Image requirements for InduSoft v7.0 Runtime on Embedded Systems

List of CEView Files and WindowsCE Image Settings for CEView

Introduction

This document describes the Operating System Image requirements in order to run InduSoft Web Studio Runtime, EmbeddedView and CEView on the Windows Embedded devices, including Windows XP/7 Embedded and Windows CE/Mobile

The information in this document is useful to configure a third-party WinCE or WinEmbedded device (for example: HMIs, PC-Panel) in order to run InduSoft runtime products. Also, it provides the necessary information for OEM (hardware manufacturers) to configure the WinCE/XPe image of their devices in order to take the advantage of all tools provided by InduSoft.

Note:
- CEView is the runtime program, which executes the applications developed with InduSoft Web Studio, on the WinCE operating system.
- EmbeddedView is the runtime program, which executes the applications developed with InduSoft Web Studio, on the Windows Embedded operating systems like Windows XP Embedded and Windows 7 Embedded.

Versions and Platforms

The table below shows the WinCE platforms supported by each version of CEView:

CEView version	WinCE version	Processor Type
v3.0	v2.11 / v2.12	ARM, MIPS, PPC, SH3, SH4, X86
V4.1	v2.11 / v2.12	ARM, MIPS, PPC, SH3, SH4, X86
V4.4	v3.00	ARM, MIPS, MIPSFP, PPC, SH3, SH4, THUMB, X86
V5.1	v3.00	ARM, MIPS, MIPSFP, PPC, SH3, SH4, THUMB, X86, Pocket-ARM, Pocket-MIPS, Pocket-SH3
V5.1+SP2	v3.00	ARM, MIPS, MIPSFP, PPC, SH3, SH4, THUMB, X86, Pocket-ARM, Pocket-MIPS, Pocket-SH3
	V4.00 (.NET)	ARMV4, ARM4I, ARM4T, MIPSII, MIPSII_FP, MIPSIV, MIPSIV_FP, SH3, SH4, X86
V5.1+SP3	v3.00	ARM, MIPS, MIPSFP, PPC, SH3, SH4, THUMB, X86, Pocket-ARM, Pocket-MIPS, Pocket-SH3, Pocket2002-ARM, Pocket2002-X86
	V4.00 (.NET)	ARMV4, ARM4I, ARM4T, MIPSII, MIPSII_FP, MIPSIV, MIPSIV_FP, SH3, SH4, X86
	V4.10 (.NET)	ARMV4, ARMV4I, ARMV4T, MIPS16, MIPSII, MIPSII_FP, MIPSIV, MIPSIV_FP, SH3, SH4, X86
V6.x	v3.00	ARM, MIPS, MIPSFP, PPC, SH3, SH4, THUMB, X86, Pocket-ARM, Pocket-MIPS, Pocket-SH3, Pocket2002-ARM, Pocket2002-X86

	V4.00 (.NET)	ARMV4, ARMV4I, ARMV4T, MIPSII, MIPSII_FP, MIPSIV, MIPSIV_FP, SH3, SH4, X86, Pocket2003-ARMV4
V7.0	V5.0, v6.0, v7.0	ARMV4I, MIPISII, MIPISII_FP, MIPISIV, MIPISIV_FP, Pocket2003-ArmV4, SH4, SmartPhone2004-ArmV4, x86

> ✎ **Note:** The CEView program compiled for WinCE v5.0 (.NET) is supported by WinCE v5.x and WinCE v6.0.

The table below shows the Windows Embedded platforms supported by each version of EmbeddedView :

EmbeddedView version	Operating System	Notes
V7.0	Windows Embedded Standard (XPe,7)	ARM, MIPS, PPC, SH3, SH4, X86
	Windows Embedded POSReady (XPe)	x86
	Windows Embedded Enterprise (XPe, 7)	x86, x64 (Win7 only)

Architecture

InduSoft Web Studio is the workbench used to configure the application (Development Station), under WinNT/2000/XP. CEView is the runtime software that runs the applications (configured with InduSoft Web Studio) under the WinCE operating system.

On Windows Embedded (XPe, 7), you should be able to run both the Runtime version of InduSoft Web Studio and the EmbeddedView, which is the small footprint runtime version specifically for Windows Embedded XP and 7.
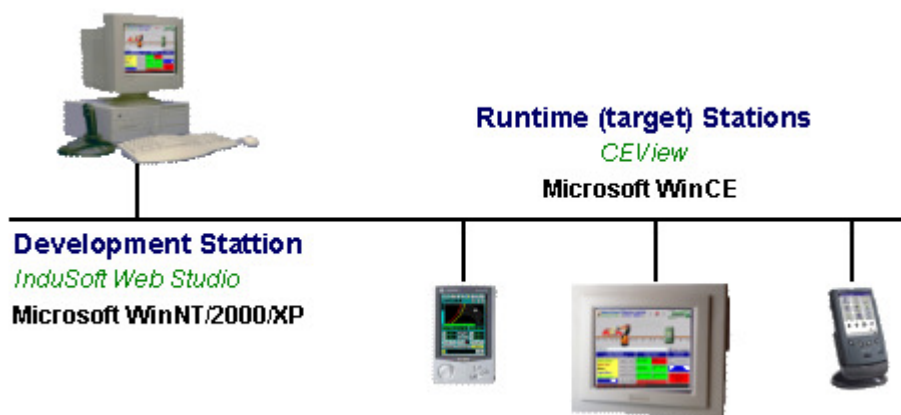
When installing InduSoft Web Studio on the development station (XP/Server 200x/7), the CEView and EmbeddedView files are stored in the *…\InduSoft Web Studio\Redist\<OS Version>\<Platform>* folder, where:

▪ **<OS Version>** = WinCE version. The files for WinCE v5, 6 and 7 are stored in the *\WinCE 5.0* sub-folder. The files for Windows XP Embedded are stored in the *\WinEmbedded* subfolder..
▪ **<Platform>** = Processor type (for WinCE)

For instance, the CEView runtime files for Geode, Atom, and other x86-based processors WinCE5 (or up) based devices, are stored in the *…\InduSoft Web Studio\Redist\WinCE 5.0\x86* folder. The files for XScale, PAx27x and other Arm-based processors (except for Mobile) are stored in the *…\InduSoft Web Studio\Redist\WinCE 5.0\ArmV4I* folder

InduSoft provides tools to easily download the CEView files (such as the application files) to the WinCE device (target station) using a serial link (RS232), and ActiveSync connection (usually through USB) or a TCP/IP (for example: Ethernet) link – refer to InduSoft Web Studio Technical Reference Manual for further information. The files can also be copied manually to the WinCE device – in this case, it is necessary to adjust some settings manually (for example, edit a few INI files) before downloading the files to the WinCE device. The next topics provide further information about the configuration of these files.

> ✎ **Note:** It is recommended that you use the InduSoft tools to download files from the development station to the target (WinCE) devices. However, if you cannot use InduSoft tools to transfer files to the WinCE device (for example: if you are using a USB interface), we suggest you use the Microsoft ActiveSync utility to transfer files to the WinCE devices.

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WinCE device image – Requirements and Comments

The modularity of WindowsCE allows each hardware manufacturer to build an image of the operating system with the specific files and services supported by the WinCE device. This section describes the minimum requirements to run CEView on the WinCE device, such as recommended actions to take advantage of all functionalities of CEView.

❑ **Minimum System Requirements**

▪ Internet Explorer: when this program is present at the image, the file called URLMON.DLL will be present as well. This DLL is a requirement for our Visualization features to work.

▪ Enable the support for VBScript on the MS Windows CE device, so CEView will be able to execute the scripts configured in the VBScript language on the device. When VBScript engine is enabled in the image, the file **VBScript.dll** must be available in the \Windows directory.

✎ **Note:** When adding VBScript to the image, make sure to have the MsgBox feature enabled as well. This is not a requirement but more of a recommendation since several users use this feature on their projects.

▪ Store the following windows files in the \Windows folder:

  ➢ ATLCE400.DLL
  ➢ MFCECE400.DLL
  ➢ OLECE400.DLL.
  ➢ ATL90.DLL
  ➢ MFC90U.DLL
  ➢ MSVCR90.DLL
  ➢ COREDLL.DLL
  ➢ COMMDLG.DLL
  ➢ OLE32.DLL
  ➢ OLEAUT32.DLL
  ➢ WINSOCK.DLL
  ➢ WININET.DLL
  ➢ URLMON.DLL

✎ **Note:** Some of these DLLs are mandatory for CEView to run on the WinCE device. However, the following DLLs are also installed by InduSoft: ATLCE400, MFCECE400.DLL, OLECE400.DLL, ATL90.DLL, MFC90U.DLL, MSVCR90.DLL. This means that even if these files are not present at the image, the Runtime will work.

❑ **Recommended System Requirements**

✎ **Note:** Some of these requirements may be mandatory, depending on the features used in your application.

▪ DCOM: even though CEView may run even if the image does not have DCOM at all, we highly recommend adding it, otherwise some features, such as OPC communications, will not work.

When enabling DCOM, add the following functions in the windows OLE32.DLL file, which must be stored in the *\Windows* folder:

– **CoGetMalloc()**
– **CoFileTimeNow()**
– **CoRegisterClassObject()**
– **CoRevokeClassObject()**

Finally, when adding DCOM, consider enabling both Local and Remote DCOM. This is not a mandatory requirement but it would allow the user to take advantage of some features that use this interface.

▪ We strongly recommend having a way to make the Window Registry persistent. So, if the user change the device's IP address, configure a web server root directory, or any other operating system interface, these changes will be saved and restored the next time that the system starts up.

▪ Add the embedded Web Server (IIS or HTTP Server from Microsoft) on the WinCE device. When doing that, make sure that the Home Directory folder (web root) can be configured by the user or, at least, is the *\<non-volatile>* folder. Then all files stored on the WinCE device can be reached by HTTP Client (for example: Web browser).

▪ Sometimes the user may need to register a file. In order to do that, we recommend having the windows program called **regsvrce.exe** in the *\Windows* folder.

▪ It is recommended that you add a text editor (for example: WordPad for WinCE) on the WinCE image to edit configuration files on the WinCE device, when necessary.

▪ In order to use the WinCE device as an InduSoft Web Thin Client, its Web browser needs to support ActiveX controls. The **Internet Explorer 5.5 (or higher) for Windows CE** supports Microsoft ActiveX controls. The other requirement is that the Windows folder needs to have the ATL90.DLL, MFC90U.DLL, MSVCR90.DLL libraries.

▪ **CEServer.exe**: this is the InduSoft program that should be installed on a *\<non-volatile>* folder in the device and there must be a way to configure it to be started automatically when booting up the system. This program allows the user to install both the runtime and project files as well as license the device. You can find it in the InduSoft Web Studio development station (XP/Server 200x/7), in the *…\InduSoft Web Studio\RedistWinCE 5.0\<Platform>\BIN* folder.

Windows XP Embedded device image – Requirements and Comments

The modularity of Windows Embedded allows each hardware manufacturer to build an image of the operating system with the specific files and services supported by the WinXPe device. This section describes the minimum requirements to run EmbeddedView on the WinXPe device, such as recommended actions to take advantage of all functionalities of EmbeddedView.

❑ **Minimum System Requirements**

Software:

Component	Description
Internet Explorer v7.0 or higher	Web Browser used for Web Thin Clients.
COM and DCOM	These components are used for many tasks of IWS. The DCOMCNFG.exe program should also be available to configure the DCOM security settings, when necessary.
MFC, OLEDB, and ATL	Operating system libraries (classes) used by IWS.
Regsvr32.exe	Utility to register controls

TCP/IP Drivers	Used for communication with remote stations and also for communication between some tasks in the local station.
IIS	Internet Information Services, including the Web Server (HTTP Server). This component is necessary if the application should work as a Web Server for remote Thin Clients, via HTTP.
TAPI	Telephone Application Program Interface libraries. This component is necessary if the application should use any modem or telephone-based feature.
Device Drivers	Hardware-specific drivers for any peripheral available in the computer, such as communication boards, serial ports, USB ports, and so forth.
.Net Framework 3.5.1	If this component is not present, it will be installed during the installation process. Please keep in mind that this a component that requires a large amount of disk space (around 200 MB)

Hardware:

The better the hardware configuration, the higher the performance and autonomy for data storage for the application. The following table describes the minimum requirement for typical applications, but some settings might need to be upgraded depending on the application's needs. For instance, depending on the size (bytes) of the application files and depending on the period of time required for the local history data, you might need to upgrade the capacity of the Storage Card.

Component	Description
Processor	x86 1GHz or higher
RAM	1 GB RAM or higher
Storage Card (typically CF Card or SSHD)	1GB or higher
Microsoft-compatible pointing device	mouse, trackball, or touch-screen
Ethernet Port	It is required at least one valid Ethernet port on the device
Serial Port	In case the user wants to communicate with PLC through a Serial connection

❑ **Recommendations**

▪ Some WinXPe devices come with a feature called "**Embedded Enhanced Write Filter**". Basically, this feature allows the user to save a state of the machine and, whenever you reboot the system, it will start on this saved state. So, if you create files, including historical ones, such as Alarm. Events and Trend History, these files will be lost.
So, you should carefully consider if this feature would be beneficial for most of the users. At this time, should you would need to decide between enabling or not this feature, we recommend not enabling it.

Map of Revision

Revision	Author	Date	Comments
A	Andre Bastos	May 11, 2011	First version