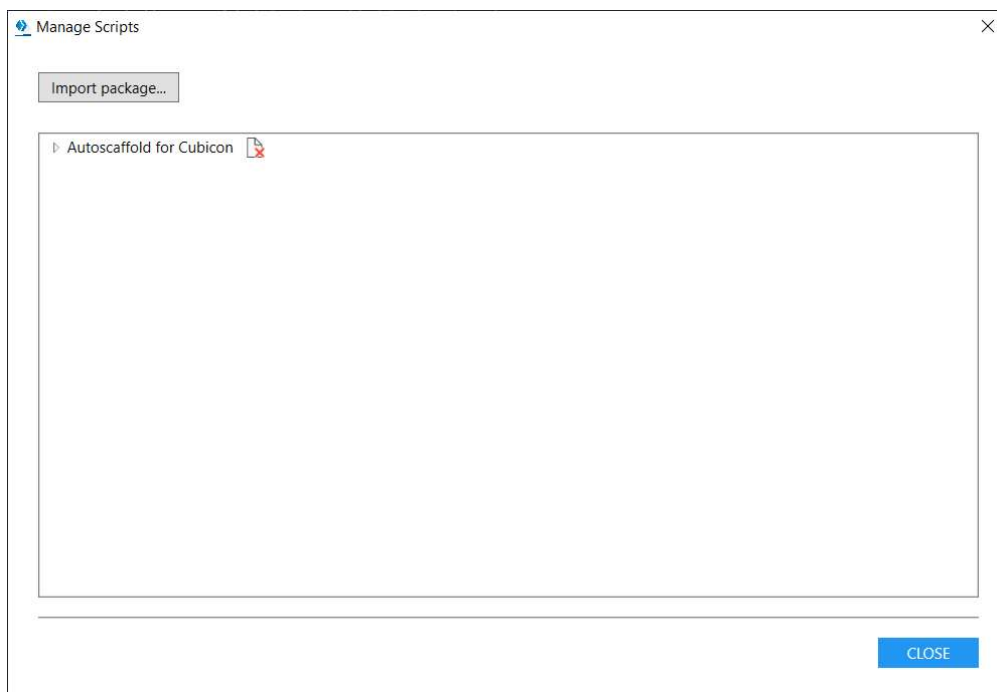
Select the provided *Autoscaffold.wfpackage*. Please note that name might slightly change after version updates.



After signature validation click OK.



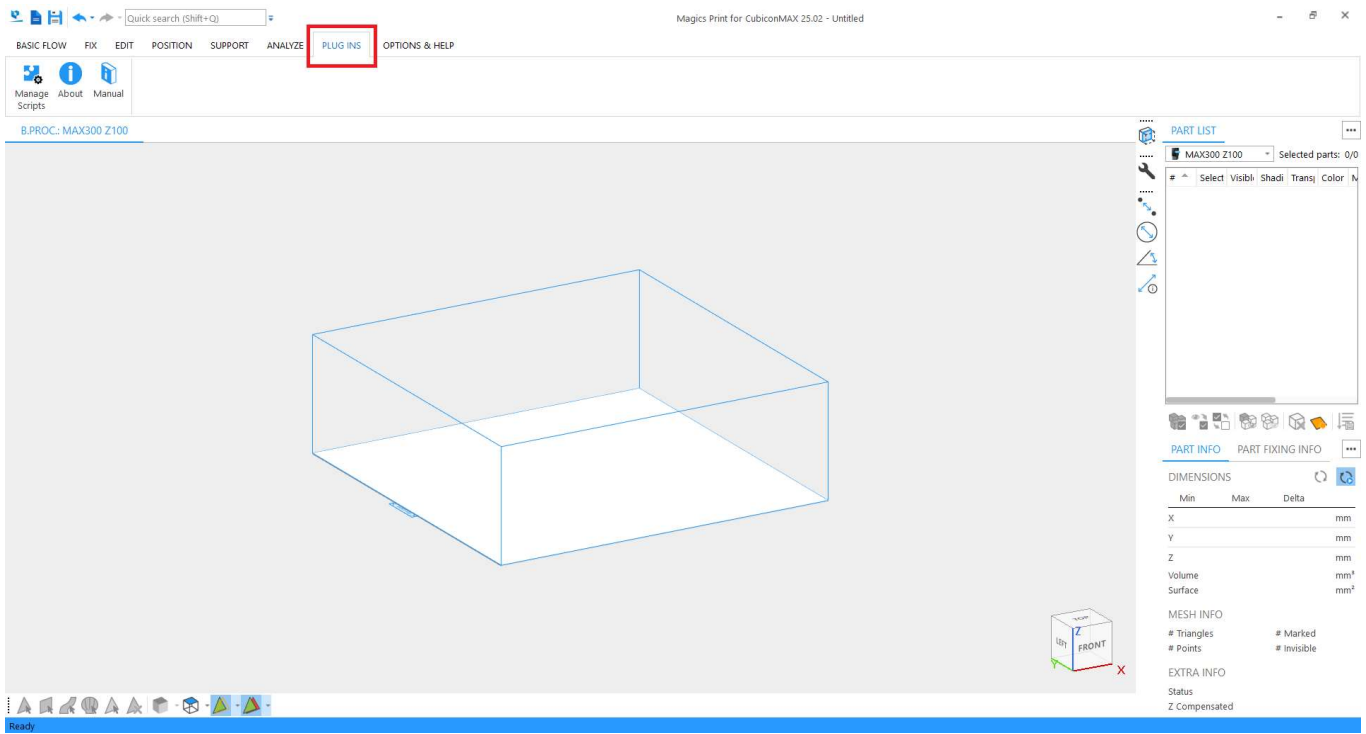
The imported package will be listed in the *Script Manager*.



Script execution

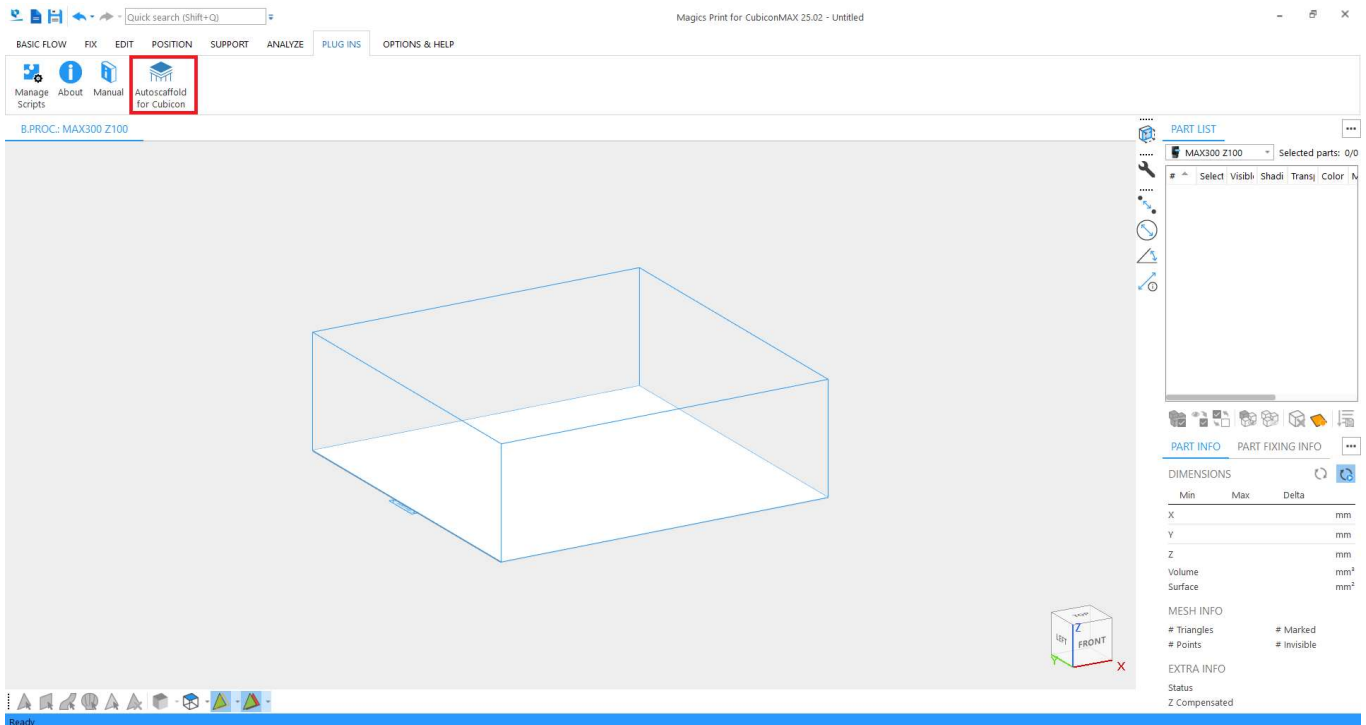
Plug in

Go to *PLUG INS* tab in Magics.



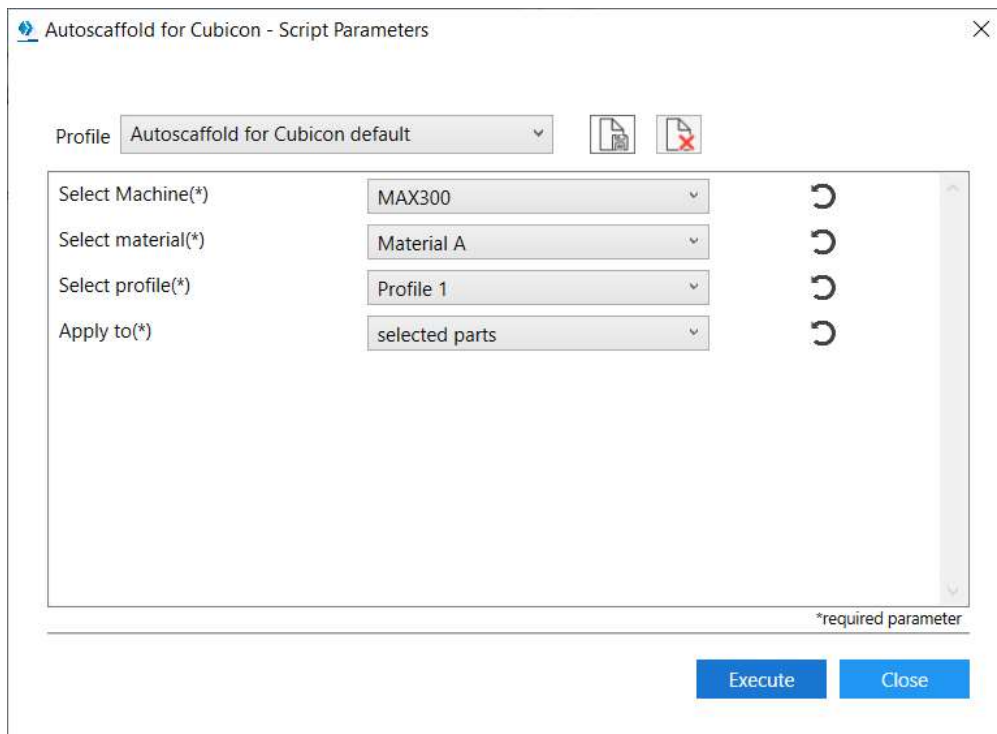
Select

Select *Autoscaffold for Cubicon* by clicking on the icon.



Parameters

Once the desired values are selected click on *Execute*.



Remark: Please note that access to their combinations is restricted by license. Be sure you have the right license for the selected machine and material.

Select Machine

Two options are available:

- MAX300
- MAX600

Select the one matching your machine.

Select Material

Nine options are available from *Material A* to *Material I*.

Select the one matching your material.

Select Profile

Three options are available:

- Profile 1
- Profile 2
- Profile 3

Select the one corresponding to your slicing strategy.

Apply to

Two options are available:

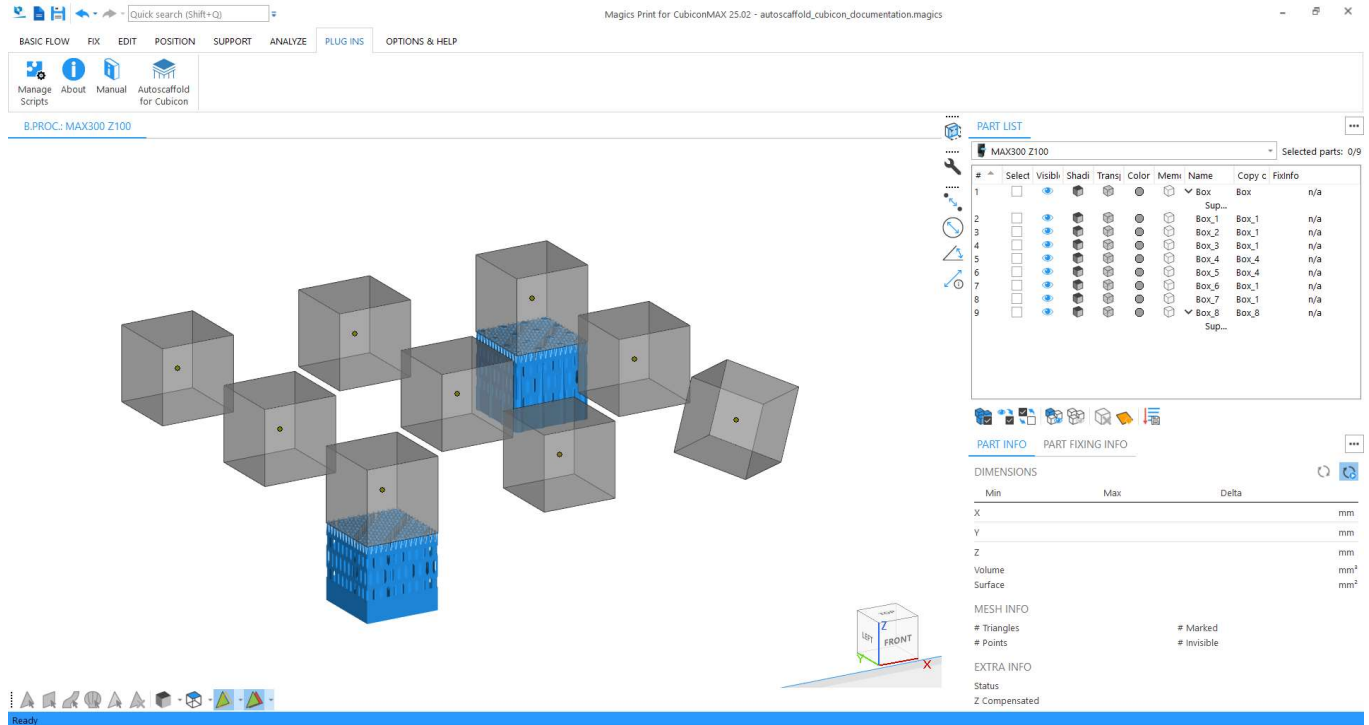
- all parts: supports will be generated for all parts in the platform.
- selected parts: supports will be generated only for the selected parts on the platform.

Example

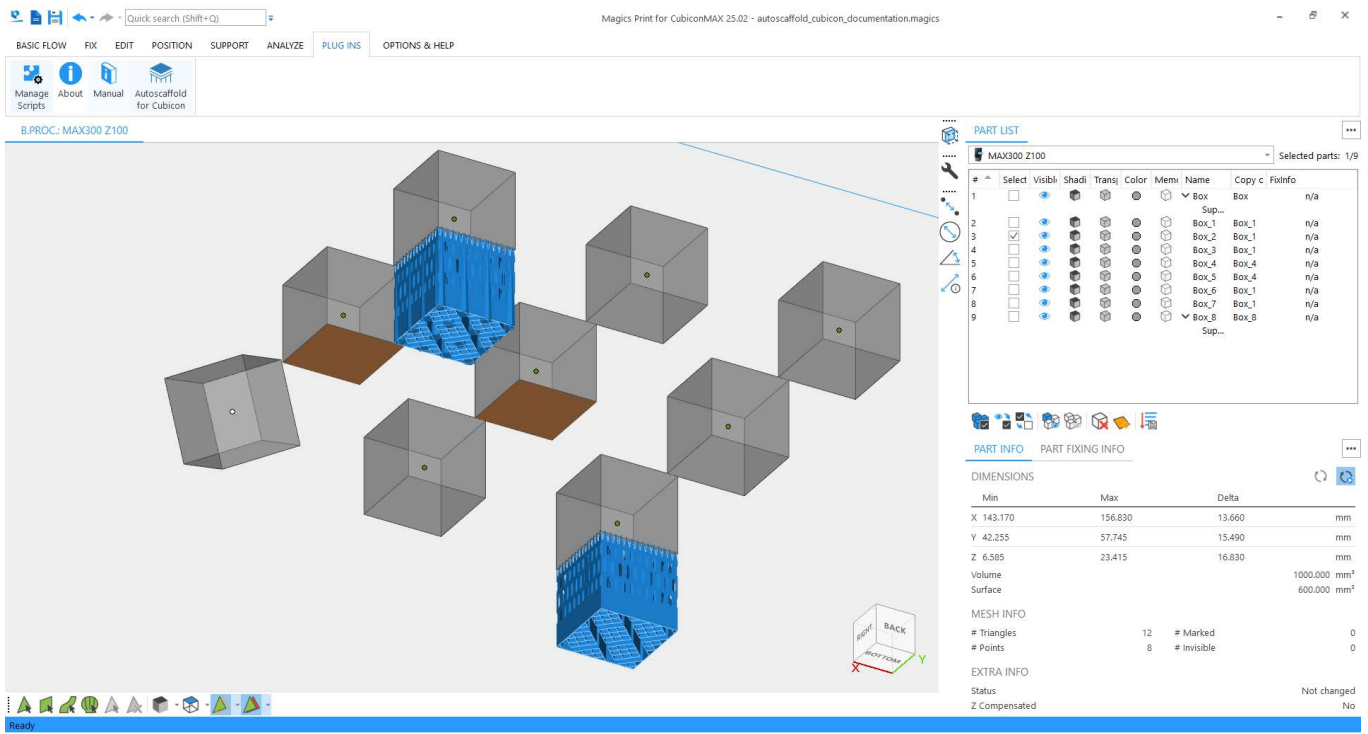
An example of how to execute the script is next presented.

Demo platform

A platform with 9 cubes, some with pre-existing supports and some with No Support Zones (NSZ), is used to illustrate several aspects of the execution and functionality.



Demo platform

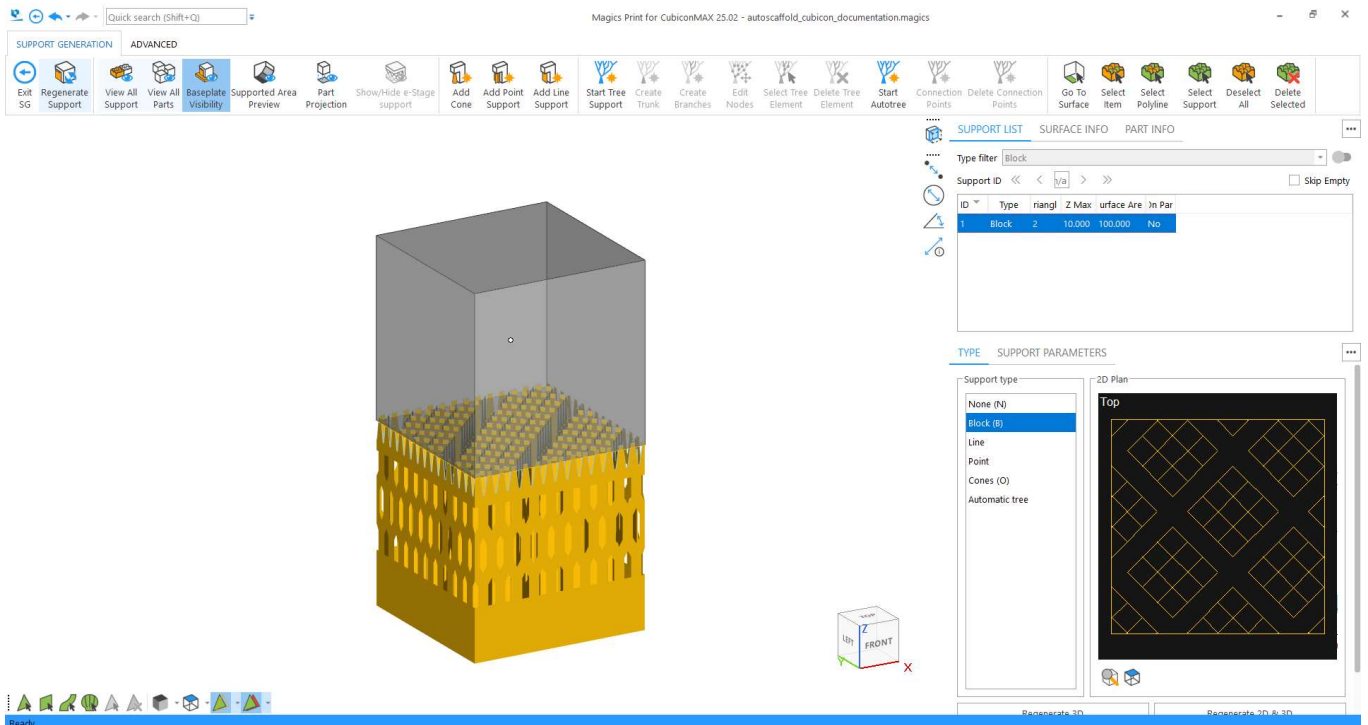


Demo platform bottom view. NSZ are displayed in orange.

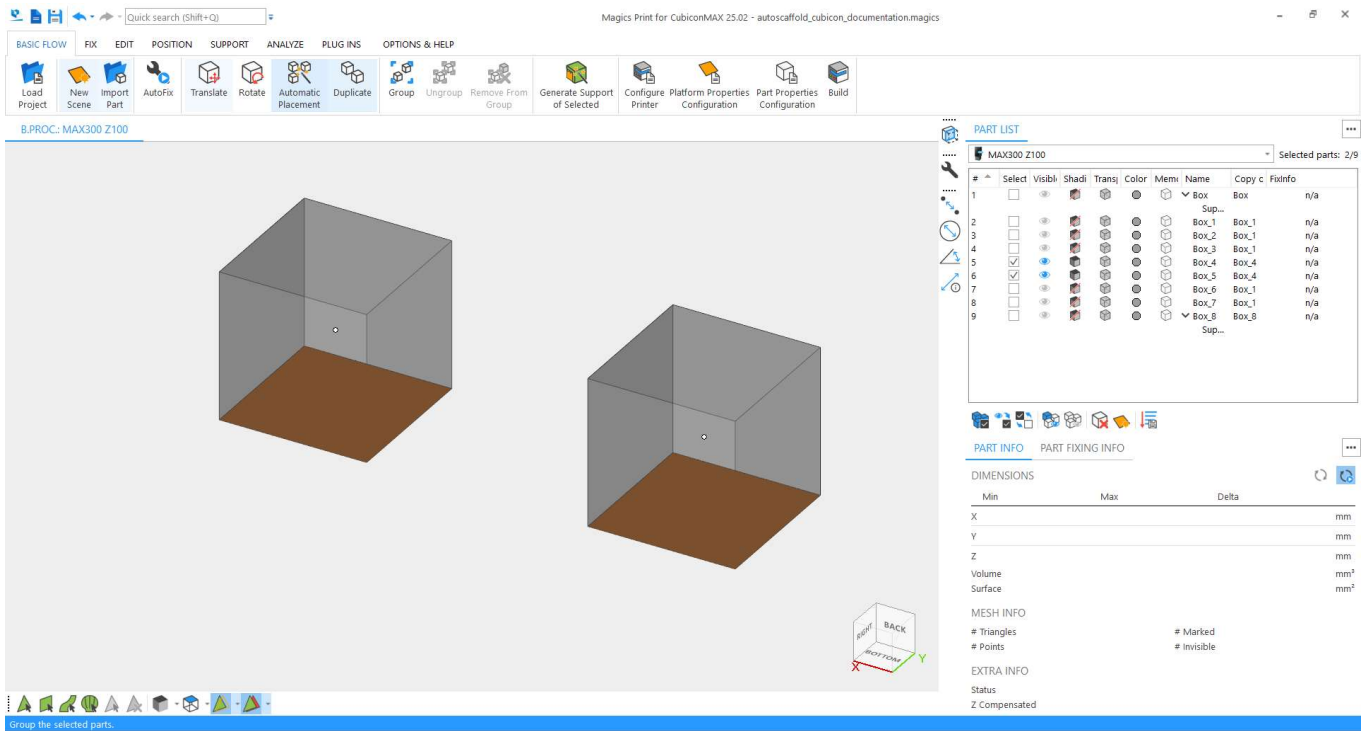
Particularly,

- Box has non-solid supports (Block),
- Box_2 has a different orientation,
- Box_4 and Box_5 have NSZ, and
- Box_8, has both solid (Cones) and non-solid supports (Block).

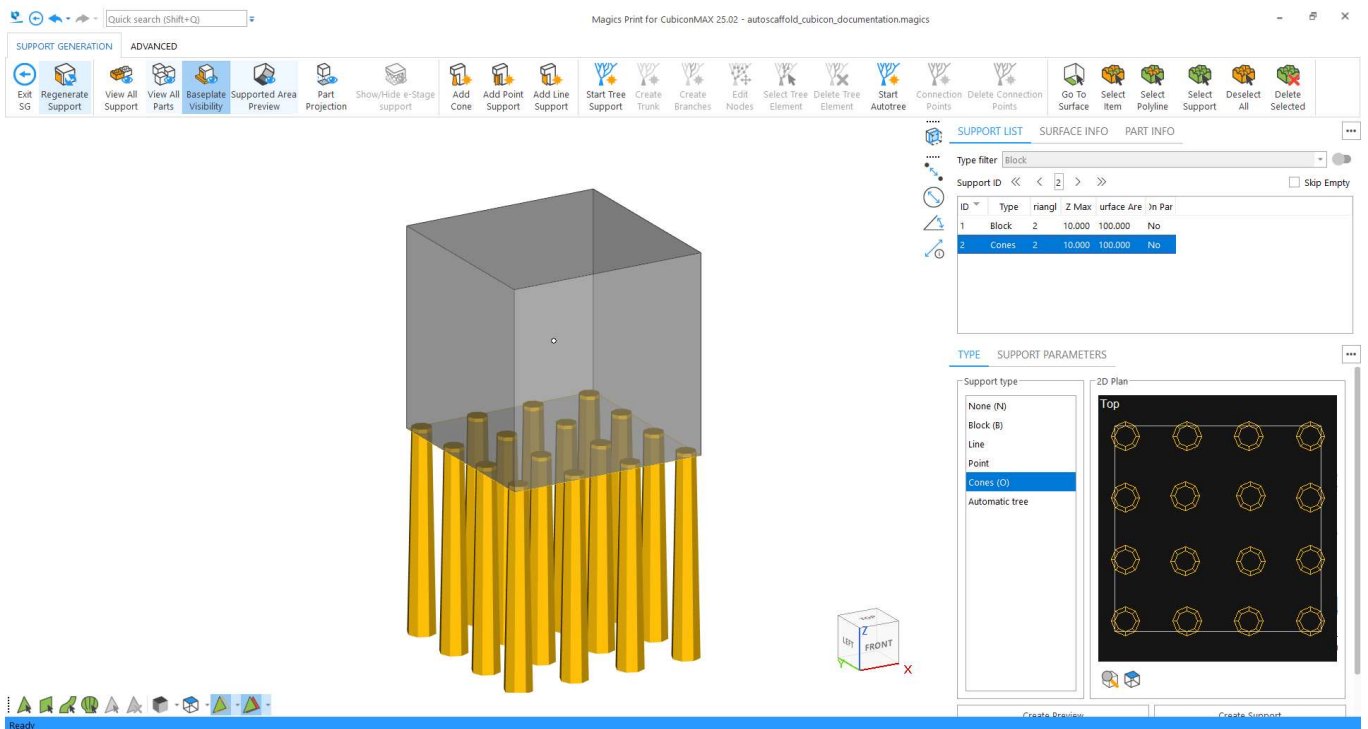
Some images illustrating the above points can be found next.



Box: Block type support



Box_4 and Box_5: No support zones in orange

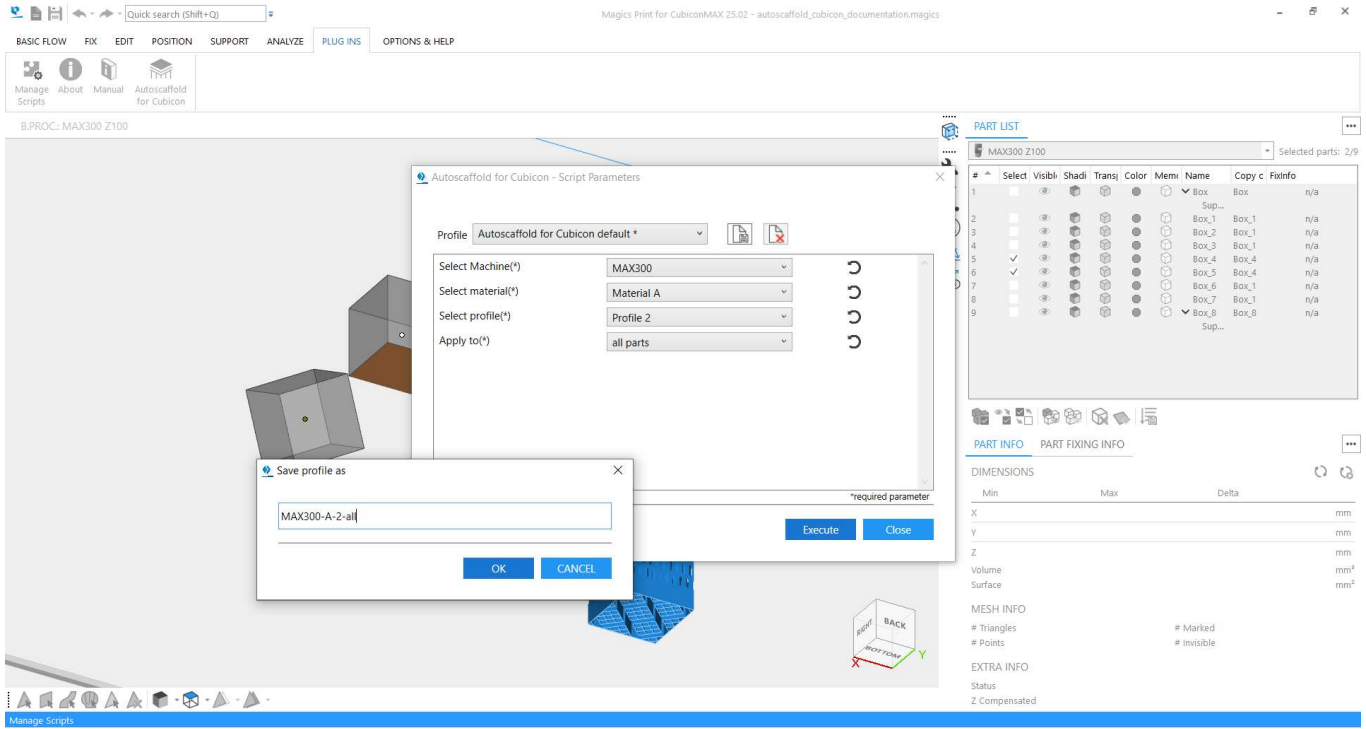


Box_8: Block (as Box) and Cone type supports

Parameters

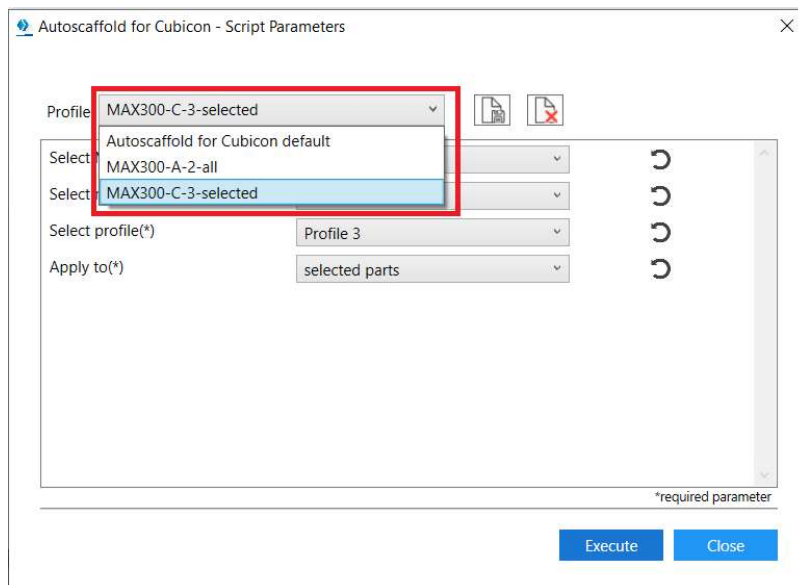
The selected parameters for this example are:

- **Machine:** MAX300,
- **Material:** Material A,
- **Profile:** Profile 2,
- **Apply to:** all parts.



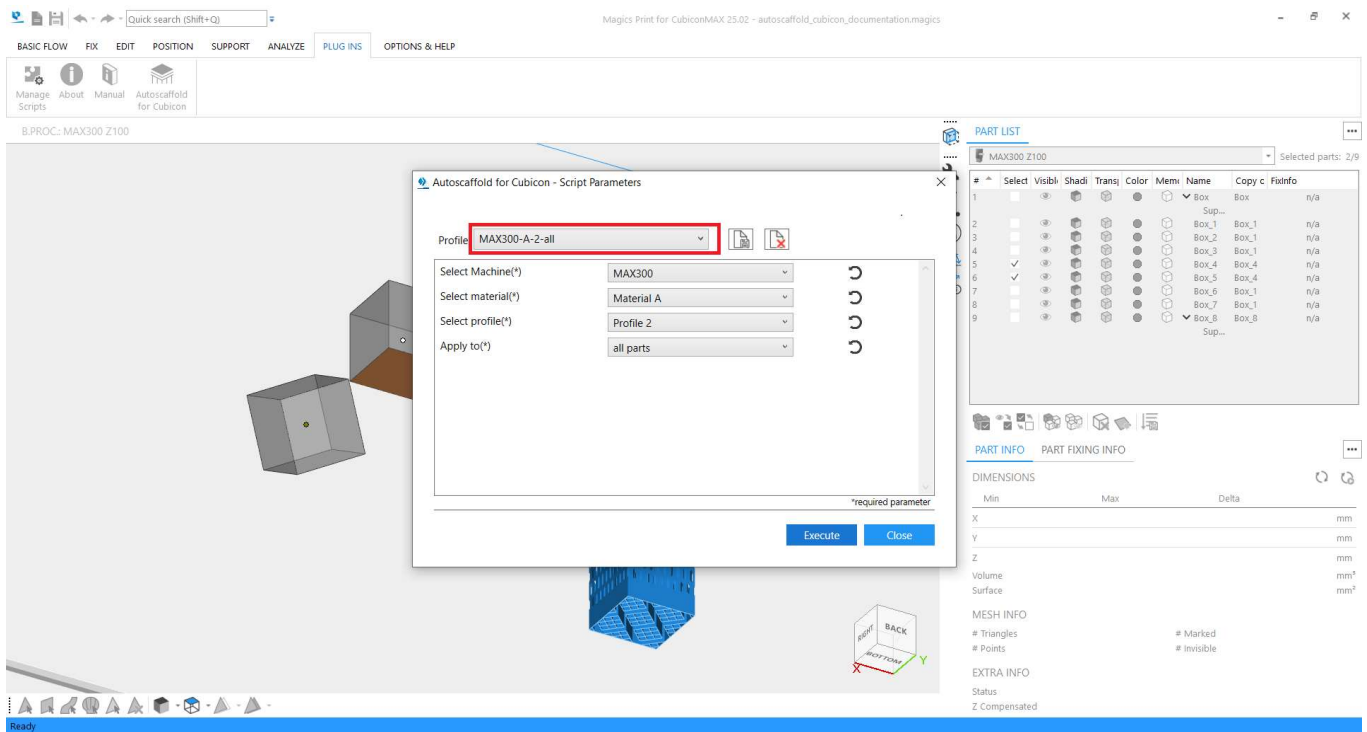
The selection shown above is saved as a profile named *MAX300-A-2-all*. This allows faster future executions of the script.

Please note that multiple profiles can be created and simply selected for Execution.

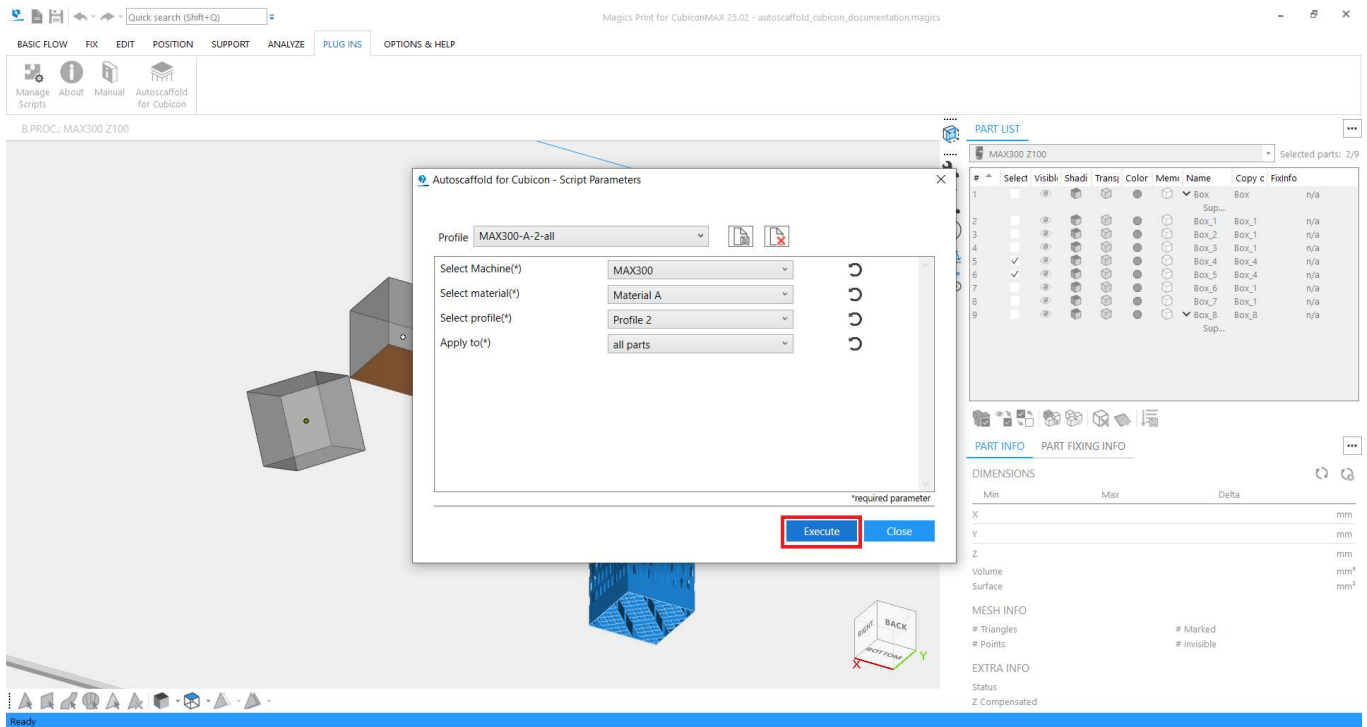


Execution

The profile has to be selected:



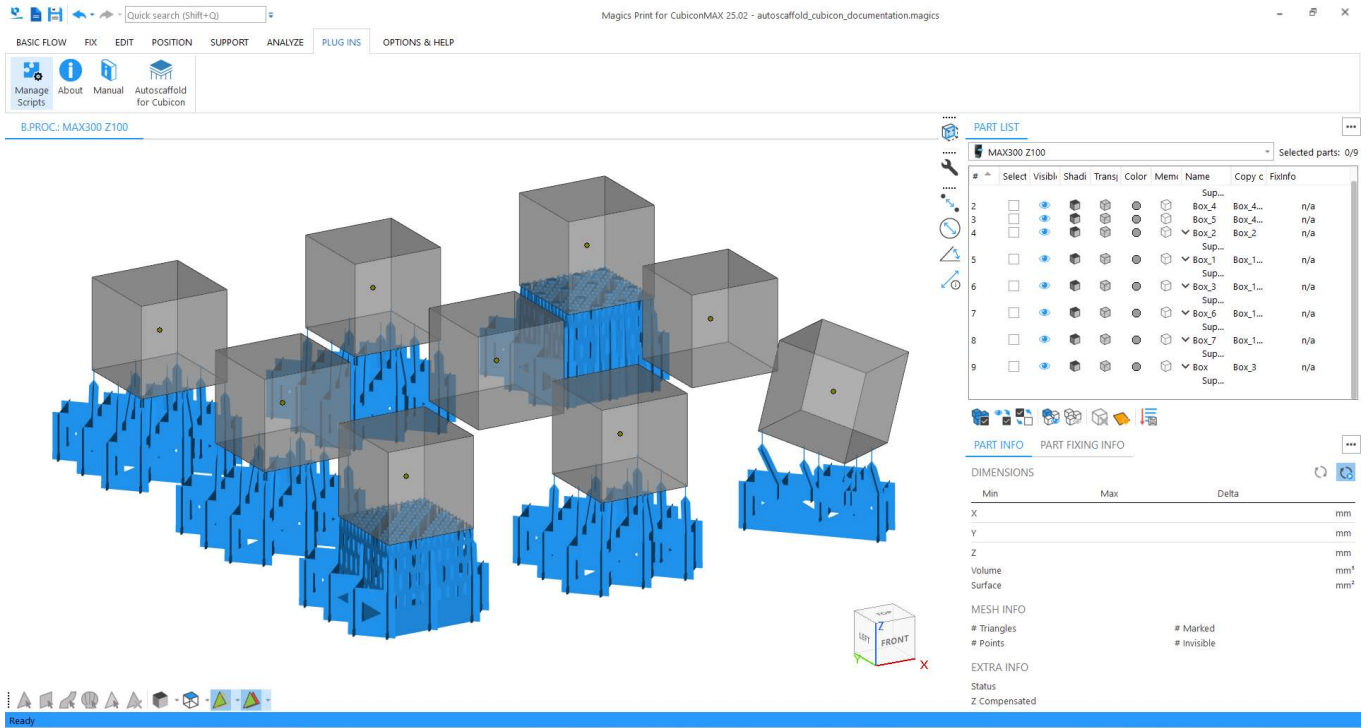
The script can be executed:



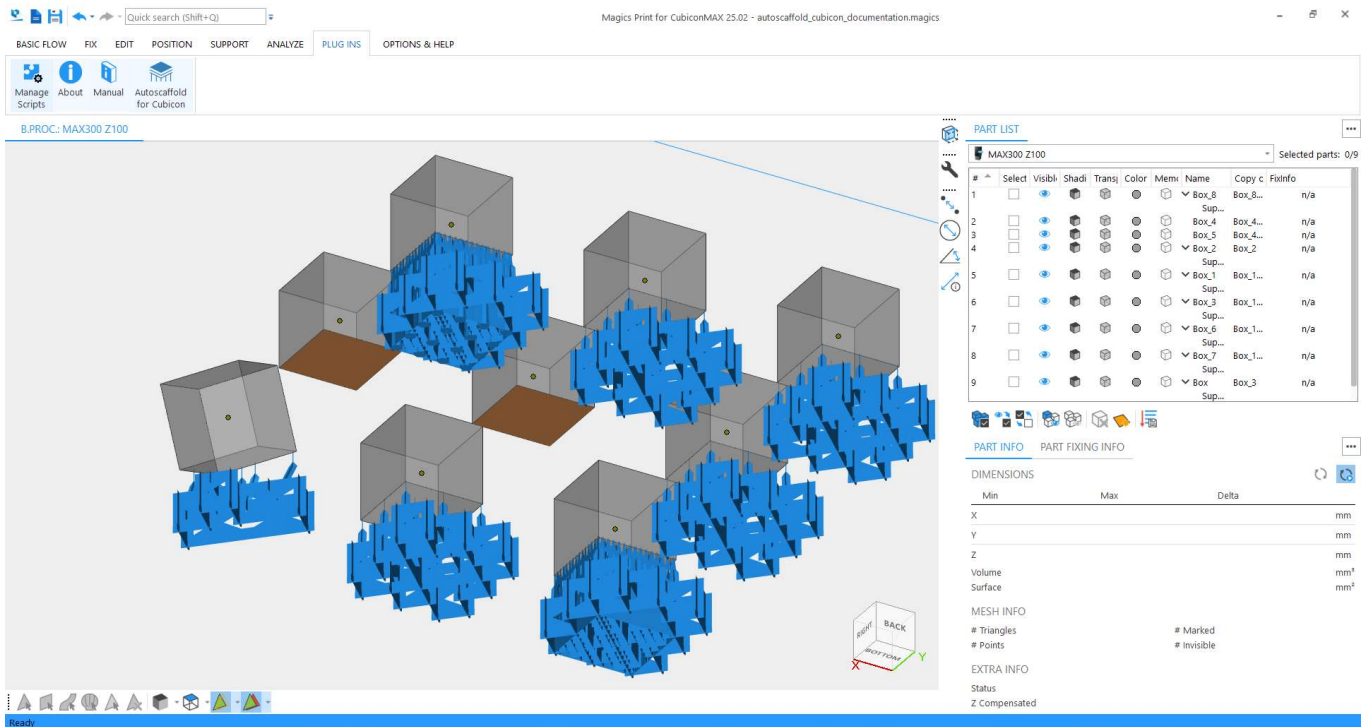
Results

After execution, the new supports will be found on the corresponding parts.

In this case, all but *Box_4* and *Box_5*, i.e. the parts with NSZ, have the new scaffold supports assigned.

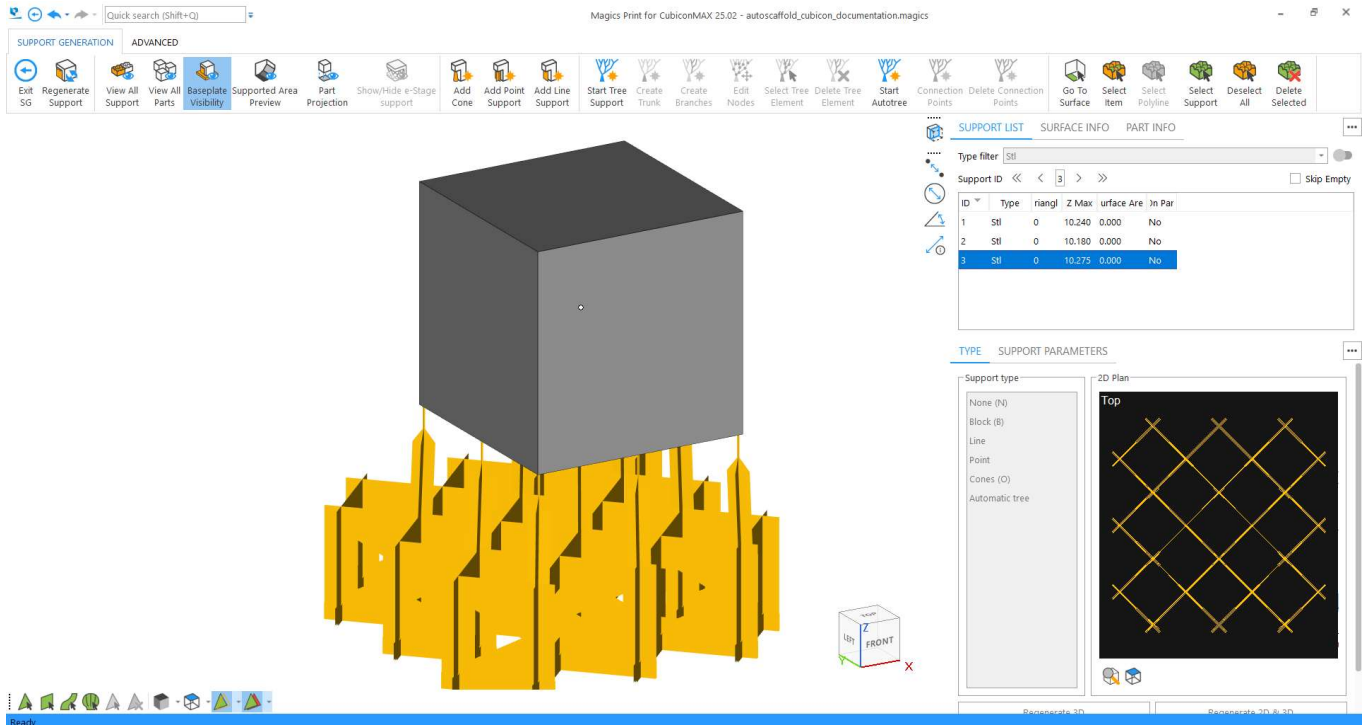


It can also be seen that NSZ are kept for *Box_4* and *Box_5* to facilitate further generation of supports.



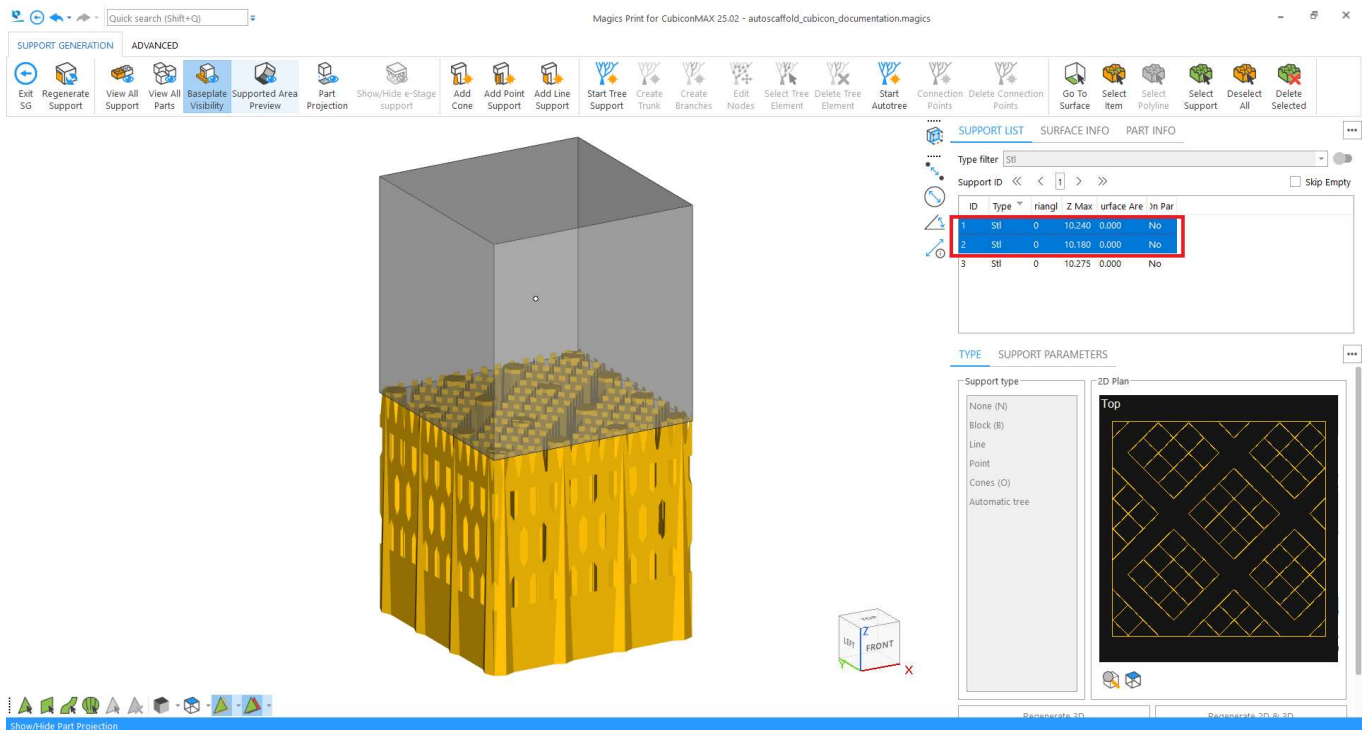
Known issues

It is noted that **pre-existing supports are kept** and the new scaffold support is added with *stl* type.



Box_8: Scaffold support type is stl.

However, the **pre-existing supports types changed to stl**.

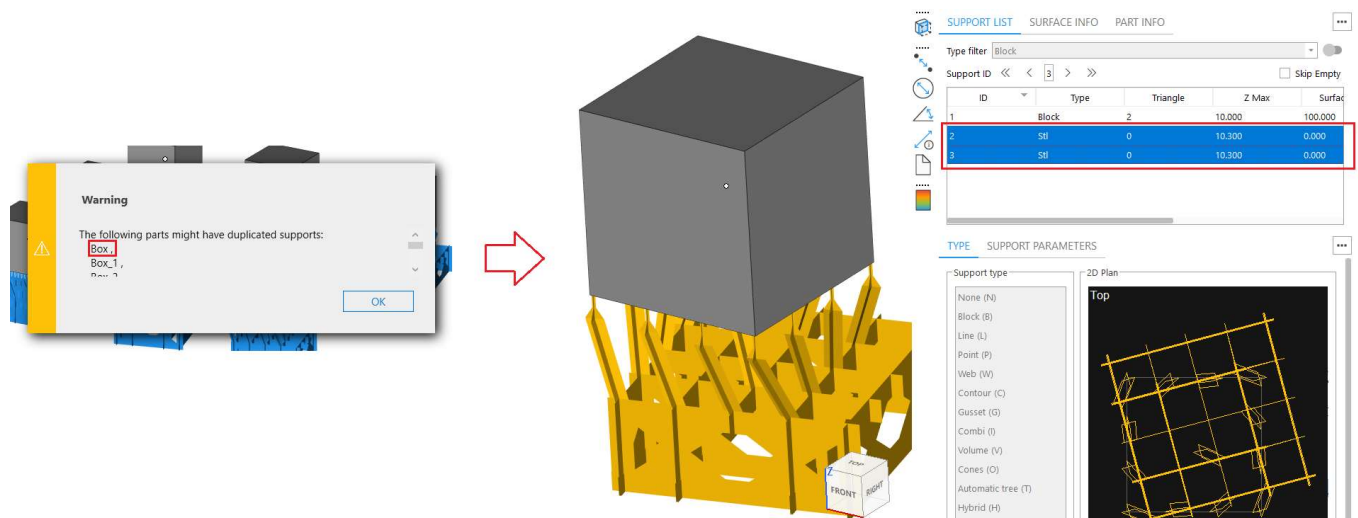


Box_8: Block and Cones support types changed to stl.

Multiple supports possible

Supports are kept by design when executing the script. As a direct consequence, if the script is executed several (N) times for one or more parts, the scaffold supports will be applied the same number (N) of times.

As a mitigation measure, a warning will be displayed after execution with a list of the parts that may have this problem. For illustration, the script is executed twice on all parts:



Example of (left) warning message and (right) supports for part Box, when calling the script twice for all parts.

This warning however might be not exhaustive, so it is recommended attention to selected parts when executing the script.

Release notes

What's New

Autoscaffold Script 1.0.0 has the following features:

- Generating autoscaffold supports for selected parts or whole platforms.
- Possibility to select different parameters depending on machine, material, and profile.
- No support zones are accounted when executing the script.
- No support zones are kept after executing the script.
- Existing supports on parts are kept when executing the script (please see *Known Issues* below).
- Execution: progress bar based on processed parts.

Fixed bugs

N/A

Known Issues

- Existing supports on parts are kept when executing the script. However, parametric supports will be converted to stl.

Compatibility with other Materialise product releases

Product Versions:

- Magics Print for Cubicon Max 25.02
- Magics Automation Module 1.3

System Requirements

Same as *Magics Automation Module*, provided together with this script.

Contact Information

For more information, check out our website: <http://eng.3dcubicon.com/>

For technical support, please contact:

Cubicon

Indices and tables

- [Index](#)
- [Module Index](#)
- [Search Page](#)

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numpy	1.25.2	BSD License (BSD-3-Clause)
pyzipper	0.3.6	MIT

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