

AutoCAD – pushing it to the limits

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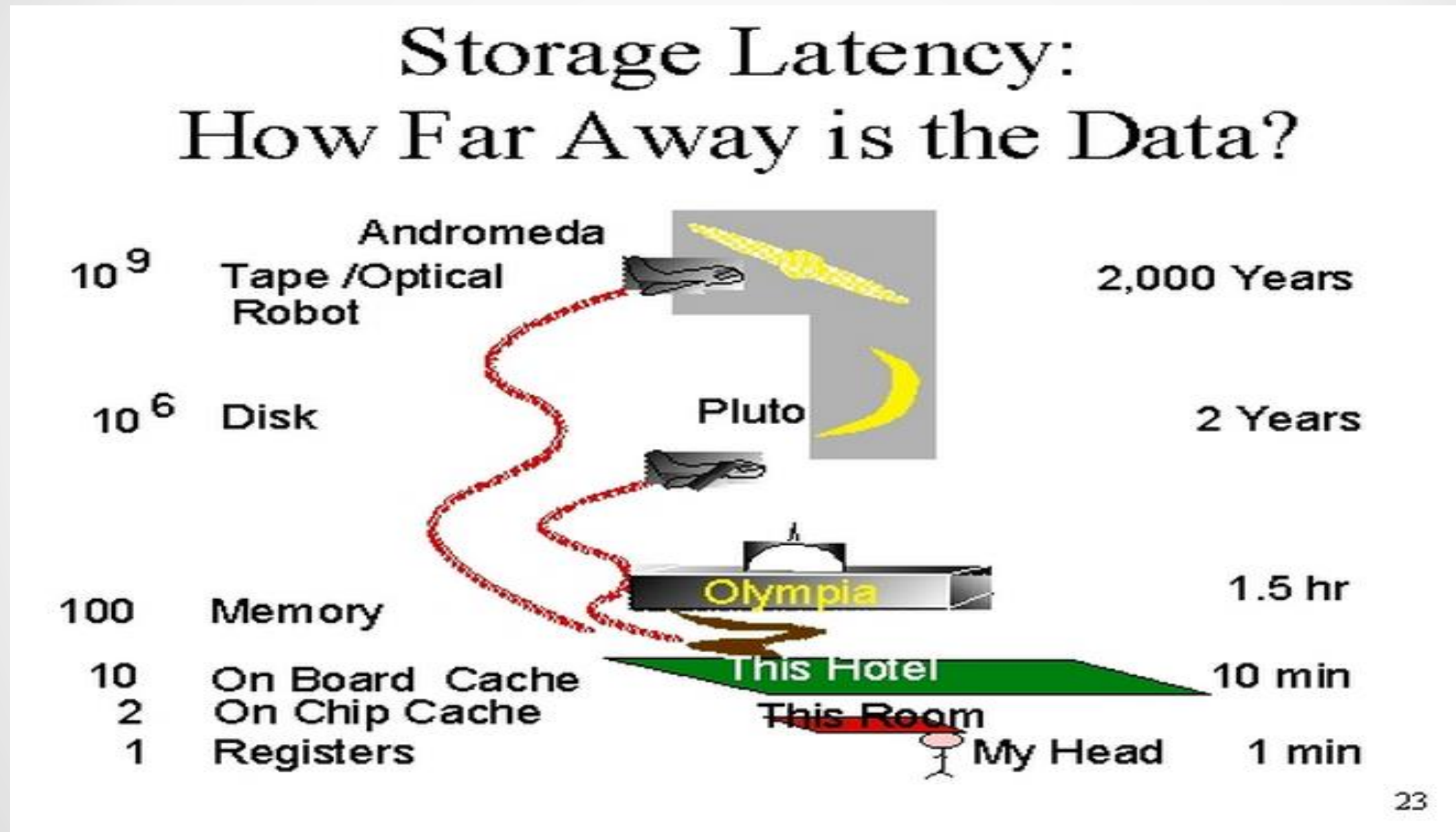
Class summary

Are you using large data sets? Are your commands taking too long to run? Are you pushing AutoCAD or your hardware to its limits? This session will give you valuable insights into the ways AutoCAD is taking advantage of the latest advances in processor technology. It will be led by members of the AutoCAD desktop team and will explore how to take advantage both of AutoCAD features as well as Xeon based workstations and servers with Iris Pro graphics.

Agenda

- Hardware dependent operations
- AutoCAD 2015 highlights
 - Point clouds
- Tuning for performance
- Multi-process architecture

Why the fuss around hardware?



Storage: Alternate Futures, Jim Gray
<http://loci.cs.utk.edu/dsi/netstore99/docs/presentations/keynote/index.htm>

Hardware dependent operations in AutoCAD

- Graphics
 - Visual effects
 - Non-wireframe visual styles
 - Lighting and textured materials
- Large drawings
 - 700k+ objects
 - Solids
- Heavy objects
 - File attachments
 - Point clouds
 - Geo location



AutoCAD 2015



AutoCAD 2015

- Enable customers to bring in real world data
- Improve efficiency while working with large data sets

AutoCAD 2015

- 2D

- Selection highlight
- Rollover
- Line tessellation
- Density fading
- Better previews

- 3D

- 3DORBIT improvements
- Point clouds
- Geo location

Point clouds

- Improved visualization and performance
- Increased maximum points per cloud

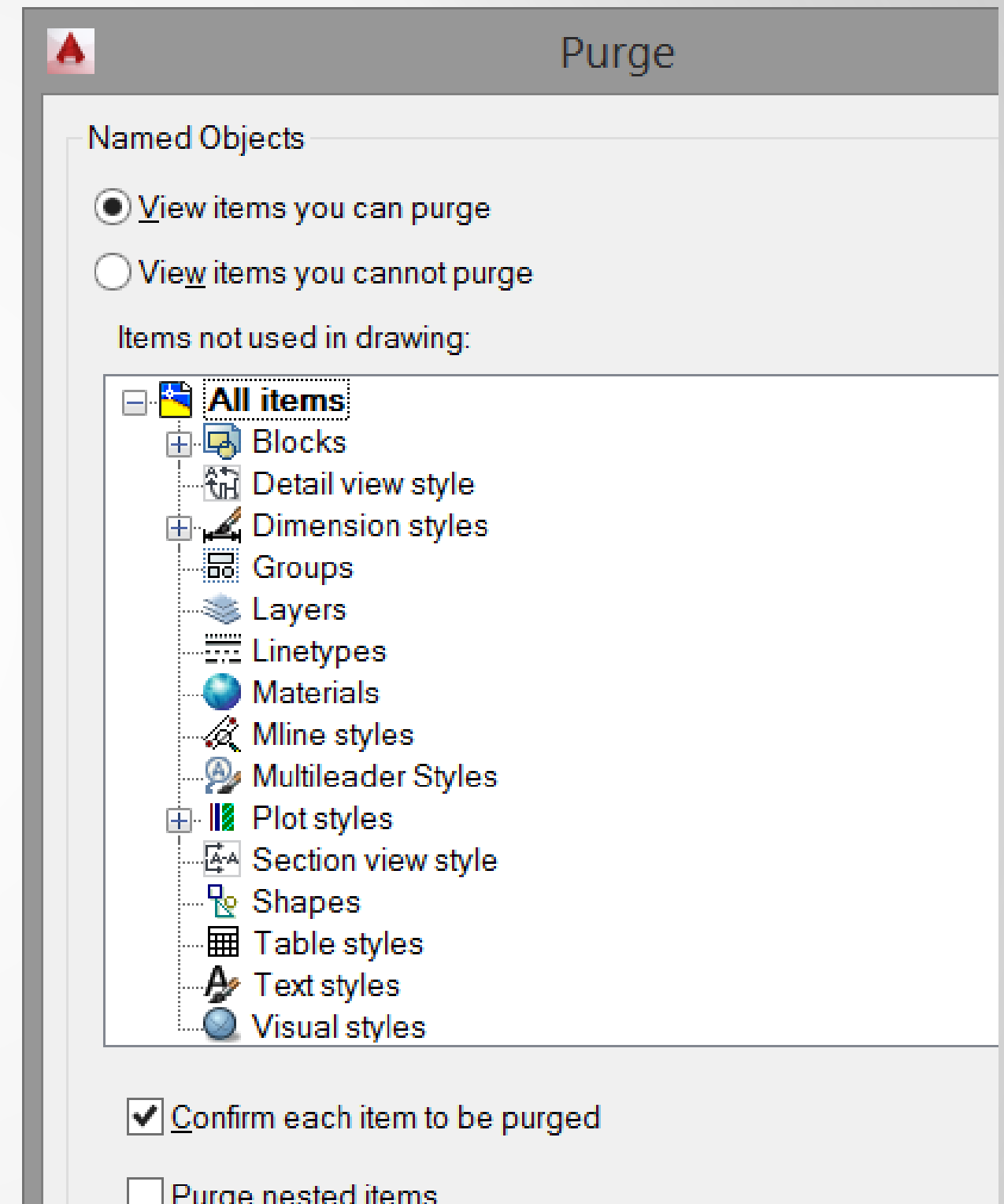


Tuning for performance

Tuning for performance

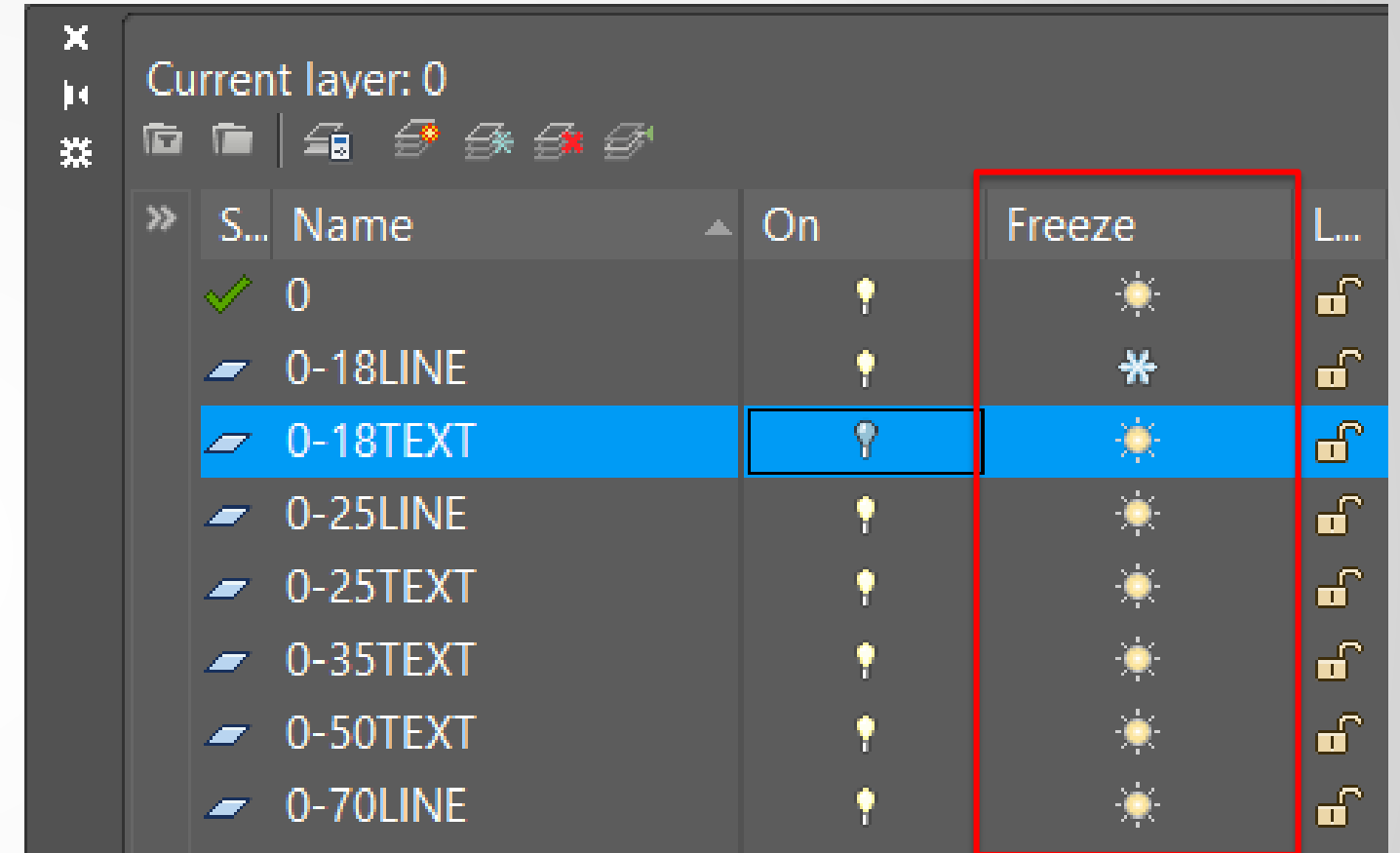
Remove unnecessary data

- OVERKILL
- PURGE
- PURGE external application data



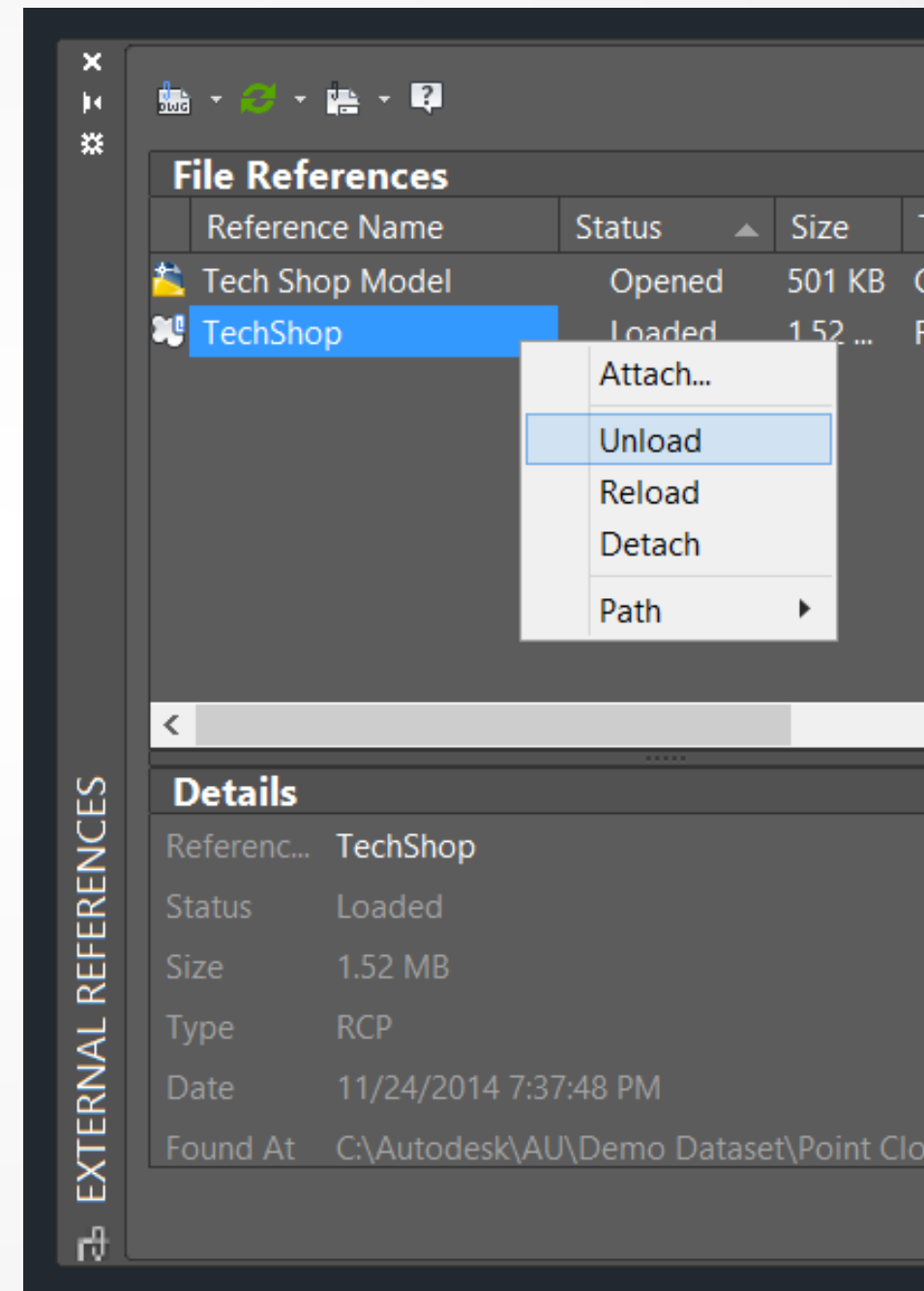
Tuning for performance

Freeze/Thaw layers vs
On/Off



Tuning for performance

Unload external references

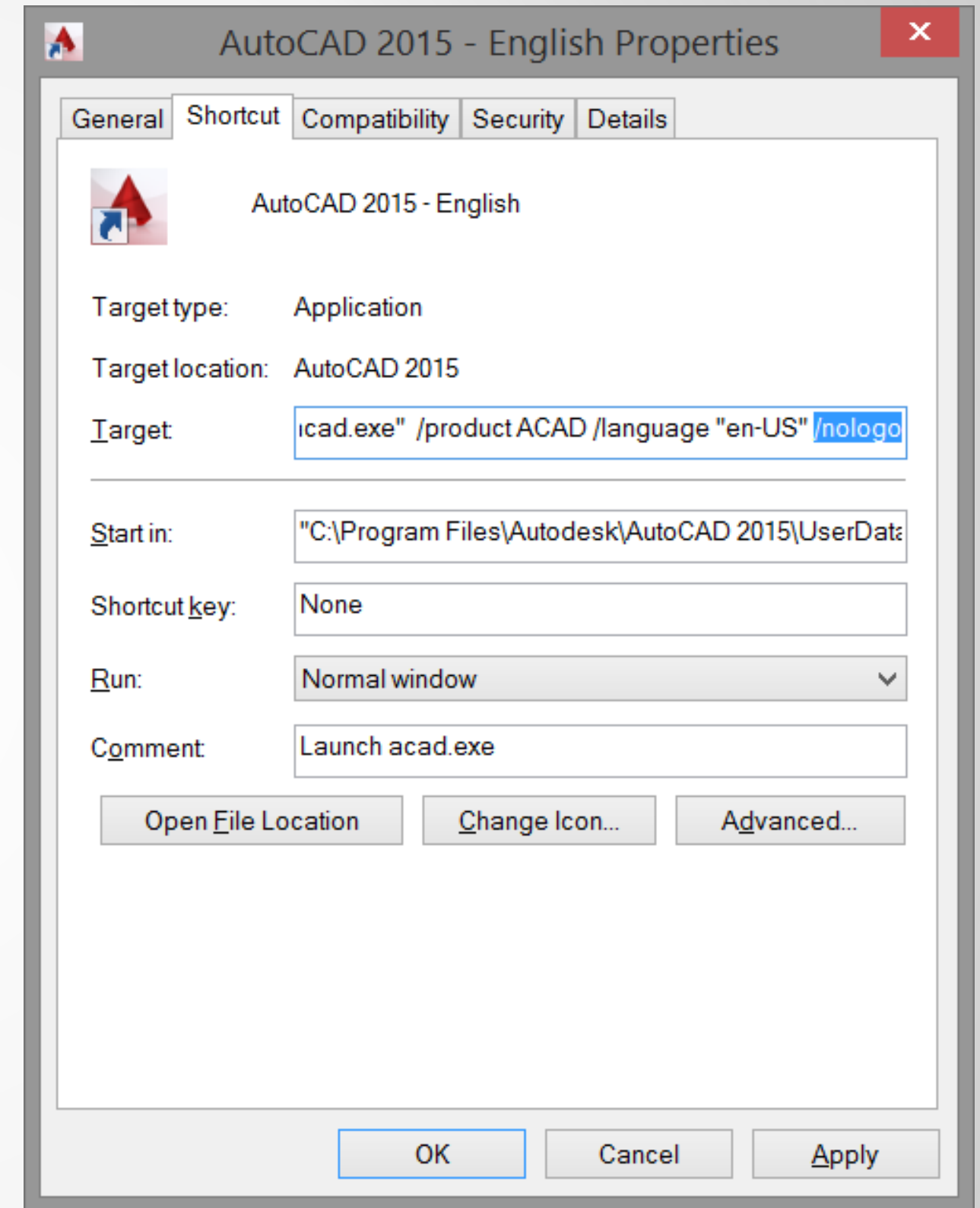


Tuning for performance

- Turn off fancy effects
 - Rollover highlight
 - Selection
- Disable features
 - Rollover tips
 - Ribbon
 - ViewCube
 - Command line AutoComplete
 - Object Snaps

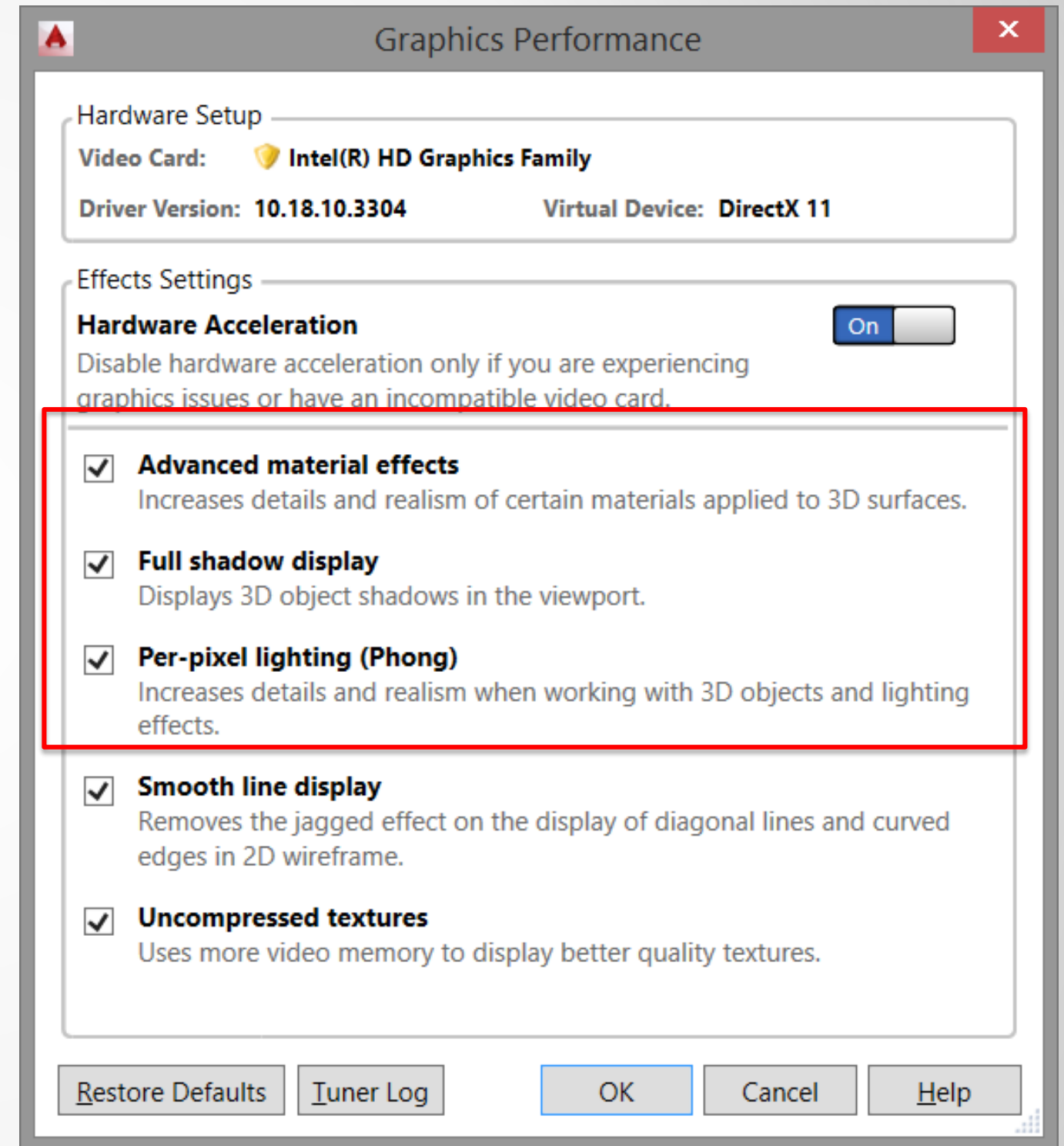
Tuning for performance

Start AutoCAD with /nologo switch



Tuning for performance

- Visual Style
 - Use 2D or 3D wireframe
- Use Graphics Performance dialog





Multi-process architecture

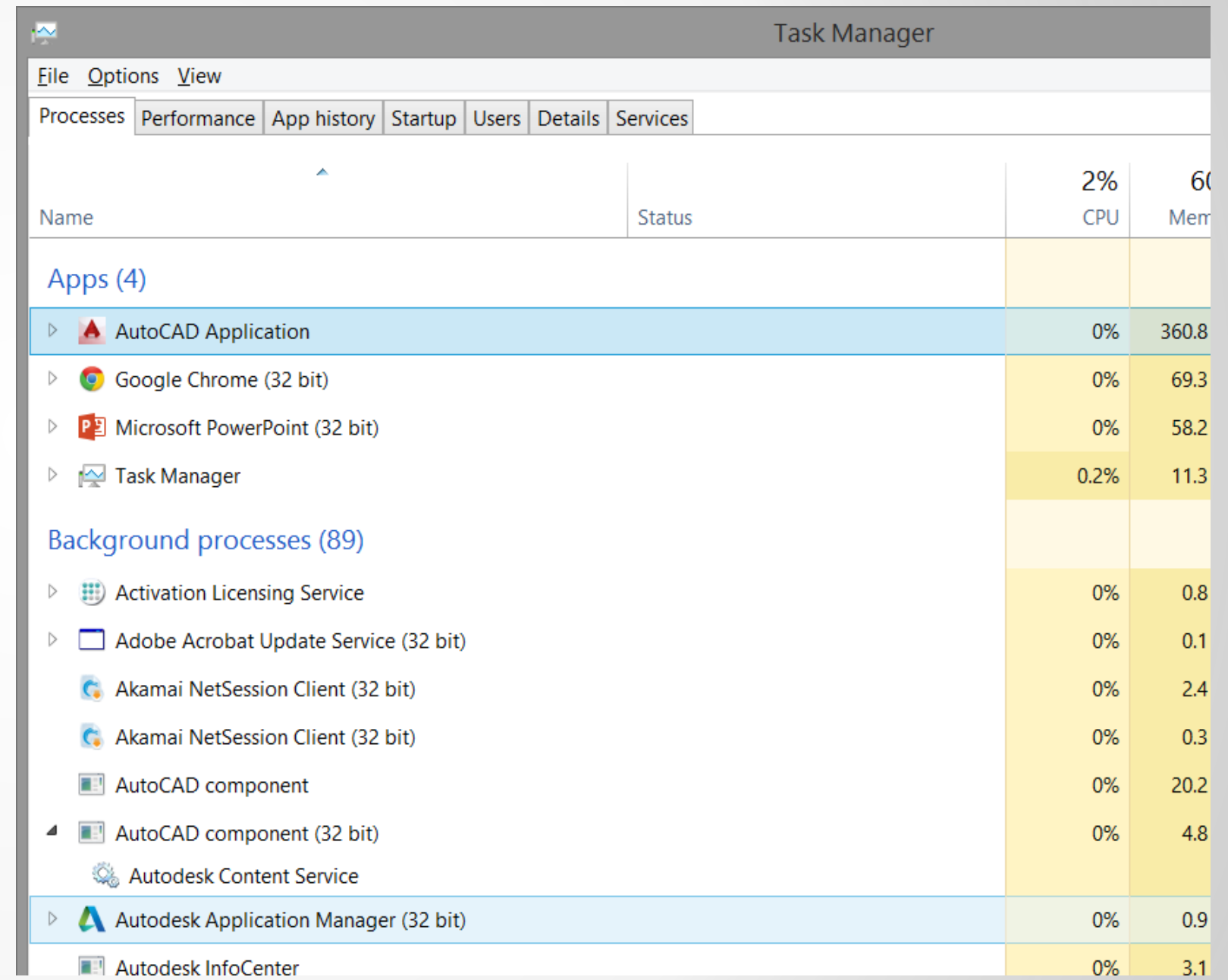
Multi-process architecture

Split out work into separate processes to enable

- Responsive UI in primary application
- Isolate crashes or errors
- Leverage technology from other products

Multi-process architecture

Many services are already running separately



The screenshot shows the Windows Task Manager interface with the 'Processes' tab selected. The window title is 'Task Manager'. The menu bar includes 'File', 'Options', and 'View'. Below the menu bar are tabs for 'Processes', 'Performance', 'App history', 'Startup', 'Users', 'Details', and 'Services'. The main area displays a list of processes with columns for 'Name', 'Status', 'CPU', and 'Mem'. The processes are grouped into 'Apps (4)' and 'Background processes (89)'. The 'Apps (4)' group includes AutoCAD Application, Google Chrome (32 bit), Microsoft PowerPoint (32 bit), and Task Manager. The 'Background processes (89)' group includes Activation Licensing Service, Adobe Acrobat Update Service (32 bit), Akamai NetSession Client (32 bit), AutoCAD component, AutoCAD component (32 bit), Autodesk Content Service, Autodesk Application Manager (32 bit), and Autodesk InfoCenter.

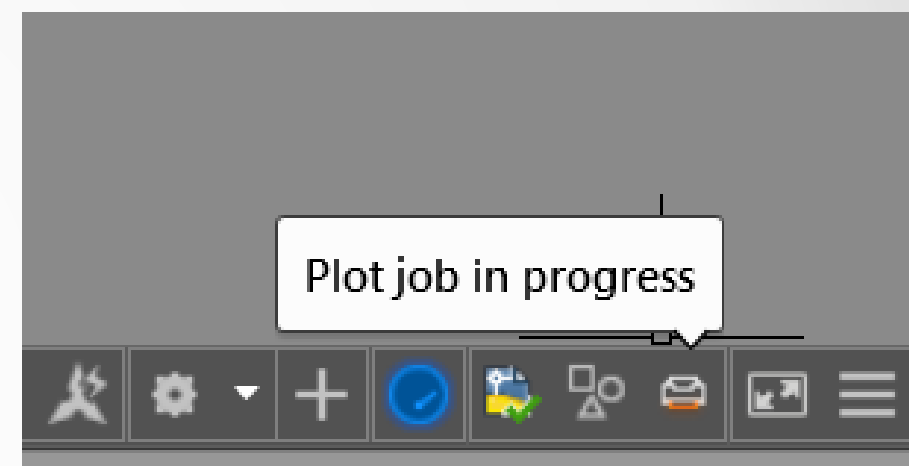
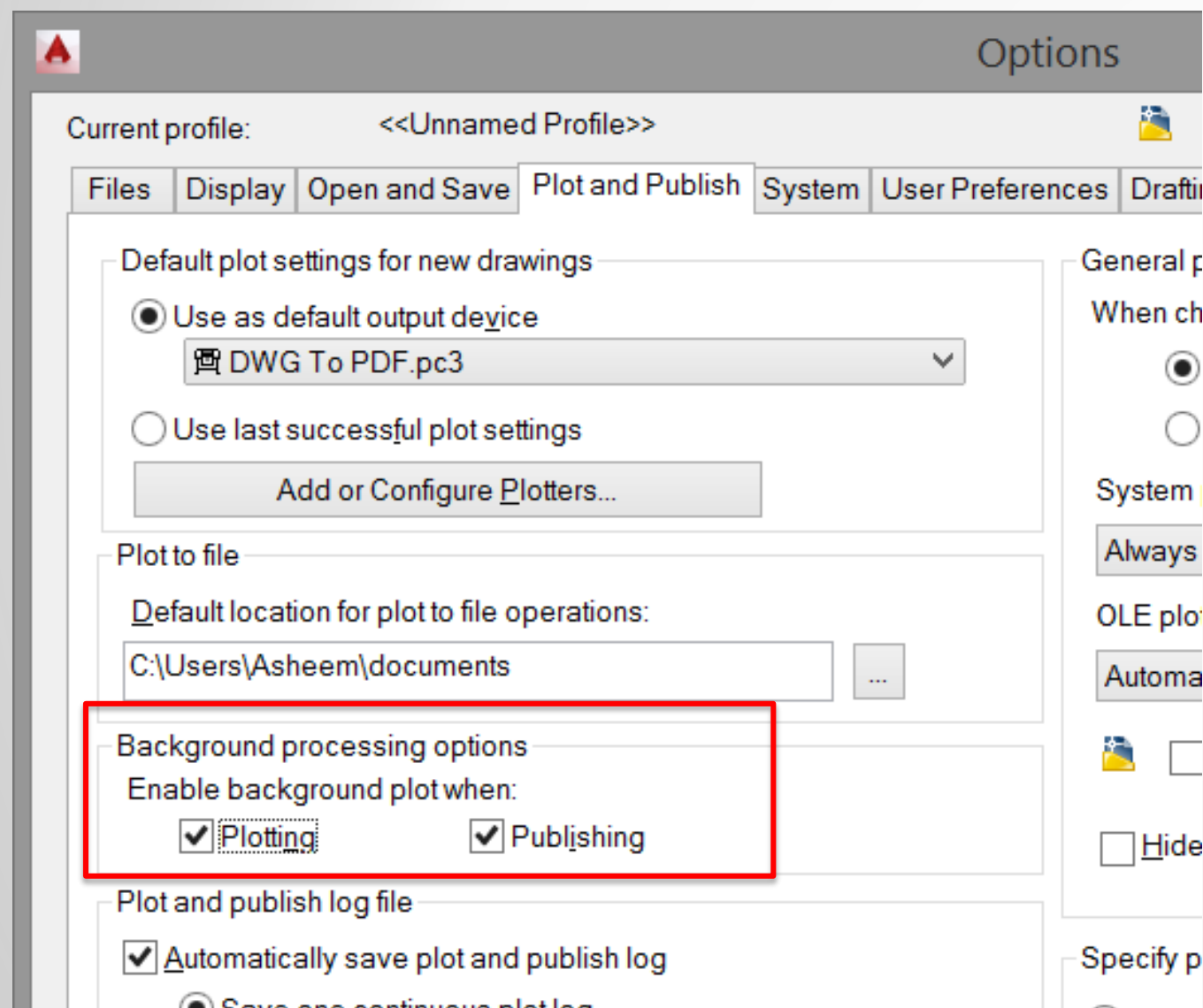
Name	Status	CPU	Mem
Apps (4)			
AutoCAD Application		0%	360.8
Google Chrome (32 bit)		0%	69.3
Microsoft PowerPoint (32 bit)		0%	58.2
Task Manager		0.2%	11.3
Background processes (89)			
Activation Licensing Service		0%	0.8
Adobe Acrobat Update Service (32 bit)		0%	0.1
Akamai NetSession Client (32 bit)		0%	2.4
Akamai NetSession Client (32 bit)		0%	0.3
AutoCAD component		0%	20.2
AutoCAD component (32 bit)		0%	4.8
Autodesk Content Service			
Autodesk Application Manager (32 bit)		0%	0.9
Autodesk InfoCenter		0%	3.1

Multi-process architecture

- Operations
 - Plot
 - Publish
- Model Documentation
 - Uses Inventor server in the background
- Fusion 360 Drawings
 - Documentation provided by AutoCAD in the background

Multi-process architecture

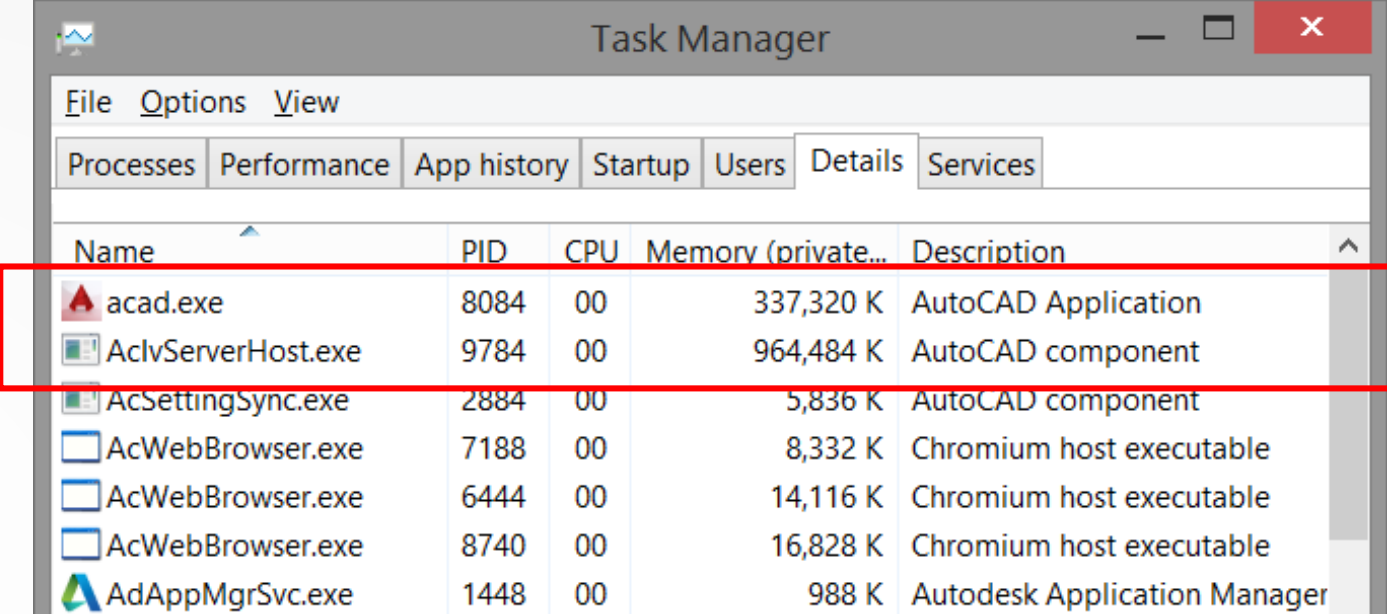
Plot and Publish



Multi-process architecture

Model Documentation

- Allows loading large Inventor models
- AutoCAD only loads the 2D representation
- Provides stability through process isolation



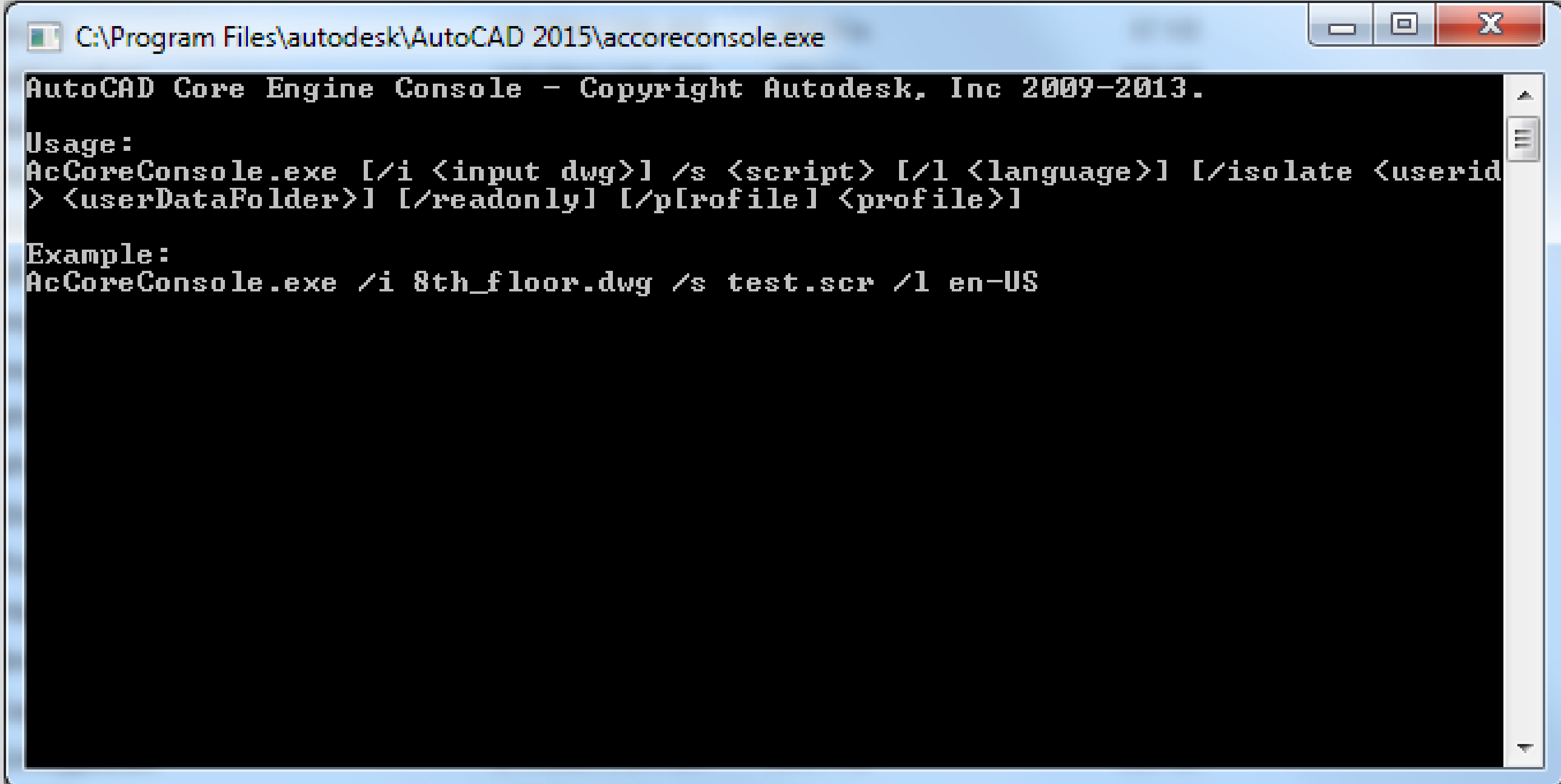
Name	PID	CPU	Memory (private...)	Description
acad.exe	8084	00	337,320 K	AutoCAD Application
AclvServerHost.exe	9784	00	964,484 K	AutoCAD component
AcSettingSync.exe	2884	00	5,836 K	AutoCAD component
AcWebBrowser.exe	7188	00	8,332 K	Chromium host executable
AcWebBrowser.exe	6444	00	14,116 K	Chromium host executable
AcWebBrowser.exe	8740	00	16,828 K	Chromium host executable
AdAppMgrSvc.exe	1448	00	988 K	Autodesk Application Manager

Multi-process architecture

Fusion 360 Drawings

- Reuse AutoCAD core technology
 - Including the Model Documentation functionality
- Each Drawing tab is a separate core process

AcCoreConsole



```
C:\Program Files\autodesk\AutoCAD 2015\accoreconsole.exe

AutoCAD Core Engine Console - Copyright Autodesk, Inc 2009-2013.

Usage:
AcCoreConsole.exe [/i <input dwg>] /s <script> [/l <language>] [/isolate <userid
> <userDataFolder>] [/readonly] [/p[rofile] <profile>]

Example:
AcCoreConsole.exe /i 8th_floor.dwg /s test.scr /l en-US
```


AcCoreConsole

- Part of AutoCAD install
- Runs a subset of commands
- Faster than AutoCAD!
- Great for running scripts

AcCoreConsole

- Command line arguments for input DWG and input Script
- Supports SCR and LISP
 - Use AutoCAD session to create your own script file
- Use [ScriptPro 2.0](#) to operate on multiple DWGs

Conclusion

- AutoCAD takes advantage of latest in hardware for new effects and features
- AutoCAD can be used with real world data, such as point clouds
- Multi-process architecture is paving the way for new and interesting uses

Q & A



Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time



