Windows® Embedded

Deploy Packages to Your Write Filter-Protected Embedded Devices Using Windows Embedded Device Manager 2011

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Windows® Embedded Device Manger 2011

Windows Embedded Device Manager 2011 extends the capabilities of Microsoft® System Center Configuration Manager 2007 to enable the centralized management of Windows Embedded devices, such as thin client, point-of-service (POS), and digital signage devices. Embedded devices are typically task-specific and present unique deployment, maintenance, and service challenges. Device Manager 2011 provides an extensible management solution for embedded devices that includes embedded device collections, the deployment of packages to write filter-protected devices, and the imaging of embedded devices using OEM device imaging solutions.

This white paper covers package deployment to write filter-protected embedded devices.

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Introduction

Windows® Embedded Device Manger 2011 enables the deployment of packages, including device configuration and software packages, to embedded devices. Device configuration items include Windows® Internet Explorer® settings, password settings, registry settings, and more. Software packages include security updates, antivirus definitions, malware definitions, and more. Device Manager 2011 offers the ability to manage write filters used on embedded devices so that the packages you deploy to embedded devices persist on the permanent storage media.

This white paper covers the following topics:

- Deploying packages to embedded devices

- Deploying packages to write filter-protected devices

- Managing write filters with Device Manager 2011

Deploying Packages to Embedded Devices

Device Manager 2011 enables the deployment of different types of packages to embedded devices. A package is a set of configuration items that is delivered to a collection of devices by either the Software Distribution feature or the Software Updates feature in Microsoft® System Center Configuration Manager 2007. Packages can contain one or more of the following:

- Device configuration items. See Table 1 for some common device configuration item types and their associated configuration items.

- An executable program or script.

- Files.

- Software updates. For example, security updates, antivirus definitions, and malware definitions.

- Individual commands.

The following table lists some common configuration item types and their associated configuration items.

Table 1: Embedded Device Configuration Item Types and Associated Configuration Items

Configuration item type	Associated configuration items
Internet Explorer settings	• Favorite name • Favorite URL • Favorite folder • Intranet site • Trusted site • Home page • Developer tools (Internet Explorer® 8) • Block popups
Password settings	• Minimum password length (in digits) • Invalid logon attempts • Password inactivity time (in minutes) • Enforce password history • Maximum passwords remembered
Registry settings	• Registry key • Value name • Data type • Value
Remote Desktop Connection settings	• File path • Host name • Port number • Domain • User name • Connect to console
Virtual private network (VPN) settings	• Name • Host name • Type • Wi-Fi settings • Network name/Service Set Identifier (SSID) • Authentication type • Encryption type • Extensible Authentication Protocol (EAP) type • Connection mode

Deploying Packages to Write Filter-Protected Devices

Some Windows Embedded devices are write filter-protected. Write filters help to secure such devices, but has presented administrative challenges. Device Manager 2011 addresses these challenges.

What Is a Write Filter?

Write filters are unique to Windows Embedded operating systems. They redirect writes to permanent media instead to temporary storage (a temporary disk partition or RAM). The device's permanent media is protected and maintained in its original imaged state. Any changes, including packages deployed to the device during its operation, are erased after a restart.

The Package Deployment Process

Device Manager 2011 provides the ability to manage write filters so that packages deployed to embedded devices persist on the device.

The package deployment process occurs in three steps:

1. The write filters used on embedded devices are disabled, as shown in the following figure.
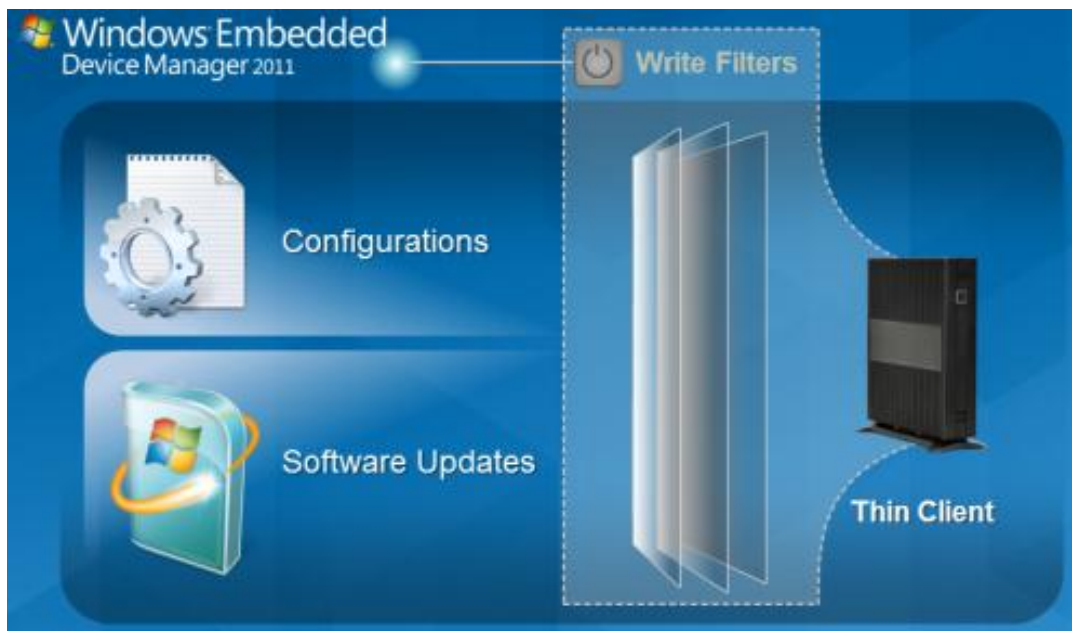

Figure 1. Write filters are disabled

2. The packages are deployed and run on the embedded devices while the write filters are disabled, as shown in the following figure. While being serviced, the device is locked so that only an administrator can log on to the device.
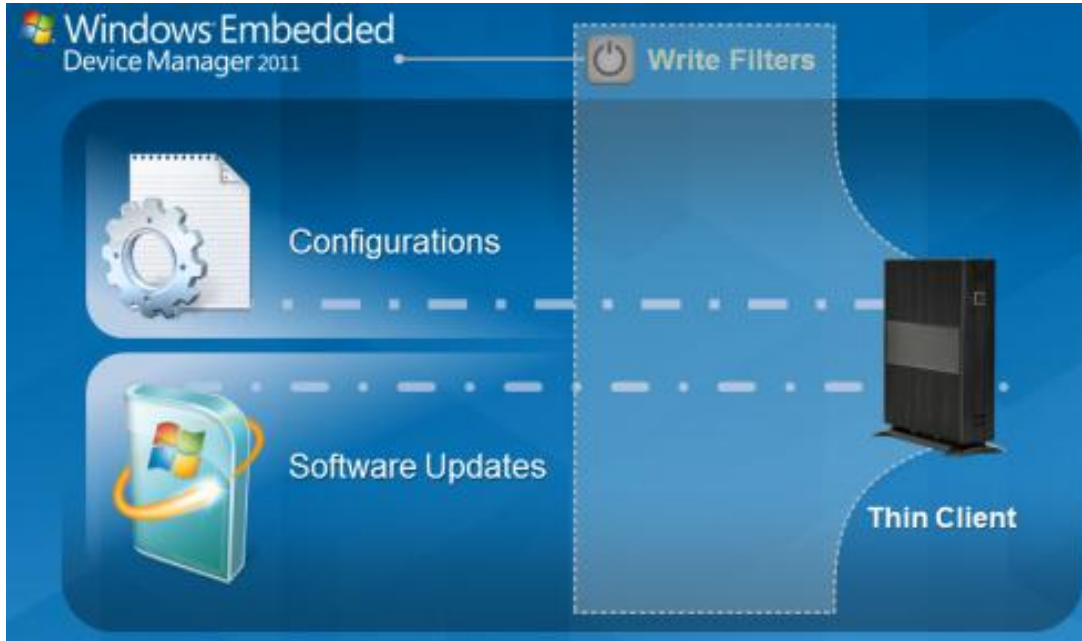

Figure 2. Packages are deployed and run

3. The write filters are enabled, as shown in the following figure.
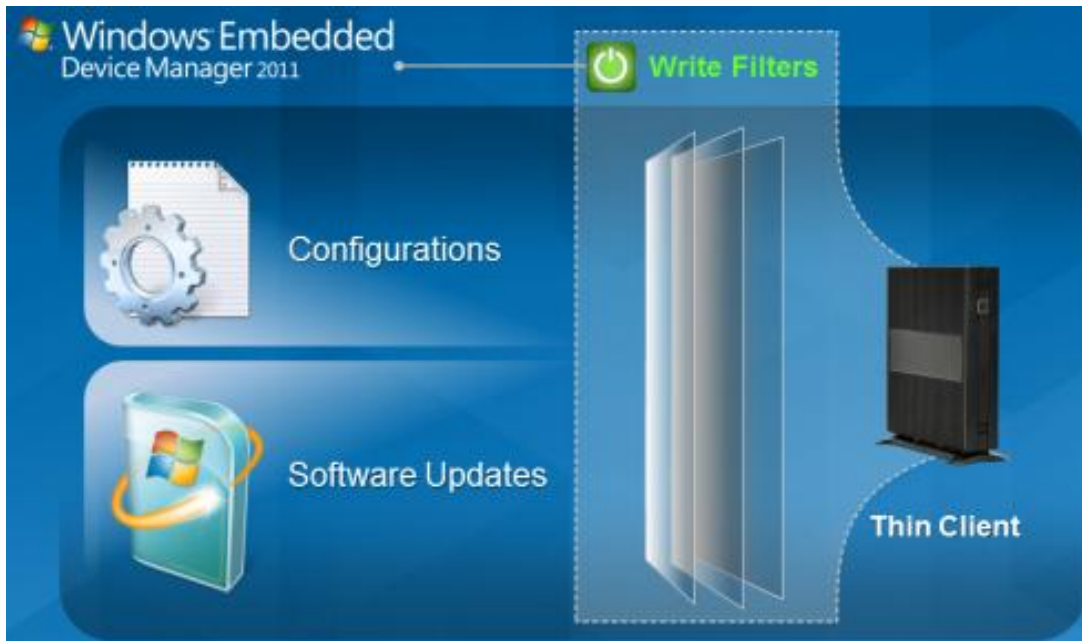

Figure 3. Write filters are enabled

Managing Write Filters with Device Manager 2011

You can use Device Manager 2011 to efficiently deploy configuration items and software packages to embedded devices that are write filter-protected. Device Manager 2011 supports the managing of write filters during a package deployment through the following methods:

- **Create an advertisement using the New Advertisement with Write Filter Handling Wizard.**

  To deploy a single package to a collection of devices that use write filters, use the New Advertisement with Write Filter Handling Wizard in the Configuration Manager console. The wizard automatically creates a task sequence for the selected package that disables write filters, performs the service actions in the package, and then restores the write filters.

- **Create an advertisement using a custom script.**

  To use a custom script to create an advertisement that disables and then enables write filters, you must use the EDM_WriteFilterAdvertisementFormatter Windows Management Instrumentation (WMI) class.

  Note: Using custom scripts in packages to disable and restore write filters is optional. If you decide to use custom scripts, use Microsoft® Visual Basic® script and the EDM_WriteFilterAdvertisementFormatter WMI class. Modify the created task sequence to disable write filters, install the software package for the package/program combination, and then enable the write filters. You can also add code to create an advertisement from this task sequence.

- **Create a custom task sequence.**

  To perform a set of updates in a specific order with multiple service actions in a package, you can create a custom task sequence. Device Manager 2011 adds extensions that disable and then enable write filters to the Task Sequence Editor in the Configuration Manager console.

Device Manager 2011 restarts devices that use write filters following software deployment. The order of the restarts depends on how the devices are configured.

Conclusion

Device Manager 2011 extends Configuration Manager 2007 to manage embedded devices. Device Manager 2011 provides an extensible management solution for embedded devices that includes embedded device collections, the deployment of packages to write filter-protected devices, and the imaging of embedded devices using OEM device imaging solutions. Device Manager 2011 also enables the deployment of packages, including device configuration and software packages, to write filter-protected embedded devices.

For more information about Windows Embedded Device Manager 2011, see:

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

Additional Resources

Device Manager 2011 installation, deployment, and management are discussed in greater detail in the following white papers:

- "Extending Microsoft System Center Configuration Manager 2007 with Windows Embedded Device Manager 2011"
- "Manage Your Embedded Devices with Windows Embedded Device Manager 2011"
- "Deploy an Operating System Image to Your Embedded Device Using Windows Embedded Device Manager 2011"

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