



Open CASCADE Technology and Products ver. 6.4.2 Maintenance Release

Release Notes

Overview

Open CASCADE Technology and Products version 6.4.2 is a maintenance release, which includes new features, improvements and bug fixes, over maintenance release 6.4.1.

Version **6.4.2** is binary incompatible with the previous versions of Open CASCADE Technology and Products, so applications linked against a previous version must be recompiled to run with this Version 6.4.2.





Table of Contents

Highlights	3
<i>Implementation of FreeImage(plus) library</i>	3
Modifications	4
<i>Modeling Algorithms</i>	4
<i>Visualization</i>	6
<i>Application Framework</i>	6
<i>Data Exchange</i>	6
<i>Dependencies and Packaging</i>	7
<i>Products</i>	7
DXF	7



Highlights

Implementation of FreeImage(plus) library

FreeImage(Plus) third-party library (<http://freeimage.sourceforge.net>) has been integrated to Open CASCADE Technology.

This library provides build-in support of popular image processing formats, such as JPEG, PNG, GIF or BMP. It should replace all obsolete code for image load/dump in the future. Currently it is used to save images from Window / OpenGL context.

The following modifications have been made in OCCT packages, classes, methods and enumerations in connection with this improvement:

- New DRAWEXE command v2ddump allows dumping the contents of 2D viewer.
- New DRAWEXE command vdump allows dumping the color buffer with alpha channel and depth buffer.
- DRAWEXE commands xwd and vdump have been modified to dump into JPEG, PNG, GIF, BMP formats. XWD format support has been removed.
- V3d_View::Dump() and V3d_View::ToPixMap() methods now use hardware accelerated off-screen buffer if available (required OpenGL2+ compatible GPU and up-to-date drivers).
- The method StdSelect_ViewSelector3d::UpdateProj() has been improved to update parameters after the first call (not the second).
- DRAWEXE 2D-Viewer (v2dinit) and 3D-Viewer (vinit) now can be used simultaneously on Windows systems.
- Work of DRAWEXE in batch mode (launched with -f Script.tcl or with -v flag) has been reorganized. Tk/Tcl control window; viewer window (commands view, axo, smallview, etc.); 3D-Viewer (OpenGL) window (commands vinit, vdisplay, etc.); 2D-Viewer window (commands v2dinit, v2ddisplay, etc.) have been removed. Drawing that has been done in these windows, is now performed in offscreen buffer.
- New methods IsVirtual() and SetVirtual() have been added in class Aspect_Window to specify a 'virtual window' which is used for off-screen rendering.
- Compress argument has been removed from method Draw_Window::Save(). This method has been implemented for Windows systems as well.
- New methods for off-screen buffer control: FBOCreate(), FBORelease(), FBOGetDimensions(), FBOChangeViewport() and a new dump method BufferDump() have been added in classes Graphic3d_GraphicDriver, OpenGL_GraphicDriver and Visual3d_View.
- Method ViewerSelector3d::InitProj() has been removed.
- New class Image_PixMap implementing system-independent image-buffer control using FreeImage(Plus) library has been added.
- New values: TOI_RGB, TOI_RGBA, TOI_RGBF, TOI_RGBA_F and TOI_FLOAT, which indicate Image_PixMap image type, have been added in TypeOfImage Enumeration.
- Method V3d_View::ToPixMap() now can be specified from TypeOfImage enumeration (TOI_FLOAT currently means Depth buffer).
- TKDraw package now depends on TKService, while TKService package now depends on FreeImage(Plus) library.
- New class OpenGL_FrameBuffer, implementing off-screen Frame Buffer Object in OpenGL, has been added.
- Structure CALL_DEF_VIEW has been extended with field void* ptrFBO to store off-screen frame buffer object used for rendering.



Modifications

Modeling Algorithms

22130	<p><i>Summary:</i> Bug in Bnd_2x.</p> <p>A misprint has been fixed in method Bnd_B2x::IsIn defining if one box is completely inside the other box.</p>
22131	<p><i>Summary:</i> Protection and improvements in BOPTools</p> <p>Protection against zero magnitude of the first derivative during computation of the tangent to an edge has been introduced in methods BOPTools_Tools2D::EdgeTangent and BOPTools_Tools3D::EdgeTangent.</p>
22133	<p><i>Summary:</i> Incorrect rotation part computation in gp_Trsf2d</p> <p>A misprint has been fixed in method gp_Trsf2d::RotationPart.</p>
22134	<p><i>Summary:</i> Uninitialized variables in IntSurf_Quadric</p> <p>Uninitialized local variables have been fixed in constructor and IntSurf_Quadric::SetValue method.</p>
22135	<p><i>Summary:</i> Fixes of potential hang-up and zero derivatives in Extrema</p> <p>The following modifications have been introduced in Extrema package to improve the performance and address other issues:</p> <ul style="list-style-type: none"> ▪ Protection against zero step and potential hang-up in definition of a degenerated isoline in static function IsoIsDeg from Extrema_ExtPS; ▪ Performance improvement by avoiding of checking degenerated isolines on plane in method Extrema_ExtPS::Initialize; ▪ Protection against zero derivatives in method Extrema_FuncExtCC::GetStateNumber; ▪ Removed uninitialized fields from constructor of FuncExtPC.
22136	<p><i>Summary:</i> Incorrect definition of negative transformation in gp_Trsf2d</p> <p>The definition of negative transformation in gp_Trsf2d has been changed to take into account the sign of determinant.</p>



22137	<p><i>Summary:</i> Fix of minor problems in IntTools</p> <p>The following modifications have been introduced in IntTools package to improve the performance and address other issues:</p> <ul style="list-style-type: none"> ▪ Fixed misprint of U and V in static function CheckSampling from IntTools_BeanFaceIntersector; ▪ Range check of intersection and check for minimal parametric range of intersection to protect from extremely small ranges in IntTools_BeanBeanIntersector::ComputeRangeFromStartPoint; ▪ Corrected handling of end knots in static function ComputeGridPoints from IntTools_BeanFaceIntersector; ▪ Fix for steps and extremity cases in static function CorrectSurfaceBoundaries from IntTools_FaceFace; ▪ Exception handling added in IntTools_BeanBeanIntersector::ComputeUsingExtrema; ▪ Protection on degenerated and non geometric edges added in IntTools_EdgeEdge.cxx
22140	<p><i>Summary:</i> Improvements in LocOpe</p> <p>The following modifications have been introduced in LocOpe package to improve the performance and address other issues:</p> <ul style="list-style-type: none"> ▪ Improved handling of closed and periodic surfaces in LocOpe_SplitShape.cxx. ▪ Corrected handling of reversed edges in LocOpe_wiresOnShape.cxx.
22141	<p><i>Summary:</i> Protection in math for division on zero</p> <p>Protection against division by zero has been implemented in file math_DirectPolynomialRoots.cxx.</p>
22142	<p><i>Summary:</i> Improvements and Fixes in Message</p> <p>Message filtering according to gravity has been corrected in method Message_PrinterOStream::Send. Now the gravities are considered as described in the header.</p>
22147	<p><i>Summary:</i> Integration of OCC performance meter</p> <p>Common functionality on performance measurement has been added in OCCT for profiling purposes.</p> <p>New class OSD_PerfMeter enables measuring the CPU time between two points of code execution, regardless of the scope of these points. A meter is identified by its name (string of chars), so multiple objects in various places of the user's code may point to the same meter. The results are printed to stdout upon finish of the program.</p>
22154	<p><i>Summary:</i> Protection of empty wire in ShapeFix_Face</p> <p>ShapeFix_Face algorithm has been modified to avoid taking into account empty wires (containing no edges).</p>



22155	<p><i>Summary:</i> Improvement cashing in TDF_Label</p> <p>Cashing in TDF_Label has been improved: the last found child is stored if it is not zero.</p>
22188	<p><i>Summary:</i> Visualization of solid fails (in BRepMesh_FastDiscretFace)</p> <p>Protection has been added in method BRepMesh_FastDiscretFace::Control, which returns square root of the maximal distance, to avoid square root calculation from a negative distance value.</p>

Visualization

21902	<p><i>Summary:</i> Improve by capability to make off-screen snapshots of 2d, 3d, and axo viewers</p> <p>FreeImage(Plus) third-party library has been integrated to OCC Technology (see full description in New Features section).</p>
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Application Framework

22152	<p><i>Summary:</i> Redefinition of several executable units to toolkits</p> <p>The following executable units have been redefined to toolkits to optimize the structure of OCCT units:</p> <ul style="list-style-type: none"> ▪ BinLPlugin ▪ BinPlugin ▪ BinTObjPlugin ▪ BinXCAFPlugin ▪ StdLPlugin ▪ StdPlugin ▪ XCAFPlugin ▪ XmlLPlugin ▪ XmlPlugin ▪ XmlTObjPlugin ▪ XmlXCAFPlugin <p>This means that ***Plugin units have been removed and their contents placed in PLUGIN macros in the corresponding ***Drivers packages. StdResource::Plugin file has been updated by replacing ***Plugin names by TK***.</p>
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Data Exchange

22156	<p><i>Summary:</i> STEP file with junk at the end can not be read</p> <p>STEP file parsing mechanism has been improved to handle STEP files having junk or errors after the actual end of STEP data. STEP lexical rules in file step.lex have been modified to provide this.</p>
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Dependencies and Packaging

22190	<p><i>Summary:</i> Problem of launching MS Visual Studio 2005 with /useenv</p> <p>Batch scripts for OCCT configuration on Windows have been improved to be operable on workstations where Visual Studio and / or OCCT are installed to paths containing spaces.</p>
22191	<p><i>Summary:</i> Adjustment of environment bat files for correct launching of VC projects</p> <p>Batch scripts for OCCT configuration on Windows have been improved to be operable on workstations where Visual Studio and / or OCCT are installed to paths containing spaces.</p> <p>This improvement consists in the following changes:</p> <ul style="list-style-type: none"> ▪ Occurrences of OCCT installation directory have become quoted, which allows scripts to work for OCCT installed to a path containing spaces (tested on Vista with VS 2005). ▪ /safemode option has been removed from call to devenv.exe. ▪ Warning on possible need to re-build if manifest fails on 64-bit platforms is made with echo instead of simply rem, to be visible to the user launching msvc.bat. ▪ Default name of directory for TBB has been corrected to correspond to the Intel distribution, i.e. including its version: tbb30_018oss instead of simply tbb. ▪ Definition of environment variable CSD_DEFINES has been added to env_build.bat.
22193	<p><i>Summary:</i> Improve management of dependency on Intel TBB on Windows</p> <p>OCCT has become independent from Intel TBB by default.</p> <p>Environment variable \$(CSF_DEFINES) has replaced hardcoded option HAVE_TBB for MS Visual Studio preprocessor definition. This variable can be defined in env_build.bat as empty string or HAVE_TBB.</p> <p>The projects will be generated with reference to variable \$(CSF_DEFINES) instead of HAVE_TBB, so that modifying env_build.bat could allow switching on or off the dependency on TBB.</p>

Products

DXF

22035	<p><i>Summary:</i> Incorrect translation of INSERT with affine transformation</p> <p>Processing of attributes attached to the elements of an INSERT of a BLOCK with affine transformations has been improved in DXFCAFControl_Reader and DxfData_TranslateInsert.</p> <p>Associations between entities and their attributes (such as layers) defined within a BLOCK are now preserved within instances defined by an INSERT so that INSERTS with affine transformations could be translated correctly.</p>
22101	<p><i>Summary:</i> Infinite loop when reading a DXF file</p> <p>DXF interface has been corrected to avoid infinite loop when reading certain files.</p>

