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# Windchill Client Optimization

A System Administrator's Perspective

July 2010

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# How is Client Optimization different from Performance Tuning?

- Client optimization is the ongoing practice of applying known solutions to documented software issues where the impact of those changes have already been quantified.
- Performance tuning is the methodical and repetitive process of “Measure > Change > Measure > Compare” to achieve pre-defined performance targets.

# Common Client Issues

- Slow Performance
- Workspace Corruptions
- Pro/ENGINEER Crashes
- Client Standardization



# Slow performance isn't just one thing...

- Client hardware
  - 32bit or 64 bit, RAM, disk space, processor speed
- Client software
  - OS, Browser, Virus Scanning, Java, CAD
- Server configuration
  - Content expiration, compression, monolithic or cluster
- Infrastructure
  - Bandwidth and latency to the server
- Modeling practices
  - Minimize external references

# Desktop Search and Disk Defragmentation

- Disable Desktop Search
  - Disable Desktop Search and indexing of cache directories
- Disk Fragmentation
  - Run disk defragmentation software DAILY
  - Diskeeper is a good configure and forget solution
  - Windows defrag utility can be used in emergencies

# Disk Defragmentation

Volume: New Volume (D:)

Dashboard

Log

History



The Dashboard displays real-time and statistical details about IntelliWrite Fragmentation Prevention, Automatic Defragmentation, performance gains, and the health of your volumes.

Go to: [IntelliWrite Fragmentation Prevention](#) | ▾

50%

- Improved read and write access time for fragments handled by Diskeeper



**IntelliWrite Fragmentation Prevention -**

IntelliWrite increases system performance by preventing fragmentation before it happens.

## IntelliWrite Statistics for All Volumes Since 12 a.m. 7/13/2010

Total Fragmentation Handled within Timeframe: 60,012 Fragments

■ Fragmentation Prevented by IntelliWrite: 58,952 Fragments

98 %

■ Fragmentation Eliminated by Defragmentation: 1,060 Fragments

2 %



Proactive prevention is the most energy efficient method to eliminate increased storage power consumption caused by fragmentation.

# Virus Scanning Software (Windchill)

- Disable Anti-Virus on:
  - %USERPROFILE%\java\_plugin\_AppletStore
  - Web browser cache directory
  - Pro/ENGINEER installation directory
  - Windchill cache .wf directory
    - Default: <user profile>\Application Data\ProENGINEER\Wildfire
- Disable McAfee On-Access Scan in the client workspace directory
  - 3rd Party Workgroup Managers
  - This can result in ~10x faster model retrieval times.
- Add Windchill servers to McAfee ScriptScan “White List” or disable ScriptScan for Windchill servers
- Monitor and restart or disable anti-virus when it contributes to excessive cpu usage

# Virus Scanning Software (ProductPoint)

- Disable virus scanning for ProductPoint Clients
  - ProductPoint Client Manager
  - %USERPROFILE%/Application Data/PTC/ProENGINEER/Wildfire/.wf
  - Program Files/PTC/Windchill ProductPoint Components
- Add ProductPoint server to McAfee ScriptScan “White List” or disable ScriptScan for ProductPoint servers
- Monitor and restart or disable anti-virus when it contributes to excessive cpu usage



# RAM Optimization

- RAM Related Issues
  - Client disconnects from server
  - Slow performance (disk thrashing)
  - Pro/ENGINEER low virtual memory message
  - Pro/ENGINEER Out of Memory crashes
- RAM Issue Confirmation
  - [TPI 141289](#) Monitoring RAM Usage

# Workstation Optimization

- Some Possible RAM Allocation Resolutions
  - More RAM!
  - [TPI 111330](#) 3GB Switch
  - Separate Browser and Pro/ENGINEER processes
    - *windows\_browser\_type ie\_in\_sep\_process*
      - (in Pro/ENGINEER Wildfire 5.0)
  - 64 bit OS
  - Change Modeling Practices
    - Use Simplified Reps
    - Don't use assembly features

# Page File Optimization

- [TPI 143897](#) and [Microsoft KB889654](#)
  - Set min and max pagefile values to the same value
  - Place pagefile on a non-system drive A general rule of thumb calculation:
    - $(3-4\text{GB}) * (\# \text{ of concurrent Pro/ENGINEER sessions}) + (500\text{MB for Windows})$ .
  - Consider an SSD for pagefile, local cache, and other temporary file locations.
  - Example (4GB client machine):
    - 1 Pro/ENGINEER session = 6GB
    - 2 Pro/ENGINEER sessions = 8-12GB.

# Temp Folders Optimization

- [TPI 143897](#)
- Cleanup unnecessary session/temporary files from:
  - Pro/ENGINEER start in directory
    - Never start up Pro/ENGINEER in a network folder location
  - Pro/ENGINEER working directory
  - %TEMP% and %TMP%
  - See [TPI 140530](#) for examples on how to automate cleanup of the start in directory
- Ensure sufficient disk space for
  - %TEMP%, %TMP% and client cache directories

# Browser Optimization

- Applying server-side tweaks
  - Apache httpd.conf:
    - SendBufferSize 16384
    - Timeout 900
    - Content Cache expiration: [TPI 141283](#)
  - Data compression (WAN): [TAN 141561](#), [TPI 130992](#), [TPI 129044](#)

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# Browser Tuning

- These work for Internet Explorer and Firefox
  - Increase Network Threads: [TPI 135832](#)
  - Maximize SendSocketBufferLength: [TPI 130437](#)
  - Disable slow script message: [TPI 130854](#)
  - Browser Caching (WAN): [TAN 120097](#)
- Client Checker

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# Pro/ENGINEER Clients

- Windchill related config.pro options
  - windows\_browser\_type ie\_in\_sep\_process or mozilla\_based\_browser
  - disable\_search\_path\_check yes
  - start\_model\_dir <minimize object count in start\_model\_dir location>
- LAN Settings
  - dm\_network\_threads 4
  - dm\_http\_compression\_level 0
  - dm\_cache\_limit 0
  - dm\_network\_request\_size 1000000
  - dir\_cache\_max 500
- WAN Setting Differences
  - dm\_http\_compression\_level 3
  - compress\_output\_files yes

# Workspace Corruption Avoidance

- Supported hardware
  - Supported graphics card
- Use latest supported software:
  - Pro/ENGINEER release and build
  - Java
  - Internet Explorer
- Remove spyware software
- Large workspaces
  - Clean workspaces after every upload/check in
  - Use large assembly management practices to reduce files added to workspace
    - Simplified Reps
    - Minimize external references



# Workspace Corruption Avoidance

- Clean up Java install
  - Remove all but 1 Java installation from:
    - Disk
    - %PATH%
    - Browser registered JVMs
  - Sometimes there is simply a bad Java installation.
- Clean up Windchill Local cache
  - Upload or check in and remove (via Windows Explorer) all .wf folders during Pro/ENGINEER update or upgrade
    - %PTC\_WF\_ROOT%
    - %USERPROFILE%\Application Data\ptc\wildfire\...

# Workspace Corruption Avoidance

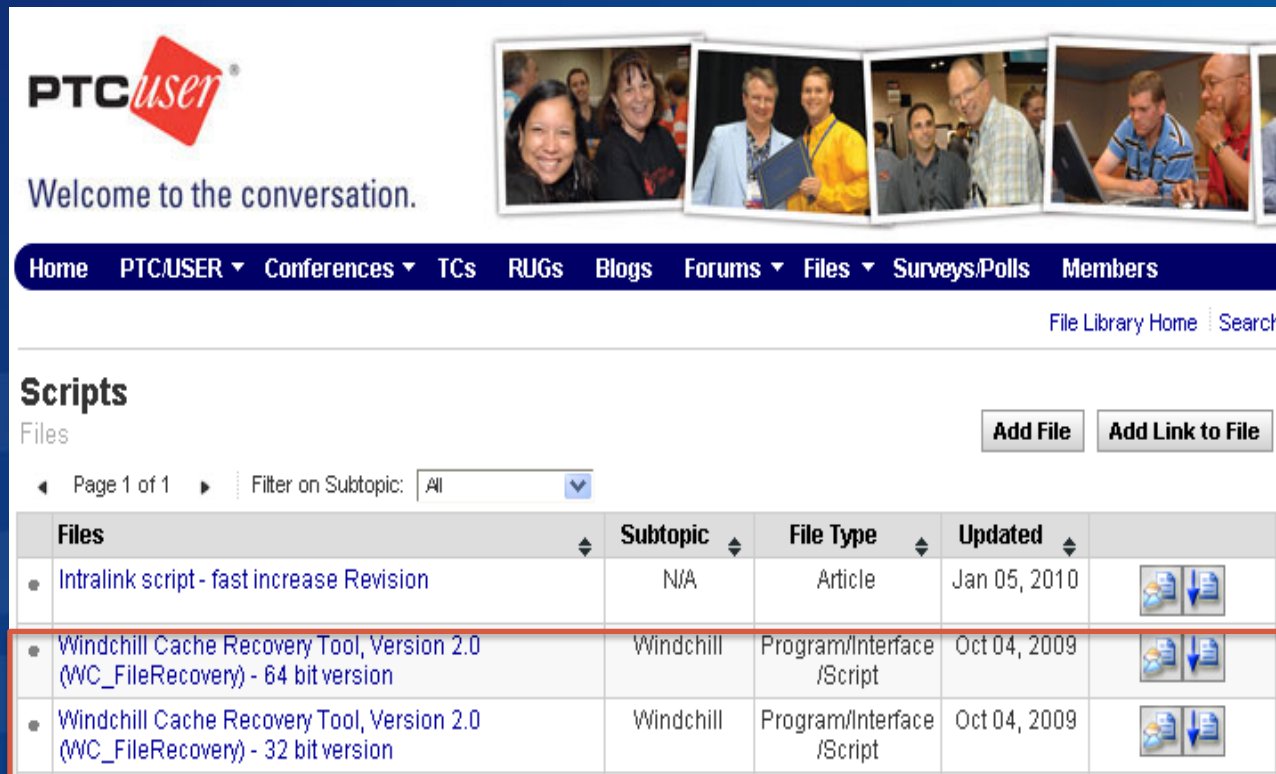
- Browser security
  - Doesn't cause corruptions but has other undesired effects
  - Disable
    - Firewalls
    - IE 8 Security features
    - Blocking of running scripts
    - Popup blocker
- Workspace Best Practices: [TPI 141290](#)
  - Clearing the local cache: [TPI 141293](#)
  - Sharing local cache is not supported: [TAN 145071](#)

# Dealing with Workspace Corruptions

- Troubleshooting
  - Enable Debug Workgroup Manager Client Logging
  - Enable Debug EPM Related Logging
- Back up the local cache
  - Client-side copy of the local cache on Pro/ENGINEER startup
  - Purge by date (every couple of days)

# Dealing with Workspace Corruptions

- Use the [Workspace Recovery Tool](#)
  - Courtesy Ron Thellen, PTC/USER member



PTC *user*

Welcome to the conversation.







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### Scripts

Files [Add File](#) [Add Link to File](#)

◀ Page 1 of 1 ▶ Filter on Subtopic: All ▾

Files	Subtopic	File Type	Updated	
• <a href="#">Intralink script - fast increase Revision</a>	N/A	Article	Jan 05, 2010	 
• <a href="#">Windchill Cache Recovery Tool, Version 2.0 (WC_FileRecovery) - 64 bit version</a>	Windchill	Program/Interface /Script	Oct 04, 2009	 
• <a href="#">Windchill Cache Recovery Tool, Version 2.0 (WC_FileRecovery) - 32 bit version</a>	Windchill	Program/Interface /Script	Oct 04, 2009	 

# Dealing with Pro/ENGINEER Crashes

- Top causes of Pro/ENGINEER crashes
  - Troubleshooting Pro/ENGINEER crashes
    - Unsupported graphics card
    - Config.pro options
    - Out of Memory
    - Corrupted Local Cache
- Capturing Client Logs On Startup

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# Client Standardization

- What should be considered as a standard?
  - Platform Specs
  - Client configuration
    - Configuration files
    - Release and build
    - Pre-launch tasks
    - Load points, working directories, local cache location, etc.
- Pro/E Launch Script document on PlanetPTC

# Upgrade Regularly

- Client Java
  - Disable automatic updates
    - Do not update Java clients ad-hoc!
    - Do not update to unsupported builds!
  - Schedule regular administratively controlled updates of the Java client for all Windchill users.
    - (i.e. quarterly or semi-annually)

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# Upgrade Regularly



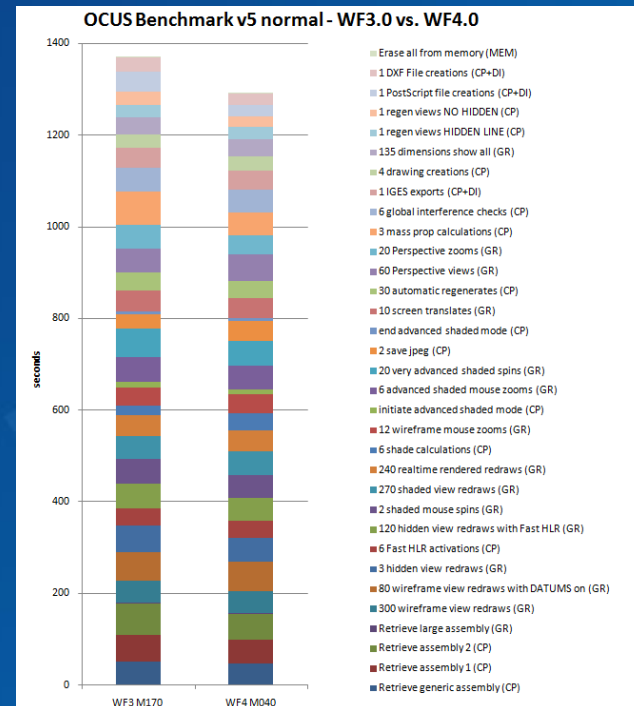
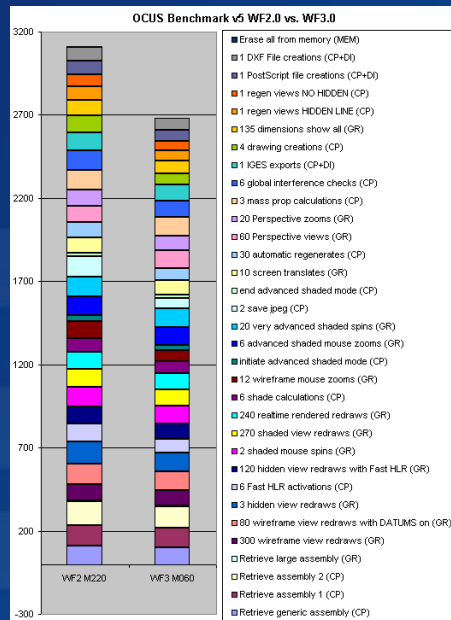
- Browser performance varies widely
  - Comparision
- Upgrade to the best browser for performance
  - Firefox 3.5/6/7 (when supported)
  - Internet Explorer 8.0
  - Firefox 2.0
    - *windows\_browser\_type*  
*mozilla\_based\_browser*
      - (in Pro/ENGINEER Wildfire 5.0)
  - Internet Explorer 7.0





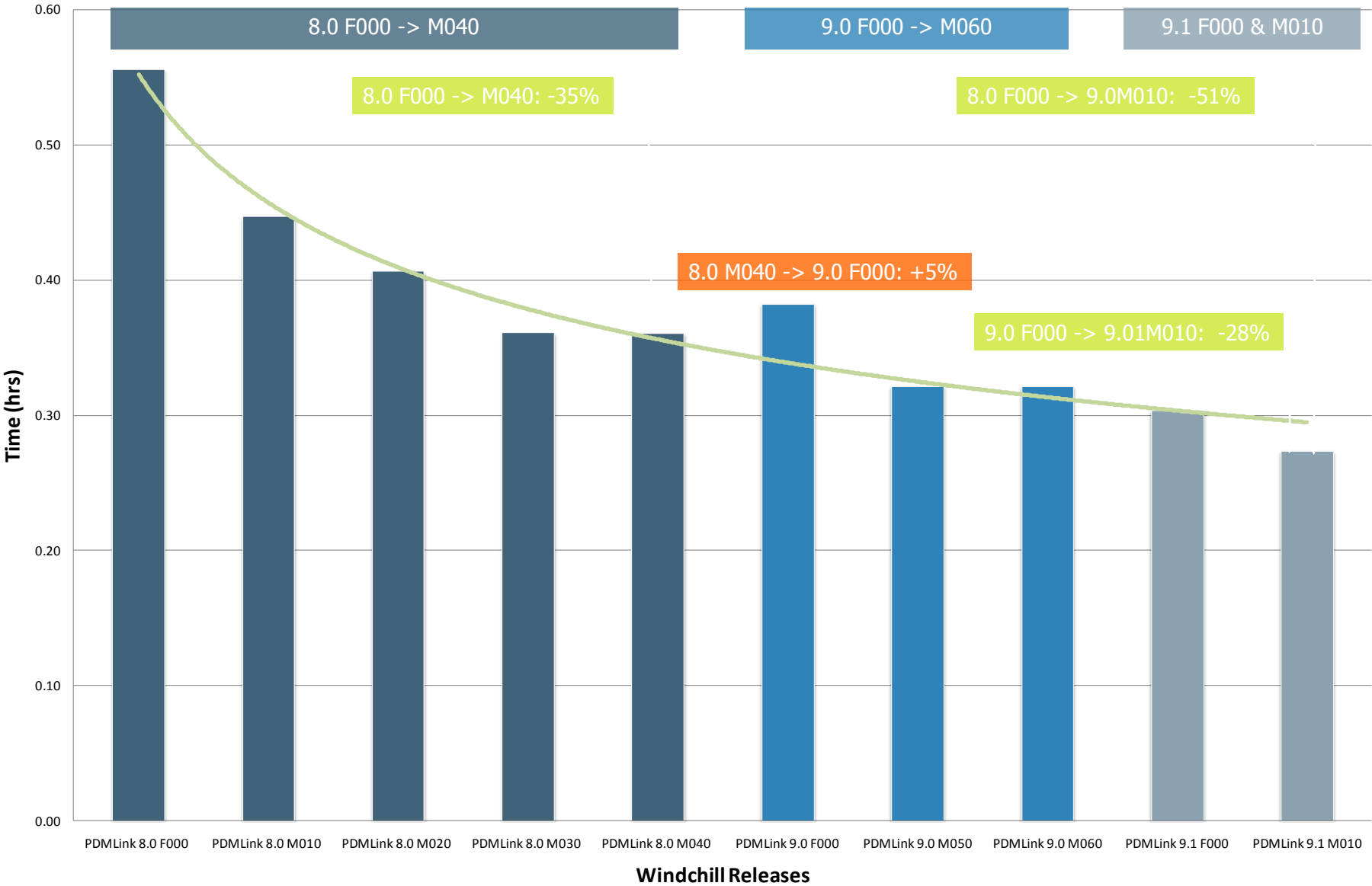
# Upgrade Pro/ENGINEER

- Upgrade to the latest Wildfire Version and Maintenance release as performance and stability improvements over previous releases are continually being made
- <http://www.proesite.com/>



# Keep up with Windchill releases and builds

Windchill Performance 8.0 F000-9.1 M010  
CAD Users "Day in the Life" Performance Model



# Summary

- Windchill perceived stability and performance are dependent on client optimization
  - Standardize the client environment
  - Proactively optimize clients
  - Keep up to date with software components

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# References



- PTC Knowledge Base
  - [Performance Tuning Recommendations For Client Systems And Windchill Servers That Manage CAD Models](#)
- PlanetPTC
  - [Pro/ENGINEER System Administration Group](#)
  - [ProductPoint System Administration Group](#)
- PTC/USER
  - [Pro/ENGINEER System Administration Technical Committee](#)
  - [Windchill Infrastructure Technical Committee](#)



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## Questions?

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