

Abstract

Software Packs are used to add support for devices, boards, middleware and other software components to MDK-ARM Version 5. This application note describes three methods for distributing Software Packs (local, web, and on www.keil.com/pack) and explains how to validate the PDSC file and Software Pack download.

Contents

Abstract	I
What is a Software Pack?	I
Validation of the PDSC File	I
Distributing a Software Pack	2
Local Installation.....	2
Web Download.....	2
Testing the Web Download.....	2
Publishing on www.keil.com/pack	3
Revision History	3

What is a Software Pack?

Software Packs provide support for microcontroller devices and development boards, and can contain software components such as drivers and middleware, including example projects and code templates. The following types of Software Packs can be distinguished:

- **Device Family Pack (DFP):** generated by a silicon supplier or tool vendor; provides support to create software applications for a specific target microcontroller. The creation of a DFP is subject of AN254: www.keil.com/appnotes/docs/apnt_254.asp.
- **Board Support Pack (BSP):** published by a board vendor to support the peripheral hardware mounted on the board. How to create a BSP is discussed in AN255: www.keil.com/appnotes/docs/apnt_255.asp.
- **CMSIS Pack:** provided by ARM® and includes support for CMSIS Core, DSP, and RTOS. It can be downloaded here: www.keil.com/dd2/pack.
- **Middleware Pack:** created by a silicon supplier, tool vendor or a third party; reduces development time by giving access to popular software components (such as software stacks, special hardware libraries, etc). There are various Middleware Packs already available at www.keil.com/dd2/pack.
- **In-house components:** developed by the tool user for internal or external distribution. AN251 explains the steps that are necessary to create such a Software Pack: www.keil.com/appnotes/docs/apnt_251.asp.

A Software Pack is a ZIP archive (with the filename extension “PACK”) containing all required libraries and files and a package description file (PDSC) with all the information about the Software Pack in XML format. The structure of a Software Pack is defined in CMSIS. Refer to CMSIS-Pack (www.keil.com/CMSIS/Pack) for more information.

Validation of the PDSC File

The creation of the package description file (PDSC) for a Software Pack is described in the above mentioned application notes. For validation, you should verify that the PDSC format complies with the related XML schema file:

- The PACK.xsd XML schema file that describes PDSC entries is part of the MDK installation and is located in the installation folder under the sub-folder `.\Keil\UV4`. Copy this file to the directory that contains the PDSC file.
- An editor like Notepad++ (notepad-plus-plus.org/) or Visual Studio (Express) (www.visualstudio.com) that is capable of validating a XML file against the related schema file is required. Load both the PDSC and XSD files into this tool and review any verification messages.

Distributing a Software Pack

There are multiple ways to distribute a Software Pack. This application note describes:

- Local Installation: used for a well-defined list of users of the Software Pack. No availability to the general public.
- Distribution via Web Download: users with the knowledge of the download URL can install the Software Pack locally. Updates can be installed automatically by Pack Installer.
- Publishing on www.keil.com/pack: Pack Installer will display the Software Pack in the list of available Packs for all MDK users. Updates can be installed automatically by Pack Installer.

Local Installation

The easiest way to distribute a Software Pack is attaching it to an email or using other means of electronic distribution (for example using a company internal file server). The installation of a Software Pack is triggered by double-clicking on the PACK file in Windows Explorer. Pack Installer is invoked and the Pack is installed on the local machine. After installation, the Pack will be listed in the Pack Installer.

If the PDSC file does not contain a valid `<url>` element, an update of the Software Pack requires to repeat the manual installation process. Otherwise, Pack Installer can check for updates on the server that is specified by `<url>`.

Web Download

You can use any web server to host the Software Pack (specified by the `<url>` element in the PDSC file). At this location, at least two files need to be present:

1. `<vendor>.<pack_name>.pdsc`
2. `<vendor>.<pack_name>.<version>.pack`

All previous versions listed in the `<releases>` section of the PDSC file should be present in that folder:

Name	Date modified	Type
Vendor.PackName.pdsc	17/05/2014 14:00	PDSC File
Vendor.PackName.1.0.0.pack	17/05/2014 14:00	Keil Software Pack
Vendor.PackName.1.0.1.pack	17/05/2014 14:00	Keil Software Pack
Vendor.PackName.1.1.0.pack	17/05/2014 14:00	Keil Software Pack
Vendor.PackName.1.2.0.pack	17/05/2014 14:00	Keil Software Pack

Based on the `<url>` element in the PDSC file the Pack can check for updates on the server.

Notes:

- If the URL or the PDSC/PACK files become unavailable (temporarily or permanently), users will not be able to retrieve updates.
- Do not replace PDSC/PACK files without updating the version number because Pack Installer will not recognize the update unless the version has been incremented.
- Older PACKs should remain available (at least in the latest released version).

Testing the Web Download

As soon as you have put the files on your web server, you can verify the download. Pack Installer will try to download any Software Pack whose PDSC file is in the `.Web`-directory of the MDK installation. Copy the PDSC file into that directory (usually `C:\Keil\ARM\Pack\.Web`) and run Pack Installer. Please validate that the Software Pack is listed and can be installed successfully.

Notes:

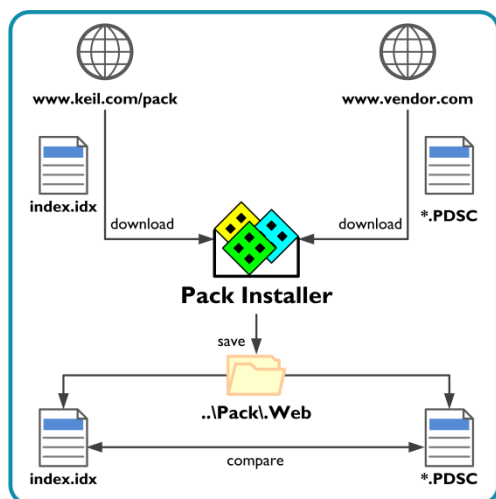
- If the Software Pack is already installed on your machine, remove *and* delete it prior to validating the download.
- A HTTP server is required for hosting the files. FTP download is not supported by Pack Installer.

Publishing on www.keil.com/pack

If you want a Software Pack to be available for all users of MDK, send the PDSC file to the following email address: cmsis@arm.com. The PDSC file will be manually XML validated. The following content will be processed in order to generate the web site and index file (www.keil.com/pack/index.idx):

- Version
- Release Notes
- Devices
- Boards
- Examples
- Software Components

Please allow up to seven working days for the process. If the file contains any errors, you will be notified. Otherwise, it will be uploaded to www.keil.com/pack.



This website is used by Pack Installer to search for available Software Packs. It saves the index file to the .Web-directory on the local machine (for example C:\Keil\ARM\Pack\.Web). The PDSC files listed in the index are compared to the files in this folder. If the index file has entries that are not present here or the version of an index file entry is higher than the one that is stored locally, the relevant PDSC file is downloaded from `<url>/<vendor>.<pack_name>.pdsc`.

Revision History

- January 2014: Initial Version