



Citrix Tools

Everything you need for troubleshooting,
optimization and analysis

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Citrix EMEA

Contents

- Crash dump tools
- GUI troubleshooting tools
- Printing tools
- Miscellaneous tools

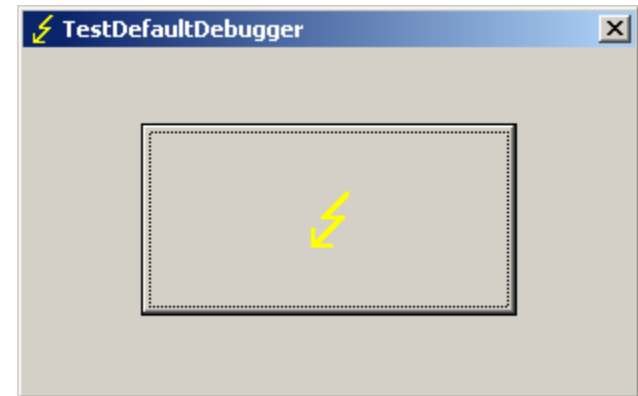
Crash Dump Tools

- TestDefaultDebugger
- SystemDump
- DumpCheck

TestDefaultDebugger

<http://support.citrix.com/article/CTX111901>

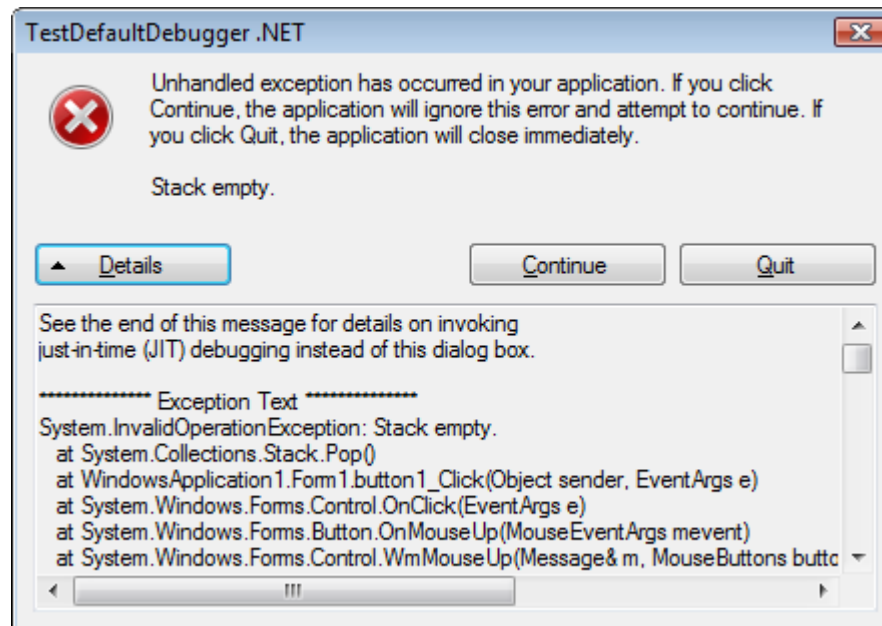
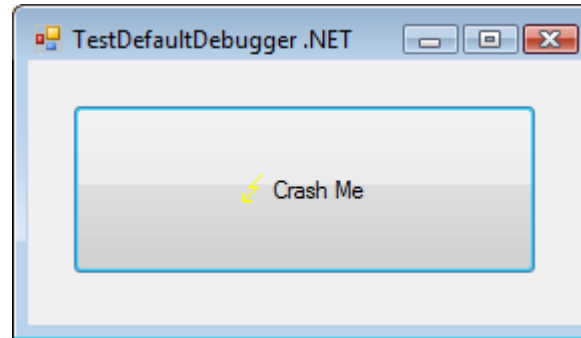
32-bit and 64-bit



```
C:\W2K3\system32\ntsd.exe
ModLoad: 7d930000 7da00000 C:\W2K3\syswow64\USER32.dll
ModLoad: 7d800000 7d890000 C:\W2K3\syswow64\GDI32.dll
ModLoad: 77f50000 77fec000 C:\W2K3\syswow64\ADVAPI32.dll
ModLoad: 7da20000 7db00000 C:\W2K3\syswow64\RPCRT4.dll
ModLoad: 73070000 73097000 C:\W2K3\system32\WINSPOOL.DRV
ModLoad: 77ba0000 77bfa000 C:\W2K3\syswow64\msvcrt.dll
ModLoad: 7c8d0000 7d0d4000 C:\W2K3\syswow64\SHELL32.dll
ModLoad: 004f0000 00542000 C:\W2K3\syswow64\SHLWAPI.dll
ModLoad: 7dbd0000 7dcd3000 C:\W2K3\WinSxS\WOW64_Microsoft.Windows.Common-Contr
ols_6595b64144ccf1df_6.0.3790.2778_x-ww_3020900a\COMCTL32.dll
ModLoad: 00550000 005dc000 C:\W2K3\syswow64\OLEAUT32.dll
ModLoad: 77670000 777a4000 C:\W2K3\syswow64\ole32.dll
ModLoad: 71c20000 71c32000 C:\W2K3\system32\tsappcmp.dll
ModLoad: 4b8d0000 4b921000 C:\W2K3\syswow64\MSCTF.dll
ModLoad: 7df50000 7dfc0000 C:\W2K3\system32\UxTheme.dll
(d14.d30): Access violation - code c0000005 (!!! second chance !!!)
eax=00000000 ebx=00000001 ecx=002dfe90 edx=00000000 esi=00425ae8 edi=002dfe90
eip=004014f0 esp=002df86c ebp=002df878 iopl=0         nv up ei ng nz ac po cy
cs=0023  ss=002b  ds=002b  es=002b  fs=0053  gs=002b             efl=00010297
TestDefaultDebugger!CTestDefaultDebuggerDlg::OnBnClickedButton1:
004014f0 c7050000000000000000000000000000 mov dword ptr [00000000],0x0 ds:002b:00000000=????
????
0:000> ntsd: Reading initial command ' .dump /ma /u c:\TEMP\new.dmp; q'
Creating c:\TEMP\new_2006-12-06_15-43-14-562_0D14.dmp - mini user dump
```

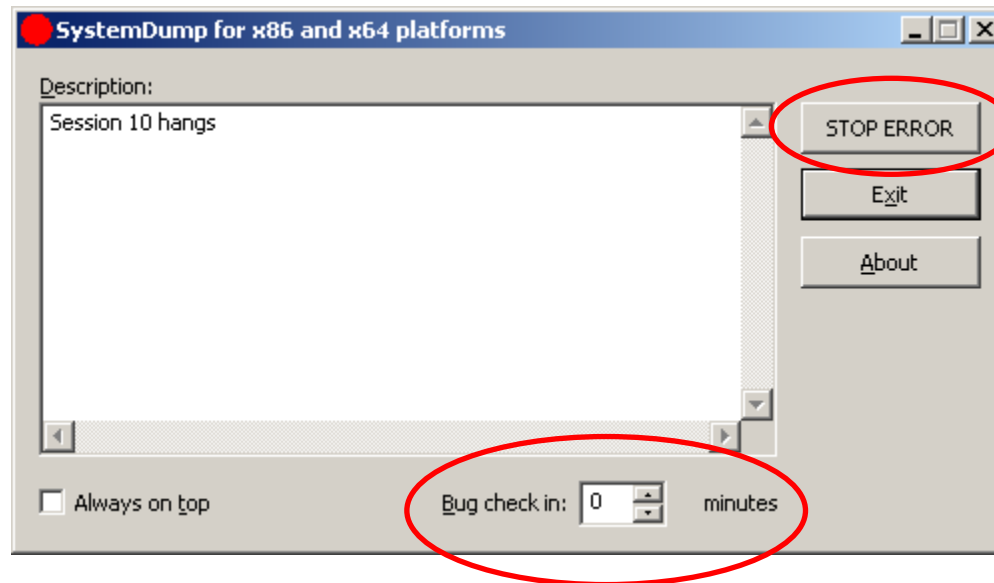
TestDefaultDebugger (...)

.NET version



SystemDump

<http://support.citrix.com/article/CTX111072>



DumpCheck

- Explorer extension

<http://support.citrix.com/article/CTX108825>

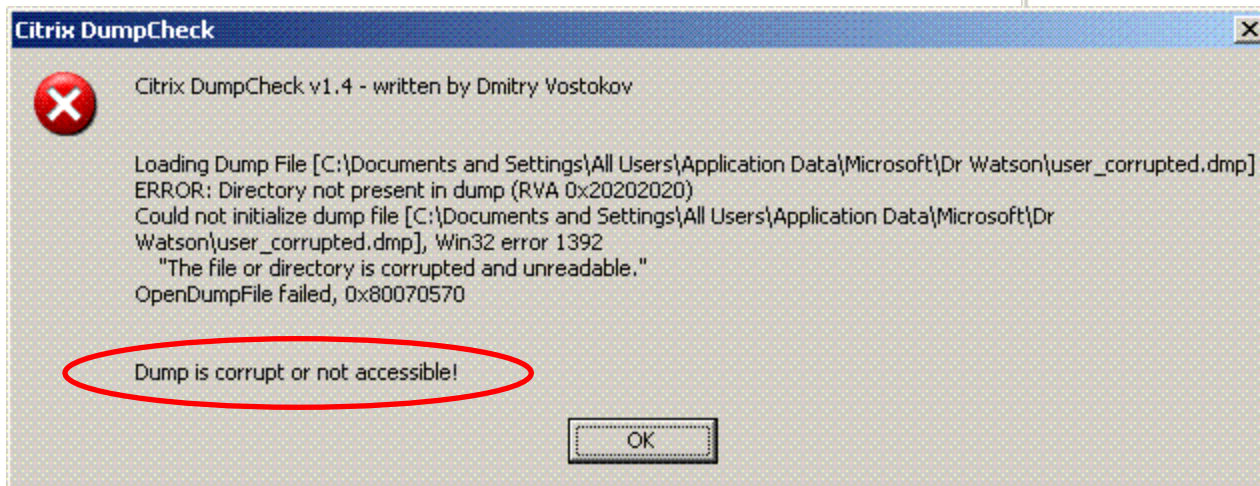
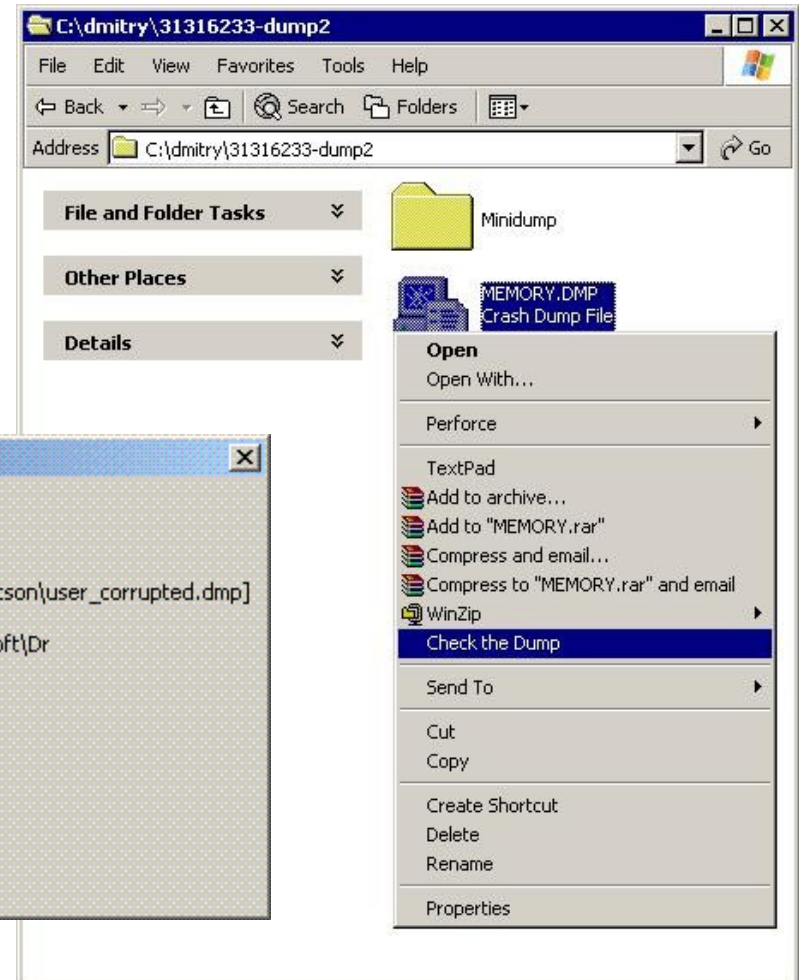
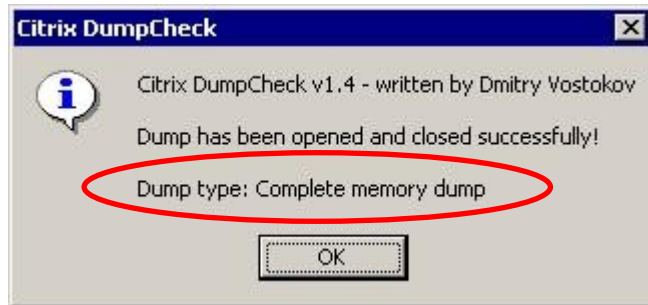
- Command line version

<http://support.citrix.com/article/CTX108890>

Helps to check dump file type before sending it:

- User memory dump
- User mini dump
- Complete memory dump
- Kernel memory dump
- Kernel mini dump

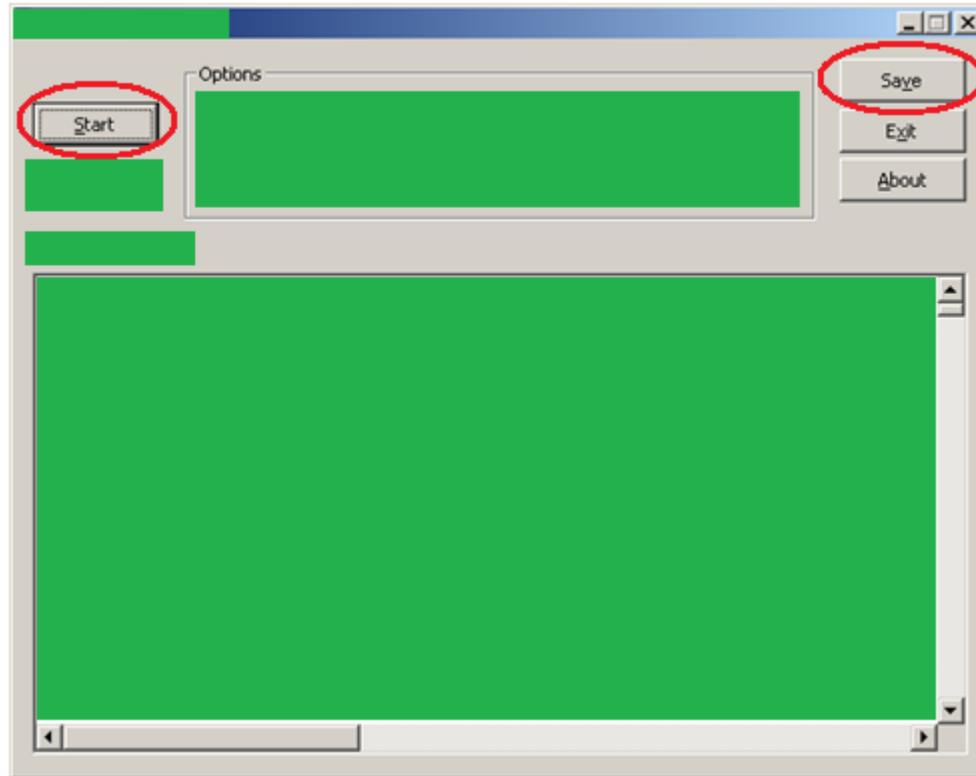
DumpCheck (...)



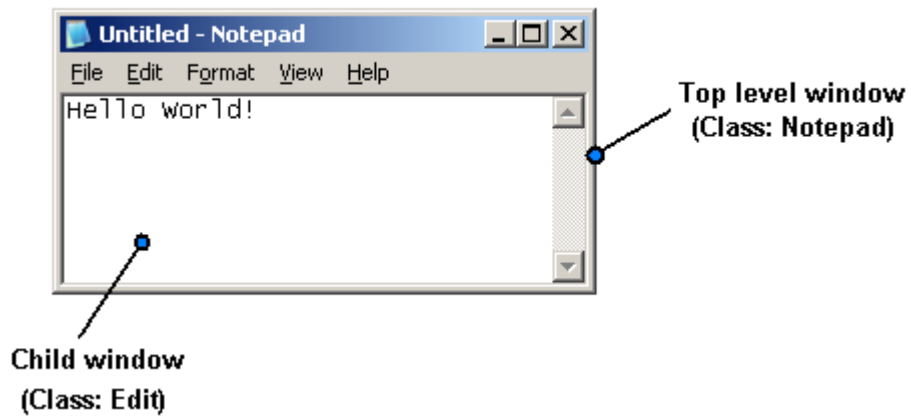
GUI Troubleshooting Tools

- SSSL Principle
- Intro: Windows
- WindowHistory
- Intro: Window Messages
- RepairCBDChain
- Intro: Message processing
- MessageHistory

Start, Stop and Send Log (SSSL)

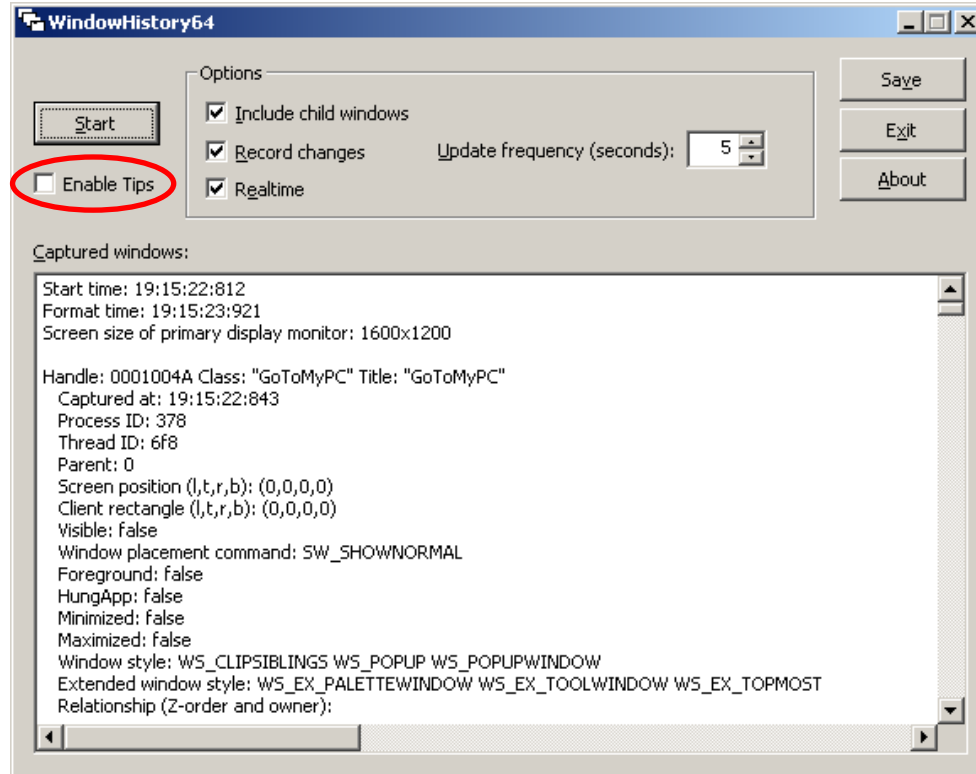


Intro: Windows

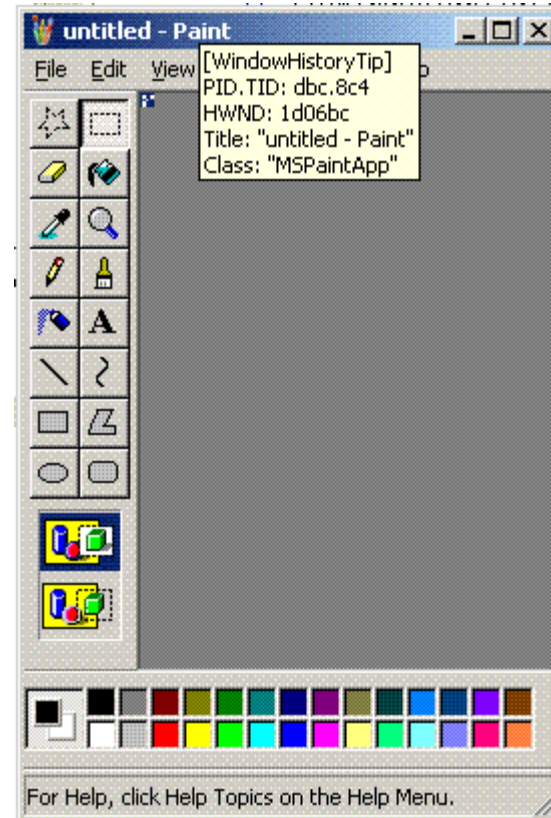
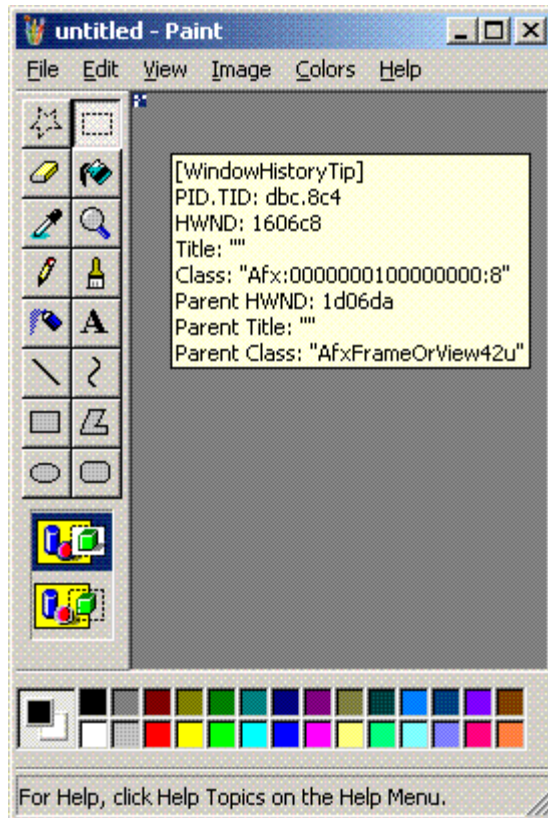


WindowHistory

- <http://support.citrix.com/article/CTX106985>
- <http://support.citrix.com/article/CTX109235> (64-bit)
- <http://support.citrix.com/article/CTX110775> (Mobile)



WindowHistory (...)



WindowHistory (.....)

Handle: 000505B4 Class: "Notepad" Title: "Untitled - Notepad"

Captured at: 21:55:14:633

Process ID: 908

Thread ID: a8

Parent: 0

Screen position (l,t,r,b): (302,277,712,644)

Position changed at 21:55:16:926 to (l,t,r,b): (-4,-4,1028,772)

Position changed at 21:55:19:790 to (l,t,r,b): (-32000,-32000,-31840,-31976)

Position changed at 21:55:24:607 to (l,t,r,b): (-4,-4,1028,772)

Position changed at 21:55:26:259 to (l,t,r,b): (302,277,712,644)

Visible: true

Window placement command: SW_SHOWNORMAL

Placement changed at 21:55:16:926 to SW_SHOWMAXIMIZED

Placement changed at 21:55:19:790 to SW_SHOWMINIMIZED

Placement changed at 21:55:24:607 to SW_SHOWMAXIMIZED

Placement changed at 21:55:26:259 to SW_SHOWNORMAL

Foreground: true

Foreground changed at 21:55:19:790 to false

Foreground changed at 21:55:24:607 to true

Foreground changed at 21:55:29:965 to false

HungApp: false

Minimized: false

Minimized changed at 21:55:19:790 to true

Minimized changed at 21:55:24:607 to false

Maximized: false

Maximized changed at 21:55:16:926 to true

Maximized changed at 21:55:19:790 to false

Maximized changed at 21:55:24:607 to true

Maximized changed at 21:55:26:259 to false

WindowHistory (.....)

Window style: WS_BORDER WS_CAPTION WS_CLIPSIBLINGS WS_DLGFRAME WS_GROUP WS_MAXIMIZEBOX WS_MINIMIZEBOX WS_OVERLAPPEDWINDOW WS_POPUPWINDOW WS_SIZEBOX WS_SYSMENU WS_TABSTOP WS_THICKFRAME WS_TILEDWINDOW WS_VISIBLE

Style changed at 21:55:16:926 to WS_BORDER WS_CAPTION WS_CLIPSIBLINGS WS_DLGFRAME WS_GROUP **WS_MAXIMIZE** WS_MAXIMIZEBOX WS_MINIMIZEBOX WS_OVERLAPPEDWINDOW WS_POPUPWINDOW WS_SIZEBOX WS_SYSMENU WS_TABSTOP WS_THICKFRAME WS_TILEDWINDOW WS_VISIBLE

Style changed at 21:55:19:790 to WS_BORDER WS_CAPTION WS_CLIPSIBLINGS WS_DLGFRAME WS_GROUP **WS_ICONIC** WS_MAXIMIZEBOX **WS_MINIMIZE** WS_MINIMIZEBOX WS_OVERLAPPEDWINDOW WS_POPUPWINDOW WS_SIZEBOX WS_SYSMENU WS_TABSTOP WS_THICKFRAME WS_TILEDWINDOW WS_VISIBLE

Style changed at 21:55:24:607 to WS_BORDER WS_CAPTION WS_CLIPSIBLINGS WS_DLGFRAME WS_GROUP **WS_MAXIMIZE** WS_MAXIMIZEBOX WS_MINIMIZEBOX WS_OVERLAPPEDWINDOW WS_POPUPWINDOW WS_SIZEBOX WS_SYSMENU WS_TABSTOP WS_THICKFRAME WS_TILEDWINDOW WS_VISIBLE

Style changed at 21:55:26:259 to WS_BORDER WS_CAPTION WS_CLIPSIBLINGS WS_DLGFRAME WS_GROUP WS_MAXIMIZEBOX WS_MINIMIZEBOX WS_OVERLAPPEDWINDOW WS_POPUPWINDOW WS_SIZEBOX WS_SYSMENU WS_TABSTOP WS_THICKFRAME WS_TILEDWINDOW WS_VISIBLE

Extended window style: WS_EX_ACCEPTFILES WS_EX_OVERLAPPEDWINDOW WS_EX_PALETTEWINDOW WS_EX_WINDOWEDGE

Relationship (Z-order and owner):

GW_CHILD: 000405C4

GW_HWNDFIRST: 00040032

GW_HWNDFIRST changed at 21:55:24:607 to 0001008A

GW_HWNDLAST: 00010090

GW_HWNDNEXT: 000904C2

GW_HWNDNEXT changed at 21:55:19:790 to 0001009C

GW_HWNDNEXT changed at 21:55:24:607 to 0004057A

GW_HWNDPREV: 000C0502

[...]

WindowHistory (.....)

Child windows:

Handle: 000405C4 Class: "Edit" Title: ""

Captured at: 21:55:14:633

Parent: 505b4

ID: f

Client rectangle (l,t,r,b): (-2,-2,400,319)

Position changed at 21:55:16:926 to (l,t,r,b): (-2,-2,1022,728)

Position changed at 21:55:26:259 to (l,t,r,b): (-2,-2,400,319)

Visible: true

Window style: WS_CHILD WS_CHILDWINDOW WS_VISIBLE WS_VSCROLL

Extended window style: WS_EX_CLIENTEDGE WS_EX_OVERLAPPEDWINDOW

Relationship (Z-order and owner):

GW_CHILD: 00000000

GW_HWNDFIRST: 000405C4

GW_HWNDLAST: 000505C6

GW_HWNDNEXT: 000505C6

GW_HWNDPREV: 00000000

GW_HWNDOWNER: 00000000

Handle: 000505C6 Class: "msctls_statusbar32" Title: ""

Captured at: 21:55:14:633

Parent: 505b4

ID: 401

Client rectangle (l,t,r,b): (0,0,402,20)

Position changed at 21:55:16:936 to (l,t,r,b): (0,0,1024,20)

Position changed at 21:55:26:259 to (l,t,r,b): (0,0,402,20)

Visible: false

Window style: WS_CHILD WS_CHILDWINDOW WS_CLIPSIBLINGS

Extended window style:

Relationship (Z-order and owner):

[...]

Intro: Window Messages

- Message ID (WM_xxx, EM_xxx, LB_xxx, ...)
- 2 parameters (wParam and lParam)

Example (from MSDN): **WM_LBUTTONDOWN**

wParam

MK_CONTROL	The CTRL key is down.
MK_LBUTTON	The left mouse button is down.
MK_MBUTTON	The middle mouse button is down.
MK_RBUTTON	The right mouse button is down.
MK_SHIFT	The SHIFT key is down.

lParam

The low-order word specifies the x-coordinate of the cursor. The coordinate is relative to the upper-left corner of the client area.

The high-order word specifies the y-coordinate of the cursor. The coordinate is relative to the upper-left corner of the client area.

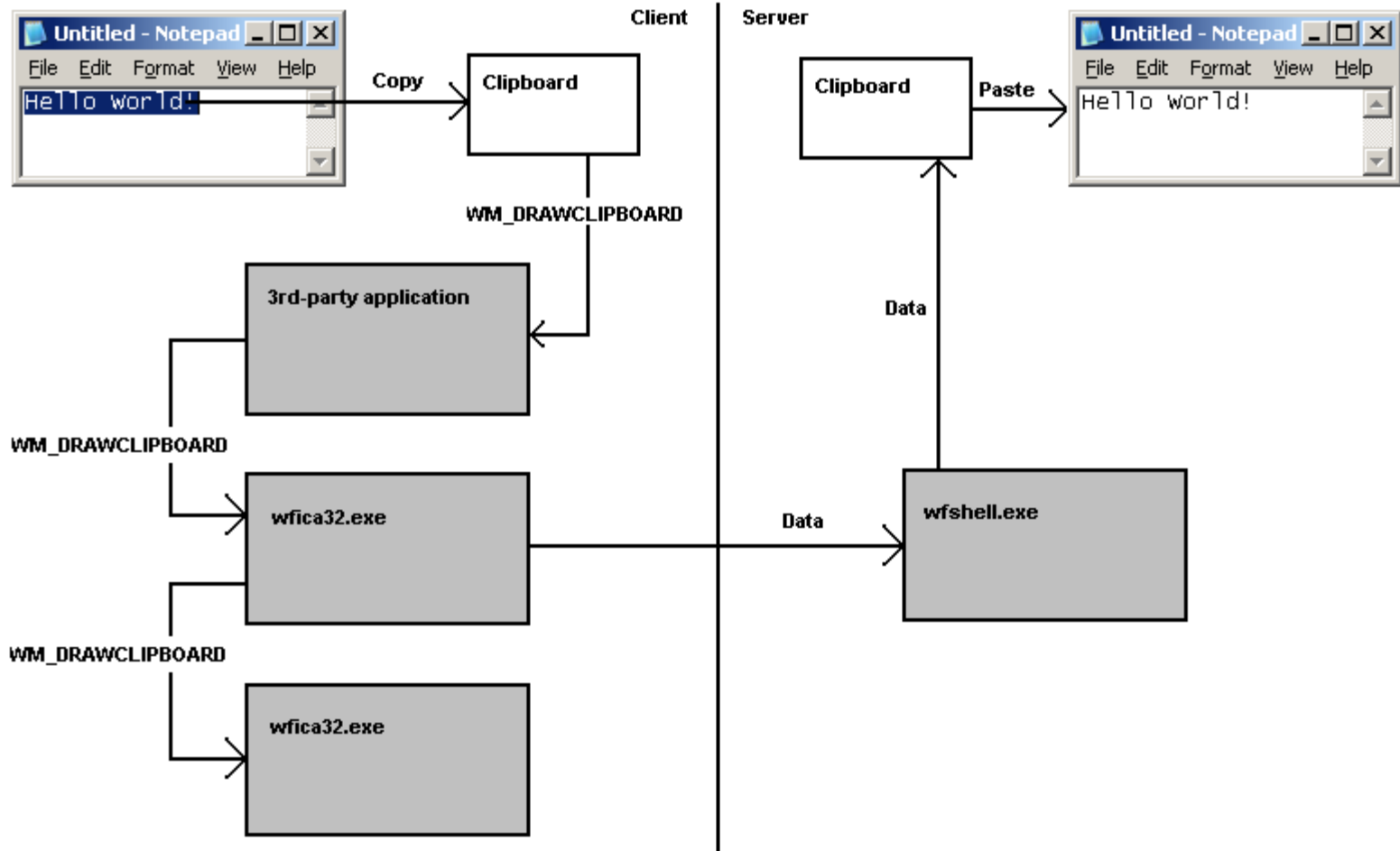
RepairCBDChain

- <http://support.citrix.com/article/CTX106226>
- <http://support.citrix.com/article/CTX109234> (64-bit)

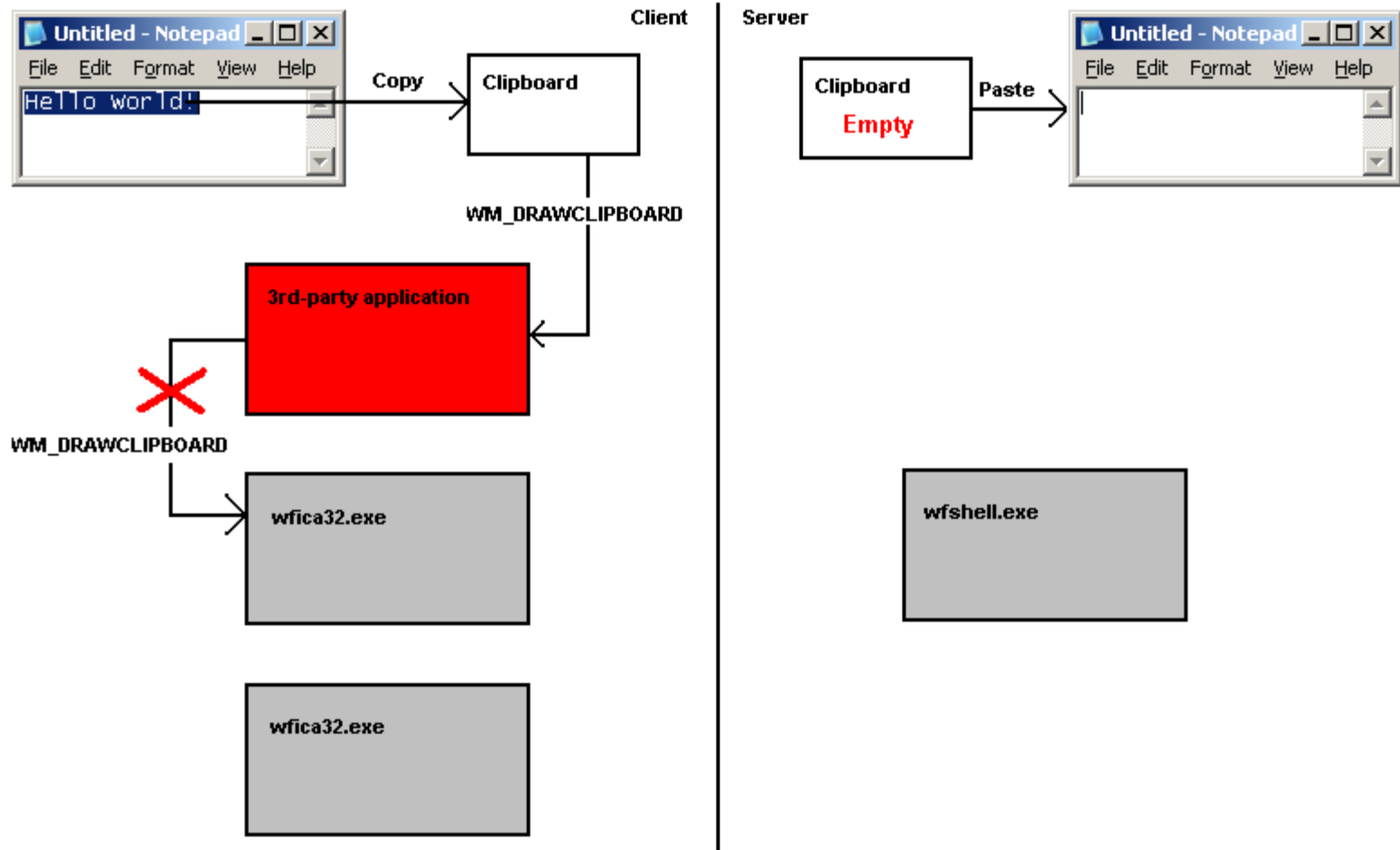
Immediately restores clipboard functionality on client and server

From 9.100 [#112636] this has been already implemented on client side
(not activated by default)

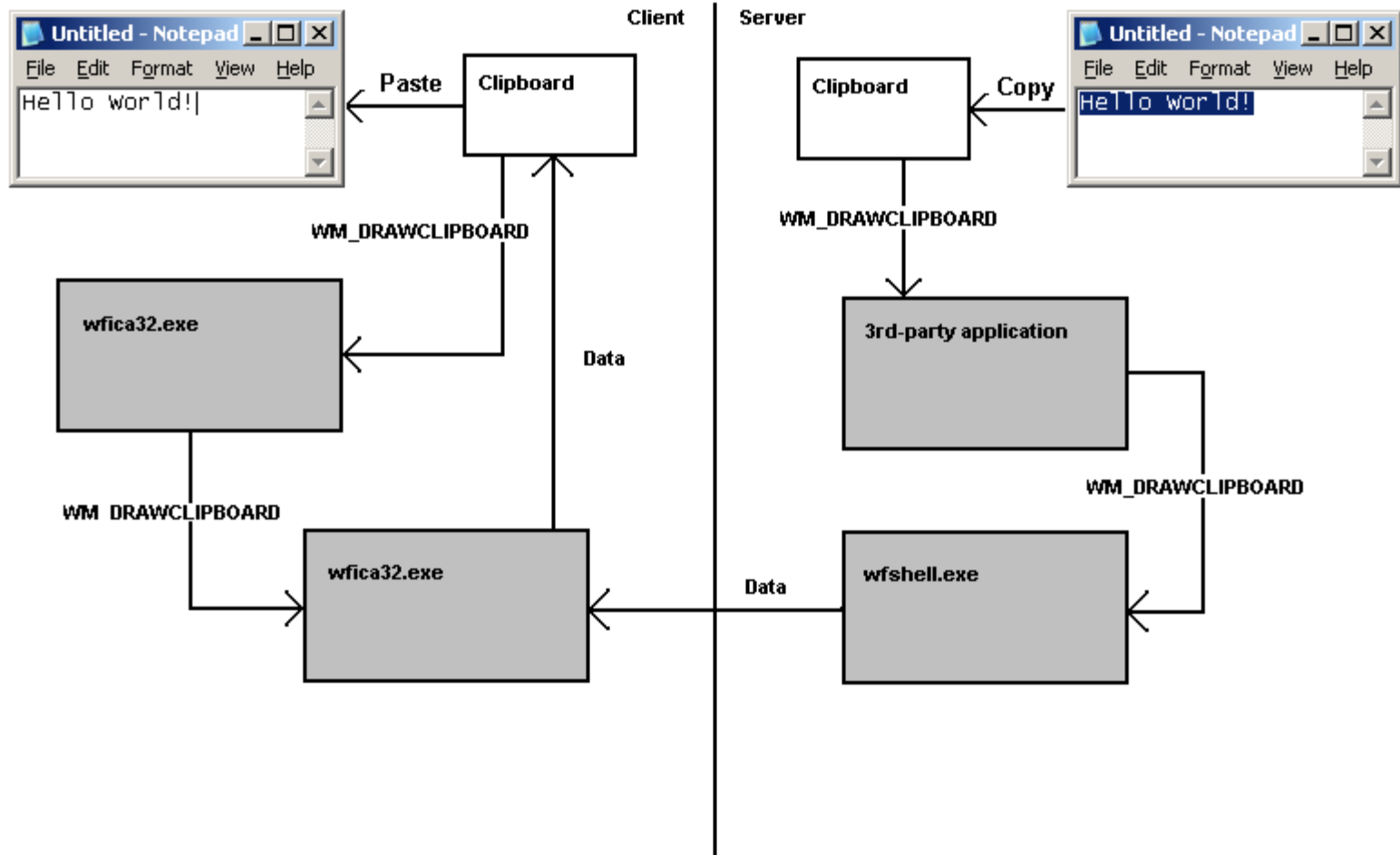
RepairCBDChain (...)



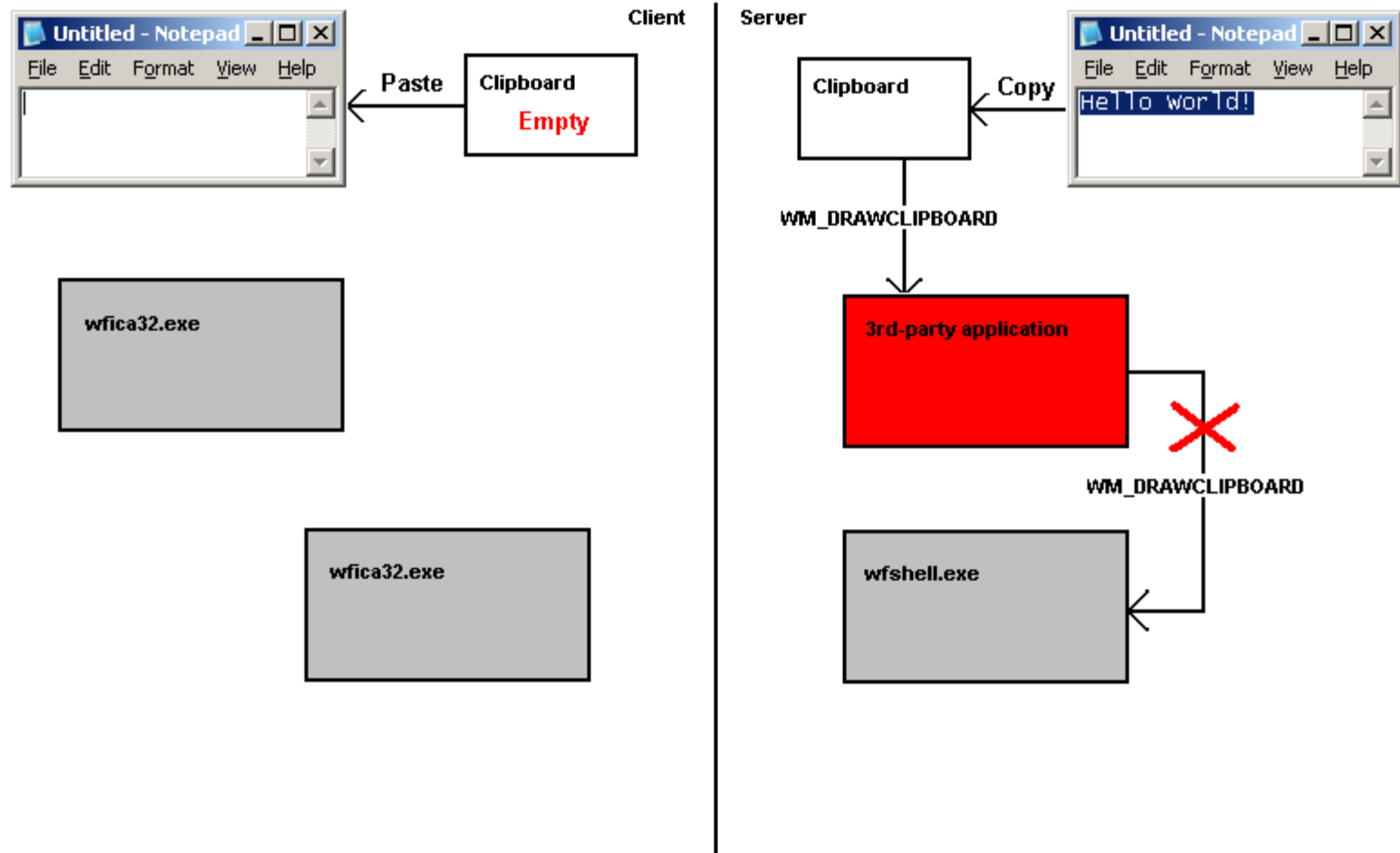
RepairCBDChain (.....)



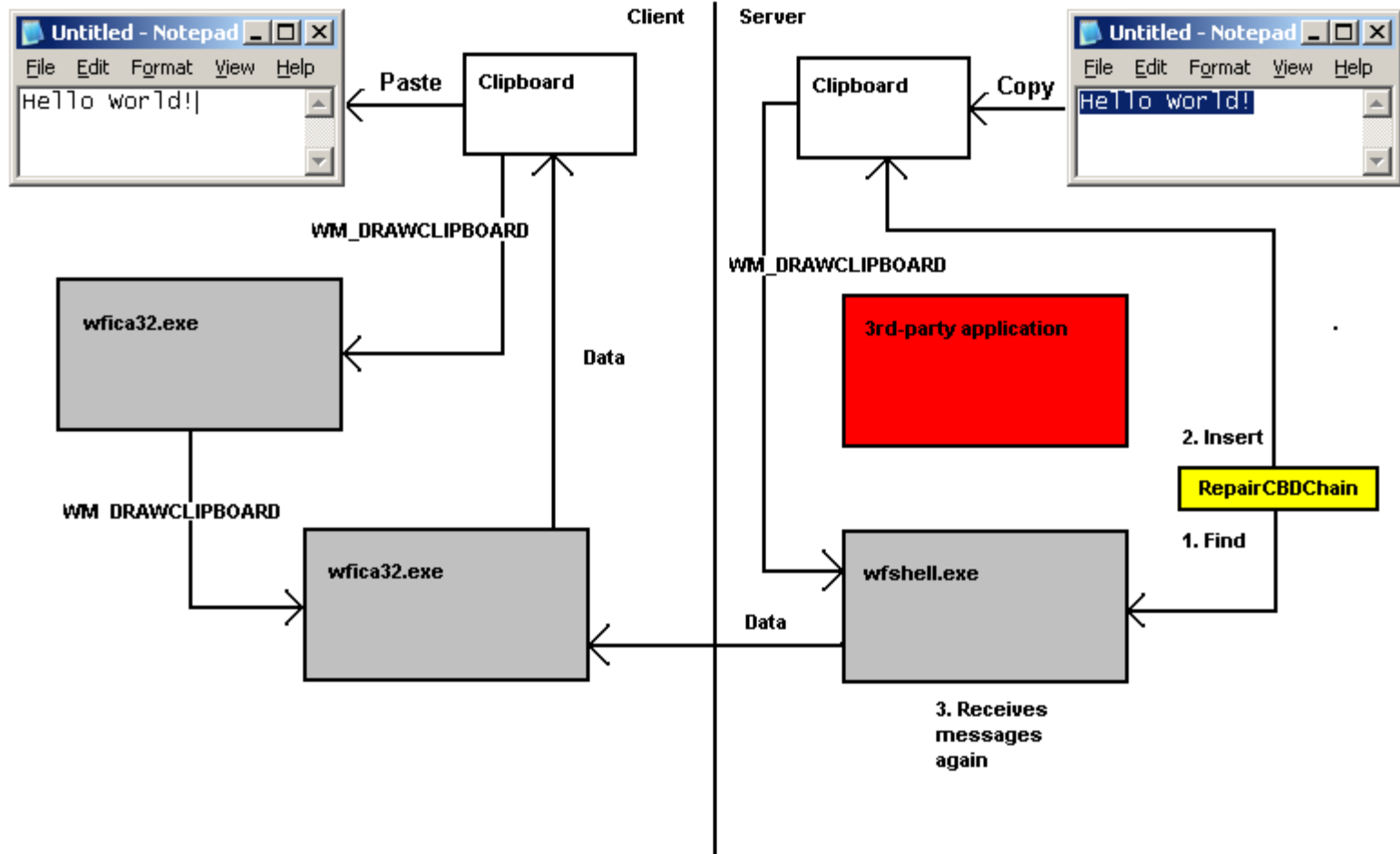
RepairCBDChain (.....)



RepairCBDChain (.....)



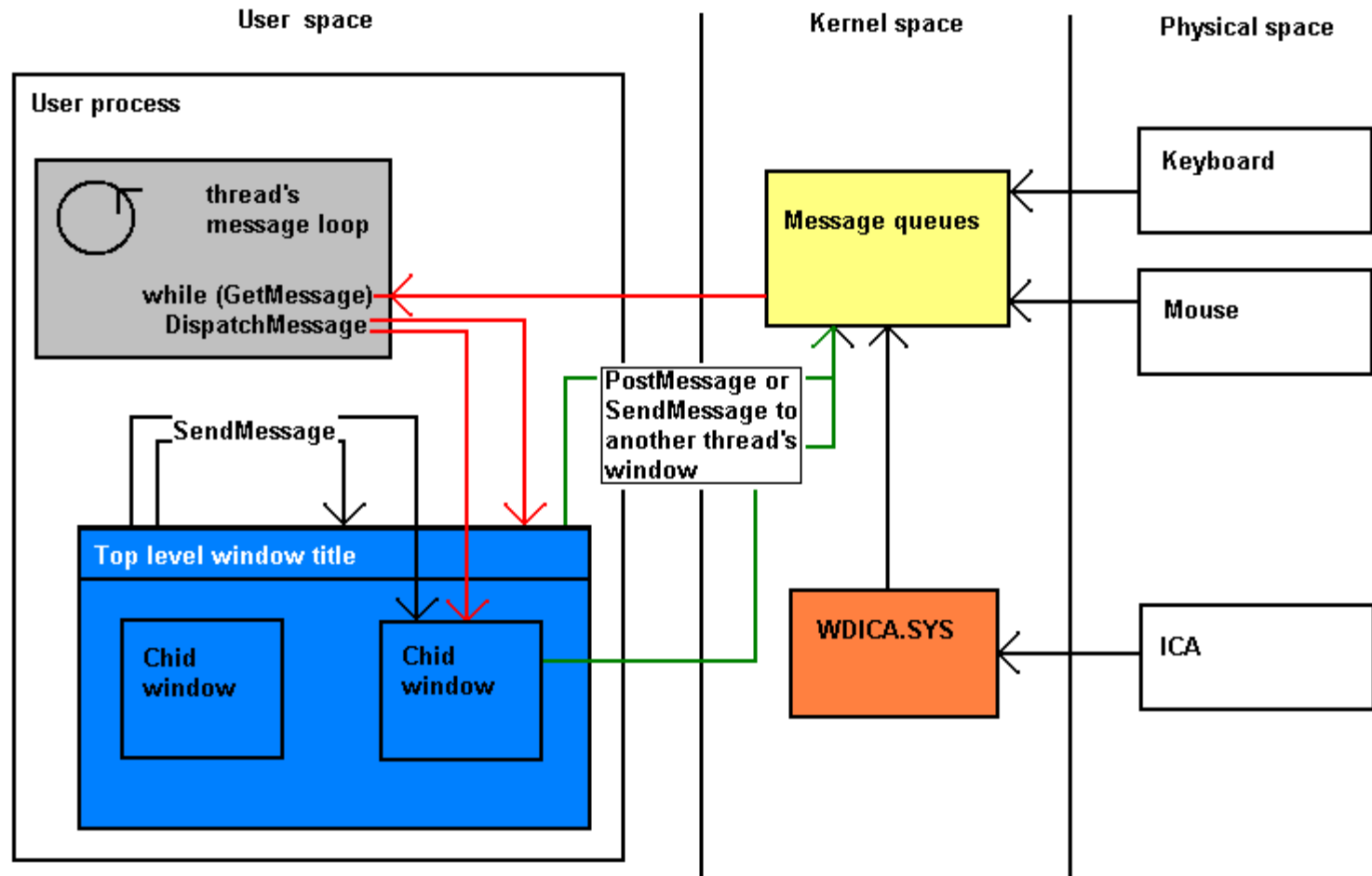
RepairCBDChain (.....)



Intro: Message Processing

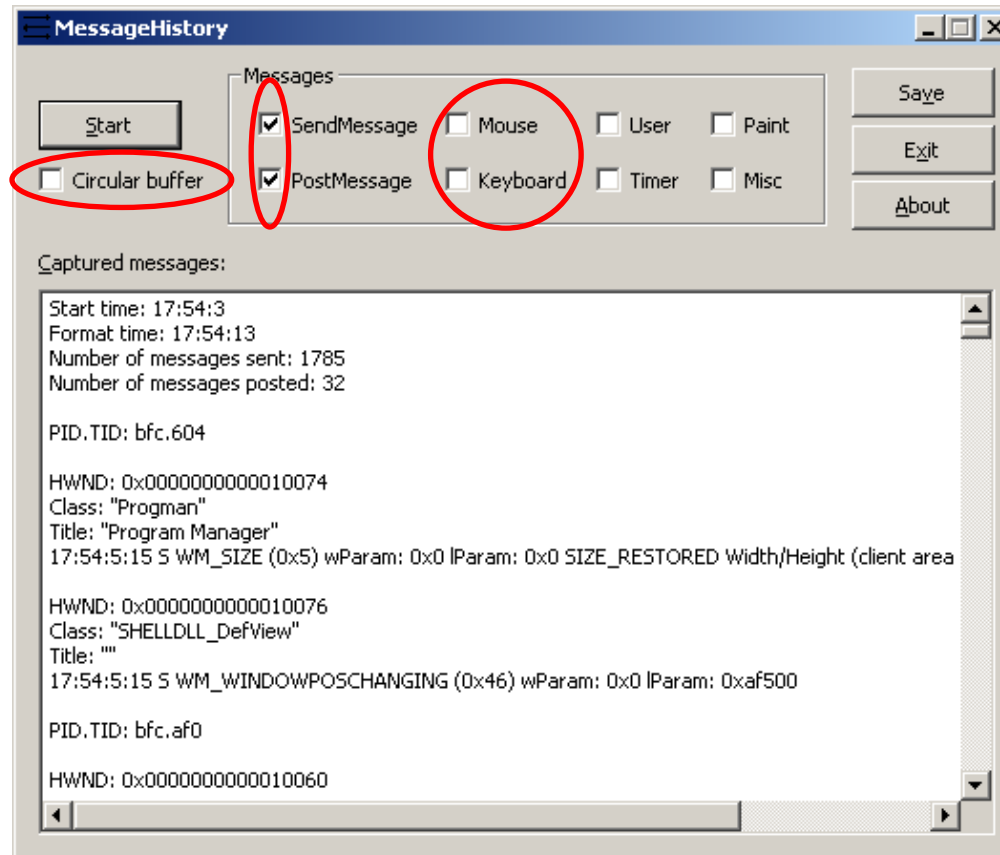
- Synchronous: window **sends** a message to itself or another window and waits for a return (**SendMessage**)
- Asynchronous: window **posts** a message to itself or another window and continues to execute its own code (**PostMessage**)

Intro: Message Processing (...)



MessageHistory

<http://support.citrix.com/article/CTX111408>



MessageHistory (...)

PID.TID: c20.c0c

HWND: 0x002501D4

Class: "wMFService006600CA004"

Title: "**Microsoft Outlook7718 - MetaFrame Presentation Server Client [SpeedScreen On]**"

17:58:53:671 S WM_WINDOWPOSCHANGING (0x46) wParam: 0x0 lParam: 0x12ef6c

HWND: 0x003F08DC

Class: "Transparent Windows Client"

Title: "^P ^b24 of 24 - Clipboard^b^SItem collected. - \\Remote"

17:58:53:671 S WM_NCCREATE (0x81) wParam: 0x0 lParam: 0x12ea78

17:58:53:671 S WM_NCCALCSIZE (0x83) wParam: 0x0 lParam: 0x12ea64

17:58:53:671 S WM_CREATE (0x1) wParam: 0x0 lParam: 0x12ea78

17:58:53:671 S WM_SIZE (0x5) wParam: 0x0 lParam: 0x230087 SIZE_RESTORED Width/Height (client area):
135/35

17:58:53:671 S WM_MOVE (0x3) wParam: 0x0 lParam: 0x48b05b7 Left/Top: 1463/1163

17:58:53:671 S WM_SHOWWINDOW (0x18) wParam: 0x1 lParam: 0x0 Window in being shown

HWND: 0x004E0332

Class: "WFClip"

Title: "WFClip"

17:58:53:484 S **WM_DRAWCLIPBOARD** (0x308) wParam: 0xd0aa0 lParam: 0x0

HWND: 0x0094036E

Class: "TWI Link"

Title: ""

17:58:53:671 S WM_WINDOWPOSCHANGING (0x46) wParam: 0x0 lParam: 0x12ef6c

MessageHistory (.....)

18:8:3:125 P **WM_KEYDOWN** (0x100) wParam: 0x10 lParam: 0x2a0001 Virtual key code: VK_SHIFT Previous key state: "up before" Repeat count: 1 Scan code: 0x2a

18:8:3:359 P **WM_KEYDOWN** (0x100) wParam: 0x48 lParam: 0x230001 Virtual key code: VK_H Previous key state: "up before" Repeat count: 1 Scan code: 0x23

18:8:3:359 P **WM_CHAR** (0x102) wParam: 0x48 lParam: 0x230001 Character code: 0x48 'H' Previous key state: "up before" Transition state: "pressed" Repeat count: 1 Scan code: 0x23

18:8:3:437 P **WM_KEYUP** (0x101) wParam: 0x48 lParam: 0xc0230001 Virtual key code: VK_H Repeat count: 1 Scan code: 0x23

18:8:3:484 P **WM_KEYUP** (0x101) wParam: 0x10 lParam: 0xc02a0001 Virtual key code: VK_SHIFT Repeat count: 1 Scan code: 0x2a

18:8:6:484 P **WM_KEYDOWN** (0x100) wParam: 0x90 lParam: 0x1450001 Virtual key code: **VK_NUMLOCK** Previous key state: "up before" Extended key Repeat count: 1 Scan code: 0x45

18:8:6:578 P **WM_KEYUP** (0x101) wParam: 0x90 lParam: 0xc1450001 Virtual key code: **VK_NUMLOCK** Extended key Repeat count: 1 Scan code: 0x45

18:8:7:156 P **WM_KEYDOWN** (0x100) wParam: 0x90 lParam: 0x1450001 Virtual key code: **VK_NUMLOCK** Previous key state: "up before" Extended key Repeat count: 1 Scan code: 0x45

18:8:7:218 P **WM_KEYUP** (0x101) wParam: 0x90 lParam: 0xc1450001 Virtual key code: **VK_NUMLOCK** Extended key Repeat count: 1 Scan code: 0x45

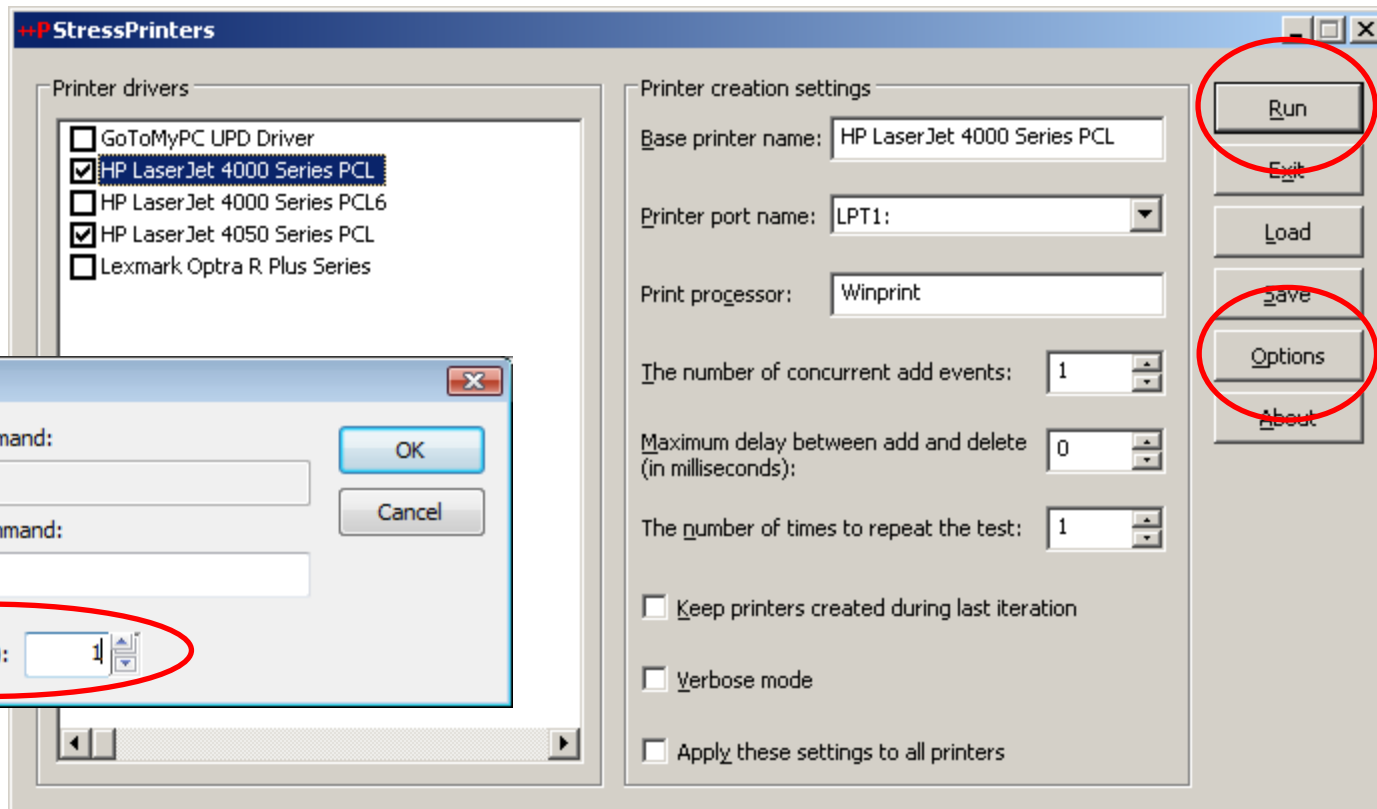
Printing tools

- StressPrinters

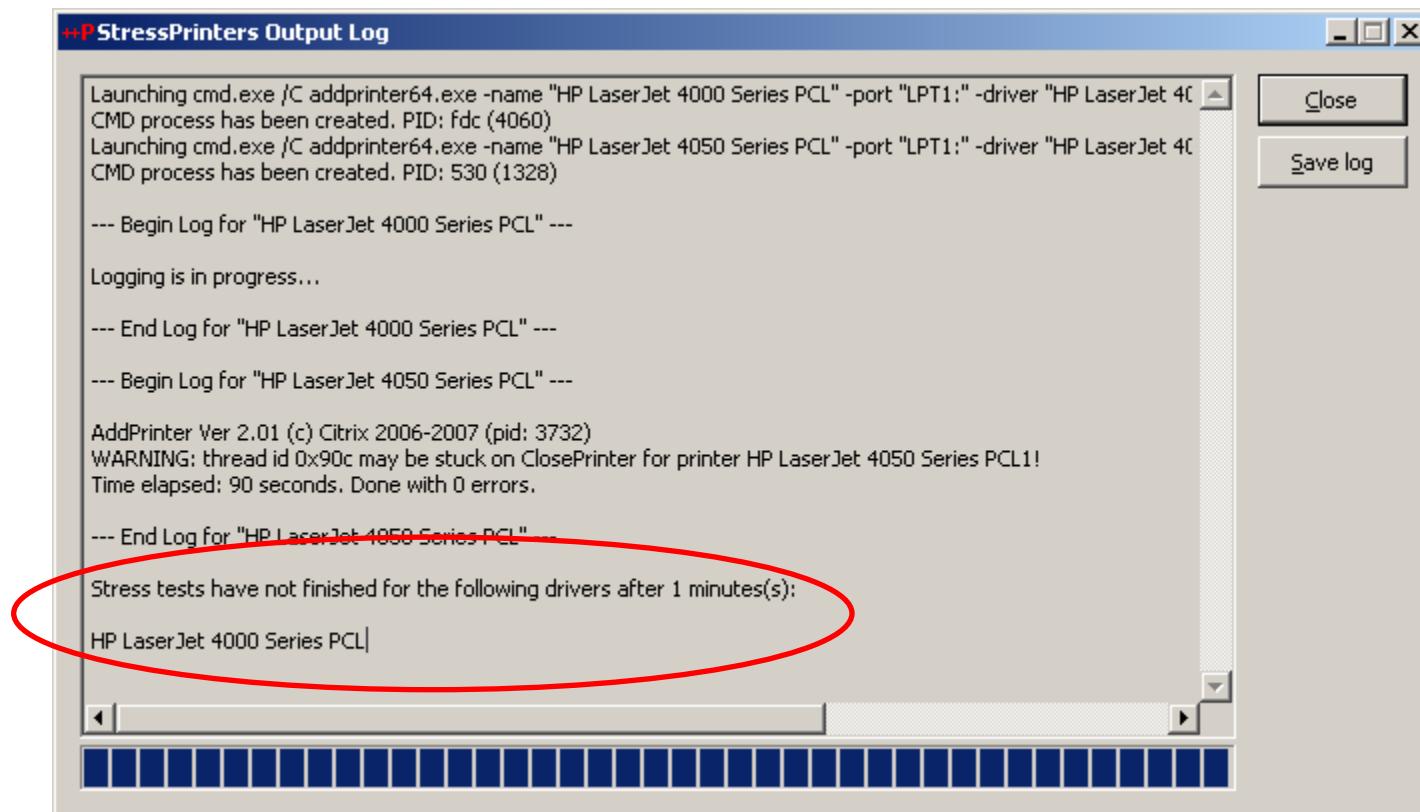
StressPrinters

StressPrinters for 32-bit and 64-bit platforms

<http://support.citrix.com/article/CTX109374>



StressPrinters (...)



Miscellaneous tools

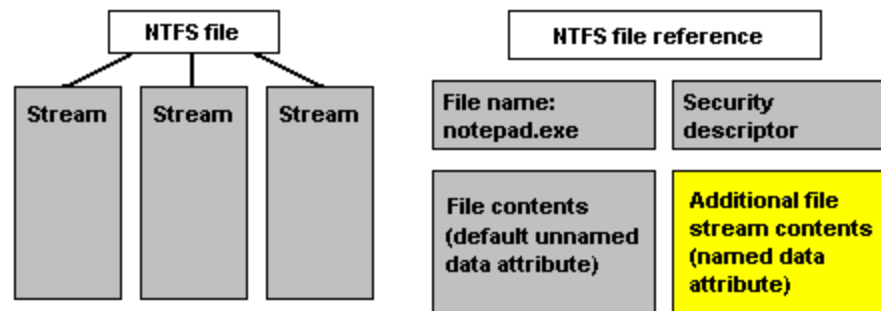
- ADSCleaner

ADSCleaner

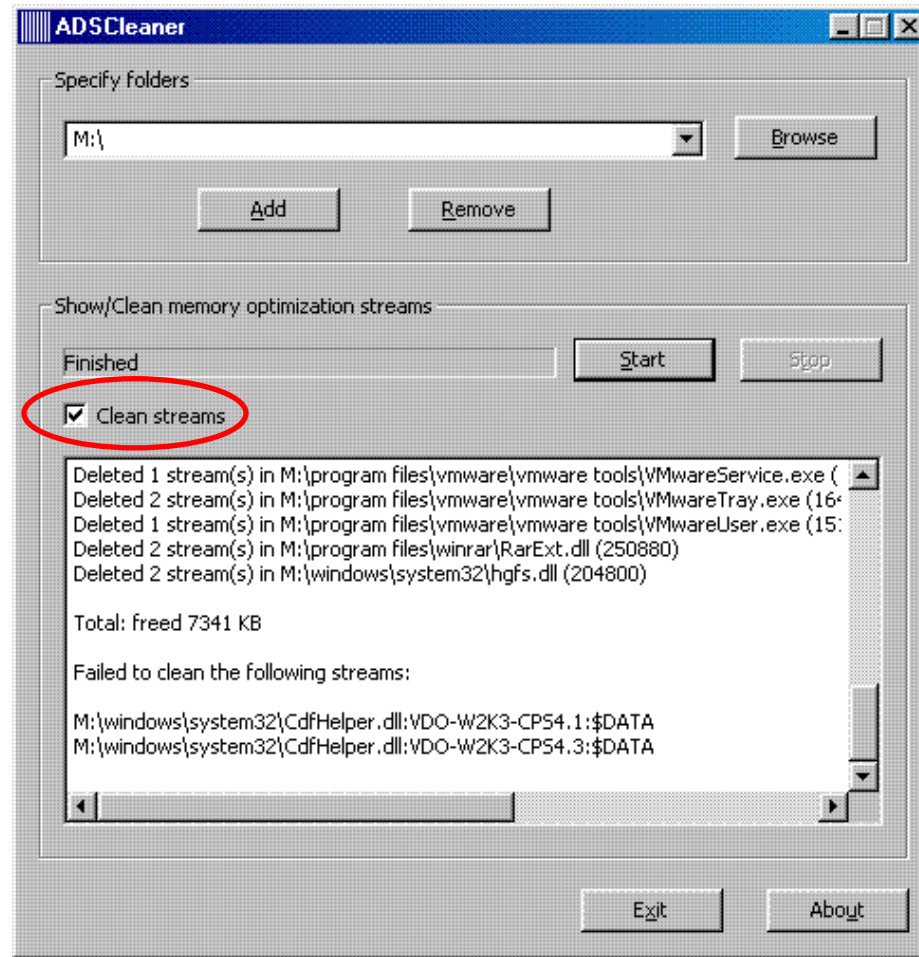
- <http://support.citrix.com/article/CTX108542>
- <http://support.citrix.com/article/CTX109602> (64-bit)

Lists and (optionally) cleans file streams created by Citrix memory optimization code

File streams (attributes)



ADSCleaner (...)



Suggested Reading

[Memory Dump Analysis Anthology, Volume 1](#)

(ISBN-13: 978-0-9558328-0-2)

Windows® Debugging Notebook: Essential Concepts, WinDbg
Commands and Tools

(ISBN-13: 978-1-906717-00-1 Forthcoming: July, 2008)

Crash Dump Analysis for System Administrators

(ISBN-13: 978-1-906717-02-5 Forthcoming: August, 2008)

DebugWare: The Art and Craft of Writing Troubleshooting Tools

(ISBN-13: 978-0-9558328-3-3 Forthcoming: September, 2008)

Questions?



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