Tech Note 1018

Optimizing Managed Memory for InTouch 2012 & Later

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Introduction

This *Tech Note* presents information on how the Managed memory in InTouch WindowViewer works, and provides configuration options that you can use to optimize runtime performance.

In-memory caching of ArchestrA Graphics is available in Managed or Published InTouch applications. This capability is not available in Native InTouch applications.

You can configure how WindowViewer uses memory for application windows in order to improve runtime performance. For example, you can configure specific windows to be cached in order to retrieve them from Memory when opening, rather than loading them from disk.

You can also designate certain windows to have a higher priority for memory usage, and configure separate memory settings just for those windows.

Note: After you modify any of the WindowViewer memory options, you must restart WindowViewer to apply your changes.

Wonderware recommends configuring memory usage for WindowViewer Windows in order to reduce the load on the virtual memory/paging operations (to and from the hard drive), and to optimize your system's performance.

Application Versions

- Wonderware InTouch 2012 (version 10.5) & Above

Detailed Explanation

Every process is allowed to use certain amount of memory as a percentage of virtual memory.

On 32-bit Windows, InTouch sets the **LARGEADDRESSAWARE** software code base so that the memory limit is set to 3 GB. On 64-bit windows, it counts as 4 GB.

This means that the memory limit is set to 3 GB. On 64-bit windows, it counts as 4 GB.

This amount of memory is *independent* of how much physical RAM is installed on the machine. Windows tries to satisfy a program's request for virtual address space by constantly shifting the memory it uses onto and off of the hard drive as the memory pages are moved in and out of physical RAM.

Figure 1 (below) shows that the physical RAM size installed on the machine is **16 GB** and that it is a **64-bit** Operating System.

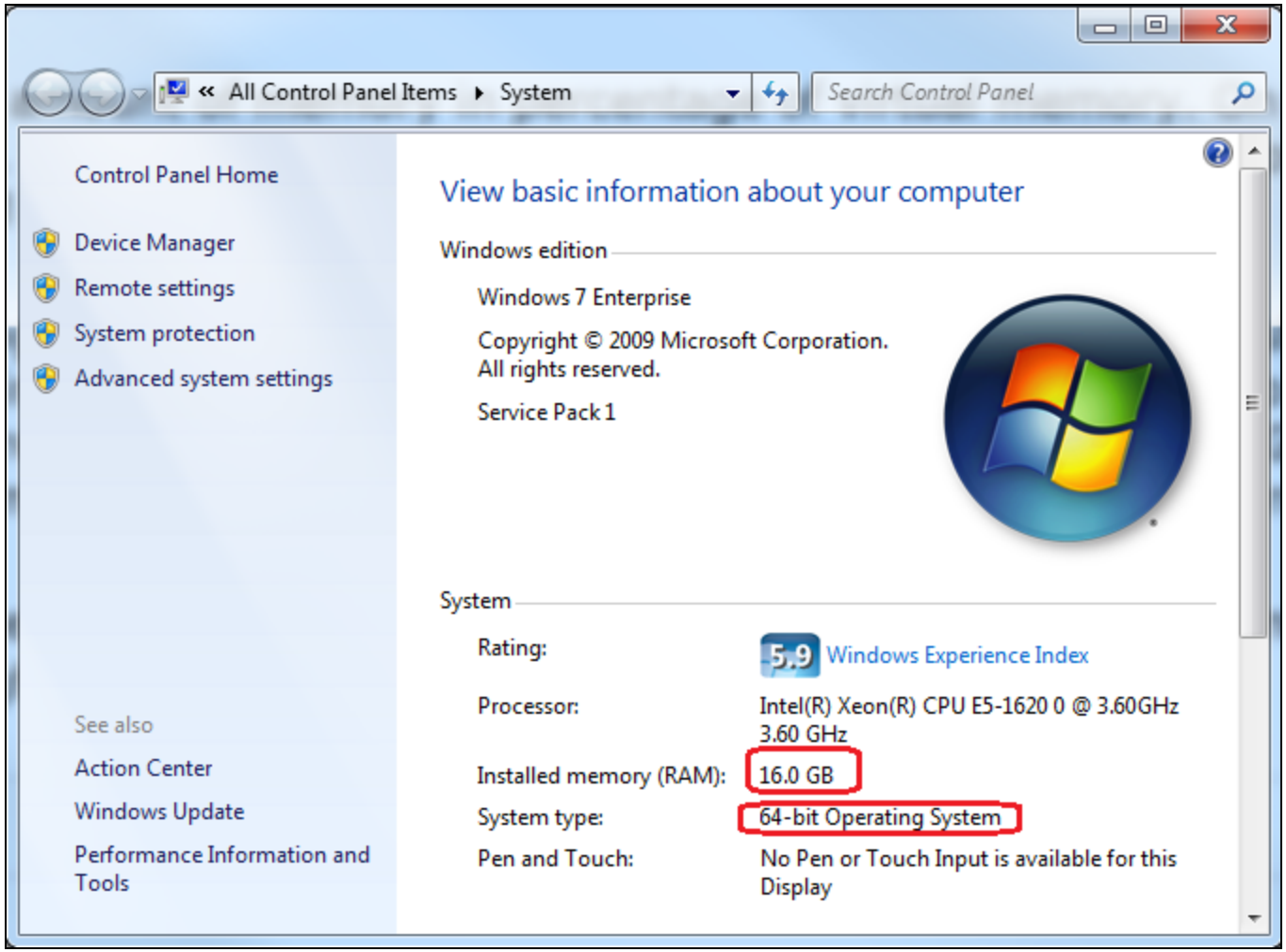

FIGURE 1: INSTALLED MEMORY AND SYSTEM TYPE

In this case, the WindowViewer process memory limit is 4 GB, regardless of what the installed memory RAM size could be. Beyond that we will get Out of Memory exception.

To eliminate this issue, InTouch 2012 and later includes in-memory caching for Windows and Graphics. Figure 2 (below) shows the **Viewer Memory** tab in the WindowViewer Properties panel.

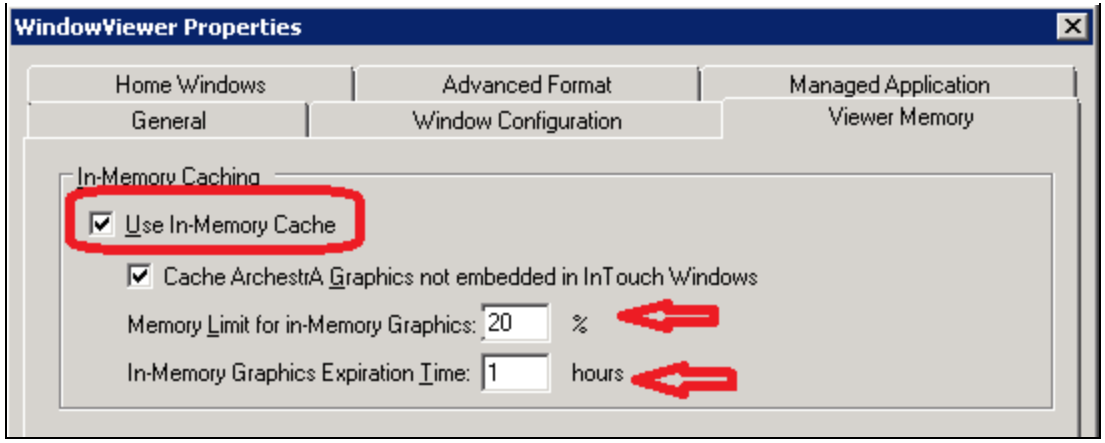

FIGURE 2: IN-MEMORY CACHE SETTING FOR INTOUCH WINDOWVIEWER

Enable the check box "Use In-Memory Cache" on WindowViewer Properties.

> **Note:** The **Cache ArchestrA Graphics not embedded in InTouch Windows** option is only available for InTouch 2012 R2 (v 10.6) & later.
>
> The **Cache ArchestrA Graphics not embedded in InTouch Windows** option is only used to cache all ArchestrA Graphics in a **Managed** InTouchView application. This option is disabled on a native InTouch application.

Memory Limit for in-Memory Graphics

Figure 2 (above) shows the **Memory Limit for in-Memory Graphics** is set to **20%**.

In this case, 20% of 4GB is **800** MB for the view.exe process limit. If the view process consumes MORE than 800 MB of memory, the system automatically removes the *oldest* closed in-memory window from the cache at run time, *unless* it is marked as a high-priority window. In this example we are setting up a window called **Main**.

> **Note:** The memory limit value for in-memory windows will always be less than the memory limit value for high-priority windows.

Figure 3 (below) shows that the view.exe process memory is around **36.3** MB. If this memory consumption exceeds 800 MB, memory caching is applied to windows.

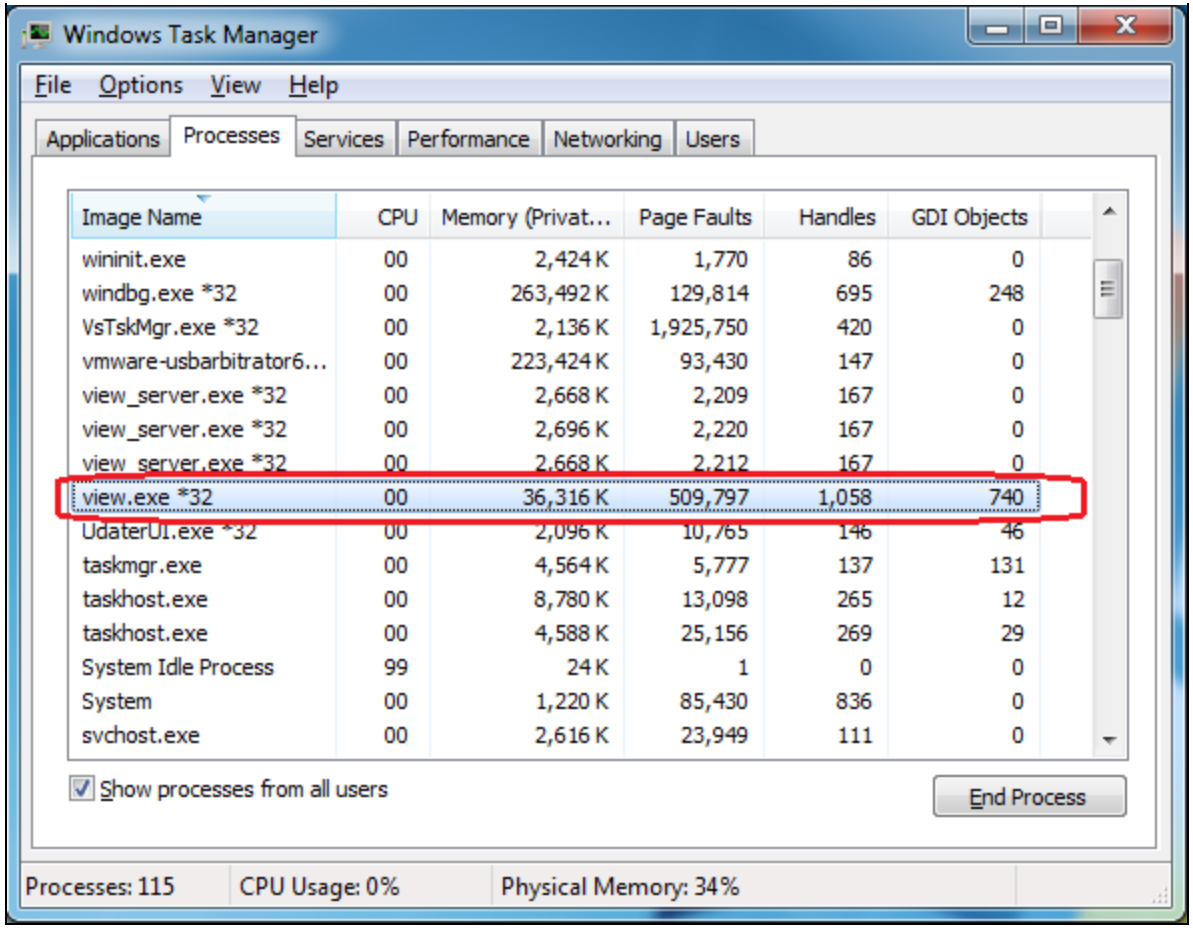

Figure 3: View.exe Process in Windows Task Manager

In-Memory Graphic Expiration Time Memory Limit for High Priority Windows

You can specify the *maximum* duration for which the closed/in-memory windows will remain in cache memory at run time. The range is anywhere between **0** and **8760** hours. The default value is 0 hours, which designates no time limit.

Wonderware recommends setting a specific duration. In Figure 2 (above), the value is set to **1** hour. The closed in-memory windows will remain in cache memory for 1 hour.

Memory Limit for High Priority Windows

The system removes the oldest in-memory window first, and then removes the oldest high-priority window when the percentage of used memory exceeds this limit at run time.

Figure 4 (below) shows that the threshold setting is **90%** for the **Main** window.

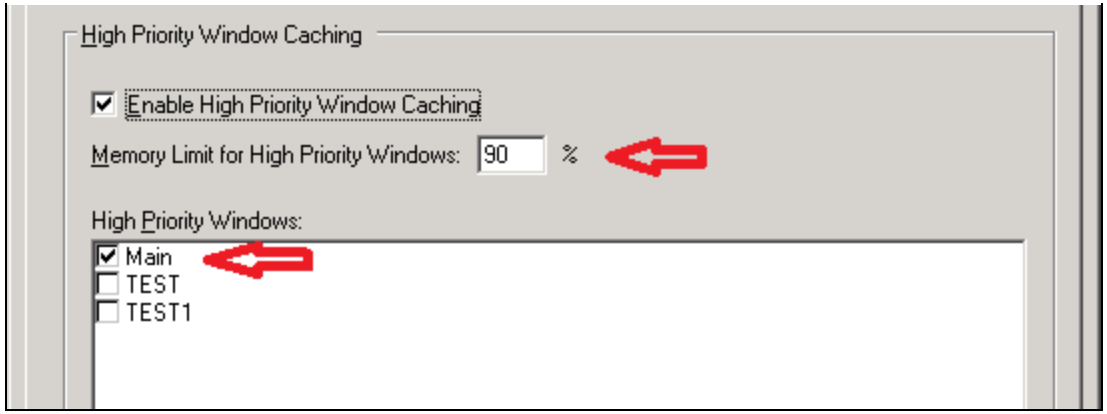

FIGURE 4: MEMORY LIMIT FOR HIGH PRIORITY WINDOWS IS 90% OF CACHED MEMORY

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Back to top