

SALOME version 9.6.0

Release Notes

November 2020

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❖ GENERAL INFORMATION

CEA/DEN, EDF R&D and OPEN CASCADE are pleased to announce [SALOME](#) version [9.6.0](#). It is a public minor release that contains the results of planned minor improvements and bug fixes against SALOME version 9.5.0 released in July 2020.

❖ PREREQUISITES

The table below lists pre-requisite products used with SALOME 9.6.0. The differences of 3rd-party product versions used for SALOME 9.5.0 and 9.6.0 are highlighted in bold.

Product	Linux		Windows	
	SALOME 9.5.0	SALOME 9.6.0	SALOME 9.5.0	SALOME 9.6.0
Alabaster	0.7.6	0.7.6	0.7.6	0.7.6
Babel	2.6.0	2.6.0	2.7.0	2.7.0
Boost	1.58.0	1.58.0	1.67.0	1.67.0
Certifi	2018.8.24	2018.8.24	2019.6.16	2019.6.16
Cgns	3.3.1	3.3.1	3.3.1	3.3.1
Chardet	3.0.4	3.0.4	3.0.4	3.0.4
Click	6.7	6.7	7.0	7.0
Cmake	3.12.1	3.12.1	3.12.1	3.12.1
Colorama	-	-	0.4.1	0.4.1
Cppunit	1.13.2	1.13.2	1.13.2	1.13.2
Cycler	0.10.0	0.10.0	0.10.0	0.10.0
Cython	0.25.2	0.25.2	0.29.12	0.29.12
Distene MeshGems suite ¹	2.10.4	2.10.4	2.10.4	2.11.5
Docutils	0.12	0.12	0.14	0.14
Doxygen	1.8.14	1.8.14	1.8.3.1	1.8.3.1
Eigen	3.3.4	3.3.4	3.3.4	3.3.4
Embree	3.3.0	3.3.0	3.5.2	3.5.2
Expat	-	-	2.0.1	2.0.1
F2C	-	-	1.0.0	1.0.0
Freeimage	3.16.0	3.16.0	3.18.0	3.18.0
Freetype	2.9.0	2.9.0	2.9.1	2.9.1
Gmsh	4.1.4	4.1.4	-	-
Graphviz	2.38.0	2.38.0	2.38.0	2.38.0
Hdf5	1.10.3	1.10.3	1.10.3	1.10.3
Homard	11.12	11.12	-	-
Idna	2.7	2.7	2.8	2.8
Imagesize	1.0.0	1.0.0	1.1.0	1.1.0
Intel® Threading Building Blocks	native	native	2019 U8	2019 U8
Ispc	1.9.2	1.9.2	1.10.0	1.10.0

¹ Commercial product; requires license.

Product	Linux		Windows	
	SALOME 9.5.0	SALOME 9.6.0	SALOME 9.5.0	SALOME 9.6.0
Jinja2	2.7.3	2.7.3	2.10.1	2.10.1
Kiwisolver	1.0.1	1.0.1	1.1.0	1.1.0
Lapack	3.8.0	3.8.0	3.8.0	3.8.0
Libbatch	2.4.3	2.4.4	2.4.3	2.4.4
Libjpeg	-	-	9c	9c
Libpng	-	-	1.5.10	1.5.10
Libxml2	2.9.1	2.9.1	2.9.1	2.9.1
Llvm	8.0.1	8.0.1	8.0.1	8.0.1
Markupsafe	0.23	0.23	1.1.1	1.1.1
Matplotlib	2.2.2	r2.2.2	3.1.0	3.1.0
Med	4.1.0	4.1.0	4.1.0	4.1.0
Mesa	19.0.8	19.0.8	19.2.3	19.2.3
Metis	5.1.0	5.1.0	5.1.0	5.1.0
Netgen ²	5.3.1	5.3.1	5.3.1	5.3.1
Nlopt	2.4.2	2.4.2	2.5.0	2.5.0
Numpy	1.15.1	1.15.1	1.16.4	1.16.4
Omniorb	4.2.2	4.2.2	4.2.3	4.2.3
Omniorbpy	4.2.2	4.2.2	4.2.3	4.2.3
Open CASCADE Technology	7.4.0p1 ³	7.4.0p2⁴	7.4.0p1	7.4.0p2
Opencv	3.2.0	3.2.0	3.2.0	3.2.0
Ospray	1.8.4	1.8.4	1.8.4	1.8.4
Packaging	17.1	17.1	19.0	19.0
Paraview	5.8.0	5.8.0	5.8.0	5.8.0
Petsc	-	3.14.0	-	-
Pip	19.1.1	19.1.1	19.1.1	19.1.1
Pillow	7.1.1	7.1.1	7.1.1	7.1.1
Planegcs	0.18	0.18	0.18	0.18
Pockets	0.6.2	0.6.2	0.7.2	0.7.2
Pthreads	-	-	2.9.1	2.9.1
Pygments	2.0.2	2.0.2	2.4.2	2.4.2
Pyparsing	2.0.3	2.0.3	2.4.0	2.4.0

² Patched for SALOME.

³ SHA1 identifier of this version is 33d9a6fa21ca4fa711da7066655aa2ba854545ee.

⁴ SHA1 identifier of this version is 85f78ac11072de6694d3a60343640bb7eef90526.

Product	Linux		Windows	
	SALOME 9.5.0	SALOME 9.6.0	SALOME 9.5.0	SALOME 9.6.0
Pyqt	5.9	5.9	5.9	5.9
PyQtChart	-	5.9	-	5.9
Pyreadline	2.0	2.0	2.1	2.1
Python	3.6.5	3.6.5	3.6.5	3.6.5
Python-dateutil	2.4.2	2.4.2	2.8.0	2.8.0
Pytz	2015.4	2015.7	2019.1	2019.1
Qt	5.9.1	5.9.1	5.9.1	5.9.1
Qwt	6.1.2	6.1.2	6.1.2	6.1.2
Requests	2.19.1	2.19.1	2.22.0	2.22.0
Scipy	0.19.1	0.19.1	1.4.1	1.4.1
Scotch	6.0.4	6.0.4	-	-
Setuptools	38.4.0	38.4.0	41.0.1	41.0.1
Sip	4.19.3	4.19.3	4.19.3	4.19.3
Six	1.10.0	1.10.0	1.12.0	1.12.0
Snowballstemmer	1.2.1	1.2.1	1.9.0	1.9.0
Sphinx	1.7.6	1.7.6	2.1.2	2.1.2
Sphinxcontrib-applehelp	-	-	1.0.1	1.0.1
Sphinxcontrib-devhelp	-	-	1.0.1	1.0.1
Sphinxcontrib-htmlhelp	-	-	1.0.2	1.0.2
Sphinxcontrib-jsmath	-	-	1.0.1	1.0.1
Sphinxcontrib-qthelp	-	-	1.0.2	1.0.2
Sphinxcontrib-serializinghtml	-	-	1.1.3	1.1.3
Sphinxcontrib-napoleon	0.6.1	0.6.1	0.7	0.7
Sphinxcontrib-websupport	1.1.0	1.1.0	1.1.2	1.1.2
Sphinx-intl	0.9.10	0.9.10	2.0.0	2.0.0
Sphinx-rtd-theme	0.4.3	0.4.3	0.4.3	0.4.3
Swig	3.0.12	3.0.12	3.0.12	3.0.12
Tcl	8.6.0	8.6.0	8.6.9	8.6.9
Tclx	8.4.1	8.4.1	8.6.9	8.6.9
Tk	8.6.0	8.6.0	8.6.9	8.6.9
Urllib3	1.23	1.23	1.25.3	1.25.3

Product	Linux		Windows	
	SALOME 9.5.0	SALOME 9.6.0	SALOME 9.5.0	SALOME 9.6.0
Zlib	-	-	1.2.5	1.2.5

Note: the table above lists only most important pre-requisite products; some optional products are not shown. For additional information about pre-requisite products and SALOME modules dependencies refer to the paragraph “**Supported distributions and pre-requisites**” below.

Note: several prerequisites given in the above table are installed with **PIP** package manager. The installation folder for these PIP packages is SALOME-9.6.0-*/SRC/BINARIES-*/Python/lib/python3.6/site-packages on Linux and SALOME-9.6.0\W64\Python\lib\site-packages on Windows.

License restrictions

Hereby we explicitly declare that PyQt and PyQtChart (by Riverbank Computing Ltd) are distributed under the terms of GNU GPL license; for more details please refer to the PyQt site:

<https://riverbankcomputing.com/commercial/license-faq>

If you plan using SALOME for commercial purposes please consider obtaining a commercial license for PyQt from Riverbank Computing Ltd.

❖ NEW FEATURES AND IMPROVEMENTS

Shaper module

- Rounding corners of wire (1D fillet feature).
- Generalization of the extrusions and revolutions to shapes of dimension 1, 2 and 3.
- Curve fitting feature in Sketch.
- Offset feature in Sketch.
- Projection to sketch without link to the original shapes.
- Allow to show/hide sketch plane.
- Rename items in Object Browser with shortcut (F2).
- Allow to customize a text color of features in Object Browser.
- Allow UNICODE characters in Object Browser.
- Keep size of trihedron arrows and the length of the 3 axes when zooming.
- Ability to select shapes in the viewer with circle or polygon.
- Python dump readability.
- Sketcher: if an automatically added constraint (horizontal or vertical) may generate an over-constraint, it is not added.
- Sketcher: if several geometries are selected, the left panel is displayed showing a neutral state.
- An additional export format has been implemented within the "Export / To CAD format ..." menu.

Parameters:

- File name.
- Shape to export. It is possible to select a single shape to export because a file in STL format contains only one object.
- Deflection of shape tessellation. It has two options:
 - "Relative" to indicate that the deflection will be calculated in relation to the size of the shape;
 - "Absolute" to indicate that only the value specified by the user should be used.
- Format of exported file:
 - "Binary" (default) to indicate that the backup will be in binary format;
 - "ASCII" to indicate that the backup will be in ASCII format.

Mesh module

- A new "Renumber" 3D hypothesis has been created, which forces Hexahedron(ijk) algorithm generate a mesh where volumes and nodes are numbered like in a structured mesh.

YACS module

- A new algorithm to execute a YACS schema is available.
- Python nodes can share the same python environment (cache).
- Dynamic foreach - the number of branches is automatically equal to the number of elements to be evaluated.
- It is possible to build a YACS schema out of a Python script using yacsdecorator.

ADAO module

- Improvements of COMM/YACS/TUI conversion support.
- User documentation improvements and corrections.
- Precision support management to fix float128 support.

EFICAS tool

- Improvements of the widgets that hold and manage lists.
- Improvements to handle big files.
- Bug fixes for:
 - Widget that manages table,
 - Home environment variable in Windows.

MEDCoupling module

- 64 bits integers field management.
- Two new methods for parallel unstructured meshes using SPMD paradigm
ParaUMesh.redistributeCells, ParaUMesh.getCellsLyingOfNodes.

Solverlab module

SOLVERLAB is a geometrical and numerical C++/Python library designed for numerical analysts who work on the discretization of partial differential equations on general shapes and meshes and would rather focus on high-level scripting. SOLVERLAB implements simple MATLAB style functions for the generation and manipulation of meshes, fields and matrices.

Int64 configuration

In order to overcome the precedent limit for meshes of ~2G nodes, ~400M tetrahedral (etc.), starting from version 9.6.0 SALOME is configured so that, by default, 64 bits signed integers are used instead of 32 bits signed integers to store arrays for:

- nodal connectivity array inside unstructured mesh data structure,
- nodal connectivity index array inside unstructured mesh data structure.

We call this new default configuration "*int64*" configuration (compared to the previous "*int32*" configuration used until version 9.5.0 of SALOME).

Impacted data structured are:

- VTK datasets,
- MEDCoupling unstructured meshes,
- MEDFile internal meshes.

The following products are impacted at configuration time by this modification:

- Paraview is configured with `-DVTK_USE_64BIT_IDS=ON` option (default value),
- Medfile is configured with `--with-med_int=long` option,
- MEDCoupling is configured with `-DMEDCOUPLING_USE_64BIT_IDS=ON` option (default value).

Consequently, SALOME ParaVis module (in particular, plugins) is also automatically configured to be adapted by this new configuration (the corresponding configuration option is automatically propagated to ParaVis from MEDCoupling).

Note that:

- fields are not impacted by this new default configuration,
- int32 configuration is still possible but it is no more validated.

As a consequence, int64 default configuration provides:

- an increase of ~60% memory consumption for unstructured mesh,
- C++ client code built over vtkDataSet: use of vtkIdType instead of int,
- C++ client code build over MEDCoupling: use of mclDType and DataArrayIdType instead of int and DataArrayInt for concerned arrays,
- Python MEDCoupling client code: MEDCouplingSizeOfIDs method can be used to map correctly to numpy arrays.

❖ CHANGE LOG

This chapter does not provide the complete set of changes included into this version of SALOME; only the most important changes are listed.

KERNEL MODULE

19784	<p><i>Summary:</i> EDF 21751 - Problem with python kernel salome study edit</p> <p>Corrected bug in the KERNEL study helper: study editor is re-initialized when new study is created or opened.</p>
19928	<p><i>Summary:</i> [CEA 19927] Folders with spaces.</p> <p>Corrected problem with executing a script with spaces in the file path.</p>

GUI MODULE

16840	<p><i>Summary:</i> [CEA 16838] plugin: SALOME shell session</p> <p>Adapt "SALOME session" plugin to correctly work in different SALOME distributions.</p>
17888	<p><i>Summary:</i> [CEA 17919] VTK Viewer - Scaling</p> <p>Now transformation operation can be applied to a representation of a Geometry objects in the VTK Viewer.</p>
19139	<p><i>Summary:</i> [CEA 19033] With Virtual GL, VTK viewer is void</p> <p>Rendering of the VTK Viewer via Virtual GL tool has been corrected.</p>

SHAPER MODULE

18355	<p><i>Summary:</i> [CEA 18354] Fuse feature regression: remove intersection edges</p> <p>Fixed OCCT algorithm Unify same domain to build new seam edges correctly.</p>
19754	<p><i>Summary:</i> EDF 21721 - Problems with a study</p> <p>Fixed crashes on dumping to python if there are problems with features validity. Improved the error-status appearance when previous features are dramatically changed.</p>
19815	<p><i>Summary:</i> EDF - cloison07 fails</p> <p>Fixed a problem appeared on edit of some features with result compsolid: sometimes it produces the error-message even when result is correct.</p>
19833	<p><i>Summary:</i> [EDF] Wrong isolines for BSpline face</p> <p>Rendering of the isolines for B-Spline faces has been fixed.</p>

19884	<p><i>Summary:</i> [CEA 19882] SHAPER tests and "--terminal" option</p> <p>Improve SHAPER module activation procedure to avoid unnecessary warning messages.</p>
19890	<p><i>Summary:</i> [CEA] Shape displayed with some transparency after symmetry</p> <p>The correct algorithm for applying a transformation to a Part has been used.</p>
19912	<p><i>Summary:</i> [CEA] Error in SHAPERSTUDY python dump in feature Face with 2 results</p> <p>Fixed problem when group stays valid while the selected elements disappear from the selected result context in some particular cases.</p>
19923	<p><i>Summary:</i> [CEA 19919] Group of Edges reported as empty</p> <p>Fixed problem with cached old version of sub-shape, located in sub-mesh, but not in groups of a mesh.</p>
19931	<p><i>Summary:</i> [CEA] Different Fuse result if the inputs are the results or the features</p> <p>Expand top-level compounds when the Fuse is performed, to avoid self-intersected compounds which contains valid shapes only.</p>
19932	<p><i>Summary:</i> [CEA] Fillet fails in python with all in features Fuse inputs</p> <p>Fix problem of incorrect python script loading when a feature references another feature that doesn't change the arguments of the first feature and makes selection by the whole feature.</p>
19989	<p><i>Summary:</i> [CEA] Sketch in error after edit and apply on Fuse (without having changed anything)</p> <p>Fix problem of selection in groups when argument is produced by a Boolean operation with the whole features selected.</p>
19990	<p><i>Summary:</i> [CEA] Error when loading geometrical dump</p> <p>Geometrical selection by coordinates of a point is able to select the center of arc now.</p>
20027	<p><i>Summary:</i> [CEA] No results in Fuse when Salome is launched in text mode or in GUI in debug</p> <p>UnifySameDomain algorithm has been improved within OCCT.</p>
20033	<p><i>Summary:</i> [CEA] No preview after parameter change</p> <p>Restore the position of the history line when changing parameter.</p>
20081	<p><i>Summary:</i> [CEA] Error in coincidence when creating two rectangles with auto apply</p> <p>A selection mechanism has been modified in order to return a vertex instead of the whole solid when starting to create the second rectangle.</p>
20090	<p><i>Summary:</i> EDF 22015 - Can't select external wire of a sketch</p> <p>A possibility to define a complex selection mode for multi-selection widget was added. Now it is possible to define selection mode as Faces Wires (without spaces) and it defines selection</p>

	mode for faces and wires at the same moment.
20111	<i>Summary:</i> EDF 22041 - Salome freezes when updating data Optimized the statuses update algorithm for particular heavy cases.
20136	<i>Summary:</i> EDF 22091 - Problem of piping The regression of incorrect set of shapes selected by pipe has been fixed.
20145	<i>Summary:</i> [CEA] Sketch's plane become visible again when unticking display of constraints Sketch's plane now is invisible when display of constraints is unticked.
20146	<i>Summary:</i> [CEA] Sketch's plane is not displayed on the right place Now a sketch's plane is displayed on the right place.
20148	<i>Summary:</i> EDF - error in projection with "break connection" in sketcher Projection functionality with "Break connection ..." option has been corrected.
20167	<i>Summary:</i> [CEA 20153] <code>checkPythonDump()</code> errors Use the precise bounding box for shapes when performing the geometrical dump.
20170	<i>Summary:</i> [CEA] Error when loading python dump: attribute "ExternalFeature" is invalid Fix problem of selection of the fillet face if this fillet is done on compound of solids and not all of them are modified by this fillet.
20204	<i>Summary:</i> [CEA] Wrong sketch in master from 9.5.0 python script Improve orientation of the curve projected onto the sketch plane.
20207	<i>Summary:</i> EDF 22171 - SIGSEGV with automatic coincidence A crash in automatic coincidence functionality has been eliminated.
20245	<i>Summary:</i> [CEA] New error when loading python dump: attribute "ExternalFeature" is invalid The dump of extrusion and revolution is corrected to take into account the base's type of selection when necessary.
20247	<i>Summary:</i> [CEA] Wrong extrusion direction to face Make top and bottom faces large enough to cut correctly the prism far away from the Origin.

GEOMETRY MODULE

16247	<i>Summary:</i> EDF - Problem of partition
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	Methods <code>MakeIsoline()</code> and <code>MakeEdge(pnt1, pnt2)</code> have been improved. Their resulting edges inherit tolerances of input shapes now. This allows building more consistent model. Also method <code>MakeFaceWires()</code> has been improved a bit to avoid occasional appearance of degenerated edges in the result.
16366	<i>Summary:</i> EDF - Remove Extra-Edge : curled face RemoveExtraEdges algorithm improved to avoid rough faces creation.
18856	<i>Summary:</i> [CEA 18848] Export STEP from BREP file Export in STEP format in non-manifold mode has been improved for standalone faces correct treatment.
19940	<i>Summary:</i> [CEA] Wrong dump offset if join by pipes is unticked Provided correct dumping to Python script of Offset with intersection join

MESH MODULE

19765	<i>Summary:</i> EDF 21730 - long time to load med file with huge amount of groups A too long import of a med file with many groups has been fixed.
19887	<i>Summary:</i> [CEA] Body fitting missing some faces and generates not-wanted splitted elements The bug of Body Fitting meshing algorithm that some faces are missing and not-wanted splitted elements are generated has been fixed.
19889	<i>Summary:</i> [CEA] No more items available in context menu after delete group with contents The problem with popup menu in Object Browser after closing "Delete Group With Contents" dialog box has been corrected.
19895	<i>Summary:</i> [CEA] Overlapping volume cells with viscous layer on shared faces The bug that Viscous layers prisms are overlapped by tetrahedra built by MG-Tetra has been fixed.
19913	<i>Summary:</i> [CEA] Crash when compute mesh with body fitting and shared faces SALOME crash with Body Fitting algorithm on a compound of solids has been fixed.
19961	<i>Summary:</i> EDF 21858 - ExportMED Argument "minor" of <code>Mesh.ExportMED()</code> has been renamed to "version", which is more correct.
19982	<i>Summary:</i> EDF 21954 - Compute mesh fails Distorted prisms generated by Extrusion 3D algorithm on a part of tube have been fixed.
19993	<i>Summary:</i> [CEA 17873] Delete group with contents crash

	SALOME crash upon Remove group with contents operation has been fixed
20082	<i>Summary:</i> [CEA] Set reverse edge in <code>GeometricProgression</code> fails Fixed processing of SHAPERSTUDY object in SMESH for special case of <code>GeometricProgression.ReversedEdgeIndices()</code> method.
20087	<i>Summary:</i> [CEA 20080] spacing value constraint not taken into account in Body fitting hypothesis construction Updated SMESH documentation of Body Fitting Parameters hypothesis to clarify Spacing Value parameter treatment.
20144	<i>Summary:</i> [CEA 20142] Import1D - Error: Algorithm failed. Failure of "Import 1D elements from another mesh" algorithm has been fixed.
20185	<i>Summary:</i> Wrong option in automatic hypotheses A bug that Assign a set of hypotheses > Free Quadrangulation creates MG-CADSurf hypothesis with Elements type == Quadrangles instead of Quadrangle dominant has been fixed.
20232	<i>Summary:</i> EDF 22208 - Add a crack in a pipe Regression of "Import 1D elements from another mesh" algorithm has been fixed.
20238	<i>Summary:</i> EDF 22226 - problem of remeshing Performance of Extrusion 3D algorithm has been improved.
20244	<i>Summary:</i> [CEA 20227] OCCT SIGSEGV - Cutting of quadrangles SIGSEGV in 'Cutting of quadrangles' has been fixed.

MG-TETRA PLUGIN MODULE

19896	<i>Summary:</i> [CEA] GHS3DPlugin_Hypothesis' object has no attribute 'SetPrintLogInFile' Invalid python dump of GHS3DPlugin hypothesis has been fixed.
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MG-TETRA PARALLEL PLUGIN MODULE

18830	<i>Summary:</i> [CEA 7927] MG-Tetra_HPC with multithread option GHS3DPRL plug-in can now compute a multi-thread mesh.
20233	<i>Summary:</i> EDF 22209 - Pb with MG-Tetra HPC Fix MG-Tetra_HPC algorithm to report a warning instead of an error in case of a successful meshing.

MEDCOUPLING MODULE

20059	<i>Summary:</i> [CEA 18523] SALOME IDs INT64 : convert .case to .med fails Problem of converting CASE to MED files with 64 bits ID has been corrected.
20133	<i>Summary:</i> [CEA] MEDCouplingCommon.i and PyArray_Check Properly wrap Numpy-depedent code in MEDCoupling SWIG interfaces.

FIELDS MODULE

19943	<i>Summary:</i> [CEA 19942] crash after selecting a non-valid representation Prevent throwing unhandled exception which causes abnormal termination of SALOME when user tries to create an invalid presentation in FIELDS module.
20253	<i>Summary:</i> [CEA] Fatal error - Expand field time series after 'New' study Correct bug in the KERNEL study helper: study editor is re-initialized when new study is created or opened.

PARAVIS MODULE

20031	<i>Summary:</i> [CEA 18447] MEDReader and MPI Propagate MPI settings from SALOME KERNEL module to PARAVIS (for MEDReader plugin).
20060	<i>Summary:</i> [CEA 18523] SALOME IDs INT64 : Cannot save data: AppendMCFieldFrom Problem in the AppendMCFieldFrom MEDCOUPLING's method has been corrected.
20272	<i>Summary:</i> [CEA 20228][Windows] crash in PARAVIS Reading 3.X.X MED files has been corrected under Windows platform.

OTHER ISSUES

16706	<i>Summary:</i> [CEA] killing a booked TCP port Improve procedure releasing TCP/IP ports when running SALOME sessions are killed.
19100	<i>Summary:</i> [CEA 19085] Compile SALOME archive in a directory with special characters Correct detection procedure for SWIG to prevent searching native swig in cases when this is not required.

❖ **OCCT 7.4.0 BUG CORRECTIONS**

This chapter lists bug corrections and improvements made for SALOME project in Open CASCADE Technology. Below listed bug corrections and improvements are included into patch #2 for OCCT version 7.4.0 used by SALOME 9.6.0.

31016	Projection of an ellipse is a B-spline in some cases
31207	Regression in Boolean Operations: fuse gives wrong result
31425	Visualization - free Edge has selection sensitivity inconsistent to presentation
31440	Visualization - Impossible to make common behaviour for multi-selection in viewer
31464	<code>BRepOffsetAPI_MakeFilling</code> algorithm increases tolerances of vertices in input edges
31470	Modelling Algorithms - Regression: BOP common produces empty result (box and holed sphere)
31485	Data Exchange - Export STEP in non-manifold mode loses all faces except one
31558	<code>BRepOffsetAPI_MakeFilling</code> algorithm makes turned inside out face
31565	Visualization - SIGFPE, Arithmetic exception if <code>SelectMgr_TriangularFrustumSet::Build()</code> is called with single point
31604	Wrong result of Boolean Operation Cut
31617	Export STEP in non-manifold mode corrupts the shape
31688	Visualization - Wrong ISO lines for a face created from B-Spline
31778	<code>UnifySameDomain</code> fails in Debug mode

❖ SUPPORTED DISTRIBUTIONS AND PRE-REQUISITES

SALOME is a cross-platform solution that supports Linux and Windows. It is distributed as open-source software under the terms of the GNU LGPL license.

The table below lists the versions of the pre-requisite products used by SALOME platform. Other versions of the products can also work but this is not guaranteed.

Product	Version	KERNEL	GUI	GEOM	SHAPER	SMESH	FIELDS	YACS	PARAVIS	HOMARD	HEXABLOCK	JOBMANAGER	NETGENPLUGIN	GHS3DPLUGIN	GHS3DPRPLPLUGIN	BLSURFPLUGIN	HexaticPLUGIN	HEXABLOCKPLUGIN	HYBRIDPLUGIN	GMSHPLUGIN	ADAO	EFICAS
Gcc*	4.4***	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
GNU make*	3.81***	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Microsoft Visual Studio**	2017	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cmake	3.12.1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Python	3.6.5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Qt	5.9.1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sip	4.19.3		X																			
Pyqt	5.9.0	X	X			X	X		X												X	X
Boost	1.58.0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Swig	3.0.12	X	X	X	X	X	X	X		X	X											
OCCT	7.4.0p2		X	X	X	X				X	X		X	X	X	X	X	X	X			
Qwt	6.1.2		X			X																
OmniORB	4.2.2	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
OmniORBpy	4.2.2	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Hdf5	1.10.3	X	X			X																
Med	4.1.0					X	X		X	X												
Vtk	8****		X	X		X	X		X		X		X	X	X	X	X	X	X	X		
Numpy	1.15.1		X			X	X		X	X												X
Scipy	0.19.1																					X
Graphviz	2.38.0	X	X	X	X	X	X	X					X	X	X	X	X		X	X		
Doxygen	1.8.14	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X		
Netgen	5.3.1												X									
Metis	5.1.0						X															
Scotch	6.0.4						X															
Libxml2	2.9.1	X	X		X		X	X														
Distene MeshGems	2.10-4													X	X	X	X		X			
Sphinx	1.7.6	X	X		X	X	X	X	X	X	X	X									X	X
Libbatch	2.4.3	X																				
Cgns	3.3.1					X																
Paraview	5.8.0		X				X		X													
Homard	11.12									X												
Gmsh	4.1.4																			X		
Planegcs	0.18				X																	
Pillow	7.1.1						X															
Nlopt	2.4.2																				X	
Eficas (tool)	9.5.0																				X	X

*) Linux only
 **) Windows only
 ***) Minimal required version
 ****) Version included into ParaView is used

The following products are not mandatory for SALOME directly; these products are either optional for SALOME or only required to build other pre-requisite products.

Product	Required by	Comment
Alabaster	Sphinx	Not used directly.
Babel	Sphinx	Not used directly.
Certifi	Sphinx	Not used directly.
Chardet	Sphinx	Not used directly.
Click	Sphinx	Not used directly.
Colorama	SAT	Not used directly. Windows only.
Cppunit	KERNEL, FIELDS, GEOM, YACS, HEXABLOCK	Optional, for unitary tests.
Cycler	Matplotlib	Not used directly.
Cython	Mpi4py, Scipy	Not used directly.
Docutils	Sphinx	Not used directly.
Eigen	Planegcs	Not used directly.
Embree	ParaView	Optional. Not used directly.
Expat	Graphviz	Windows only.
F2c	SMESH	Compile FORTRAN code (converted to C).
Freeimage	OCCT	Optional. Not used directly.
Freetype	OCCT, ParaView	Optional. Not used directly.
Idna	Sphinx	Not used directly.
Imagesize	Sphinx	Not used directly.
Intel TBB	OCCT, Ospray, SMESH	Optional.
Ispc	ParaView	Optional. Not used directly.
Jinja2	Sphinx	Not used directly.
Kiwisolver	Sphinx	Not used directly.
Lapack	Numpy	Not used directly.
Libjpeg	Graphviz	Not used directly. Windows only.
Libpng	Graphviz	Not used directly. Windows only.
Llvm	ParaView	Optional. Not used directly.
Markupsafe	Shinx	Not used directly.
Matplotlib	ParaView	Optional. Not used directly.
Mesa	Visualization subsystem.	Optional. Not used directly.
Opencv	GEOM	Optional.
Openmpi	ParaView, Hdf5, Med, KERNEL, FIELDS	Optional.
Ospray	ParaView	Optional. Not used directly.
Packaging	Sphinx	Not used directly.
Pestc	Solverlab	Not used directly.
Pip	Python extra packages	Optional. Not used directly.
Pockets	Sphinx	Not used directly.
Pthreads	OmniORB, and other	Not used directly.
Pygments	Sphinx	Not used directly.
Pyarsing	Matplotlib	Not used directly.
Pyreadline	SAT	Not used directly. Windows only.
Python-dateutil	Matplotlib	Not used directly.
PyQtChart		Not used directly.
Pytz	Matplotlib, Sphinx	Not used directly.
Requests	Sphinx	Not used directly.

Setuptools	Sphinx, Matplotlib, Numpy, Scipy, ...	Not used directly.
Six	Matplotlib	Not used directly.
Snowballstemmer	Sphinx	Not used directly.
Sphinx-inlt	GUI, GEOM, SMESH, MEDCOUPLING	Optional.
Sphinxcontrib-applehelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-devhelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-htmlhelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-jsmath	Sphinx	Not used directly. Windows only.
Sphinxcontrib-qthelp	Sphinx	Not used directly. Windows only.
Sphinxcontrib-napoleon	GUI, GEOM, SMESH, MEDCOUPLING	Optional.
Sphinxcontrib-serializing	Sphinx	Not used directly. Windows only.
Sphinxcontrib-websupport	Sphinx	Not used directly.
Sphinx-rtd-theme	Sphinx	Not used directly.
Tcl	OCCT, Python	Optional. Not used directly.
Tk	OCCT, Python	Optional. Not used directly.
Tclx	OCCT, Python	Optional. Not used directly.
Urllib3	Sphinx	Not used directly.
Zlib	Hdf5	Not used directly.

SALOME depends on a number of products for run time execution, others are necessary only for compilation or generation of development documentation (like doxygen for example). Below there is a list of mandatory and optional products⁵.

Software Requirements

Product	Compilation and Development		Execution		Remarks
	Mandatory	Optional	Mandatory	Optional	
Gcc	X		X		
GNU make	X				
Microsoft Visual C++	X		X		For execution, runtime libraries are only required
Boost	X		X		
Cgns		X		X	For SMESH only Required only if used at compilation step
Cmake	X				
Cppunit		X			For testing only.
Distene MeshGems	X	X	X	X	Compilation: depending on build optioned used, can be mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRLPLUGIN, HexoticPLUGIN, HYBRIDPLUGIN. Runtime: mandatory for BLSURFPLUGIN, GHS3DPLUGIN, GHS3DPRLPLUGIN, HexoticPLUGIN, HYBRIDPLUGIN.
Doxygen		X			Needed only for documentation generation
Eficas (tool)	X		X		For ADAO, EFICAS
Freetype	X		X		
Freeimage		X		X	Required only if used when building OCCT
Gmsh	X		X		For GMSHPLUGIN only
Graphviz	X		X		In run-time required for YACS only
Hdf5	X		X		
Homard			X		For HOMARD module only
Intel TBB		X		X	Required if used when building OCCT and/or if used to build SMESH
Libbatch		X		X	Required only if used at compilation step for KERNEL

⁵ Some optional pre-requisite products are not listed.

Libxml2	X		X		
Matplotib				X	Required only if used when building ParaView. Used by ADAO.
Med	X		X		
Metis		X		X	Required only if used at compilation step for FIELDS
Netgen	X		X		For NETGENPLUGIN only
Nlopt				X	Required by ADAO.
Numpy (+ Lapack)	X		X		Required by FIELDS, ADAO
Omniorb	X		X		
Omniorbpy	X				
OCCT	X		X		
Opencv		X		X	Required only if used at compilation step for GEOM
Openmpi		X		X	Required only if used when building SALOME and/or pre-requisites
ParaView	X		X		Mandatory for PARAVIS module; optional for GUI module
Pillow				X	Optionally required by FIELDS.
Planegcs	X		X		Required by SHAPER
Pyqt	X		X		
Python	X		X		
Qt	X		X		
Qwt	X		X		
Scipy			X		Required by ADAO
Scotch		X		X	Required only if used at compilation step for FIELDS
Sip	X				
Sphinx		X			Needed only for documentation generation
Swig	X				
Vtk	X		X		

❖ HOW TO GET THE VERSION AND PRE-REQUISITES

Sources of SALOME 9.6.0 can be retrieved from the Git repositories using V9_6_0 tag; the complete list of repositories can be found at <https://git.salome-platform.org/gitweb/>.

All pre-requisites can be obtained either from the Linux distribution (please be sure to use a compatible version) in form of native package or from the distributors of these pre-requisites.

Note: SALOME version 9.6.0 patches some third-party pre-requisite products, such as ParaView, Netgen, Open CASCADE Technology and other. These patches solve different problems and introduce some specific features needed for SALOME project.

❖ LICENSE

SALOME platform is distributed under terms of the GNU Lesser General Public License (LGPL) license version 2.1. All used pre-requisites use similar or compatible licenses (with minor exceptions). Detail information about licenses used by SALOME and its pre-requisites can be found on the following page: <http://www.salome-platform.org/downloads/license/>.

See also "*License restrictions*" paragraph above.

❖ KNOWN PROBLEMS AND LIMITATIONS

- The following modules are obsolete and not included into this SALOME release: FILTER, SUPERV, MULTIPR, VISU (Post-Pro). These modules are considered obsolete and not supported anymore.
- Application crash might occur on the data publication in the study if both data server and CPP container are running in the standalone mode.
- Sometimes regression test bases give unstable results; in this case the testing should be restarted.
- SALOME in general supports reading of documents from earlier versions but the documents created in the new version may not open in earlier ones. However, some studies may work incorrectly in SALOME 9x; mainly it concerns studies with Post-Pro data in which med v2.1 files have been imported. Due to removal of med v2.1 support and deprecation of Post-Pro module in SALOME series 9x, there can be problems with opening of such studies in SALOME.
- If SALOME modules are not installed in a single folder, SALOME may not work in the CSH shell since the environment variables are too long by default. In this case, it is suggested to use SH or to install all modules in the same folder.
- Compilation of OCCT by Makefiles on a station with NVIDIA video card can cause problems because the installation procedure of NVIDIA video driver removes library `libGL.so` included in package `libMesaGL` from directory `/usr/X11R6/lib` and places this library `libGL.so` in directory `/usr/lib`. However, `libtool` expects to find the library in directory `/usr/X11R6/lib`, which causes compilation failure (See `/usr/X11R6/lib/libGLU.la`). We suggest making symbolic links in that case using the following commands (*Note: you need root permission to do this*):

```
ln -s /usr/lib/libGL.so /usr/X11R6/lib/libGL.so
ln -s /usr/lib/libGL.la /usr/X11R6/lib/libGL.la
```

- MEFISTO algorithm sometimes produces different results on different platforms.
- In some cases the number of triangles generated by MEFISTO may be different at each attempt of building the mesh.
- When generating a 2D mesh with “Maximum Area” hypothesis used, MEFISTO algorithm can produce cells with maximum area larger than specified by the hypothesis.
- For the current moment, because of the ParaView application architecture limitations, PARAVIS module has the following known limitations:
 - PARAVIS module works unstably using a remote connection; when SALOME is running on a remote computer, activation of PARAVIS module can sometimes lead to the application hang-up.
 - Different visual artifacts may take place in ParaView or VTK viewer when using a remote connection; this is a limitation of indirect rendering: ParaView uses OpenGL 2.0 backend which some features are not supported by indirect rendering.
 - PARAVIS module compilation can fail on 64-bit platforms when building ParaMEDCorba plugin (due to crash of `kwProcessXML` tool during generation of the plugin documentation). In such case it is necessary to unset `VTK_AUTOLOAD_PATH` environment variable and restart the compilation, for example:


```
[bash%] unset VTK_AUTOLOAD_PATH
```
 - Loading big files in ParaVis might render SALOME instable. This problem is expected to be fixed in one of the next releases; it can be temporarily avoided in the current version by applying one of the two solutions below:
 - In ParaVis settings (ParaVis tab), disable the use of the external pvserver. This approach has the limitation that it is not possible to execute ParaVis' Python scripts outside the SALOME graphical interface (for instance, from an external terminal).

- In ParaVis settings (ParaView tab → RenderView tab), increase the amount of memory under "Remote/Parallel rendering options" to something bigger than the default 20 MB (for example 200 MB).
 - ParaVis module executes ParaView-related code in the standalone `pvserver` process that is launched with `--offscreen-rendering` option; this can cause problems with displaying data in ParaVis module if graphic card driver does not support off-screen rendering feature.
 - Med library (`medfichier`) can read only MED files of version 2.2 and newer.
 - Users can experience OpenGL issues when running SALOME on virtual machines or with Intel graphic chipset. As a workaround, SALOME Windows archive contains the `opengl32.dll` library, which can be used as follows:
 - In the extraction folder of SALOME, go to subfolder: `SALOME-9.6.0\W64\mesa\64`,
 - Select and copy `opengl32.dll`,
 - In the extraction folder of Salome, go to subfolder: `SALOME-9.6.0\W64\GUI\bin\salome`,
 - Paste `opengl32.dll`,
 - Eventually, edit file `run_salome.bat` SALOME launcher and add at line 11:


```
SET MESA_GL_VERSION_OVERRIDE=3.2
```
 - Sometimes a crash may be experienced on Windows when putting contents of the YACS graph to a *Bloc* node.
 - For Windows 10 operating system, the Microsoft Visual C++ Redistributable for Visual Studio 2017 is required. It can be downloaded from the official Microsoft site:

<https://support.microsoft.com/en-us/help/2977003/the-latest-supported-visual-c-downloads>

For convenience, the distributable is included into the SALOME archive as well.

- On Linux SALOME requires Python 3 package to be installed. If you don't have it, use the corresponding Linux package manager (`rpm`, `dpkg`, `apt-get`, `yum`, etc.) to install it. Alternative solution (which can also be applied on the platforms which do not provide native Python 3 package, like CentOS 6) to launch SALOME consists in using the environment script included into the SALOME archive, as follows:

```
$ cd SALOME-9.6.0-<OS>-SRC
$ . ./env_launch.sh
$ salome
```

Here, `<OS>` is an alias for the operating system being used, e.g. `CO7` for Linux CentOS 7.

- Because of the known 8192 character command line limit, On Windows, the installation directory should be as short as possible, e.g. `C:\SALOME\SALOME-9.6.0`.
- On Linux and Windows, the installation folder should not contain spaces or special characters.
- There are known issues about behavior of the automatic link between Shaper and Mesh. The behavior will not be optimal if several iterations between the two modules are done by the user.