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REVISION HISTORY

Revision	Revision Date	Reason for Revision/Change Request	Revised By
000	18May12	Initial Release	S. Pletzer

1. Purpose

The purpose of this document is to describe how the EPIC Shell was implemented.
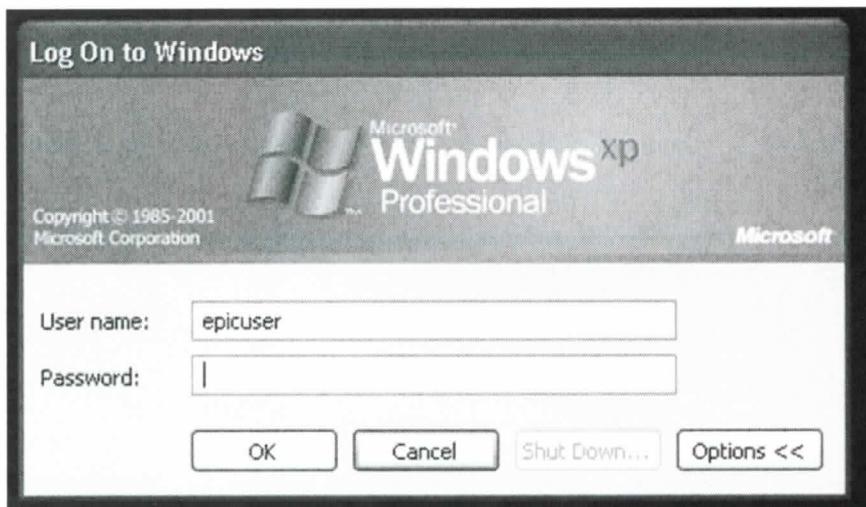
2. Scope

3. Definitions

Shell	Software used to access features of the operating system (Windows XP) such as viewing tasks (e.g. ClearView) and running and closing applications.
Windows Registry	A place to store application settings for Windows and software that runs on Windows.
Windows API	A set of functions provided by windows that control the interactions between software and the Windows desktop manager.
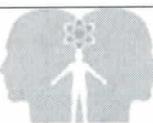
4. Specification

4.1. The EPIC Shell uses Windows API calls that are completed compatible with Windows XP and Windows 7.

4.2. The default Windows logon mechanism is used to access the shell, when the username and password is entered, the Shell is opened after the user logs in:

4.3. The shell can be configured for individual logins by following the instructions in IT-011.

4.4. The shell starts for a particular user automatically by setting Shell in the Windows Registry.

Key	HKCU\ Software\Microsoft\Windows NT\CurrentVersion\Winlogon
Name	Shell
Value	C:\Windows\Shell.exe (our application)

Type   String (REG_SZ)

4.5. The shell launches as a task bar application that fits the width of the screen. It configures windows to fill the screen size minus the size of the taskbar when not in Auto-hide mode.

The Windows API call used to adjust the working area of the screen is called SystemParametersInfo, SPI_SETWORKAREA.   More documentation can be found by searching Microsoft for that function call.
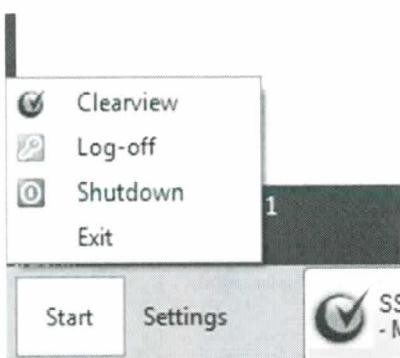
The shell also attaches to the SystemEvents.DisplaySettingsChanged event to ensure it maintains the full width of the screen.

4.6. There are no options to close out of the shell; it only displaces a taskbar and the Windows background.

4.7. The Task Manager is disabled using a registry key:

Key	HKCU\ Software\Microsoft\Windows\CurrentVersion\Policies\System
Name	DisableTaskMgr
Value	0 to allow access, 1 to disable access
Type	32 bit value (REG_DWORD)

4.8. The only options for the shell are to launch ClearView, Log-off, shutdown, or edit the settings. It cannot be closed otherwise. Exit is only down to administrator accounts.
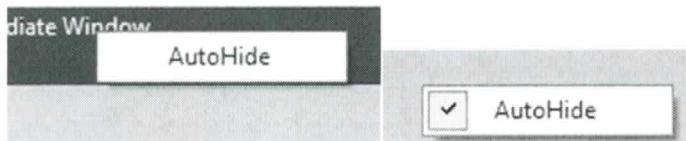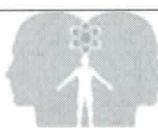

System keys are captured by the shell and some are ignored. This is done using a low level Windows event hook. This is done by calling SetWindowsHookEx with a hook type of KEYBOARD_LL. More information can be found by searching the Windows API for that call.
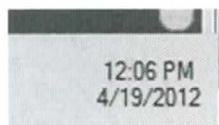
Alt+Tab, Alt+F4, Alt+ESC, CTRL+Shift+ESC are all captured and cancelled. The Windows key will bring up the Start menu just like in the default shell. Pressing CTRL+ALT+DEL will display the Settings menu for changing the shell settings.

4.9. The start button in the lower left corner is shown above.

4.10.   The taskbar can be optionally hidden by right clicking the taskbar and checking the Auto-hide option:

4.11.   The time is extracted from Windows and will reflect whatever cultural settings are set by the administrator.

4.12.   As shown in 4.9, Exit is only displayed to administrators for convenience. Log-off and shutdown can be used. ClearView opens the program specified in the Settings dialog.

4.13.   In the settings dialog, "Set desktop background" can be checked, this calls the Windows API function SystemParametersInfo with the option SPI_SETDESKWALLPAPER. It also sets the desktop background in the registry and directs the Wallpaper setting to %UserProfile%\clearview.bmp.

Key	Software\Microsoft\Windows\CurrentVersion\Policies\System
Name	Wallpaper
Value	C:\Document and Settings\epicuser\clearview.bmp
Type	String (REG_SZ)

4.14.   Access to printer configuration can be done by logging in as EPICAdministrator where the shell is not present.

4.15.   Access to network configuration can be done by logging in as EPICAdministrator where the shell is not present.

5. Reference

IT-011, ClearView System Installation and Operational Verification

6. Attachments

N/A