Secure Digital Card Boot Support in Windows Embedded Standard 7 SP1

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Windows® Embedded Standard 7 SP1

Many embedded devices can use a Secure Digital High Capacity (SDHC) card as their primary system drive. These devices boot the operating system stored on the card. Windows® Embedded Standard 7 Service Pack 1 (SP1) provides embedded devices the ability to boot the Standard 7 operating system from an SDHC type card if the hardware and BIOS are configured accordingly.

Contents

Introduction

SD Cards are compact in size and available in a number of class types, enabling a range of embedded devices that are compact, robust and often task specific. A growing number of embedded devices can use a Secure Digital High Capacity card as their primary system drive, hosting the Standard 7 operating system in addition to applications and data. Windows® Embedded Standard 7 Service Pack 1 provides boot support to embedded devices using the SDHC type card. This white paper covers the use of SDHC cards as the primary system drive, and the process to add SDHC boot support to a Standard 7 SP1 image. Topics include:

- Why use a SDHC card as the primary system drive?

- Adding SDHC card boot support to a Standard 7 SP1 image.

Why Use a SDHC Card as the Primary System Drive?

There is increasing interest and demand to use SD cards as the primary system drive. Windows Embedded Standard 7 SP1 supports the SDHC type card, applicable to embedded device categories that include:

- **Thin clients** in new form factors with reduced cost components.

- **Industrial automation devices** that are durable for use in rough environments.

- **Specialized devices** that can be updated by the OEM changing the SDHC card inside the device itself.

Better Storage Options

SDHC cards provide an attractive storage option for a growing number of embedded device applications and form factors. Reasons include:

- SDHC cards can replace hard drives in embedded devices and reduce the size and number of overall moving parts.

- SDHC cards can fit within a small, compact embedded device form factor.

- SDHC cards can fit low voltage device applications.

- SDHC cards are more shock/vibration tolerant than other drive types.

Write Filter Support

Windows Embedded Standard 7 operating system uses write filters to help protect embedded devices and make them more tamper proof. To reduce wear and tear on the SDHC card, it is recommended that developers use Write Filters with embedded devices that boot from an SDHC card.
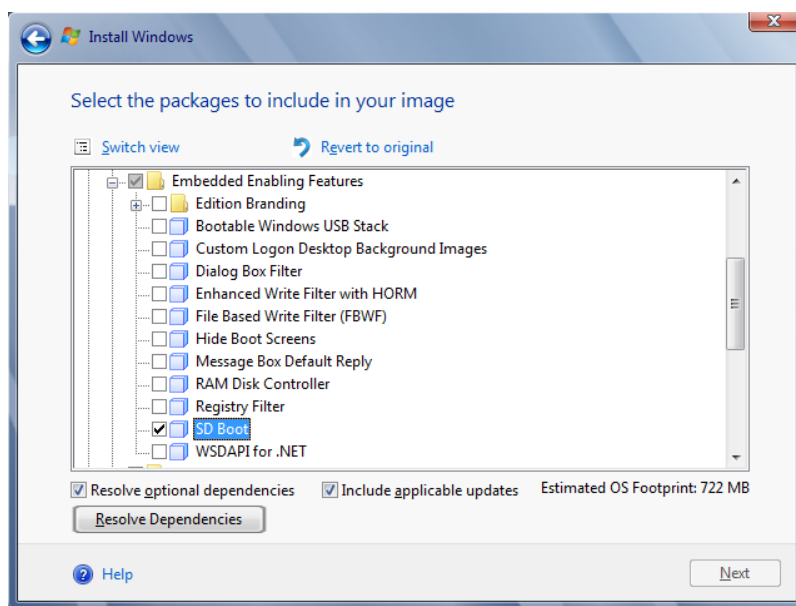
Disk Optimization Not Necessary

Disk defragmentation has long been an aid in hard disk usage and optimization, but these practices are not applicable to the SD card family that already has better random read performance. There is potential to damage an SD card from the application of any disk optimization procedure.

> **Important**: All disk optimization options such as disk defragmentation should be disabled for SDHC cards.

Adding SD Boot to the Standard 7 SP1 Image

Windows Embedded Standard 7 SP1 supports the SDHC card type on devices that have an SD host adapter and a BIOS that can boot the Standard 7 operating system on the card. Hibernation and crash dumps are not supported on devices that boot from SDHC cards. Developers can use the Image Build Wizard (IBW) or the Image Configuration Editor (ICE) to add SDHC card boot support to Standard 7 SP1 image. The process works as follows:

1. Start the IBW and connect it to the embedded device.

2. On the **Select the package to include in your image** page of the wizard, in the **Embedded Enabling Features** folder, select the **SD Boot** package option as shown in the following figure.

3. Select the packages to be included in the image build.

4. Ensure all dependency issues are resolved.

5. Complete the wizard.

> **Note:** Licensing terms do not allow SDHC card roaming between devices. To comply with these restrictions, OEMs place both the card and the reader inside the device case to restrict access.

Conclusion

Windows Embedded Standard 7 SP1 provides the ability for embedded devices to boot from SDHC cards

providing the OEM manufacturer supplies hardware with a SD host adapter and a BIOS that will boot the

Standard 7 operating system on the card.

For more information about Windows Embedded Standard 7 SP1, see:

Windows Embedded website: www.microsoft.com/windows/embedded/default.mspx

Additional Resources

Additional resources related to this topic include:

- About Write Filters in Windows Embedded: http://technet.microsoft.com/en-us/library/bb932158.aspx
- Build an Image Using Image Builder Wizard: http://msdn.microsoft.com/en-us/library/ff794312(WinEmbedded.1001).aspx
- Build Your First Windows Embedded Standard 7 Image: http://msdn.microsoft.com/en-us/library/ff794956.aspx
- Image Builder Wizard – Quick and Easy Embedded OS Creation – Part 1: http://blogs.msdn.com/b/embedded/archive/2009/09/08/image-builder-wizard-quick-and-easy-embedded-os-creation-part-1.aspx
- Support and Q&A for Solid-State Drives: http://blogs.msdn.com/b/e7/archive/2009/05/05/support-and-q-a-for-solid-state-drives-and.aspx

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