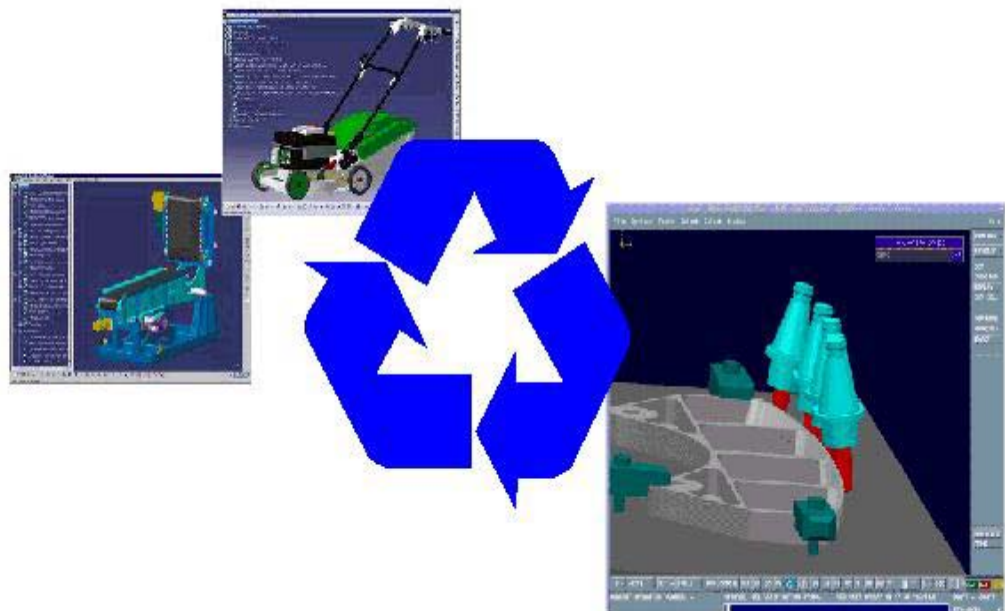# 3GB Memory for CATIA V5 under Windows OS

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1   Introduction

This document is based on the configuration and customization of an IBM IntelliStation with 4GB of main memory for using CATIA V5 in a Windows environment at CIPO (CATIA Interoperability Project Office), IBM Frankfurt.

Access to more than 2.0 GB for allocations of data and code within a V5 process running on Windows XP is made possible. This section describes necessary settings to get access to more than 2.0 GB of memory of data and code within a CATIA V5 process running on Windows XP.

It covers more the step-by-step instructions of the CATIA V5 Program Directory than described in Section "Accessing more than 2.0 GB of memory on Windows XP".

2   Addressing 3 GB Memory for CATIA V5 under Windows OS

By default, CATIA Version 5 processes on Windows can allocate up to 2.0 GB of memory for storing data and code. The 4 GB address space offered by the Windows operating system being split in two areas of 2 GB each, first 2 GB for user mode, 2 other GB being reserved by the kernel. On Windows XP, it is possible to increase the default allocation capabilities up to 3.0 GB (3 GB for user mode, 1 GB reserved for kernel). Such capability requires additional settings in order to be effective:

- From an Windows operating system standpoint
- From a CATIA Version 5 standpoint

2.1. Operating System Instructions

The 3GB memory allocation support for CATIA V5 needs the following steps:

1. Use Windows XP GA code, or install SP1a (the preferred service pack) or later for Windows XP.

2. Add the /3GB switch to the boot.ini. If you are using an ATI graphics adapter, add /3GB /USERVA=2900 to the boot.ini. It is advised to copy the current line in boot.ini and add the /3GB switch to that it could easily boot with and without the /3GB or /3GB /USERVA=2900 switches.

3. If the system fails boot with the /3GB switch or with /3GB /USERVA=2900 switches, (may also receive an error message that states that one of the registry hives is corrupted) either install SP2 for Windows/XP or install the fix to problem 328269 "Windows XP SP1 May Not Start with the /3GB or /USERVA Switch". Details of which can be found here http://support.microsoft.com/default.aspx?scid=kb;en-us;328269

For example:
```
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS
[operating systems]
```

IBM

```
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP
Professional 3GB" /fastdetect /3GB /USERVA=2900
multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft Windows XP
Professional" /fastdetect
```

2.2. CATIA V5 Customization

2.2.1. Application Memory Tuning

This capability allows memory-intensive applications to utilize up to 50 percent more virtual memory on Intel-based computers. Application memory tuning provides more of the computer's virtual memory to applications by providing less virtual memory to the operating system.

2.2.2. Application Changes

No APIs are required to support application memory tuning. However, it would be ineffective to automatically provide every application with a 3-GB address space.

Executables that can use the 3-GB address space are required to have the bit IMAGE_FILE_LARGE_ADDRESS_AWARE set in their image header. If you are the developer of the executable, you can specify a linker flag (/LARGEADDRESSAWARE).

To set this bit, you must use Microsoft Visual Studio Version 6.0 or later and the Editbin.exe utility, which has the ability to modify the image header (/LARGEADDRESSAWARE) flag. For more information on setting this flag, see the Microsoft Visual Studio documentation.

Executables that must see the 3-GB address space are required to have the bit IMAGE_FILE_LARGE_ADDRESS_AWARE set in their image header to made executables "Large Address Space Aware". This can be done using one of the following tools:
- imagecfg, or
- editbin

2.2.3. The imagecfg Tool

The Imagecfg tool that is included in the Support folder on the Windows Resource Kit Supplement CD or from the Internet to get the latest version. For example, to modify the target file cnext.exe, type the following at a command prompt:

    Imagecfg -l cnext.exe

2.2.4. The editbin Tool

The editbin tool can be get by the access from Microsoft Visual Studio V6. The editbin command line options can be displayed by editbin /?

    editbin /LARGEADDRESSAWARE CNEXT.exe

This sets the IMAGE_FILE_LARGE_ADDRESS_AWARE bit in the header of the CNEXT executable. Without this, the CATIA task cannot use more than 2GB.

Documentation on editbin can be found here
http://msdn.microsoft.com/library/default.asp?url=/library/en-
us/vccore98/html/vcreflargeaddress_editbin.asp

Note: First make a backup copy of the main executable (for example, CNEXT.exe, generally
found in C:\Program Files\Dassault Systemes\Bxx\intel_a\code\bin; the same pattern is applicable
for DMU.exe or Delmia.exe).
To go back to initial behavior by restoring the original copy of CNEXT.exe (or original copy of
main executable modified) and removing /3GB switch from the boot.ini file, or use the original
entry in the boot.ini.

2.3. **Additional Operating System Considerations**

If 4GB or more memory is in the system, the paging file size should reduced to 256MB to save
wasting disk space.

Some driver may not load correctly when /3GB switch is added to boot.ini. In such case, one
would need to apply Service Pack 1 on Windows XP, and tune /3GB configurations with
/USERVA switch in boot.ini file. See :
Driver May Not Be Loaded with the /3GB Switch
http://support.microsoft.com/default.aspx?scid=kb;EN-US;Q319043

Windows XP SP1 May Not Start with the /3GB or /USERVA Switch
The information in this article applies to:

   * Microsoft Windows XP Professional SP1
   * Microsoft Windows XP Home Edition SP1

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SYMPTOMS
If you upgrade your computer to Windows XP Service Pack 1 (SP1) and you are using the /3GB
switch or the /USERVA switch with the /3GB switch, Windows may not start. You may also
receive an error message that states that one of the registry hives is corrupted.
CAUSE
This issue occurs because Ntldr incorrectly puts part of the registry in memory when Windows is
starting. This causes the registry to be unreadable by the kernel later in the startup process. When
this occurs, the startup process is stopped and you receive the error message.
RESOLUTION
A supported fix is now available from Microsoft, but it is only intended to correct the problem that
is described in this article. Apply it only to computers that are experiencing this specific problem.
This fix may receive additional testing. Therefore, if you are not severely affected by this problem,
Microsoft recommends that you wait for the next Windows XP service pack that contains this fix.

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