What is Embedded? And Some Notes on WES/XPe Licensing.

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Products using WES/XPe cannot ship until a license agreement is signed and the license keys are integrated into the image. Since licensing is handled by distributors, it is not a topic I get involved with. There have been a few developers who have been trying to understand the basic licensing process and who to talk too. Some recent feedback and discussions with a few developers pointed out the lack of basic information and confusion about licensing WES/XPe. Here are few high level notes on licensing, *but details do change so obviously talk to your distributor for the latest information.*

First let's answer a simple question: What is an Embedded System?
Embedded systems are not widely known to the public, but people use them every day. To help better understand how the licensing came to be and the basic premise behind the licensing wording, we need a basic definition of what an embedded system is. An embedded system is a dedicated or limited functioning computer, and these computers perform a single dedicated task like an ATM machine, airport check-in kiosks, cash registers, thermostats, automotive fuel injectors, remote controls, flat panel TVs, microwave ovens, DVRs, mobile phones, game consoles, industrial controllers, navigation units, MP3 players, or slot machines, just to name a few. General purpose PCs, laptops, or servers that run a multitude of games, office software, multimedia, and development software are <u>not</u> embedded systems, but the PC hardware can be and often is used as the basis to create a dedicated, embedded system.

Embedded systems are built with 8-bit micro CPUs up to the latest 64-bit, multi-core solutions. They are programmed in a variety of programming languages and can consist of simple firmware, kernels, or full up operating systems. For developers, the embedded market is rich with hardware and software solutions from a variety of vendors. There is always a make-versus-buy option available, and the PC is one of the most popular off-the-shelf platforms to create an embedded system. Starting the late '80s, industrial PCs found a home for developers who wanted to purchase off-the-shelf hardware/software solutions, and one of the more popular software platforms was MS-DOS. As a desktop operating system, MS-DOS offered a well known and popular platform to write applications that directly interacted with hardware. Because of the availability of engineering talent familiar with the popular desktop operating systems, desktop operating systems like Microsoft Windows and Linux became the popular OS choices for embedded systems in the late '90s. Back then, developers were using all different flavors of Windows – Windows 3.11, 95, NT, and CE.

WES/XPe Licensing
In the 1980's, Microsoft didn't have a focus on the embedded market because general purpose desktop PCs where such a strong revenue maker. Once it was realized that there was a market for MS-DOS in a dedicated system, Microsoft started allocating sales resources to the embedded market. Microsoft has since introduced variants of the desktop operating systems for the embedded market. If we forget MS-DOS 5.0 and Windows 3.1 ROM version, Windows CE was the first embedded operating system to offer a small, ROMable, 32-bit Windows OS available for embedded systems. Windows NT Embedded soon followed, which was later succeeded by Windows XP Embedded / Windows Embedded Standard 2009.

To address some of the basic questions about licensing, here are a few things to know:

- There is a special group in Microsoft that focuses on OEM sales for embedded systems. They are separate from the desktop/server sales group.

- A company can license the desktop operating systems like Windows Server and Windows XP Pro for Embedded Systems. The embedded licensing agreement restricts usage of these products to embedded systems. A company cannot use them to build a general purpose PC platform.

- Some products have a long lifecycle of support, but product support doesn't last forever. Please check the Microsoft website or a Microsoft authorized distributor for more information about the support lifecycle for a particular OS.

- Pieces of Microsoft Office can be used in an embedded system to support the dedicated application. Microsoft Office cannot be fully utilized because of restrictions in the license agreement. This is to make sure there is a clear delineation between the two sales channels.

- Even though they're the same product technically, Windows XP Pro broken down into 12,000 components, Windows XP Embedded and Windows Embedded Standard 2009 are considered different products. If you already ship Windows XP Embedded, you will have to update the license agreement, buy the new toolkit, receive new stickers, and receive a license key for Windows Embedded Standard 2009.

- The full release tools are needed to ship a WES/XPe runtime image. The evaluation versions don't support full released image builds.

- When the license agreement is signed and your company purchases stickers, a yellow card will come with the stickers. The card contains the 5x5 alpha-numeric number that must be entered into the configurations/SLX Run Time Image settings. The Yellow card is titled and worded as follows: **"IMPORTANT NOTICE – DO NOT LOSE THIS FLYER" " THIS IS THE RUNTIME KEY:"**

You do NOT enter the sticker serial numbers nor the 5x5 number that comes in the box with the Windows Embedded Studio tools.

- For WES 2009 and XP Embedded, once the licensing key has been entered, the resulting image will already be activated. No need to connect for online stamping or activation. You only need 1 PID number, and you can duplication the image. WES/XPe makes production of the embedded system easier. You just need to place the license sticker on the unit and record the serial number.

- Evaluation/time-bombed images cannot be re-stamped. You must enter the PID, rebuild, and redeploy.

The information above is supplied AS-IS without warranty. As mentioned earlier, licensing terms and products do change. Microsoft authorized distributors are the best place to get answers to licensing questions - http://www.microsoft.com/windowsembedded/partners. There are several distributors around the world. Please contact your distributor for the latest information.

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