

Performance Related INI Options

Oracle AutoVue 20.0.0, Client/Server Deployment

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Introduction

Oracle AutoVue provides viewing, markup, and collaboration solutions support for hundreds of file formats. These formats include 3D CAD parts and assemblies, 2D CAD drawings, PCB/IC layouts and schematics, scanned raster documents, vector files, office documents, and graphics.

Engineering designs have increased in complexity and size over the years. Oracle AutoVue has recognized the need to load these complex and large designs in reasonable time and has been increasing its focus towards performance improvements.

AutoVue provides a streaming file solution to speed up subsequent loads of designs. When you load a document for the first time and close it, AutoVue generates a streaming file for the design. Streaming file is a file format that is developed by Oracle that helps accelerate the display of large or complex designs and ensures optimized performance, high-speed, and accurate data delivery.

AutoVue also provides several configuration options that help optimize file load performance. These options are described in this document.

This document provides performance recommendations for several 2D, 3D, Raster and EDA file formats. Some options are generic and could apply to all formats of a format group.

Overview

When loading a design, document or model, there are different factors that can affect its loading time and rendering performance. These factors can be the type of data loaded, the performance/quality duality for rendering and memory/speed duality.

This document provides information on some of these performance-affecting factors and how to choose speed over memory or accuracy over performance.

Memory Optimization

AutoVue performs memory management when loading large files. If AutoVue memory hits a pre-defined threshold, AutoVue dumps the least-used data from memory to the disk. This memory management scheme helps load larger models in AutoVue 20.0.0. Memory management is enabled by default. To disable it, you must set `jvueserver.memory.managed=FALSE` in `jvueserver.properties`. Refer to the following table for all memory management-related configurations.

In `jvueserver.properties`, you can set the following parameters to optimize memory or performance speed.

Property	Description	Default
<code>jvueserver.memory.managed = [TRUE FALSE]</code>	This option orients the optimization in the product towards speed or memory. If set to FALSE, the optimization is assigned to the speed performance. If set to TRUE, the optimization is assigned to memory usage. Setting option value=TRUE does not impact the loading of Office and Raster formats. Note: When option value = TRUE, AutoVue's memory manager dumps the least used components from memory onto disk when the process memory hits the threshold specified in <code>jvueser.memory.threshold</code>. Effect on Performance: Performance speed is improved if value is set to FALSE. If loading large files, or files that require a lot of memory, we recommend that you set the option to TRUE to optimize memory usage.	TRUE

<code>jvueserver.memory.threshold=</code> <i>value</i>	Specifies the process memory threshold for AutoVue after which the memory manager dumps data. Specify value in MB. When set to 0, AutoVue calculates the memory threshold based on the following formula: $[(\text{Total memory on the machine})/(\text{n}+1 \text{ where n is processpoolsize})]*1.2$ The computed value does not exceed 1GB or the maximum memory size addressable for the process on the system multiplied by 0.8, whichever is less. Note: Minimum value is 256MB Effect on Performance: Performance speed is improved when the threshold is a larger value. To optimize memory usage, set a lower threshold.	0
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In `jvueserver.ini` you can configure the page size and temporary dumping folder name.

Parameter	Description	Default
<code>MNGMEMPAGE SIZE=num</code>	When memory management is enabled, specify the size of pages (memory) to allocate when storing the managed data. Each memory page is predefined. num = number of bytes used to allocate pages in memory. Minimum value: 8192 (8KB) Maximum value: 1048576 (1MB) Note: The memory pages are dumped to temporary dumping files located in the path defined in <code>MNGTEMPFNAME</code>. Effect on Performance: Performance speed is improved when the value is high.. To optimize memory usage, set a lower value.	131072 (128KB)
<code>MNGTEMPFNAME=</code> folder location	When memory management is enabled, specify the location and name of the temporary dumping folder. If the temporary dumping folder does not exist, it is created and marked for deletion.	<AutoVue Installation Folder>\bin\av dump

3D INI Recommendations

Loading and rendering time depends on the data loaded for the drawing or model. AutoVue enables you to tune how much information is read from the file by selecting how and if the following data is read or generated: Mesh/BREP, Topology, and PMI.

Data	Description
Mesh/BREP	A mesh is a collection of vertices, edges, and faces that define the shape of a 3D object. Boundary representation (BREP) information represents 3D objects using their boundaries; it consists of topological and geometrical information. The geometrical information defines the vertices, edges, and faces. Whereas, the topological information identifies the relationships between the vertices, edges, and faces. Some formats may have both mesh and BREP information. Generally, choosing mesh over BREP will mean faster loading time. However loading the mesh can impact accuracy (for example, measurements, mass properties, and model tree) because AutoVue approximates the topological information. Choosing BREP can provide higher accuracy of data since the topological information already exists, but will mean slower loading time.
Topology	Topological information is required during operations such as measurements, but is not always available in the file format itself. In order to maintain a homogenous behavior across all file formats, the topology is computed by AutoVue. This process can be time consuming. AutoVue provides the option to turn off topology computation in order to speed up performance.
PMI	Some file formats allow annotations—mainly 2D—to be added to 3D models. These annotations are called Product and Manufacturing Information (PMI). Loading and rendering PMIs can be time consuming and requires a lot of CPU. AutoVue provides the option to turn off PMI loading or rendering.

You can choose to improve the rendering speed by rendering small entities as primitives; AutoVue provides optimization options for rendering PMI. However, an increase in speed can sometimes result in an increase of memory usage. AutoVue gives you the option to optimize either the speed or memory usage.

Global INI Options

Global INI options are not file format specific. These options could be applicable to all file formats or to a subset of file formats.

The following table identifies the available global INI options to optimize performance. The option section headers are indicated in brackets [].

[Options]

Parameter	Description	Default
LoadFacetedData=[0 1]	Instructs AutoVue to load mesh data if present in the 3D model (faster display). Applies to the following 3D formats when both mesh and BREP data are available: - CATIA V5 - Pro/ENGINEER - SolidWorks If set to 1, the mesh data loads. If set to 0, the BREP data is read and rendered instead of the mesh data (more accurate measurement). Effect on Performance: Usually, the mesh model loads faster than the BREP model. Loading the mesh model can impact measurement accuracy.	0
MeshBuildTopology=[0 1]	Builds the topology for mesh bodies. If set to 1, the topology for mesh bodies is built. If set to 0, the topology is not built. Applies to the following 3D formats: - AutoCAD - CATIA 4 and 5 - DirectModel (JT) - IFC - Microstation 8 - Pro/ENGINEER - SolidWorks - STL - Unigraphics Effect on Performance: Performance is improved if no topology is built. For meshes that do not have well defined topology, it may take a long time for AutoVue to detect and create it.	1

Parameter	Description	Default
MeshResolutionDefault=[0 1 2]	Defines the resolution of the mesh generated when faceting BREP models. Setting values: • 0: Medium resolution and average loading speed. • 1: Low resolution and fast loading speed. As a result, performance is improved. • 2: High resolution and slow loading speed. Effect on Performance: This option has the least affect on the loading performance, as it only reduces the time spent during faceting after the model is built. Usually the model building time is an order bigger than the faceting time.	0

Format-Specific INI Options

The following sections list format-specific INI options available to optimize performance. The option section headers are indicated in brackets [].

AutoCAD 3D Options

Optimization options for AutoCAD 3D files.

[Options]

Parameter	Description	Default
ACAD_Fast3D=[0 1]	When set to 1 , display will be much faster. However, individual bodies belonging to 3D parts will not be listed in the model tree and layer visibility will not be supported on those bodies. If set to 0 , the rendering time of AutoCAD 3D file will increase. However, layer information is listed and all bodies are streamed and listed in the model tree. Effect on Performance: Enable option to improve rendering performance.	1

CATIA Options

Configure options for CATIA 4 and 5 files.

Note: For CATIA 4-specific files see “CATIA V4 Options”, and for CATIA 5-specific options see “CATIA V5 Options”.

[Options]

Parameter	Description	Default
CATALOADPMI = [0 1]	Set to 1 to enable displaying of PMIs. Set to 0 to disable displaying of PMIs. Effect on Performance: Disabling the loading of PMI entities improves performance when files contain a large number of PMI entities.	1

CATIA V4 Options

Optimization options for CATIA V4 files.

[Options]

Parameter	Description	Default
LoadCatiaWires=[0 1]	Set to 1 to load and display 3D wires for CATIA V4 3D files. Set to 0 to disable loading and display of 3D wires for CATIA V4 3D files. Effect on Performance: Disabling loading of 3D wires improves performance when files contain large number of 3D wires.	1

Parameter	Description	Default
CATIAFilterNonRoot=[0 1]	Non-root entities are construction geometries used in helping the design of the model. If set to 1, AutoVue will not load non-root entities. Set to 0 to load and display non-root entities for CATIA V4 3D. Effect on Performance: Filtering out non-root entities improves performance when files contain a large number of non-root entities.	1
CATIAFilterNoShows=[0 1]	Controls the loading and visibility of the NoShow entity. Set to 1 to filter out hidden entities for CATIA V4 3D. Hidden entities will not be loaded or displayed. Set to 0 to load and display hidden entities for CATIA V4 3D. Effect on Performance: Filtering out hidden entities improves performance when files contain a lot of hidden entities.	1

CATIA V5 Options

Optimization options for CATIA V5 files.

[Options]

Parameter	Description	Default
CATIA5BuildCGMSETS=[0 1]	Controls the building and display of geometrical sets. Set to 1 to build and show geometrical sets structure in the Model Tree. Set to 0 to disable. Effect on Performance: Disabling the loading and display of geometrical sets improves performance when files contain a large number of geometrical sets.	1
CATIA5BuildInvisibleCGMBodies=[0 1]	Option controls the building and display of invisible BREP bodies. Set to 1 if you wish to process and display invisible BREP bodies. Set to 0 to disable the loading and display of invisible BREP bodies. Effect on Performance: Disabling the loading of invisible BREP bodies improves performance when files contain a large number of invisible BREP bodies.	0

IFC Options

Optimization options for IFC files.

[Options]

Parameter	Description	Default
IFCLoadInvisibleSpaces=[0 1]	Enable or disable loading and display of internal spaces boundary geometry. Set to 1 to enable loading of internal spaces boundary geometry. Set to 0 to disable loading of internal spaces boundary geometry. Effect on Performance: Disabling loading of internal spaces boundary geometry improves both time and memory usage when files contain a large number of invisible spaces.	1
IFCReadProperties=[0 1]	Enable or disable loading of supported entity properties for an IFC file. Set to 1 to load and display all supported entity properties for an IFC file. Set to 0 to load only default entity properties such as Display Mode, Name and Visibility. Effect on Performance: Choosing to load only the default entity properties improves loading performance.	1

DirectModel (JT) Options

Optimization options for DirectModel (JT) files.

[Options]

Parameter	Description	Default
JTRESOLUTION = [HI MED LO]	When available, enables users to load the JT model's high, medium, and low resolution in meshes. Effect on Performance: Setting the option to LO improves performance but lowers resolution.	HI

MicroStation 8 3D Options

Optimization options for MicroStation 8 3D files.

[Options]

Parameter	Description	Default
DGN_Fast3D=[0 1]	If set to 1, the rendering time will be much faster. Each cell entity is loaded as a single body and in a top-down approach. That is, if a cell contains a child cell, all the bottom-level cell's graphics are loaded in the top-level cell's body. If set to 0, the rendering time of AutoCAD 3D file will increase. However, layer information is listed and all bodies are streamed and listed in the model tree. Effect on Performance: Enable option to improve rendering performance.	1

Pro/ENGINEER Options

Optimization options for Pro/ENGINEER files.

[Options]

Parameter	Description	Default
ProELoadPMIData=[0 1]	Enable or disable the loading of PMI entities. Set to 1 to enable loading and display of PMI entities. Set to 0 to disable loading and display of PMI entities. Effect on Performance: Disabling the loading of PMI entities improves performance when files contain a large number of PMI entities.	1
ProELoadCosmetics=[0 1]	Enable or disable the loading and display of datum planes, datum axes, datum points and coordinate systems. Note: ProELoadPMIData should be set to 1 for this option to take effect. Set to 1 to turn on loading and display of PMI entities. Set to 0 to turn off loading and display of PMI entities. Effect on Performance: Disabling loading of cosmetic entities improves performance when files contain a large number of cosmetic entities.	1
ProELoadCosmeticWires=[0 1]	Enable or disable the loading of 3D wires. Note: ProELoadPMIData should be set to 1 for this option to take effect. Set to 1 to load and display 3D wires. Set to 0 to turn off loading and display for 3D wires. Effect on Performance: Disabling loading of 3D wires improves performance when files contain a large number of 3D wires.	1

STEP Options

Optimization options for STEP files.

[Options]

Parameter	Description	Default
STEPDetailedTree=[0 1]	Select to enable or disable detailed model tree. Set to 1 to show detailed tree for STEP files. Set to 0 to display collapsed model tree. Effect on Performance: Displaying a collapsed model tree improves rendering performance when there are a large number of subparts	0

EDA INI Recommendations

Global INI Options

The following table identifies the available global INI options to optimize performance. The option section headers are indicated in brackets [].

EDA PCB Options

Optimization options for EDA PCB files.

[ECAD]

Parameter	Description	Default
ECAD_Load_3D_Page=[0 1]	Controls whether or not to load the 3D model for EDA PCB designs. Option applies to the following PCB formats: • Altium Designer/Protel • Cadence Allegro • Cadence Specctra • IDF • Zuken CADIF • Zuken CADSTAR • Mentor Graphics BoardStation • Mentor Graphics Expedition • Mentor Graphics PADS • ODB++ • OrCAD Layout • PADS Layout If set to 1, AutoVue loads the 3D model. If set to 0, AutoVue does not load the 3D model. Effect on Performance: Not loading the 3D model decreases the time to create the streaming file and reduces its file size.	1

Format-Specific INI Options

The following sections list the available format-specific INI options to optimize performance. The option section headers are indicated in brackets [].

Allegro Options

Optimization options for Allegro files.

[ECAD]

Parameter	Description	Default
ECAD_3D_SHOWHOLES = [0 1]	Set to 1 if you want holes to be drawn in the 3D model. Set to 0 if you do not want holes to be drawn in the 3D model. Note: Currently only affects Allegro files. Effect on Performance: Not drawing the holes improves performance.	0
Allegro_UseTrueTypeFonts=[0 1]	Select to use either stroke font or true type font. Set to 0 to use stroke font. Set to 1 to use true type font. Effect on Performance: Using the true type font improves performance, but causes text to display differently than on the manufactured board.	0

Cadence Options

Optimization options for Cadence Project files.

[ECAD]

Parameter	Description	Default
Cadence_CPMOnly=[0 1]	Load and display all pages in the Cadence project file, or only the files listed in the CPM file. Set to 1 if you want only files listed in the CPM file displayed. Set to 0 to load and display all the pages inside the Cadence project file. Effect on Performance: Loading only the files listed in the CPM file improves performance.	1
Cadence_ConceptHDLOnly=[0 1]	Controls whether or not to load and display PCB boards in a Cadence project. Set to 1 if you do not want PCB boards displayed. Set to 0 to load and display the PCB boards. Effect on Performance: Not loading the PCB board improves performance.	0

OrCAD Layout Options

Optimization options for OrCAD Layout files.

[ECAD]

Parameter	Description	Default
OrCAD_Cutout_Copper_Pour=[0 1]	Controls whether or not to display the copper pour cutouts for OrCAD Layout files. Set to 1 to display the copper pour cutouts. Set to 0 to disable the display. Effect on Performance: Disabling the display of the copper pour cutouts improves performance.	0

2D/Raster/Office INI Recommendations

Global INI Options

The following table identifies the available global INI options to optimize performance. The option section headers are indicated in brackets [].

[Options]

Parameter	Description	Default
TextBitmapRendering=[0 1]	Select to render small text glyphs using bitmaps. This option may affect most text in PDF, TrueType text in ME10, and Post-Script text in CATIA V5. Set to 1 to enable bitmap rendering. Set to 0 to disable bitmap rendering. Effect on Performance: Enabling bitmap rendering for small text glyphs improves performance.	1
ANTIALIAS=[0 1]	Aliasing is the distortion of a continuous line due to the nature of screen display, which relies on a matrix of pixels. Anti-aliasing visually corrects this by introducing additional colored pixels to give the impression of a continuous line or curve. If set to 1, anti-aliasing is enabled. If set to 0, anti-aliasing is disabled and degrades the quality of the display. Effect on Performance: Enabling anti-aliasing impacts rendering performance for large raster files and for PDF files. Disabling anti-aliasing speeds up rendering for large rasters and PDF files.	1

Format-Specific INI Options

The following sections list the available format-specific INI options to optimize performance. The option section headers are indicated in brackets [].

Acrobat PDF Options

Configure options for Adobe PDF files.

[Options]

Parameter	Description	Default
PDFMAXIMAGESIZEEMB = <val>	Allows users to set the maximum image size (in Mbytes) of large bitmaps in PDF files after which the PDF decoder starts reducing resolution to reduce memory use. Effect on Performance: Performance speed is improved when the value is lower.	150

AutoCAD Options

Configure options for AutoCAD drawings.

[Options]

Parameter	Description	Default
SHOWNONRECTVIEWPORTS = <0 1>	In AutoCAD it is possible to create non-rectangular viewports. When a file has non-rectangular viewports, it may take AutoVue longer to display the drawing. Set to 1 to display non-rectangular viewports. Set to 0 to disable display of non-rectangular viewports. Note: This options applies to AutoCAD 2000 and up files. Effect on Performance: Disabling display of non-rectangular viewports improves performance. Note that the accuracy of the display will be compromised.	1

JPEG Options

Optimization options for JPEG files.

[Options]

Parameter	Description	Default
JPGQuantize=[0 1]	Quantizes JPEG images to 256 colors for quicker display. Quantizing images affects quality of the color display. Set to 1 to quantize images. Set to 0 to use true colors. Effect on Performance: Quantizing the JPEG images to 256 colors improves performance.	1

JPEG 2000 Options

Optimization options for JPEG 2000 files.

[Options]

Parameter	Description	Default
J2KResolution= [DYNAMIC HIGH MEDIUM LOW +num -num]	Used to set the resolution of JPEG 2000 files. Set to HIGH to display with the highest possible resolution. Set to MEDIUM to display with a medium resolution. Set to LOW to display with low resolution. Set to DYNAMIC to display with a dynamically calculated resolution which tries to balance resolution with performance. You can also set values to <i>+num</i> or <i>-num</i>, where n is a number between 1 and 100. Setting to <i>+num</i> gives the same result as DYNAMIC but increases the resolution by a factor of num where num is a value from 1 to 100 (up to the maximum possible resolution of the image). Setting to <i>-num</i> gives the same result as DYNAMIC but decreases the resolution by a factor of num where num is a value from 1 to 100 (down to the lowest possible resolution of the image). Effect on Performance: Setting to HIGH decreases performance. Setting to LOW improves performance. Setting to <i>+num</i> may decrease performance. Setting to <i>-num</i> may increase performance.	DYNAMIC

Summary

INI Options	Default	Fast	Slow
ACAD_Fast3D	1	1	0
Allegro_UseTrueTypeFonts	0	0	1
ANTIALIAS	1	1	0
Cadence_CPMOnly	1	1	0
Cadence_ConceptHDLOnly	0	1	0
CATIAFilterNonRoot	1	1	0
CATIAFilterNoShows	1	1	0
CATIALOADPMI	1	0	1
CATIA5BuildCGMSETS	1	0	1
CATIA5BuildInvisibleCGMBodies	0	0	1
DGN_Fast3D	1	1	0
ECAD_3D_SHOWHOLES	0	0	1
ECAD_Load_3D_Page	1	0	1
IFCLoadInvisibleSpaces	1	0	1
IFCReadProperties	1	0	1
javueserver.managed.memory	TRUE	FALSE	TRUE
javueserver.memory.threshold	0	1GB	256MB
JPGQuantize	1	1	0
JTRESOLUTION	HI	LO	MEDIUM
J2KResolution	DYNAMIC	LOW -num	HIGH +num
LoadCatiaWires	1	0	1
LoadFacetedData	1	1	0
MeshBuildTopology	1	0	1
MeshResolutionDefault	0	1 (low)	0 (medium) 2 (high)
MNGMEMPPAGESIZE	131072	1048576	8292
OrCAD_Cutout_Copper_Pour	0	0	1
PDFMAXIMAGESIZE	150	lower	higher
ProELoadPMIData	1	0	1
ProELoadCosmetics	1	0	1

INI Options	Default	Fast	Slow
ProELoadCosmeticWires	1	0	1
SHOWNONRECTVIEWPORTS	1	0	1
STEPDetailedTree	0	0	1
TextBitmapRendering	1	1	0

Other Recommendations

Streaming Files

You can leverage the streaming file feature to enhance AutoVue performance. When a file is loaded for the first time and then closed, a streaming file is generated. For subsequent loads of the file, AutoVue accesses the streaming file, rather than the native file to render. As a result, there are significant performance improvements for rendering and for functionalities such as layers, Bill of Material (BOM), Mass Properties, and so on.

Batch Generation of Streaming Files

AutoVue provides you with the ability to do a batch or offline generation of streaming files. By pre-generating metafiles, you can benefit from faster loading times even for the first load of a file. Contact your Customer Support representative for information regarding batch generation of streaming files.

Streaming file generation is enabled by default.

Feedback

Oracle products are designed according to your needs. We would appreciate your feedback, comments or suggestions. Contact us by fax, e-mail or telephone. There is a feedback button on our Web page that activates an easy-to-use feedback form. Let us know what you think.

General Inquiries

Telephone: +1.514.905.8400

E-mail: autovuesales_ww@oracle.com

Web Site: <http://www.oracle.com/autovue/index.html>

Sales Inquiries

Telephone: +1.514.905.8400

E-mail: autovuesales_ww@oracle.com

Customer Support

Web Site: <http://www.oracle.com/support/index.html>

