

Windows 8 – The Embedded Edition as “Technical Preview”



The Metro UI tile interface is now also available under WES8. Shells or applications can be started directly via the Shell Launcher.

“Windows Embedded Standard 8,” the embedded version of the Windows 8 operating system, has been available as a “Community Technology Preview,” also referred to as WES8-CTP, since March 2012. Initial tests indicated significant improvements in terms of integration of device drivers, access protection, branding and new touch-enabled user interface options.

Microsoft launched the new Windows 8 in September 2011. In addition to the conventional PC and notebook market, the new operating system is also targeting the tablet consumer market. The “Touch First” operating philosophy required for tablets and implemented in the form of the “Metro-UI” tile interface caused quite a stir. Microsoft has now initiated a new era specifically for this target market: Windows 8, the successor to Windows 7, supports not only the Intel x86/x64 architecture, but also runs on ARM-based System-on-Chip (SoC) solutions.

“What benefits does the new WES8 version hold for automation technology?”

The Windows Embedded versions are generally scalable, i.e. the scope of the operating system can be tailored to the requirements of the hardware and special application scenarios. The question is whether WES8 also offers an option for generating images for ARM-based platforms? And what benefits does the new WES8 version hold for automation technology?

The publicly available WES8-CTP already gives a very robust impression: Images can be produced for the x86/x64 platforms, but not yet for ARM. The size of the images and therefore the space requirement, e.g. on flash media, has grown continuously in the previous version. In WES7 it had reached 2.2 GB, although admittedly in a comprehensive configuration with almost all components selected, including: .NET Framework 2 and 3.5, multi-language package, Internet Explorer IE10, remote desktop (RDP), diagnostics tools and write filter. Although the space requirement is no longer that relevant, in view of the fact that memory prices have continued to fall over recent years, it is nevertheless reassuring that, with the same components selected, the space requirement for WES8-CTP is exactly the same, despite new features such as Metro-UI as the shell.

“The tool chain for generating the images has remained unchanged.”

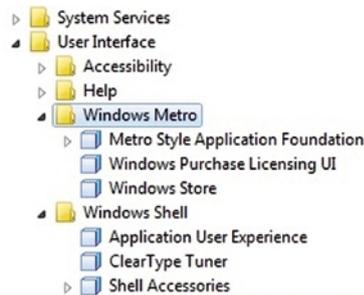
The tool chain for generating the images has remained unchanged: The “Image Configuration Editor” (ICE) is used to specify the required operating system functions, including configuration of default settings such as “Write Filter not active by default.” In return ICE provides a so-called Answer file in XML format. As in WES7, the “Image Building Wizard” (IBW) uses this Answer file on a bootable USB stick for generating an executable image directly on the target hardware. The basic procedure has remained unchanged, as has IBW. However, the “Image Configuration Editor” offers significant benefits. Previously under the WES7 ICE, any third party OEM components that were required had to be integrated in the target image via xcopy from an OEM directory. With the new module designer WES8 now offers straightforward integration of OEM components: The user can generate modules that copy or execute files, install drivers or modify the registry.

All indications of the Windows operating system can be eliminated from the operating cycle through branding: The logon screen can be customized, as can the shell and the shutdown procedure. In the latest version, in combination with UEFI boot during the start phase – and during the boot process – any indication of Microsoft, in the form of text or graphics, can be suppressed and optionally be replaced with a custom graphic. A lack of reference to Windows in embedded devices therefore does not necessarily mean that a non-Microsoft OS is used: The device manufacturer may simply have tailored the OS to their requirements.

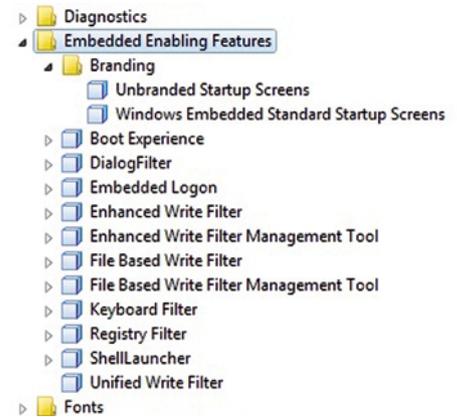
“The Image Configuration Editor now also makes the Metro UI shell available as a component.”



On new hardware with SecureBoot and Trusted Module Platform (TMP) Windows 8 offers significantly improved security mechanisms.



The "Image Configuration Editor" now also makes the Metro UI shell available as a component. Shells or applications can be started directly via the Shell Launcher.



Compared with the full Windows 8, the "embedded enabling features" offer the main embedded functions in addition to scalability. The new "Unified Write Filter" (UWF) consolidates the existing filters.

In the past the boot time was around 45-55 seconds. UEFI boot now enables a default image to be launched directly in the Metro UI tile interface within 15 seconds, from where the familiar Win32 shell can be accessed. In addition, WES8-CTP allows alternative startup behavior to be specified: The "Shell Launcher" enables any other application to be started as a shell. Different shells can be specified for different users and user groups. All familiar filters, such as the keyboard or dialog filters for suppressing Windows dialogs, are still available. A new gesture filter is able to intercept touch tasks, if required.

"The new Unified Write Filter consolidates the existing filters."

Under WES7 the "Enhanced Write Filter" (EWF), "File based Write Filter" (FBWF) and "Registry Filter" were available. For the purpose of write protection the EWF blocked access to the CF card at the partition level, for example. The FBWF offered more flexibility and allowed write protection exceptions at the directory or file level. In WES8-CTP the new "Unified Write Filter" (UWF) consolidates all existing filters and offers new options: In the past, the EWF did not release the overlay memory – a virtual memory in which modifications of files/folders made during runtime are preserved – after modifications were deleted. The UWF now deals with the release automatically. The registry exclusion function of the UWF enables direct write access to the registry, without the need to use an overlay: This feature makes automatic handling of "DayLight Switching" (DST switching) much easier. In the past it was not straightforward to implement a solution for switching between summer and winter time: A dedicated application had to detect the time leap on the locked and protected system and correct the time during system startup before all other applications. The UWF now deals with this. For configuration access the UWF offers a local and remotely accessible MMC-Snap-In and a script-capable WMI interface.

"Initial tests confirmed that the embedded WES8-CTP version runs on all Windows 7 computers."

Windows 8 runs on all Windows 7 computers and requires no new hardware. Initial tests also confirmed this for the WES8-CTP embedded version. The Metro-UI options perfectly support the multi-touch systems now entering the automation market. Win32 applications can continue to be installed under WES8-CTP in the normal way. For Metro UI applications Microsoft currently only offers the marketplace route for the tablet consumer world. Marketplace apps are subject to rules and stability tests in order to ensure a positive user experience in terms of stability and performance. However, automation devices generally have no direct web access, so that other distribution mechanisms will have to be used.

The "Technical Preview" version of WES8 already gives a very robust and sophisticated impression at this early stage. The next few months should prove interesting.

"The current TwinCAT 2 and TwinCAT 3 versions have already been successfully tested on the new WES8 platform. Our customers therefore benefit from early technology access."

Stefan Hoppe, TwinCAT
Product Manager at
Beckhoff and "Microsoft
Most Valuable Profes-
sional" (MVP) for
Windows Embedded

