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Warranty

For the complete Zebra hardware product warranty statement, go to: www.zebra.com/warranty.
## Revision History

Changes to the original guide are listed below:

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<td>-02 Rev. A</td>
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<td>Updated screen shots.</td>
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<td>-03 Rev. A</td>
<td>04/2015</td>
<td>Zebra Rebranding.</td>
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<tr>
<td>-04 Rev. A</td>
<td>11/2019</td>
<td>Updates:</td>
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<td></td>
<td></td>
<td>- Branding</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>- Functionality</td>
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<tr>
<td></td>
<td></td>
<td>- 123Scan2 &gt; 123Scan, where applicable</td>
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</tr>
<tr>
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<td>3-2</td>
</tr>
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<td>Hardware Requirements</td>
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<td>3-2</td>
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<td>3-2</td>
</tr>
</tbody>
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ABOUT THIS GUIDE

Introduction

The Zebra Scanner Management Service User Guide provides the information necessary to install the SMS and 123Scan, create SMS Packages to remotely manage scanners, execute the actions specified in the SMS, and troubleshoot the setup and processes.

Chapter Descriptions

Topics covered in this guide are as follows:

- **Chapter 1, SMS INTRODUCTION** provides a broad overview of the Zebra SMS.
- **Chapter 2, QUICK STARTUP GUIDE** provides quick links to important topics in the guide.
- **Chapter 3, INSTALLATION OF THE SMS** describes how to install the Zebra SMS and 123Scan on recommended platforms.
- **Chapter 4, GENERATING AN SMS PACKAGE USING 123SCAN** provides information to create SMS Packages to remotely manage scanners.
- **Chapter 5, DEPLOYING THE SMS PACKAGE** provides information to execute the actions specified in the SMS Package.
- **Chapter 6, SMS CONFIGURES SCANNER AT POS** provides information to perform the actions specified in the active package.
- **Chapter 7, TROUBLESHOOTING** provides information problem solving.
Notational Conventions

The following conventions are used in this document:

- **Courier New** font is used for code segments.
- **Italics** are used to highlight:
  - Chapters and sections in this and related documents
  - Fields on a window
  - Names of windows
  - File names
- **Bold** text is used to highlight buttons and keys.
- bullets (•) indicate:
  - Action items
  - Lists of alternatives
  - Lists of required steps that are not necessarily sequential
- Sequential lists (e.g., those that describe step-by-step procedures) appear as numbered lists.
- Throughout the programming bar code menus, asterisks (*) are used to denote default parameter settings.

**NOTE** This symbol indicates something of special interest or importance to the reader. Failure to read the note will not result in physical harm to the reader, equipment or data.

**CAUTION** This symbol indicates that if this information is ignored, the possibility of data or material damage may occur.

**WARNING!** This symbol indicates that if this information is ignored the possibility that serious personal injury may occur.
Related Documents


The latest version of this guide and all guides are available at: www.zebra.com/support.

Service Information

If you have a problem with your equipment, contact Zebra Technologies Support for your region. Contact information is available at: www.zebra.com/support.

When contacting Zebra, please have the following information available:

- Serial number of the unit
- Model number or product name
- Software type and version number.

Zebra responds to calls by E-mail, telephone or fax within the time limits set forth in support agreements.

If your problem cannot be solved by Zebra Technologies Support, you may need to return your equipment for servicing and will be given specific directions. Zebra is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty.

If you purchased your business product from a Zebra business partner, contact that business partner for support.
CHAPTER 1 SMS INTRODUCTION

Overview

Figure 1-1  Steps in the SMS Process

Reducing Your Total Cost of Ownership

Lowering your total cost of ownership, the SMS Solution enables an enterprise to remotely manage their Zebra scanners. In addition to accessing asset tracking information, the SMS Solution can remotely set parameters and update firmware. Providing your enterprise maximum flexibility, the SMS Solution operates in an automated, unattended manner, no operator intervention is required.

Helpful Links

- To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.
- To download the SMS agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit: www.zebra.com/ScannerHowToVideos.
Manage Asset Information Fleet Wide

The SMS also provides a conduit for any third party enterprise console to query and report fleet wide asset tracking information such as model number, serial number, date of manufacture, firmware version, configuration file name and parameter values. Providing additional flexibility, the SMS can operate as a service - always running and available, or as an application that can be invoked by a third party console command.

Configuration at the Point-of-Use

The SMS automates the process of loading a 123Scan generated SMS Package to a scanner. The SMS Package contains 123Scan generated scanner configuration file(s) loaded with parameters, scanner plug-in(s) containing the scanner's firmware and a load directive file with loading details such as date and time. Best of all, the SMS enables an enterprise to purchase off-the-shelf Zebra scanners and fully customize them to their needs at the point-of-use, no depot staging or operator intervention or bar code scanning required.

Zero Effort Configuration

SMS automatically establishes communication between the scanner and your host application hence operator intervention, pre-staging at a depot, scanning a bar code to establish communication, or console interaction is not required.

Replacing a scanner during store hours just before the holidays is not a problem. Just plug in the scanner and walk away. If the SMS is run as a Service, it automatically establishes communication with the scanner and downloads the appropriate content from the SMS Package to the scanner. No operator intervention is required.
Solution Architecture - Three Steps to Success

The SMS enables an enterprise to remotely update scanner firmware, configure scanner parameters, and gather asset tracking information. The SMS automates the process of loading firmware, and configuration files (parameter settings) to Zebra scanners. It also provides a conduit for third party network tools to query and report fleet wide asset tracking information, such as model number, serial number, date of manufacture, firmware version, configuration file name, and parameter values.

Figure 1-2  Steps in the SMS Process

Remotely managing your scanner using the SMS is a three step process:

Step 1. Generate an SMS Package using 123Scan v5.0 (or newer).

Step 2. Deploy the SMS Package to your target (production) PC to the specified download folder on the scanner’s terminal using your third party network tools. The network management console can also be used to query asset information from the SMS agent.

Step 3. On the target PC, the SMS agent loads the SMS Package to your scanner.

SMS solutions are available at no cost and require no licensing fees.
CHAPTER 2 QUICK STARTUP GUIDE

Quick Startup

Use this Quick Startup Guide to simplify navigation of this document. The Quick Startup Guide contains links to all the key topics within this document.

Helpful Links

- To download the Zebra Scanner Management Service (SMS) agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit www.zebra.com/ScannerHowToVideos.

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CHAPTER 3 INSTALLATION OF THE SMS

Introduction

This chapter describes how to install the Zebra SMS and 123Scan on recommended platforms.

Helpful Links

- To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.
- To download the SMS agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit www.zebra.com/ScannerHowToVideos.
Download the SMS Solution from the Web

Both the SMS Solution and 123Scan must be downloaded to utilize the SMS Solution. Both utilities can be downloaded from www.zebra.com/sms, or download 123Scan from www.zebra.com/123Scan.

System Requirements

123Scan Requirements

**Hardware Requirements**

- Pentium Dual-Core E214 1.6GHz or Pentium Mobile Dual-Core T2060 or Pentium Celeron E1200 1.6GHz
- 2GB RAM and 1.2 GB free hard drive space
- USB port, 1.1 or higher, for the connection of USB Scanners

**Software and Operating System Requirements**

- Microsoft Windows 7 or 10 (32 bit/64 bit)
- If not present, Microsoft .NET Framework 3.5 SP1 loaded at time of initial 123Scan installation
- Minimum display resolution = 1024 by 768 pixels

SMS Solution Requirements

**Supported Operating Systems**

The Zebra SMS supports the following Operating Systems:

- Windows 7 SP1 (32- and 64-bit)
- Windows 10 (32- and 64-bit)
- Windows POS Ready 2009

**SMS Solution Size**

The Zebra SMS 32-bit installation package is approximately 20 MB in size. The Zebra SMS 64-bit installation package is approximately 30 MB in size.

Once installed in a production environment, the SMS solution size decreases.

**Table 3-1**  *Installed SMS Solution Sizes*

<table>
<thead>
<tr>
<th>Typical Installed Solution Size</th>
<th>32-bit</th>
<th>64-bit</th>
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<tbody>
<tr>
<td>SMS agent</td>
<td>4 MB</td>
<td>9 MB</td>
</tr>
<tr>
<td>SMS Package for one model scanner</td>
<td>3 MB</td>
<td>3 MB</td>
</tr>
<tr>
<td>Total required space</td>
<td>7 MB</td>
<td>12 MB</td>
</tr>
</tbody>
</table>
Installing the Solution

The following steps show the process to install 123Scan and the SMS Solution.

**Install 123Scan (v5.0 or newer)**

To install 123Scan:


2. Scroll down to the Software section and select and run the relevant OS download for your PC (123Scan 32 bit or 123Scan 64 bit).

3. The Zebra CoreScanner Driver is a prerequisite for both the 32- and 64-bit setup programs. The installation process checks for the CoreScanner driver on the target PC. If the CoreScanner driver is not present, or is outdated, clicking **Install** ([Figure 3-1](#)) adds updated drivers before installing the Zebra 123Scan package.

   ![Zebra 123Scan (64bit) - InstallShield Wizard](image)

   **Figure 3-1  Installation of Zebra CoreScanner Driver Window**

   The Microsoft .NET Framework is also a prerequisite for Zebra 123Scan. If .NET is not available in the system, the installer lists it as a requirement and installs it as part of the setup process.
4. Click **Next** in the *Welcome* window.

![Welcome Window](image)

**Figure 3-2 Welcome Window**

5. Review the license agreement and click **Yes** to accept.

![License Agreement Window](image)

**Figure 3-3 License Agreement Window**
6. Click **Install** to install 123Scan.

![Ready to Install Window](image1)

**Figure 3-4  Ready to Install Window**

7. As the installation proceeds, the status displays.

![Installation Status Window](image2)

**Figure 3-5  Installation Status Window**
8. When the installation is complete, the following window displays. Click **Finish**.

![Figure 3-6  Installation Complete Window](image)

**Install SMS**

To install SMS:


2. Scroll down to the Software section and select and run the relevant OS download for your PC (SMS 32 Bit, or SMS 64 Bit).

3. If you previously installed 123Scan on the same PC, the Zebra CoreScanner Driver (a prerequisite for both the 32- and 64-bit setup programs) was already installed. If you are installing the SMS Solution first, or on a different PC than 123Scan, the CoreScanner driver automatically installs before the SMS Solution installation. See **Step 3 on page 3-3** for more information about the CoreScanner driver installation.
4. Click **Next** in the *Welcome* window.

![Welcome Window](image)

*Figure 3-7  Welcome Window*
5. Review the license agreement and click **Yes** to accept.

![License Agreement Window](image1)

**Figure 3-8  License Agreement Window**

6. Click the appropriate radio button (**Figure 3-9**) for the type of setup to install.
   a. **Complete** setup installs all Zebra SMS components.
   b. **Custom** setup allows the user to de-select **Start** menu shortcuts for Developer Utilities.

![Setup Type Window](image2)

**Figure 3-9  Setup Type Window**
7. Click **Next** to continue with the installation.

**Figure 3-10  Custom Setup Selection Windows**
8. Click **Install** to continue.

![Ready to Install Window](image)

**Figure 3-11**  *Ready to Install Window*

9. When the installation is complete, the following window displays. Click **Finish**.

![Installation Complete Window](image)

**Figure 3-12**  *Installation Complete Window*
Silent Unattended Installation of the Zebra Scanner Management Service

The CoreScanner driver and the Scanner Management Service (SMS) require the Microsoft 2017 C++ Redistributable Package which automatically installs if it does not already exist on the host PC. For an unattended installation, a complication arises if the 2017 C++ Redistributable is not pre-installed. By default, Microsoft triggers a reboot of the PC after the C++ Redistributable installation. In this case, a reboot is injected into the overall silent install process (which may then also require a login).

To avoid the interruption, the 2017 C++ Redistributable can be downloaded from Microsoft (see links below) and pre-installed silently while suppressing the reboot using the command line switches /install /quiet /norestart. This delays the required reboot and allows custom silent CoreScanner and SMS installs to be performed using subsequent commands.

The Visual C++ Redistributable for Visual Studio 2017 can be downloaded from the Microsoft website (see links below). The appropriate file vcredist_x86.exe (32-bit version) or vcredist_x64.exe (64-bit version) must be selected and downloaded. The command line to perform its install silently without reboot is:

```
vcredist_x86.exe /install /quiet /norestart
```

or

```
vcredist_x64.exe /install /quiet /norestart
```

The required reboot must be performed at the end of the overall installation process to ensure correct operation.

The Zebra Scanner Management Service and prerequisite CoreScanner driver are packaged using the Flexera InstallShield installer program. Options can be selectively installed using the Custom Installation option. In conjunction with this custom install option, the installer program supports command line switches to record custom responses that can be used to create a silent install response file. These response files, ending in the file extension .iss, may then be used to perform a silent installation of the CoreScanner driver and SMS components on production PCs.

Silent Install Command Line Options

**Command Line Switch Description**

- **-s** Silent mode. The -s switch runs the installation in silent mode using the responses contained in a recorded response file.
- **-r** Record mode. The -r switch displays all the setup dialogs and records the chosen responses in the file specified with the -f1 switch described below.
- **-f1** Specify custom response file name and path. The -f1 switch specifies where the response file is located for the -s switch, or where it should be created when using the -r switch. Specify an absolute path; using a relative path yields unpredictable results.
- **-f2** Specify alternative log file name and path. When running an installation in silent mode (using the -s switch), the log file is created by default in the same directory and with the same name (except for the extension) as the response file. The -f2 switch enables you to specify an alternative log file location and file name. Specify an absolute path; using a relative path yields unpredictable results.

When executed from a command prompt, the example below uses the -r and -f1 switches to record your responses to the setup prompts into a custom response file:

```
"Zebra_CoreScanner_Driver_(64bit)_v3.04.0004.exe" -r -f1"c:\path\CSsetup.iss"
```

The responses chosen using the command above are saved in the specified response file and can then be used as input to silently install the Corescanner with those chosen responses on production PCs.
The next example shows how the `-s` switch uses the response file created with the previous command to perform the silent install:

"Zebra_CoreScanner_Driver_(64bit)_v3.04.0004.exe" -s -f1"c:\path\CSsetup.iss"

Note that there is no space between the `-f1` switch and first quotation mark for the custom response file.

Additionally, you would perform the above steps for the silent installation of the SMS. Record the SMS response file using the `-r` switch on a PC that does not yet have SMS installed:

"Zebra_Scanner_Management_Service_(64bit)_v4.02.0003.exe" -r -f1"c:\path\SMSsetup.iss"

Then use that resulting response file with the `-s` switch to install silently on other PCs:

"Zebra_Scanner_Management_Service_(64bit)_v4.02.0003.exe" -s -f1"c:\path\SMSsetup.iss"

If necessary, the `-r` switch option can also be used to record a custom response file for a silent removal of a program by running the command on a PC that has that program already installed.

2017 C++ Redistributables 14.16.27012 Download links:

x64:
download.visualstudio.microsoft.com/download/pr/9fbed7c7-7012-4cc0-a0a3-a541f51981b5/e7eecd15278b4473e26d7e32ce53a34c/vc_redist.x64.exe

x86:
download.visualstudio.microsoft.com/download/pr/d0b808a8-aa78-4250-8e54-49b8c23f7328/9c5e653205786367ee61aaf3313c95/vc_redist.x86.exe

---

**Components and Folder Paths**

**SMS Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Installation Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS agent folder</td>
<td>SMS installation folder. User cannot customize this location.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS</td>
</tr>
<tr>
<td>SMS Package download folder</td>
<td>Folder on PC host in which SMS Packages are placed for processing.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download</td>
</tr>
<tr>
<td>SMS default log folder</td>
<td>Default log file folder. User can change the logging location in the package at creation time.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download\Logs</td>
</tr>
<tr>
<td>Launch SMS as an Application</td>
<td>Executable file to launch SMS as an application.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\SmsService.exe</td>
</tr>
</tbody>
</table>
### SMS Components (Continued)

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Installation Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start SMS agent</td>
<td>Script file to start the SMS agent.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Start SMS Agent.bat</td>
</tr>
<tr>
<td>Stop SMS agent</td>
<td>Script file to stop the SMS agent.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Stop SMS Agent.bat</td>
</tr>
<tr>
<td>Release notes</td>
<td>Release notes.</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS Release Notes.htm</td>
</tr>
</tbody>
</table>

### 123Scan Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Installation Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Application EXE and the supporting DLLs of the program</td>
<td>%ProgramFiles%\Zebra Technologies\Barcode Scanners\123Scan2</td>
</tr>
<tr>
<td>Configuration files</td>
<td>Default location of Configuration Files</td>
<td>Users\Public\Documents\123Scan2\Configuration Files</td>
</tr>
<tr>
<td>Activity reports</td>
<td>Default location of Activity Reports</td>
<td>Users\Public\Documents\123Scan2\Activity Report Database</td>
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<td>Data view reports</td>
<td>Default location of Data View Reports</td>
<td>Users\Public\Documents\123Scan2\Data View Reports</td>
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<td>Saved images</td>
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<td>Default location of SMS Packages</td>
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<td>Application help document</td>
<td>Application Help Document</td>
<td>Program Files\Zebra Technologies\Barcode Scanners\123Scan2\Languages\en-us</td>
</tr>
</tbody>
</table>
CHAPTER 4 GENERATING AN SMS PACKAGE USING 123SCAN

Introduction

An SMS Package is a single file which, when used with the SMS agent, can be used to remotely manage scanners by programming parameters and updating firmware. 123Scan is used to generate an SMS Package.

An SMS Package can be programmed to support up to five (5) unique scanners models/plug-ins.

For example:

Model/Plug-in #1. DS6878 SR (Standard Range)
Model/Plug-in #2. DS6878 HC (Health Care)
Model/Plug-in #3. DS4208 SR
Model/Plug-in #4. LS4208 SR
Model/Plug-in #5. DS9808 SR

An SMS Package is comprised of three components:

Component #1. 123Scan configuration file containing parameters.
Component #2. 123Scan plug-in file containing the scanner's firmware.
Component #3. A single Load Directive File (LDF) containing the rule set including details such as trigger events, programming date and logging settings.

Once the SMS Package is placed on the target PC, if the SMS agent is in its default state - Run as a Service, it will review the SMS Package’s content and automatically program the scanner as described in the SMS Package.

Helpful Links

- To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.
- To download the SMS agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit www.zebra.com/scannersoftwarevideos.
Creating an SMS Package

123Scan v5.0 (or newer) can be used to create an SMS Package. 123Scan utilizes a wizard to guide users through the SMS Package generation process.

Steps to Create the SMS Package

1. Launch the 123Scan utility.
2. In the Start tab, click the Actions drop-down menu (Figure 4-1) and select Create Scanner Management Service (SMS) Package.

3. In the SMS Package name and notes window (Figure 4-2), enter an SMS Package name, and any Package notes you may want to add to describe the package. Click Next >.
4. In the *Select your scanner family from the options below* window (*Figure 4-3*), select the family of scanners that you want to configure. Click **Next >**.

![Figure 4-3](image)

*Figure 4-3  SMS Untitled1 Tab - Select your scanner family Window*

5. In the *Select your scanner model from the options below* window (*Figure 4-4*), click the scanner model you want to configure. Click **Next >**.

![Figure 4-4](image)

*Figure 4-4  SMS Untitled1 Tab - Select your scanner model Window*
6. In the **Supported scanner models** window (**Figure 4-5**), click **Next >** if your scanner model is in the list of supported scanners.

![Supported scanner models window](image)

**Figure 4-5** SMS Untitled1 Tab - Supported scanner models Window

**IMPORTANT** If your scanner model is not in the list, click **Change scanner model** to return to the **Select your scanner family** window (**Figure 4-3 on page 4-3**) and choose another scanner family.

7. In the **Cable connection** window (**Figure 4-6 on page 4-5**), click the **Management Communication Protocol** drop-down arrow to select the communication method you want to use to manage your device.

This protocol is the communication mode used by SMS to manage your scanner. The fastest supported management communication protocol (programming mode) is shown at the top of the list by default. Note that this management protocol can be different than the communication protocol used by the device during normal operations such as scanning and transmitting data to the host application.

The SMS for Windows supports the following communication protocols.

- **USB SNAPI**
- **USB OPOS** (IBM Hand-held USB with Full Scan Disable)

For example, the management communication protocol for a DS9808 scanner could be SNAPI while the scanning communication protocol could be OPOS.
8. In the **Load parameters to your scanner** window (Figure 4-7 on page 4-5), you may check the **Load parameters to scanner** box if you have a configuration file containing attributes that you want to load onto the scanner. This option requires that you have already created an appropriate configuration file for your scanner using the 123Scan utility. After checking the box, click the **Browse for file** and select the configuration file you want to load onto the scanner. Click **Next >**.

9. In the **Load firmware to your scanner** window (Figure 4-8 on page 4-6), you may check the **Update scanner firmware** box to load updated firmware on the scanner. When you check the box, the available versions of firmware actively display. The most recent firmware is recommended and selected by default but previous versions may be chosen, if necessary. Click **Next >**.
10. On the Add another device group window (Figure 4-9), you may configure additional device groups (up to a total of five) within the SMS Package. If applicable, click Add Device Group and repeat Step 4 on page 4-3 through Step 9 on page 4-5. When all device groups are added within the SMS Package, click Next>.

11. In Track events with a log file window (Figure 4-10 on page 4-7), you may select the mode for logging SMS events.

   **NOTE** The information that follows includes log file field descriptions and sample log files. To continue with the next step in the SMS Package Generator (Step 12), go to page 4-10. Click Next > on the window above to continue with the generator.
Table 4-1 lists the fields available in this window, and their descriptions.

Table 4-1  Track events with a log file Window Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate a log file</td>
<td>Select this box to create a log file; deselect this box to disregard logging.</td>
</tr>
<tr>
<td></td>
<td><strong>Logging for all devices:</strong> Select this radio button to log events for all managed devices defined in the SMS Package.</td>
</tr>
<tr>
<td></td>
<td><strong>Enable / disable logging by device group:</strong> Select this radio button to choose particular managed devices for which to log events.</td>
</tr>
<tr>
<td>Target location</td>
<td>This is the directory path to which the log file is saved on your target (production) PC. Note the target location excludes the name of the log file.</td>
</tr>
<tr>
<td></td>
<td>For a Windows machine, by default, the target path would be: C:\Program Files\Zebra Technologies\Barcode Scanners\SMS\Download\Logs</td>
</tr>
<tr>
<td></td>
<td>For advanced users, this same path can also be entered as: %ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download\Logs</td>
</tr>
</tbody>
</table>
**Table 4-1  Track events with a log file Window Fields (Continued)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log method</td>
<td>There are two log method options available: <em>Circular log file</em>, or <em>Accumulating log files</em>. All events are alternately written between two log files. All information is written to one log file until it reaches its maximum size, then new information is written to a second log file. Once the second file reaches its maximum size, new information is again written to the first log file, over-writing its original content. The combined size of both log files equals the <em>Log File Size</em> set within the SMS Package.</td>
</tr>
<tr>
<td><strong>Circular Log File</strong> (default):</td>
<td></td>
</tr>
<tr>
<td><strong>Accumulating Log Files:</strong></td>
<td>All events for a given SMS Package are logged into one file that continues to grow until it reaches its maximum size, the <em>Log File Size</em> set within the SMS Package. Upon log file one reaching the maximum size, another new log file is created. The process of generating new log files will continue over time. If a new SMS Package is placed within the SMS download folder, a new log file is started.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>All log files are time date stamped. A sample name would be &quot;SMS_2019.10.11_11-58-13.log&quot;. The naming convention is SMS_YYYY.MM.DD_HH-MM-SS with hours (HH) in 24 hour format.</td>
</tr>
</tbody>
</table>

**Log file size**

Maximum log file size.

**Sample Log File**

SMS log message format is as follows:

```
<log-time-stamp> <device-group-and-name> :: <log-message-information>::<configuration-or-firmware-file-name>: <unique-identifier-for-scanner> :<scanner-model>: <scanner-serial-number> : <DOM>: <firmware-version>: <program-date>
```

*Table 4-2* lists the log file fields, and their descriptions.

**Table 4-2  Log File Fields**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log-time-stamp</td>
<td>Date and time of the log message in the format: yyyy-mm-dd, hh:mm:ss.</td>
</tr>
<tr>
<td>device-group-and-name</td>
<td>Device group and the name of the device by which this scanner is managed.</td>
</tr>
<tr>
<td>log-message-information</td>
<td>Details of the action that the corresponding device executed on this scanner.</td>
</tr>
<tr>
<td>configuration-or-firmware-file-name</td>
<td>File name and the path of firmware or configuration file below %program files%/Download.</td>
</tr>
<tr>
<td>unique-identifier-for-scanner</td>
<td>Unique identifier assigned by SMS for each scanner managed by the SMS service or application.</td>
</tr>
<tr>
<td>scanner-model</td>
<td>Model of the scanner.</td>
</tr>
<tr>
<td>scanner-serial-number</td>
<td>Serial number of the scanner.</td>
</tr>
<tr>
<td>DOM</td>
<td>Date of manufacture of the scanner in the format: ddmmyy. If the scanner does not have this information, SMS writes &quot;DDMMYY&quot; to the log file.</td>
</tr>
<tr>
<td>firmware-version</td>
<td>Version of the current firmware in the scanner.</td>
</tr>
<tr>
<td>program-date</td>
<td>Date on which the scanner’s last electronically programmed date in the format: ddmmyy. If the scanner does not have this information, SMS writes &quot;DDMMYY&quot; to the log file.</td>
</tr>
</tbody>
</table>
When the SMS agent begins execution of a package, either from cold-start or auto-reboot, an appropriate log file entry is made (if logging is enabled) explaining the last loaded package details as follows:

[2012-07-27, 14:17:37] INFO: A Valid Package 'SMS Package_ScannerUpgrade_OnAttach_DS6878_Presentation.smspkg' has been dropped into the DOWNLOAD folder. SMS will be re-started when current device execution completes

[2012-07-27, 14:17:40] INFO: SMS Device Engine Requested a Service Restart


The following is part of the log file content while SMS loaded the configuration on a DS6878 scanner with a standard cradle connected to host PC:


The following log entries were created while SMS loaded firmware and the configuration on a DS6878 scanner with a presentation cradle when SMS was started as a service:


[2012-06-22, 21:17:05] Device Group 1_on_service_start :: Initializing configuration file push :: config_files\Config_File_DS6878_BeeperHigh_2012.06.22.scncfg : 3 : DS6878-SR20007WR : M1M87R37F : 08OCT10 : PAAAJS00-004-R01 : DDMYY

[2012-06-22, 21:17:22] Device Group 1_on_service_start :: Configuration file push succeeded :: config_files\Config_File_DS6878_BeeperHigh_2012.06.22.scncfg : 3 : DS6878-SR20007WR : M1M87R37F : 08OCT10 : PAAAJS00-004-R01 : DDMYY
12. In Activation trigger window (Figure 4-11), you may select the operation mode of the SMS agent, and which events trigger the SMS Package to be loaded to a scanner.

![Figure 4-11 Activation trigger Window](image)

**Table 4-3** lists the fields available in this window, and their descriptions.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS Operation Mode</td>
<td>The SMS operation mode setting determines if the SMS operates as a service, or an application. Use the drop-down arrow to make a selection.</td>
</tr>
<tr>
<td></td>
<td>• <em>Run as Service</em>: The SMS runs continuously as a Windows background service. It monitors scanners and the download folder on the target PC for any activity that triggers a package load. In this mode, the SMS agent automates the process of loading an SMS Package to your scanner. Once the SMS Package is on the target PC in the download folder, the SMS agent reviews the SMS Package content and automatically programs the scanner appropriately. Using your SMS Package, the SMS agent programs your scanner without any console/application initiating command. Asset information can be accessed real time using Windows Management Instrumentation (WMI).</td>
</tr>
</tbody>
</table>
SMS Operation Mode (continued)

- **Run as Application**: The SMS is only available and running when it is manually launched. The SMS agent can be launched by a third party application, or console initiated command. When invoked, the SMS agent checks the download folder on the target PC for the existence of a new SMS Package, and processes that package. Typically, a customer uses their third party network management tool first to copy an SMS Package into the target PC download folder and then invokes the SMS agent to process that package. Upon completion of the task(s) outlined in the SMS Package, the SMS agent terminates operation and releases the USB scanner device. Asset information can be accessed non-real time from the log file (which must be enabled in the SMS Package), and compiled through parsing. In Application mode, the SMS agent can be used in conjunction with but not simultaneously with a third party application, or driver (such as a non-Zebra OPOS scanner driver). To configure SMS to initially run in Application mode, first download an SMS Package with its SMS operation mode set to Run as an Application (programmable in the 123Scan Activation trigger Window on page 4-10). Then, launch the SMS agent using the script, `Start SMS Agent.vbs` (located in `<%ProgramFiles%>\Zebra Technologies\Barcode Scanners\SMS`). Alternatively, from a command line, type `net start "Zebra SMS"`. **Note 1**: If you select Run as Application, certain trigger events start of SMS, initial download of SMS Package, and date and time) are not available for selection.

**Note 2**: To switch the SMS agent to operate in Application mode, load an SMS Package with SMS Operation Mode set to Run as an Application.

**Note 3**: Be aware that when SMS is running in Service mode, an unexpected plug and play event such as a cable reconnection may trigger SMS processing. In this instance, SMS will temporarily gain control of the scanner to perform any specified SMS package directives and interrupt normal scanner operation until SMS has finished executing. If this scenario is a concern, set SMS to 'Run as Application' and launch SMS manually when an interruption will not impact normal scanner usage.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply settings to all device groups</td>
<td>This trigger event to load your SMS Package applies trigger events to all managed devices in your SMS Package.</td>
</tr>
<tr>
<td>Each device group has its own settings</td>
<td>This trigger event to load your SMS Package applies different trigger events to different managed devices in your SMS Package.</td>
</tr>
<tr>
<td>Trigger events (Event triggering load)</td>
<td>Triggers package loading when the SMS agent starts. This trigger includes the following scenarios:</td>
</tr>
<tr>
<td>Start of Scanner Management Service (SMS)</td>
<td>- When the SMS agent is executed, and <strong>Run as Application</strong> is set.</td>
</tr>
<tr>
<td></td>
<td>- When the SMS is set to run as a service, and the host PC is rebooted.</td>
</tr>
<tr>
<td></td>
<td>- When the SMS is set to run as a service, and the SMS service is restarted.</td>
</tr>
<tr>
<td>Power up and/or cable connection of scanner</td>
<td>Triggers package loading when a scanner becomes attached to the host PC, or the PC is rebooted.</td>
</tr>
<tr>
<td>Run immediately (at download of package to SMS)</td>
<td>Triggers package loading immediately upon arrival and detection of an SMS Package in the download folder. If this trigger is not selected, package loading takes place at the next host PC reboot or restart of the SMS service. This trigger applies only to <strong>Run as service</strong>.</td>
</tr>
</tbody>
</table>
Table 4-3  *Activation trigger Window Fields (Continued)*

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date and time</td>
<td>Triggers a package load at the specified date and time, and time interval. This trigger applies only to <em>Run as Service</em> mode.</td>
</tr>
<tr>
<td></td>
<td>Select <em>Reoccurrence</em> to set up a reoccurring event to load an SMS Package. For example, to reload the same SMS Package every two weeks, set this field to <em>Every 2 weeks</em>. In this example, the SMS Package loads on the same day of the week and time specified in the <em>Date</em> and <em>Time</em> trigger event boxes. The SMS Package continues to reload every two weeks. This trigger applies only to <em>Run as Service</em> mode.</td>
</tr>
</tbody>
</table>

*Table 4-4* shows the differences between the SMS operation modes.

Table 4-4  *SMS Operation Modes: Service vs Application*

<table>
<thead>
<tr>
<th>SMS Functionality</th>
<th>Run as Service</th>
<th>Run as Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter Configuration</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Firmware Update</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Asset Tracking</td>
<td>Supported</td>
<td>Non-real Time Support</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SMS Operation</th>
<th>Run as Service</th>
<th>Run as Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS always running and accessible</td>
<td>Supported</td>
<td>Not Supported</td>
</tr>
<tr>
<td>SMS launched by a command from a third party console or application</td>
<td>Not Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>Upon completion of tasks define in the SMS Package, the SMS terminates operation and releases the USB scanner</td>
<td>Not Supported</td>
<td>Supported</td>
</tr>
</tbody>
</table>
13. Click **Next >** in *Figure 4-11 on page 4-10* to display the *Load and print* window. In this window choose one of the SMS Package output options (see *Table 4-5*).

![Figure 4-12  Load and print Window](image)

**Table 4-5  Load and print Window Buttons**

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Save SMS package to PC</td>
<td>Prompts with a window to select a location to save the completed SMS Package.</td>
</tr>
<tr>
<td>Print SMS report</td>
<td>Opens a window with the option to print the SMS report, or save it to a Word document.</td>
</tr>
<tr>
<td>Email SMS package</td>
<td>Opens an e-mail window with the SMS Package attached.</td>
</tr>
<tr>
<td>Deploying an SMS Package</td>
<td>Opens a window with instructions on deploying an SMS Package on a production host PC.</td>
</tr>
</tbody>
</table>
Opening an Existing SMS Package

You can open an existing SMS Package from a Windows folder, or within the 123Scan utility.

Opening an SMS Package from a Windows Folder

1. Locate the SMS Package on the PC. The folder path for an SMS Package within 123Scan folder structure is C:\ProgramData\Documents\123Scan\SMS Packages.

2. Double-click the package.

3. The 123Scan utility launches and the SMS package summary window (*Figure 4-13*) displays.

4. Click Start SMS package wizard to modify the package content.

*Figure 4-13*  SMS package summary Window
Opening an SMS Package within 123Scan

1. Launch the 123Scan utility.

2. On the Start tab, click the Actions drop-down menu (see Figure 4-1 on page 4-2) and select Open Scanner Management Service (SMS) Package.
   
   Select the SMS Package from the file dialog or
   
   Select an existing package from the recent files list. Click the Recent files arrow to expand the list of the recently accessed files (Figure 4-14).

3. Once expanded, click any of the recent files in the list to open SMS package summary window for that file (Figure 4-13).

4. Click Start SMS package wizard to modify the package content.
CHAPTER 5 DEPLOYING THE SMS PACKAGE

Introduction

Deployment of an SMS Package involves placing the package into the SMS download folder on the scanner's host PC. Whether the SMS agent is running as a service or as an application, the SMS agent monitors the download folder for a deposited SMS Package. If a package exists, the SMS agent executes the actions specified in the SMS Package.

For additional details see the Deployment Checklist in section 6.3.3.

Helpful Links

- To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.
- To download the SMS agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit www.zebra.com/scannersoftwarevideos.
Customer Supplied Third Party File Distribution Tool

The SMS solution relies on the customer to provide a method to install the SMS agent on managed host PCs and to deliver SMS Packages to those host PCs. The typical method is using a 3rd party network tool such as IBM Director or HP OpenView to push the SMS software and packages to terminals that have scanners to be configured.

SMS Package Download Destination

The directory path for the SMS’ download folder, which the SMS agent monitors for new packages, is shown below.

%ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download

Once an SMS Package is placed into the download folder, it is acted upon by the SMS agent. In this process, the SMS Package is automatically moved from the download folder to a work sub-folder. The new SMS Package replaces the previous content of the work sub-folder.

An SMS Package placed into the download folder takes priority and is acted on instead of any prior package that exists in the work folder. For example, if a package exists in the work folder and then another package is placed into the download folder, the work folder package will no longer be acted upon. Instead, the newly arrived download folder package replaces the work folder package and is loaded to the scanner.

NOTE Download only one SMS Package at a time to the download folder for processing. Downloading multiple packages simultaneously into the download folder will yield unexpected results.

Download Folder Structure

The Download folder structure for Windows consists of:

- %ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download
- %ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download\Work
- %ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download\Temp
- %ProgramFiles%\Zebra Technologies\Barcode Scanners\SMS\Download\Logs

The 123Scan Deployment Checklist

The 123Scan Deployment Checklist is a document detailing the activities involved in deploying an SMS Package. The document also lists key folder locations:

- Where to access your SMS Package from the PC running 123Scan.
- Where to push the SMS Package on your production PCs.

The Deployment Checklist can be accessed and printing from within 123Scan v5.0 on the SMS Wizard’s name and notes window. Use the how-to-video URL in Helpful Links on page 5-1 for more on this topic.
Configuration at the Point-Of-Use (POS)

Once the SMS agent running on a host PC detects a trigger event, it will perform the actions specified in the active package. For example, when the SMS agent is running in Service mode, the arrival of a package in the download folder causes the agent to process the new package, check the rule set conditions specified and then perform the appropriate actions. If the connection of a scanner device is defined as a trigger event, the SMS agent will check the rule set conditions specified in the active package and perform the actions associated with that connection event.

When the SMS agent runs in Application mode, the execution of the SMS agent is the trigger event. Upon execution, the agent will check for and process a new package. Then it checks the rule set conditions in the active package and performs the specified actions.

Helpful Links

- To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.
- To download the SMS agent, visit www.zebra.com/sms.
- To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.
- To view all the SMS how-to videos, visit www.zebra.com/ScannerHowToVideos.
Scanner LEDs Indicating SMS Load Status

The SMS agent instructs the scanner to display a red blinking LED to indicate that an SMS Package is currently loading to the scanner.

<table>
<thead>
<tr>
<th>LED State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LED Blinking Red (when not controlled by an application)</td>
<td>Loading SMS Package to scanner.</td>
</tr>
<tr>
<td>Other LED states</td>
<td>SMS agent not communicating with scanner.</td>
</tr>
</tbody>
</table>

Default SMS Agent Operation Mode

By default, the SMS is configured to start as a service when first installed on a production host PC.

To configure SMS to initially run in Application mode, first download an SMS Package with its SMS operation mode set to Run as Application. (This is programmable on the 123Scan Activation trigger Window on page 4-10.) Then, launch the SMS agent using the script, Start SMS Agent.vbs (located in <%ProgramFiles%>\Zebra Technologies\Barcode Scanners\SMS). Alternatively, from a command line type the following: net start “Zebra SMS”.

Querying Asset Tracking Information

The SMS solution enables the query of asset tracking information from Zebra scanners. The following is an example of asset information to query:

- Model Number
- Serial Number
- Date of Manufacture
- Firmware Version
- Configuration File Name
- Date of first Electronic Programming

Asset information can be queried in either real time or non-real time based on the SMS operation mode. For more details on SMS operation mode see SMS Operation Mode on page 4-10.

- If the SMS operation mode is set to Service, asset information can be accessed real time using WMI.
- If SMS operation mode is set to Application, asset information can be accessed non-real time from the log file and compiled through parsing. For more information on the SMS log file see Generate a log file on page 4-7 and Sample Log File on page 4-8.

In this scenario a script can be written to parse the required information.
Querying Asset Information Real Time

SMS provides a conduit for an enterprise console application to query and report fleet wide asset tracking information using Windows WMI. Note that because of network security implications, WMI remote management is typically an IT/SysAdmin function that requires configuration and access rights to allow remote functionality depending on a customer's particular network environment.

The Zebra WMI namespace is Symbol_BarcodeScanner which allows WMI to access properties, methods and events for Zebra scanners. The SMS installation loads the WMI Provider Service for Zebra Scanners named ScnSrvc.

If multiple RSM-enabled scanners are connected to an SMS host PC, asset tracking information for all connected scanners can be reported back to the querying source (enterprise console application) over the standard WMI interface. For a list of parameter values that can be queried, download the Product Reference Guide for your scanner model at www.zebra.com/us/en/support-downloads/scanners.html.

Sample Application to Query Assets Using WMI

A basic application that demonstrates this capability is the Scanner WMI Test sample application provided with Zebra's Scanner SDK for Windows. Figure 6-1 shows this sample application's ability to display the asset information of a scanner connected to the same host PC on which the sample application is running. For access to the WMI sample application and its source code, download the Scanner SDK for Windows from www.zebra.com/scannersdkforwindows. The Scanner WMI test sample application is capable of accessing scanners on remote PCs if a systems administrator configured WMI for remote access.

Figure 6-1  Asset Tracking Information Displayed in the WMI Sample Application from the Scanner SDK
Sample WMI Visual Basic Script to Query Asset Tracking Information

The following Visual Basic script shows an example of a WMI script used to query the asset information of scanner devices in IBM HandHeld mode connected to a host PC running the SMS agent.

' FILENAME: ScannerInfo.vbs
'
On Error Resume Next

Const wbemFlagReturnImmediately = &h10
Const wbemFlagForwardOnly = &h20

arrComputers = Array("127.0.0.1")

For Each strComputer In arrComputers
    WScript.Echo " Script Start: " & Time
    Set objWMIService = GetObject("winmgmts:\" & strComputer & "\root\CIMV2")
    Set colScanners = objWMIService.ExecQuery("SELECT * FROM Symbol_BarcodeScanner", _
                                           "WQL", wbemFlagReturnImmediately + wbemFlagForwardOnly)

    For Each objScanner in colScanners
        WScript.Echo "-----------------------------------------------------"
        WScript.Echo " Part Number   : " & objScanner.PartNumber
        WScript.Echo " Serial Number : " & objScanner.SerialNumber
        WScript.Echo " Firmware Ver  : " & objScanner.FirmwareVersion
        WScript.Echo " Date of Manuf : " & objScanner.DateofManufacture
        WScript.Echo "-----------------------------------------------------"
    Next

Next

WScript.Echo " Script End: " & Time

![Sample WMI Visual Basic Script Screen Output](image-url)

Figure 6-2  Sample WMI Visual Basic Script Screen Output
Tracking SMS Operations

SMS enables a customer’s management console to query the ActivityStatus flag of the HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ZebraSMS registry key (Figure 6-3) to determine if scanners are being controlled by the SMS.

Figure 6-3  Zebra SMS Registry Key

The ActivityStatus value indicates whether SMS agent is busy currently executing any rules that cannot be interrupted.

- ActivityStatus = 1 indicates that the SMS agent is busy executing some rules and cannot be interrupted at this point in time without compromising device state. Any new package dropped into the download folder is only acted upon after these critical rules finish execution.
- ActivityStatus = 0 indicates that the SMS agent has completed rule execution and any package can be safely dropped into the download folder at this point in time and is immediately acted upon.

In addition, the SMS log file tracks all the actions performed on all connected scanners as specified in the SMS Package.
CHAPTER 7 TROUBLESHOOTING

Helpful Links

• To simplify navigation of this document and find links to commonly asked questions, see Chapter 2, QUICK STARTUP GUIDE.

• To download the SMS agent, visit www.zebra.com/sms.

• To view a one minute video tour of the SMS in action, visit www.zebra.com/sms.

• To view all the SMS how-to videos, visit www.zebra.com/scannersoftwarevideos.

Troubleshooting Actions

Verification of Proper Operation

After installing SMS, copy any SMS Package to the download folder. If the installation is successful, the package shall disappear from the download folder after few seconds. If SMS logging is enabled in the package, the SMS log file will have an entry indicating that SMS has executed the package successfully:

[<date-time-stamp>] INFO: SMS has Started Executing as a <Launch Mode> From the download folder, Package Details: <package-name>

Folder Security Check for the Download Folder

The Windows user account logged into the host PC requires administrative rights including full access rights to the download folder and its sub-folders. These access rights are granted by the SMS installation utility by default and modifying these by any other means would lead to improper execution of the SMS agent. Adding or removing any files inside these folders while the SMS agent is running is prohibited. The download folder is constantly monitored and managed by the SMS agent for either instrumented or manually initiated SMS Package drops in real time. Do not introduce any file except valid SMS Packages into the download folder.

The log folder by default is located inside the download folder. However there can be usage scenarios where the log folder might have to be located in a network share. In these situations, the SMS agent will impersonate the currently logged-on interactive user to gain access to this network shared folder. It is therefore essential to ensure that the logged-on user has sufficient security privileges to gain access to this network shared folder.
Firewall Considerations

Firewall permissions must allow the customer's third party console application to copy an SMS Package to the download folder.

Finding Last Load Details in Log File

When the SMS agent begins execution of a package either from cold-start or auto-reboot, an appropriate log file entry is made (if logging is enabled) documenting the details of the last loaded package.

Error Copying Files Running the SMS Agent as an Application on a Windows XP SP2 Host PC

If an error copying files occurs on a Windows XP SP2 host PC when running the SMS agent as an Application, the Windows Temp folder may have reached its capacity. If so, this error may be overcome by deleting the contents of the folder C:\Windows\Temp.

Updates to Scanner Devices Connected Via a USB Hub Do Not Complete

If updates to multiple scanners connected to a host PC through a USB hub fail to complete, ensure that each port of the USB hub provides 500mA of current. A self-powered USB hub with a power supply capable of providing 500mA per port may be required.
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