User Manual

SmartSnippets™ Studio

UM-B-057

Abstract

This guide describes how to install SmartSnippets™ Studio on your computer, and how to use it in combination with the SmartSnippets™ SDKs and RDs for Dialog Semiconductor SmartBond™ devices.

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Terms and Definitions

ARM	Advanced RISC Machine
CDT	C/C++ Development Tools
CMSIS	Cortex Microcontroller Software Interface Standard
DK	Development Kit
Eclipse	Open Source IDE
JTAG	Joint Test Action Group
HTML	HyperText Markup Language
GNU	General Public License
GDB	GNU Debugger
PC	Personal Computer
RD	Reference Design
SVD	System View Description
URL	Uniform Resource Locator
SDK	Software Development Kit
HDK	Hardware Development Kit

References

[1] "Eclipse Project Release Notes" documentation in Eclipse CDT (online or local_drive), Application Note, Dialog Semiconductor.

[2] SEGGER manual (online)

[3] UM-B-060-DA1468x/DA1510x Development Kit.

Prerequisites

- SmartSnippets™ Studio package (contact Dialog Semiconductor customer support)
- Dialog's Semiconductor SmartSnippets™ SDKs (supported families DA14580/581/583, DA1453x, DA14585/586, DA1468x, DA1469x) or a Dialog Reference Design (contact Dialog Semiconductor customer support)
- Minimum hardware requirements:
  - Windows or Linux Operating System – 1 GHz, 32-bit or 64-bit processor
  - 1 GB of system memory (RAM)
  - 2 GB of available disk space
- Development Kit (Basic or Pro) for one of the supported families and accessories
- Serial-port terminal software (for example, RealTerm)
- A USB connection supporting USB-Serial (FTDI)
- Unzip program
- For Linux only: `netstat` utility is required for SmartSnippets™ Toolbox

About User Guide

This guide describes installation process and features of the SmartSnippets™ Studio software along the different components that platform supports.

SmartSnippets™ Studio is used with the SmartSnippets™ SDKs for DA14580/581/583, DA1453x, DA1585/586, DA1468x, DA1469x families and Reference Designs for SmartBond devices.

When the term <family> SDK is used in this manual, all devices from this family are meant.

It also applies to DA1468x-based RDs (Reference Designs)

Note: Novice users can also read one of the **Getting Started Guides** provided for different development kits. [DA14531 Pro kit, DA14531 Usb kit, DA14585/586 Basic kit , DA14585/586 Pro kit, DA1468x Pro kit, DA1469x Pro kit, DA14695 Usb kit]

Introduction

This document presents Dialog Semiconductor software package, SmartSnippets™ Studio.

SmartSnippets™ Studio is a royalty-free software development platform for Smartbond™ devices. It fully supports the DA14531, DA14580/581/583, DA1585/586, DA1468x and DA1469x family of devices.

Note: Some of the tools (such as KEIL, GCC, and so on) might need to get installed separately since they are not included by default.

SmartSnippets™ Studio is a framework of tools comes with the popular open source IDE Eclipse CDT.

The SmartSnippets™ IDE is enabled by an on-board J-Link debugger from SEGGER. This offers standard debug capabilities such as single stepping, setting breakpoints, software download and many more. For more details on the debugger capabilities, visit https://www.segger.com/.

All components, tools and plug-ins are taken from the internet without changes and modifications. A subset of useful tools/plug-ins is selected by Dialog, and these are bundled with Eclipse CDT. Users can interact with all different tools from within the Studio environment.

Availability in tools and features is directly dependent on the selected Dialog Device Family.

For the latest version of SmartSnippets™ Studio, contact Dialog Semiconductor customer support.

Supported Systems and Versions

SmartSnippets™ Studio is getting released with support for the following operating systems and versions:

- Windows
  - Win 10 64bit
- Linux
  - Ubuntu 20.04.1 LTS
  - Ubuntu 18.04.5 LTS

1 SmartSnippets™ Installation

1.1 Fresh install in Microsoft Windows

This section describes installation on Microsoft Windows systems for the first time.

Supported variants:

- Windows 10 64-bit

Disk space requirements:

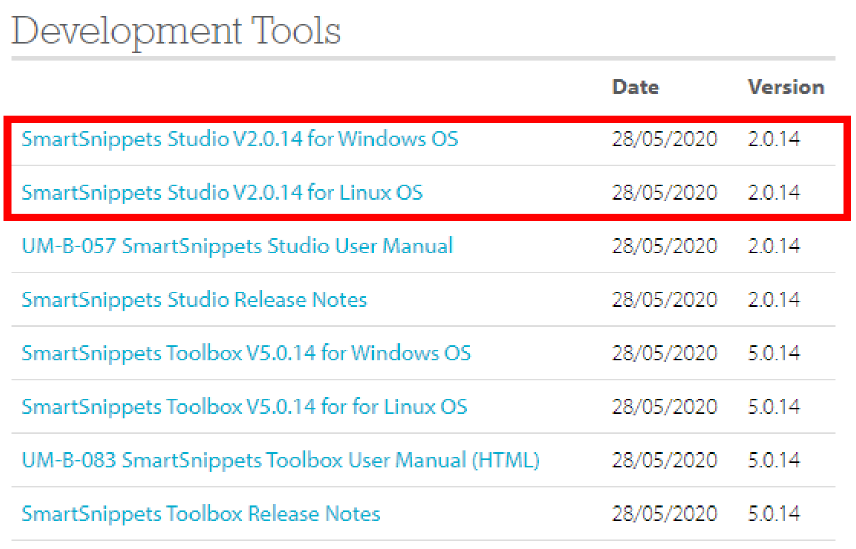
- At least 2 GBytes of free disk space are needed to complete this installation

To proceed with installation, go through the following steps.

1. Get access to the SmartSnippets™ SDKs. Please visit product page in https://support.dialog-semiconductor.com, download and unzip SDK zip-file, preferably under a subfolder of the home user's directory (for example, under a subdirectory of `C:\Users\<user>`).

   It is recommended that the root directory of the selected SDK or RD is selected for creating SmartSnippets™ Studio workspaces, so that the C projects can easily reference the source code and libraries of the SmartSnippets SDK. Also, see the SDK release notes.

   Note: It is recommended that the pathnames of the folders used for unzipping the SDK zip files, to be as short as possible (less than 20 characters). This is important to prevent problems under Windows due to the maximum path length restriction (260 characters for the entire path).
2. Download the latest version of SmartSnippets™ Studio from product website, as in Figure 1.

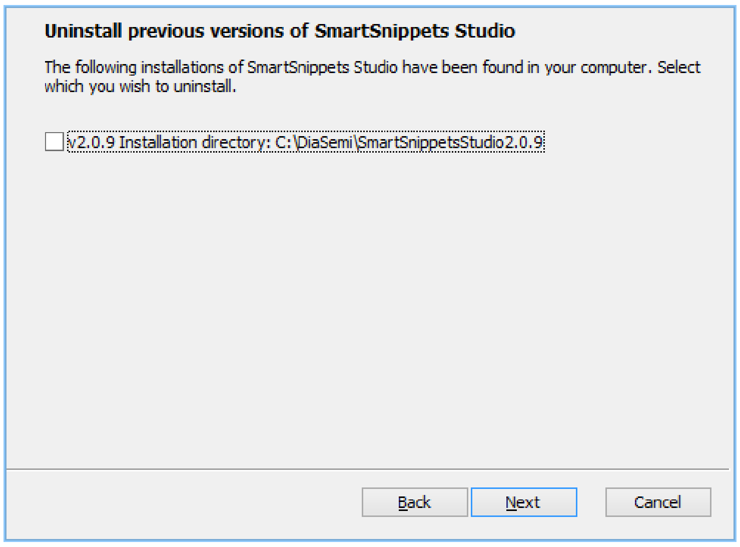


Development Tools

	Date	Version
SmartSnippets Studio V2.0.14 for Windows OS	28/05/2020	2.0.14
SmartSnippets Studio V2.0.14 for Linux OS	28/05/2020	2.0.14
UM-B-057 SmartSnippets Studio User Manual	28/05/2020	2.0.14
SmartSnippets Studio Release Notes	28/05/2020	2.0.14
SmartSnippets Toolbox V5.0.14 for Windows OS	28/05/2020	5.0.14
SmartSnippets Toolbox V5.0.14 for for Linux OS	28/05/2020	5.0.14
UM-B-083 SmartSnippets Toolbox User Manual (HTML)	28/05/2020	5.0.14
SmartSnippets Toolbox Release Notes	28/05/2020	5.0.14

Figure 1: SmartSnippets™ Studio Install Link

3. Run SmartSnippets™ Studio installer (.msi). Several of the required tools are automatically installed while others need to be manually downloaded and installed.
4. If a previous version of SmartSnippets™ Studio is found, user can uninstall it first before proceeding to installation of current version. This may take some minutes.

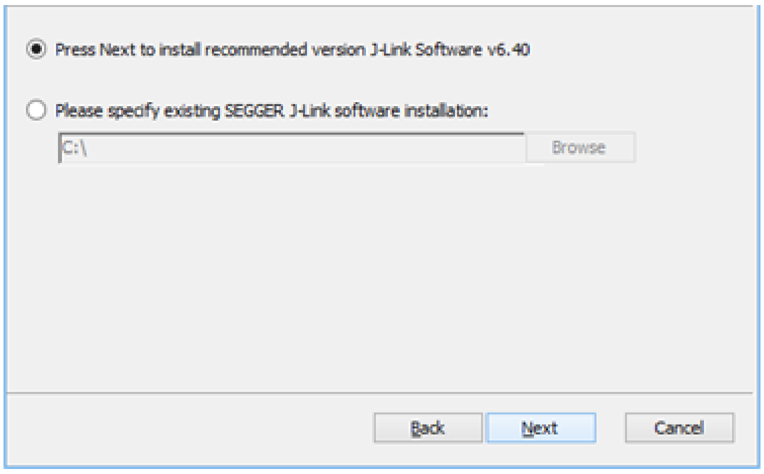

Uninstall previous versions of SmartSnippets Studio

The following installations of SmartSnippets Studio have been found in your computer. Select which you wish to uninstall.

☐ v2.0.9 Installation directory: C:\DiaSemi\SmartSnippetsStudio2.0.9

Figure 2: Optionally Uninstall Previous Version

5. Select to install recommended and latest version of SEGGER J-Link GDB server and click **Next**.


[✓ Press Next to install recommended version J-Link Software v6.40]

Please specify existing SEGGER J-Link software installation:

C:\

Figure 3: Segger JLink GDB Server Installation Directory

The installer will search for already installed version and will allow easily install of the recommended version. In case that there is an already bundled version with the installer, the prompt will be shown as in Figure 4. It is recommended to install the version which is bundled with the installer (if not already installed) by clicking the **Next** button.

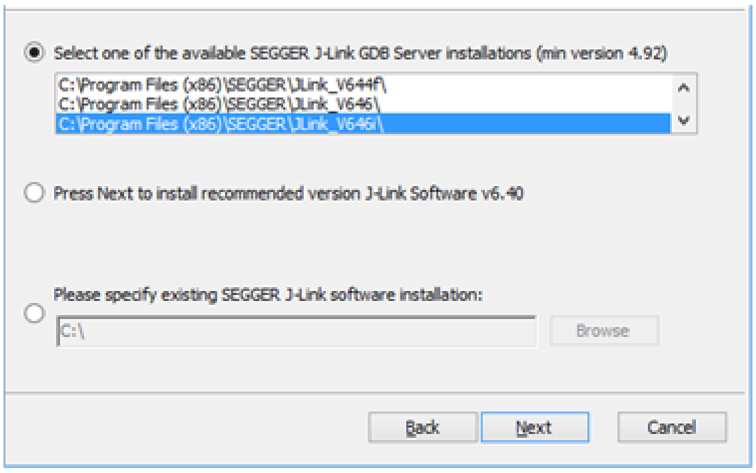

Select one of the available SEGGER J-Link GDB Server installations (min version 4.92)
C:\Program Files (x86)\SEGGER\JLink_V644f\
C:\Program Files (x86)\SEGGER\JLink_V646\
C:\Program Files (x86)\SEGGER\JLink_V646i\
Press Next to install recommended version J-Link Software v6.40
Please specify existing SEGGER J-Link software installation:
C:\

Figure 4: Segger JLink GDB Server Installation Directory with Bundled GDB Server

6. Select the destination folder for the SmartSnippets™ Studio and click **Next**.

   Destination Folder is the installation folder for SmartSnippets™ Studio. Default is `C:\Diasemi\` for windows installation.

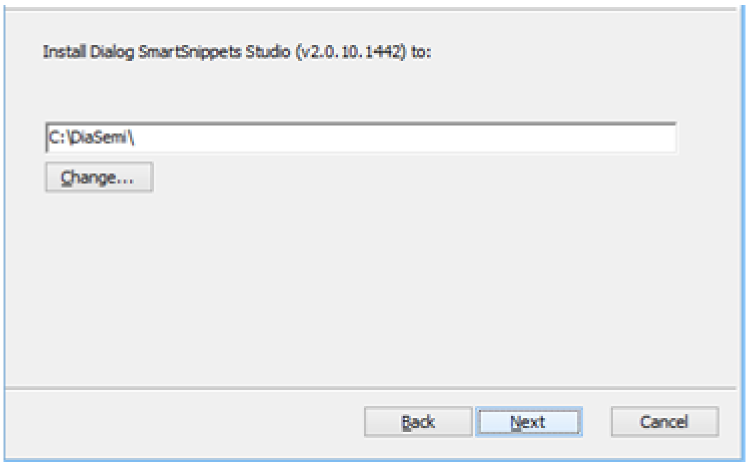

Install Dialog SmartSnippets Studio (v2.0.10.1442) to:
C:\DiaSemi\

Figure 5: SmartSnippets™ Studio Installation Directory

7. The SmartSnippets™ Studio is installed. To run the application, double-click the desktop shortcut or run from:

```
Start > All programs > Dialog Semiconductor > SmartSnippets™ Studio
{v<Studio_version>}
```

Note:

- The default Windows installation folder for SmartSnippets™ Studio is `C:\DiaSemi`.
- When Windows Defender is turned ON, it will prevent the file SmartSnippets™ Studio installer (.msi) from automatically running, click **Run Anyway** when prompted
- Administrator access is required to install SmartSnippets Studio software components
- During the installation, the user has to click the OK button several times
- Window hosting the OK button may be hidden behind the active window

1.2 Fresh install in Linux

This section describes installation on Linux systems for first time.

SmartSnippets™ Studio has been tested under:

- Ubuntu 20.04.1 LTS (64-bit x86_64)
- Ubuntu 18.04.5 LTS (64-bit x86_64)

Note: SmartSnippets™ Studio should work with the most modern 64-bit Linux distributions.

Disk space requirements:

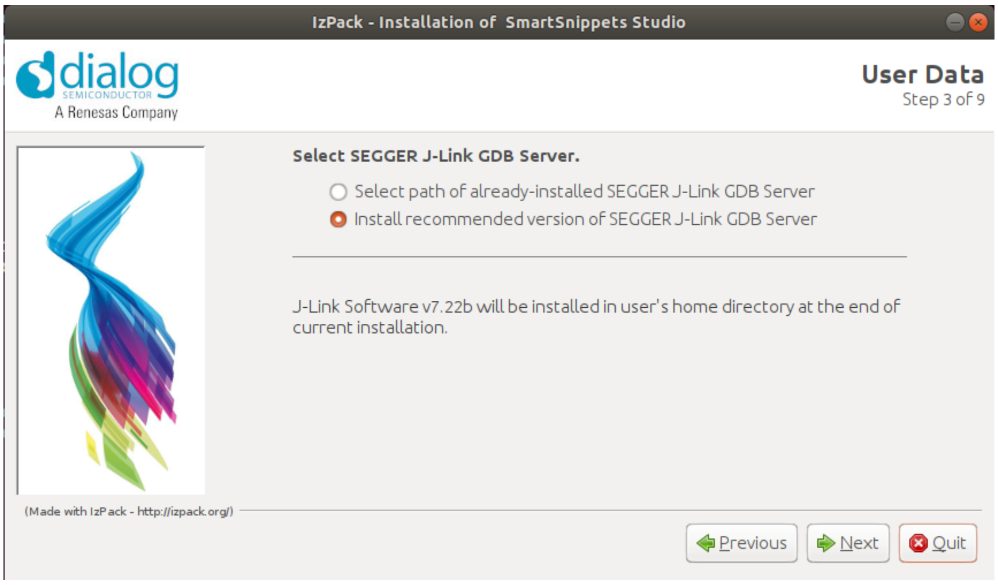
- At least 2 GB of free disk space are needed to complete this installation

To proceed with installation, go through the following steps:

1. Families DA1468x and DA1469x need the `netstat` utility for communication with JTAG interface. On Ubuntu install with:
   ```
   sudo apt-get install net-tools
   ```
2. To be able to compile native projects from the SDK on Linux, install the `gcc` compiler and the `make` utility. On Ubuntu install with: `sudo apt-get install build-essential`
3. SDK 1 requires GNU cross arm compiler 4.9-2015 which is a 32 bit package. To be able to run a 32 bit program on Ubuntu 64 the following packages need to be installed:
   ```
   sudo apt-get install libc6:i386 libncurses5:i386 libstdc++6:i386
   ```
4. Segger SystemView 2.xx referred by current SDK require `libqtgui4`. On Ubuntu 18.04 install with:
   ```
   sudo apt-get install libqtgui4
   ```
   SystemView 2.xx is not supported on Ubuntu 20.04. User is advisable to install its own version 3.xx from https://www.segger.com/downloads/systemview/. See also <troubleshooting> section.
5. The SmartSnippets™ SDK sources should be installed in a directory that gives read and write permissions to the user working with SmartSnippets™ Studio so that the user can work with the source files and the temporary files created during compilation/linking.
6. If a python project uses tkinter module, needs tcl/tk to be installed or else a missing library error occurs (see Troubleshooting section). There are two ways to resolve this issue:
   a. Install Tcl/Tk on the system:
      i. For Ubuntu
         ```
         sudo apt-get install tk tcl
         ```
   b. Download and install ActiveState ActiveTcl® (https://www.activestate.com/activetcl/downloads) and update LD_LIBRARY_PATH to point to the lib directory (for example, `LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/ActiveTcl-8.6/lib`)
7. To get access to the SmartSnippets™ SDKs, contact your Dialog sales representative. Download and unzip the SDK zip file, preferably under a subfolder of the home user's directory (for example, under a subdirectory of `./home/<user>/`).

   It is recommended that this folder also becomes the default folder for creating SmartSnippets™ Studio workspaces, so that the C projects can easily reference the source code and libraries of the SmartSnippets™ SDKs. Please also refer to the SDK release notes.
8. Run SmartSnippets™ Studio Installer that comes in the form of an executable file, having a '.run' extension. Modify its properties to make it executable:
   ```
   chmod +x SmartSnippets_Studio-linux.gtk.x84_64-X.X.X.XXX.run
   ```
   User may run installer as root with sudo (for example, sudo ./SmartSnippets_Studio-linux.gtk.x84_64-X.X.X.XXX.run) or as simple user.

   It is recommended to install as the user who owns the SmartSnippets™ SDK to make sure that user has all necessary permissions to automatically build SDK projects.
9. Select to install the latest version of SEGGER J-Link GDB server and click **Next**.


IzPack - Installation of SmartSnippets Studio
dialog SEMICONDUCTOR
A Renesas Company
User Data
Step 3 of 9
(Made with IzPack - http://izpack.org/)
Previous
Next
Quit

Select SEGGER J-Link GDB Server.

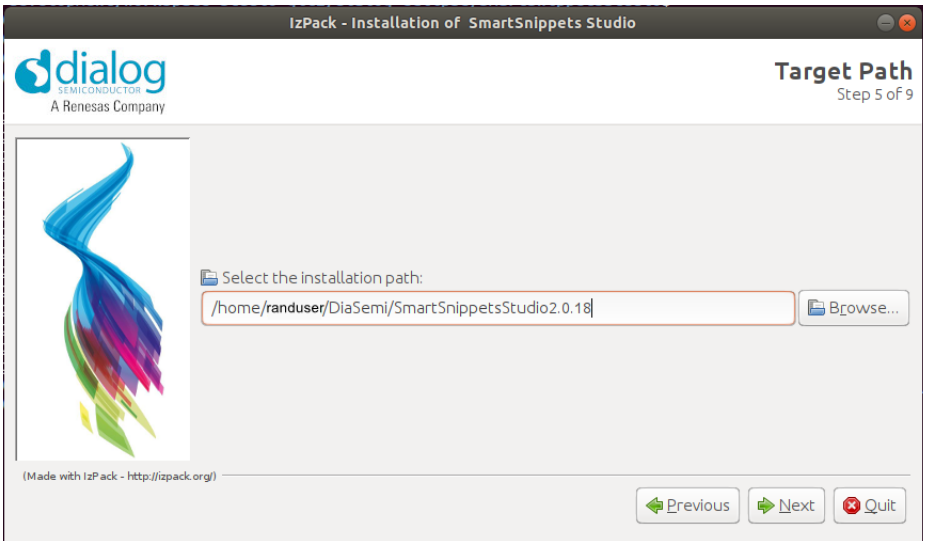
( ) Select path of already-installed SEGGER J-Link GDB Server
[✓ Install recommended version of SEGGER J-Link GDB Server]

J-Link Software v7.22b will be installed in user's home directory at the end of current installation.

Figure 6: Automatically Install the J-Link

10. Select the destination folder for the SmartSnippets™ Studio and click **Next**.

    Destination Folder on root installation default folder depends on Linux distribution (usually `/usr/local`) else default folder is user's home directory.


IzPack - Installation of SmartSnippets Studio
dialog SEMICONDUCTOR
A Renesas Company
Target Path
Step 5 of 9
Browse...
(Made with IzPack - http://izpack.org/)
Previous
Next
Quit

Select the installation path:
/home/randuser/DiaSemi/SmartSnippetsStudio2.0.18

Figure 7: Select SmartSnippets™ Studio Install Directory

11. The application can be executed from terminal by running:

```
<inst_dir>/Diasemi/SmartSnippetsStudio2.0.6/CDT/SmartSnippets_Studio.startup.sh
```

    Also, .desktop files (shortcut files) are created in the following cases:

    a. For installation as root user:
    `/usr/share/applications/smartsnippets_studio.desktop`

    b. For installation as normal user:
    `/home/<user>/.local/share/applications/smartsnippets_studio.desktop`

These shortcuts should be visible from the window manager and the Desktop. Enable launching if needed. For example, on Ubuntu 20.04 right click on desktop shortcut and select "Allow launching" (Figure 8).

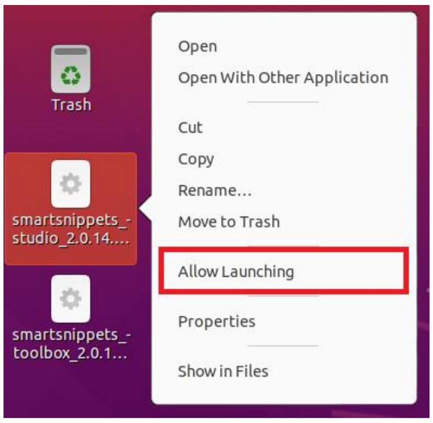

Trash
smartsnippets_-studio_2.0.14....
smartsnippets_-toolbox_2.0.1...
Open
Open With Other Application
Cut
Copy
Rename…
Move to Trash
Allow Launching
Properties
Show in Files

Figure 8: Allow Launching on Ubuntu 20.04

1.3 Reinstall/Uninstall under Windows

It is recommended to uninstall the previous version of SmartSnippets™ Studio before installing a new one. Also remove any remaining files and folders if installing under the same directory path. If not, the new version of SmartSnippets™ Studio will still try to uninstall the previous version before installing itself.

SmartSnippets™ Studio workspace will not be removed as long as it is not located inside the installation folder. So, workspaces can be used even after installing a newer version of the tool.

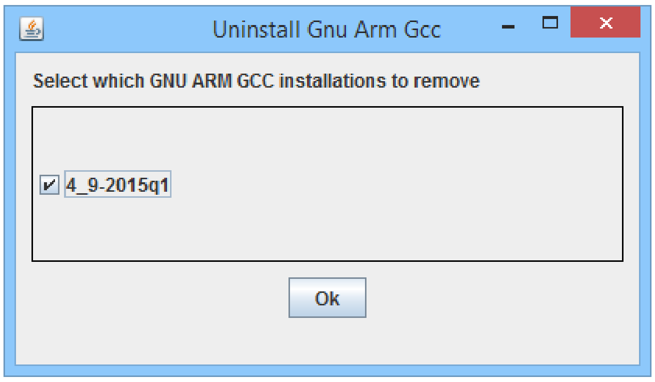
In cases there is some major change in how external paths are being treated internally, user may have to reconfigure project paths (for example, the JLink or SDK paths) again.

In general, Eclipse workspace preferences are maintained if user prefer working under the same workspace, even after upgrading to a new version of SmartSnippets™ Studio take place.

To uninstall SmartSnippets™ Studio from Windows, you can do it by executing the **Uninstall SmartSnippets™ Studio** located under **Start** > **All programs** > **Dialog Semiconductor** folder.

Note that after the uninstallation completes, the `.metadata` file is not deleted so that the workspaces that have been created in SmartSnippets™ Studio are still available.

During uninstallation process, user can select which of the currently installed GNU ARM GCC toolchains would like to remove.


Uninstall Gnu Arm Gcc

Select which GNU ARM GCC installations to remove

☑ 4_9-2015q1

Figure 9: Uninstall GNU ARM GCC

1.4 Reinstall/Uninstall under Linux

It is recommended to uninstall the previous version before reinstalling a more recent one under the same directory. Linux installer will not try to uninstall the previous version by itself.

To uninstall SmartSnippets™ Studio from Linux, user can search for the uninstaller shortcut (see Figure 10) or run:

```
/home/someuser/DiaSemi/SmartSnippetsStudio2.0.14/CDT/scripts/uninstall/uninstall_start
up.sh
```

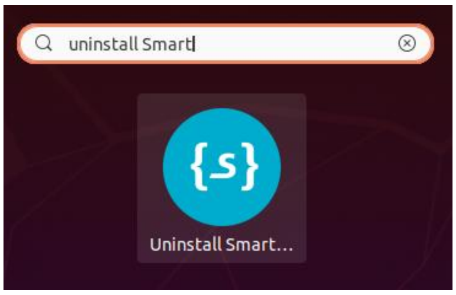


Figure 10: Uninstall Shortcut on Linux

This should:

- Remove the installation files and folders (will ask first for folder)
- Remove file /etc/profile.d/smartsnippets_studio.sh if you installed as root or lines between DIALOGECLIPSECONF_START and DIALOGECLIPSECONF_END on your PATH settings file (~/.bash_profile or ~/.profile) if you installed as user
- Remove the SmartSnippets .desktop file under /usr/share/applications for root installation or /home/<user>/.local/share/applications/ for normal user installation
- Remove file “99-smartsnippets_studio_common_ftdi_devices.rules” (if any) located under /etc/udev/rules.d
- Uninstaller will ask which GNU ARM GCC toolchains to remove (see Figure 9)

SmartSnippets™ Studio workspace will not be removed as long as it is not inside the installation folder. So, workspaces can be used even after installing a newer version of the tool.

If there is some major change in how external paths are being treated internally, user may have to reconfigure project paths (for example, the JLink or SDK paths) again.

In general, Eclipse workspace preferences are maintained if user prefer working under the same workspace, even after upgrading to a newer version of SmartSnippets™ Studio.

2 Starting SmartSnippets™ Studio

By starting the SmartSnippets™ Studio and after selecting a workspace, first thing that user will see is the welcome page. Nevertheless, the exact first time that IDE starts this might not be the actual case since some configuration needs to take place first.

No Toolchain included

Note that no toolchain is included by default with the provided installers. This is applicable for all platform installers. Furthermore, once a workspace gets connected with an SDK which requires a toolchain as a dependency, then a tool called "SDK Wizard" will come forward to guide the user in order to install the required dependencies. See Section 2.3 for more details.

2.1 Select Workspace

When SmartSnippets™ Studio starts for the first time, it prompts for a workspace selection under user's profile folder (for example, under `C:\Users\<user>\workspace_without_SDK` for windows).

User must download and unzip an SDK to work with SmartSnippets Studio. Extract to a path that do not contain spaces. See also Section 15.29.

The workspace must be the root directory of the downloaded and unzipped SDK. The root directory contains folders named "sdk" and "projects", and a folder named "config", that includes a file like "config.xml".

SmartSnippets™ Studio stores your projects in a folder called **workspace**. User can always change the targeted workspace from the top menu (**File** > **Switch workspace**) or through the SmartSnippets™ Studio Welcome Page (see Figure 22 for point 3).

Important Note*: When IDE loads the workspace, it tries to locate also an SDK under the specified path. For that reason, users* ***should always export*** *the root directory of the SDK they want to work with under the selected workspace path. This ensures that when SmartSnippets™ Studio try to open the workspace will be able to read necessary configuration settings and will also prepare appropriately the environment for this SDK.*

In different case, SmartSnippets™ Studio will not be able to read the configuration files and it ***will not set up the necessary tools*** *and configuration parameters for working under the context of an SDK. Please also note that the 'API documentation' button will not be functional.*

In case workspace folder does not correspond to a valid SDK root folder or corresponds to one of the older SDKs supported by SmartSnippets™ Studio (namely DA14580/581/583 5.0.3 SDK or DA1468x 1.0.4 SDK), SmartSnippets™ Studio welcome page will show a message like in Figure 21.

This means that a predefined set of tools, URLs and buttons will get by default enabled, **but the overall installation/configuration will not be necessarily compatible with what is needed for this SDK to work appropriately under the specified workspace.**

NOTE
It is better that path to workspace should not contain spaces or else some projects may have build errors. To ensure that when the SmartSnippets™ Studio launches for an SDK all appropriate tools and settings are in place, it reads the SDK configuration files and sets up the appropriate environment. This means that if the user modifies some of the preferences (for example, **Windows** > **Preferences** > **MCU** > **Global SEGGER JLink Path**) that reside in the configuration files too, next time the workspace starts these user preferences are read again from the SDK configuration file and will get overwritten. If for any reason (highly not recommended) the user wants to override the default configuration parameters for an SDK, the following steps should be followed: 1. Rename the `<sdk_root>\config\*SDK_config.xml` file by adding a prefix to the filename and placing the new file under the same folder (`<sdk_root>\config`). 2. Modify the copied *SDK_config.xml file. 3. Restart SmartSnippets™ Studio. The following preferences are reset every time Studio launches:

NOTE
1. C/C++ Indexer: "index source files not included in the build" and "index unused headers" are always set to false when Studio starts. 2. C/C++ Build: "Build configuration only when there are Eclipse resource changes..." is always set to false when Studio starts.

2.2 Supported SDKs

From version 2.0.10 the following SDKs are supported:

- SDK5: version 5.0.4 or newer
- SDK6: all versions
- SDK1: version 1.0.6 or newer
- SDK10: all versions

2.3 SDK Tools Installer

When the user runs the SmartSnippets™ Studio installer, a set of tools required for all SDKs are getting automatically installed.

Table 1: Default Tool Installation

Tool Name	Version for Studio v2.0.18	Installation Directory
Doxygen	1.8.16	DiaSemi/SmartSnippetsStudio2.0.18/Tools/doxygen
mingw-w64 (windows only)	4.3.5	DiaSemi/SmartSnippetsStudio2.0.18/Tools/mingw32
Msys2 (windows only)	20190524	DiaSemi/SmartSnippetsStudio2.0.18/Tools//msys2
Python	3.5	DiaSemi/SmartSnippetsStudio2.0.18/Python35

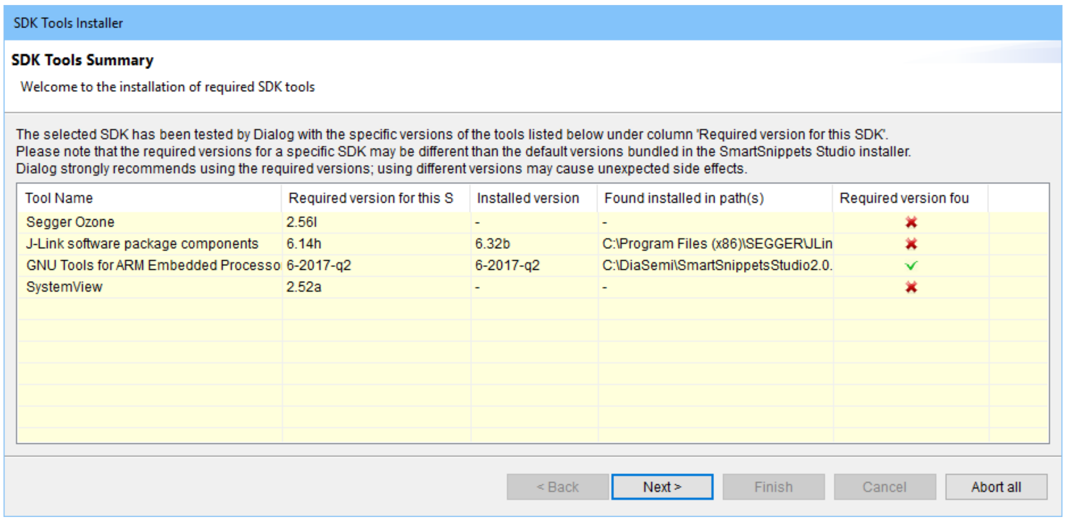
Depending on the selected SDK, there are some SDK dependencies that need to be installed. The set of SDK specific tools or the required versions may differ from SDK to SDK. Also, the selected SDK may have been tested with tool versions that are different than the ones bundled by default with the Studio installer.

To ensure that all required tools and their appropriate versions are installed, the **SDK Tools Installer** wizard is launched when Studio starts to guide the user through the installation process. A tool may be mandatory or optional. An optional tool can be specified in the configuration xml of the SDK with the attribute *can_skip="true"*.

Installation of optional tools can be skipped in the wizard. The user's choice to skip an optional tool is remembered by SmartSnippets™ Studio so that the wizard does not ask again for the installation of this tool the next time the wizard is launched. However, if the user decides to install an optional tool that has been skipped, a preference can be modified in order to trigger again the wizard which will also ask again for the skipped tools.

Figure 11 shows the first page of the wizard, which presents a table of the selected tools that this SDK requires along with the required version of the tool(s) and optionally the currently installed one for those that they are already installed. If the required version of a tool is not matching or not found at all, the wizard will prompt for tool installation.

***Important Note**: It is mandatory go through this wizard since otherwise SDK tools **will not** become functional or get installed at all. For that reason, users **should never** exit this dialog box by clicking the **Abort all** button. Instead, they should follow the steps till the **Finish** button appears (see Figure 15).*



SDK Tools Installer

SDK Tools Summary

Welcome to the installation of required SDK tools

The selected SDK has been tested by Dialog with the specific versions of the tools listed below under column 'Required version for this SDK'.
Please note that the required versions for a specific SDK may be different than the default versions bundled in the SmartSnippets Studio installer.
Dialog strongly recommends using the required versions; using different versions may cause unexpected side effects.

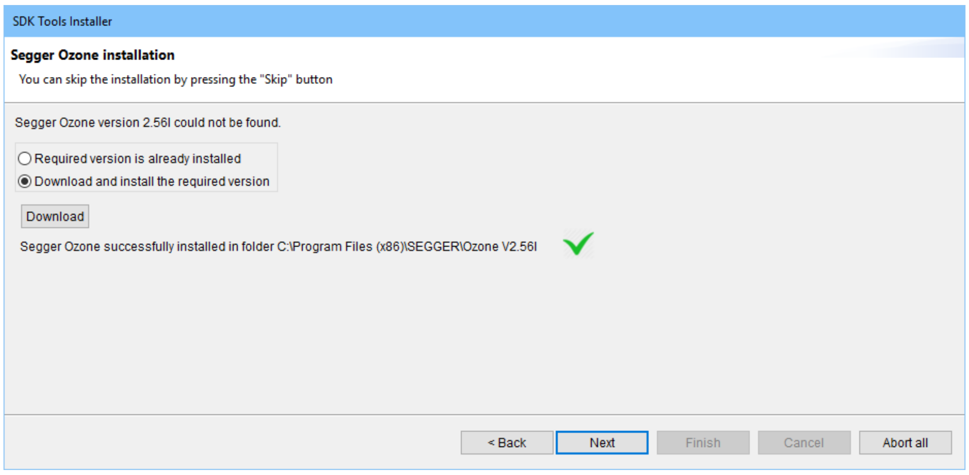
Tool Name	Required version for this S	Installed version	Found installed in path(s)	Required version fou
Segger Ozone	2.56l	-	-	✗
J-Link software package components	6.14h	6.32b	C:\Program Files (x86)\SEGGER\JLin	✗
GNU Tools for ARM Embedded Processo	6-2017-q2	6-2017-q2	C:\DiaSemi\SmartSnippetsStudio2.0.	✓
SystemView	2.52a	-	-	✗

Figure 11: The SDK Tools Installer Wizard Intro Page

For the selected SDK, installer will guide the user to install Segger JLink, Segger Ozone, and Segger SystemView.

For tools that have been specified as optional, user can always skip those by clicking the **Skip** button and eventually continue with the rest of the installation process.

User should normally install all optional tools and then click the **Next** button to continue with the installation dialog, as in Figure 12.



SDK Tools Installer

Segger Ozone installation

You can skip the installation by pressing the "Skip" button

Segger Ozone version 2.56l could not be found.

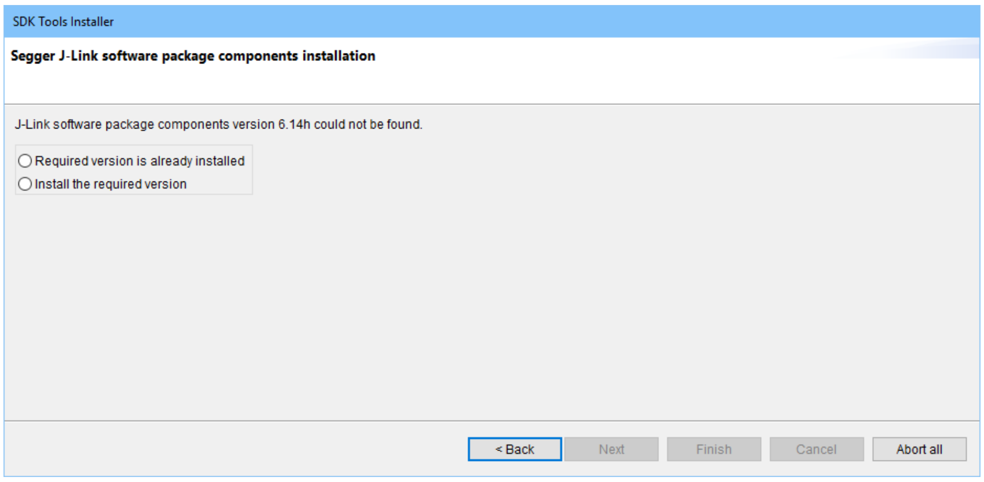
○ Required version is already installed
● Download and install the required version

Segger Ozone successfully installed in folder C:\Program Files (x86)\SEGGER\Ozone V2.56l

Figure 12: Installation of Segger Ozone by the SDK Tools Installer

For mandatory tools, the user has to download and install such tools by clicking the **Download** button or can always specify an installation folder if the tool is already installed externally. The **Next** button is enabled only after specifying a valid installation path or successfully installing the tool.

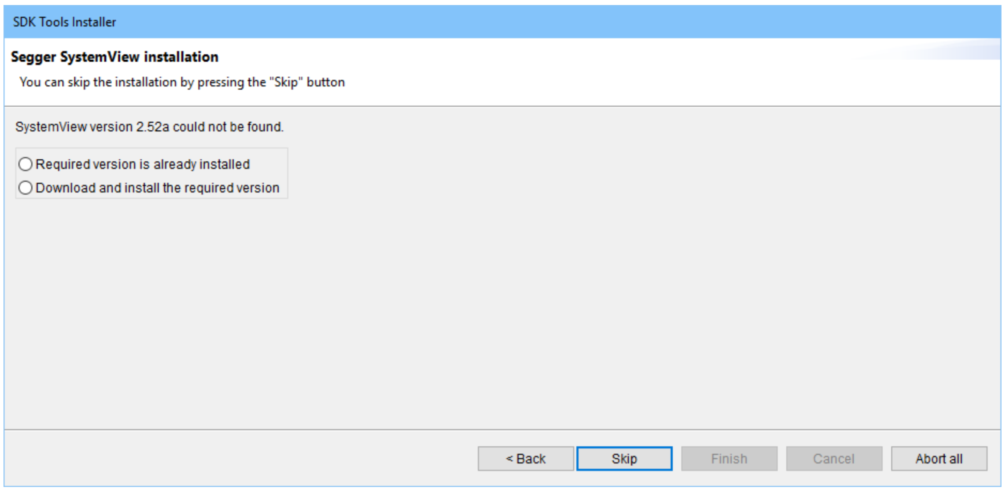
Figure 13 showns the installation of Segger J-Link software components, which are mandatory.



J-Link software package components version 6.14h could not be found.

- ◯ Required version is already installed
- ◯ Install the required version

Figure 13: Installation of Segger J-Link Software Components by SDK Tools Installer



You can skip the installation by pressing the "Skip" button

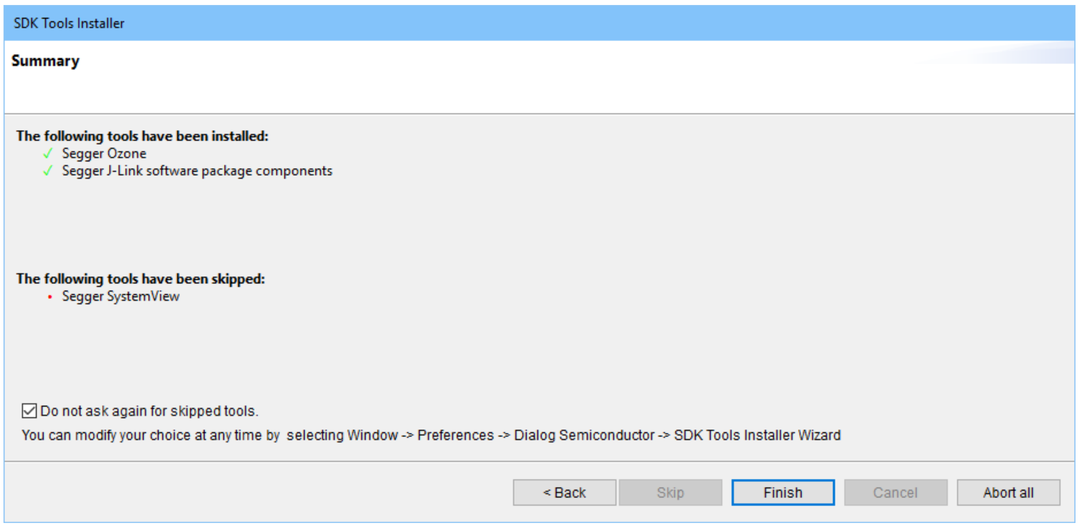
SystemView version 2.52a could not be found.

- ◯ Required version is already installed
- ◯ Download and install the required version

Figure 14: Skipping Segger SystemView Installation in SDK Tools Installer

The last page of the wizard shows a summary of installed and skipped tools (Figure 15).

If the option **Do not ask again for skipped tools** is selected, the SDK Tools Installer wizard will not ask again for the installation of tools that the user has selected to skip. Note that user preferences for skipped tools are SDK specific, meaning that user's choice to skip a tool, or to select **Do not ask again for skipped tools**, has no effect on another SDK.


SDK Tools Installer

Summary

The following tools have been installed:
- ✓ Segger Ozone
- ✓ Segger J-Link software package components

The following tools have been skipped:
- Segger SystemView

☑ Do not ask again for skipped tools.

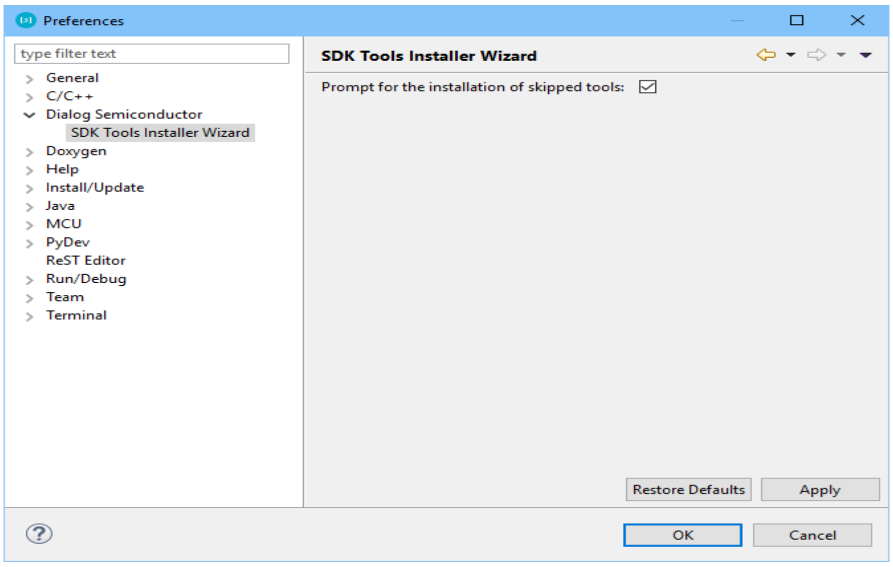
You can modify your choice at any time by selecting Window -> Preferences -> Dialog Semiconductor -> SDK Tools Installer Wizard

Figure 15: SDK Tools Installer Wizard Summary Page

As mentioned in the last page of the wizard, the user can modify the choice for the wizard to ask or not for tools that have been skipped by the user through the preferences page.

Figure 16 shows SDK Tools Installer Wizard preferences page.

Selecting the **Prompt for the installation of skipped tools** checkbox and clicking **Apply** or **OK** will trigger SDK Tools Installer wizard, which will guide the user to install tools that have been skipped in the past.


Preferences

SDK Tools Installer Wizard

Prompt for the installation of skipped tools: ☑

Figure 16: SDK Tools Installer Wizard Preference Page

Note: For tools provided by SEGGER (for example, the Ozone debugger, the J-Link software package and the System Viewer), older versions are delivered on as-is basis and come without support from SEGGER.

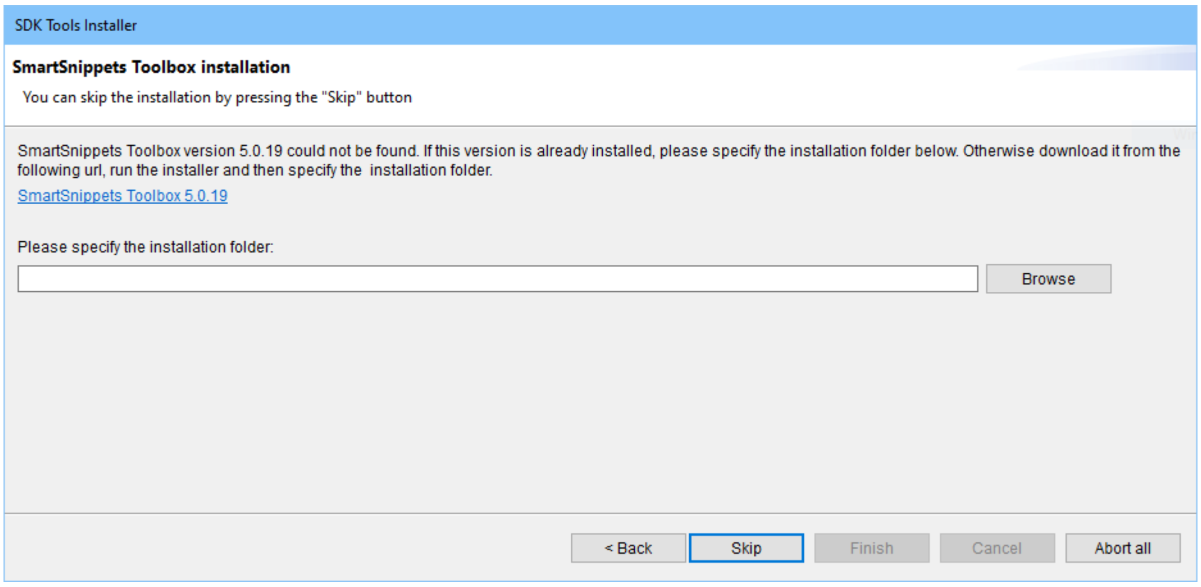
SEGGER Support can only be provided if the current version available on the SEGGER website shows the same misbehavior as the older one that is required for running an SDK.

2.3.1 SmartSnippets™ Toolbox Installation via SDK Tools Installer

SmartSnippets™ Toolbox is no longer installed by SmartSnippets™ Studio installer. To be able to launch the tool from the SmartSnippets™ Studio welcome page, it can be added as a dependency in the configuration xml file of the SDK. The SDK Tools installer wizard will guide the user on installing it and/or making its installation path known to Studio. The following lines can be added under `<tools>` nodefor windows platform to make SmartSnippets™ Toolbox available via SmartSnippets™ Studio:

```
<tool id="toolbox" can_skip="true">
   <name>SmartSnippets Toolbox</name>
   <official_url>https://sp-proptimality.s3.eu-west-
3.amazonaws.com/ApplicationUpdates/ToolBox/SmartSnippets_Toolbox_v5.0.19.4046_windows.msi
</official_url>
    <version>5.0.19</version>
    <official_download_url direct_download="no">https://sp-proptimality.s3.eu-west-
3.amazonaws.com/ApplicationUpdates/ToolBox/SmartSnippets_Toolbox_v5.0.19.4046_windows.msi
</official_download_url>
 </tool>
```

The wizard will ask from the user to configure the installation path of Toolbox. The user can download and install SmartSnippets™ Toolbox installer from the URL provided by the SDK tools installer wizard page. If SmartSnippets™ Toolbox is already installed, the user can directly browse and select the path where SmartSnippets™ Toolbox is installed. Note that in this example Toolbox has been added as an optional dependency in the configuration xml file (`can_skip` attribute is true). If the tool installation is skipped or the SDK Tools Installer wizard dialog box is closed before installing SmartSnippets™ Toolbox, SmartSnippets™ Toolbox and Rf Master buttons will not be available in the welcome page, even if they are enabled in the configuration xm file.


SDK Tools Installer

SmartSnippets Toolbox installation

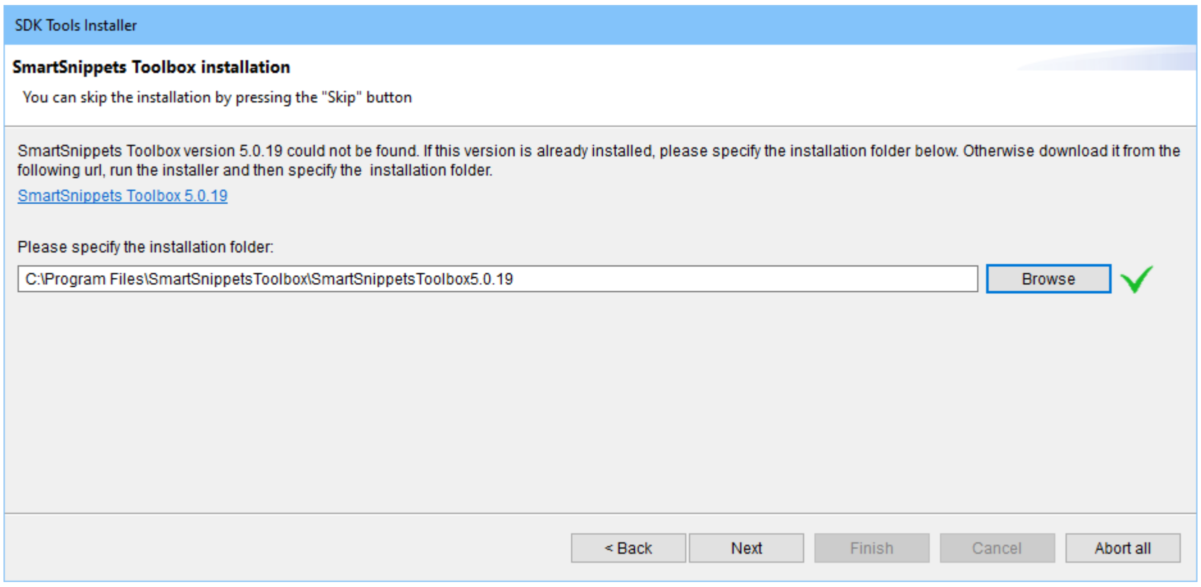
You can skip the installation by pressing the "Skip" button

SmartSnippets Toolbox version 5.0.19 could not be found. If this version is already installed, please specify the installation folder below. Otherwise download it from the following url, run the installer and then specify the installation folder.

SmartSnippets Toolbox 5.0.19

Please specify the installation folder:

Figure 17: SmartSnippets™ Toolbox Page in SDK Tools Installer



SDK Tools Installer

SmartSnippets Toolbox installation

You can skip the installation by pressing the "Skip" button

SmartSnippets Toolbox version 5.0.19 could not be found. If this version is already installed, please specify the installation folder below. Otherwise download it from the following url, run the installer and then specify the installation folder.

SmartSnippets Toolbox 5.0.19

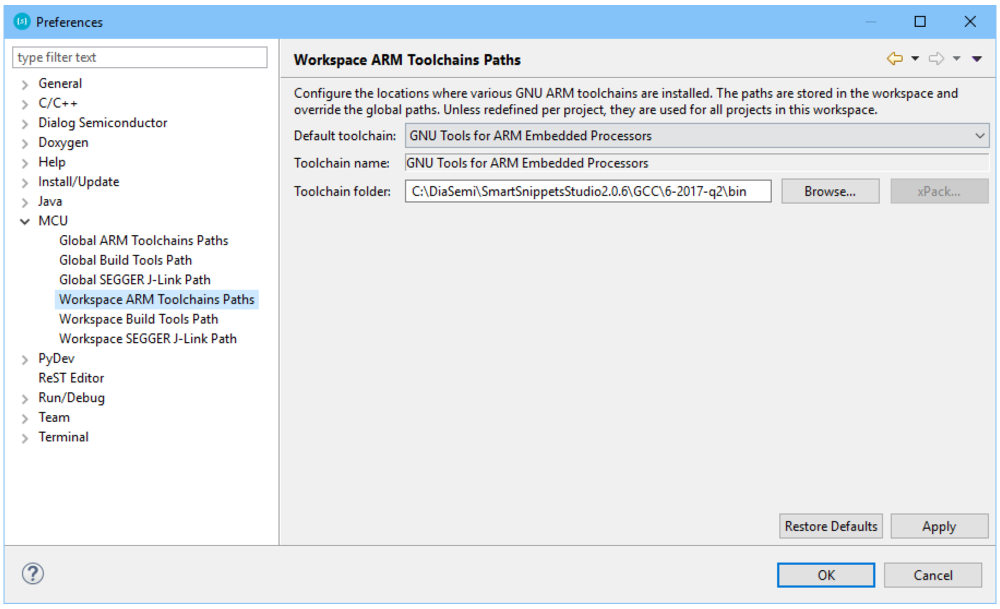
Please specify the installation folder:

C:\Program Files\SmartSnippetsToolbox\SmartSnippetsToolbox5.0.19

Figure 18: Installation path of SmartSnippets™ Toolbox is Verified by SDK Tools Installer

2.4 Change Workspace Toolchain

By default, toolchain is being set up by the SDK Tools Installer Wizard as described in Section 2.3.User may change the global or workspace toolchain from menu item **Window** > **Preferences** > **MCU** as shown in Figure 19.



Workspace ARM Toolchains Paths

Configure the locations where various GNU ARM toolchains are installed. The paths are stored in the workspace and override the global paths. Unless redefined per project, they are used for all projects in this workspace.

Default toolchain: GNU Tools for ARM Embedded Processors

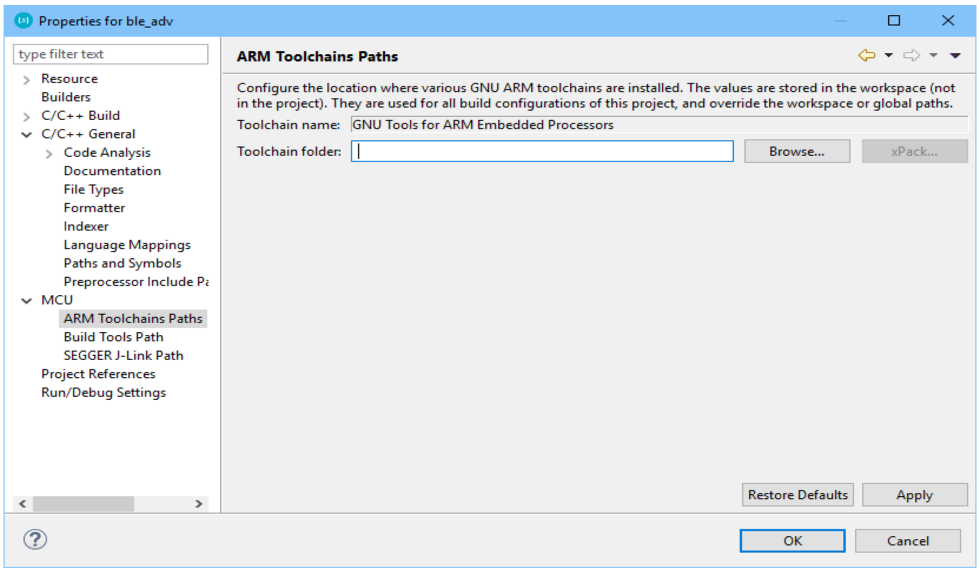
Toolchain name: GNU Tools for ARM Embedded Processors

Toolchain folder: C:\DiaSemi\SmartSnippetsStudio2.0.6\GCC\6-2017-q2\bin

Figure 19: Change Global or Workspace Toolchain

Note that after a Studio restart or a workspace change, the toolchain location path reverts to its default version as defined in SDK configuration and setup by SDK Tools Installer Wizard.

User may also change the toolchain for a specific project by right-clicking on project and selecting **Properties** > **MCU** > **Arm Toolchains Paths** as shown in Figure 20.



Configure the location where various GNU ARM toolchains are installed. The values are stored in the workspace (not in the project). They are used for all build configurations of this project, and override the workspace or global paths.

Toolchain name: GNU Tools for ARM Embedded Processors

Toolchain folder:

Figure 20: Change Project Toolchain

In such a case user's selection remains after Studio restarts.

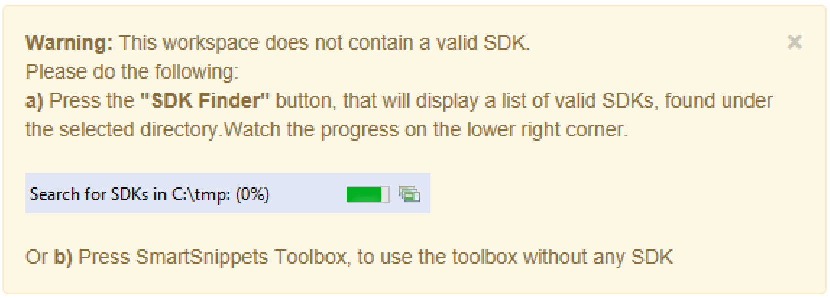
3 Welcome Page

The welcome page provides the user with the ability for easily launching applications, configure the SmartSnippets SDKs and HDKs (Hardware Development Kits), browse documentation and examples among other useful links.

The welcome page displayed in Figure 22 and Figure 23 can be reopened at any time via different accessing points, see points 1 and 2 recognizable as respectfully.

Additionally, the welcome page presents a **dynamic** set of tools and URLs directly associated with the linked SDK. Depending on SDK selected slightly different options may be available on the welcome page.

Important Note: *In case the selected workspace does not correspond to a valid SDK, a warning message is displayed on the welcome page prompting user to take some actions. User can either run the SDK finder tool to search for a valid SDK in local computer. (Figure 21). The user can dismiss it using the [x] button.*

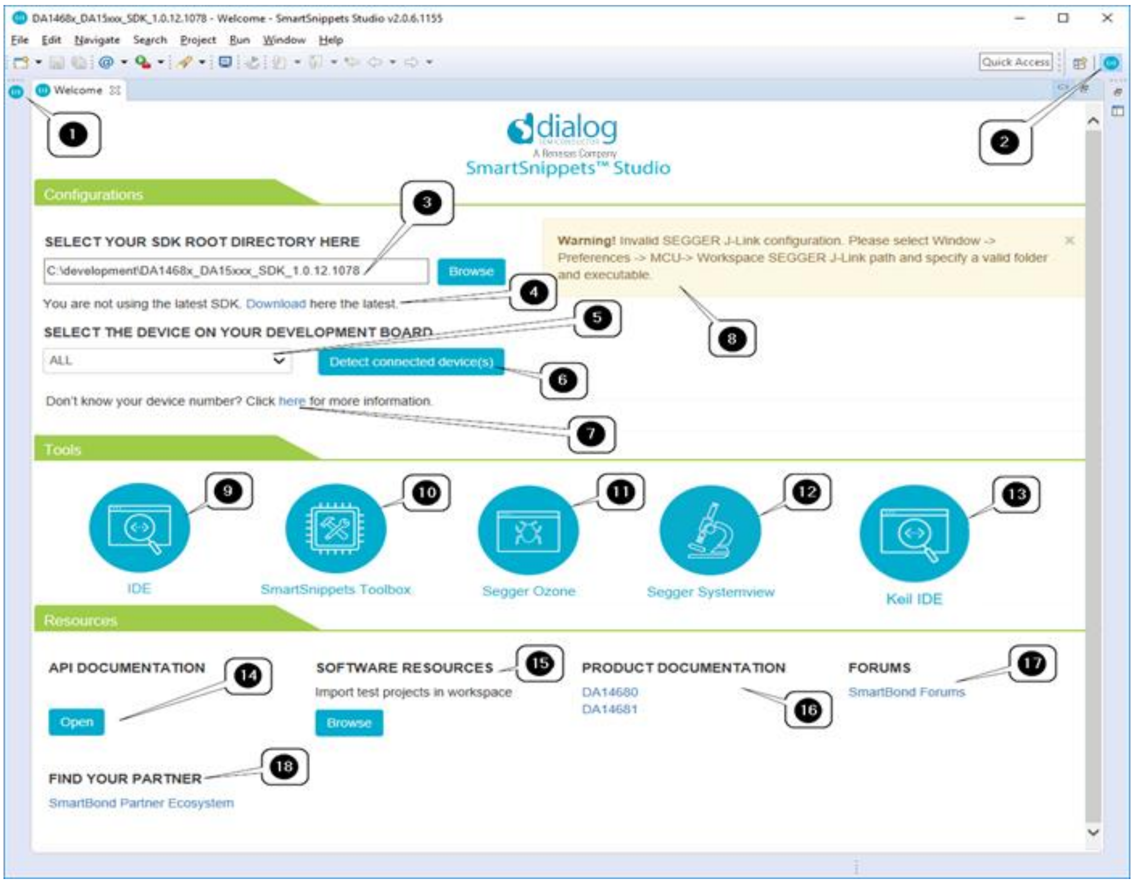


Warning: This workspace does not contain a valid SDK. ×
Please do the following:
a) Press the **"SDK Finder"** button, that will display a list of valid SDKs, found under the selected directory.Watch the progress on the lower right corner.

Search for SDKs in C:\tmp: (0%)

Or **b)** Press SmartSnippets Toolbox, to use the toolbox without any SDK

Figure 21: No SDK Selected Error in Welcome Page



C:\development\DA1468x_DA15xxx_SDK_1.0.12.1078

You are not using the latest SDK. Download here the latest.

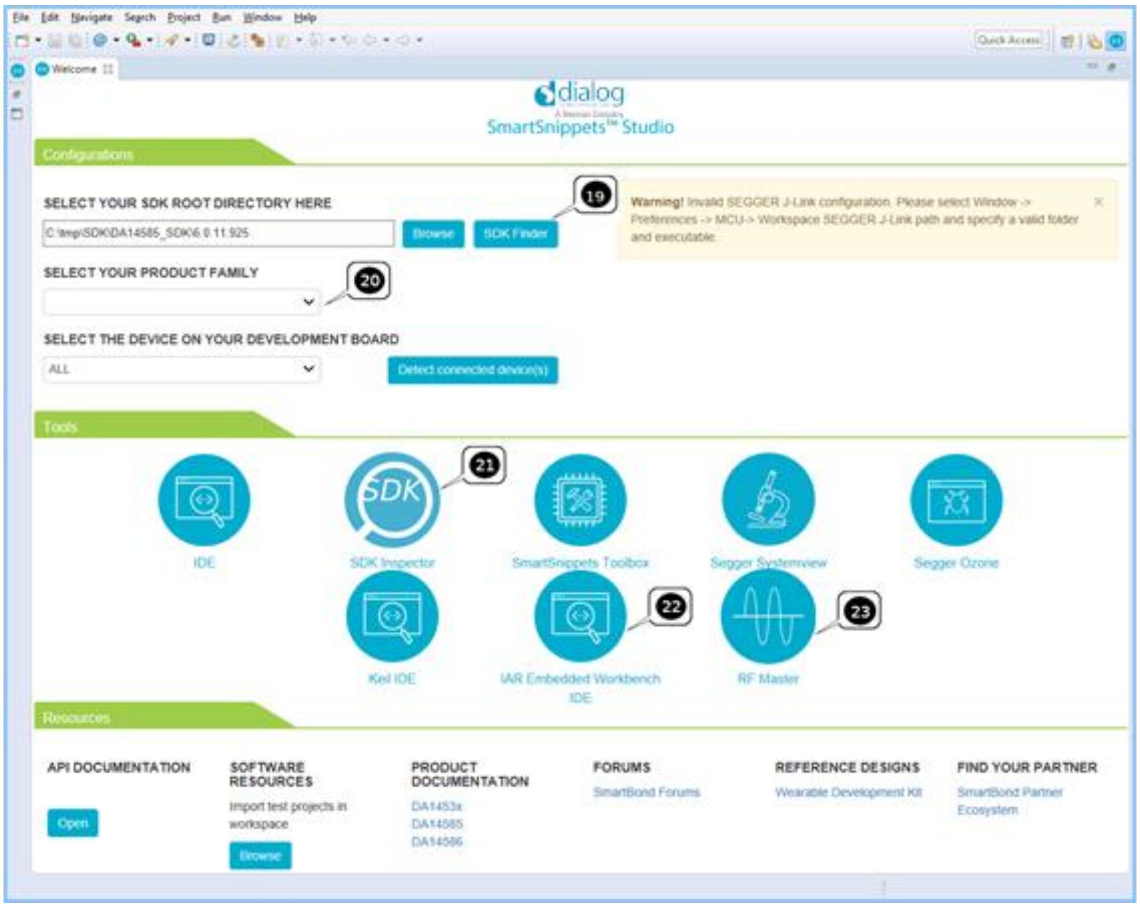
ALL

Don't know your device number? Click here for more information.

Warning! Invalid SEGGER J-Link configuration. Please select Window -> Preferences -> MCU-> Workspace SEGGER J-Link path and specify a valid folder and executable.

Import test projects in workspace

Figure 22: SDK Welcome Page



Warning! Invalid SEGGER J-Link configuration. Please select Window -> Preferences -> MCU-> Workspace SEGGER J-Link path and specify a valid folder and executable.

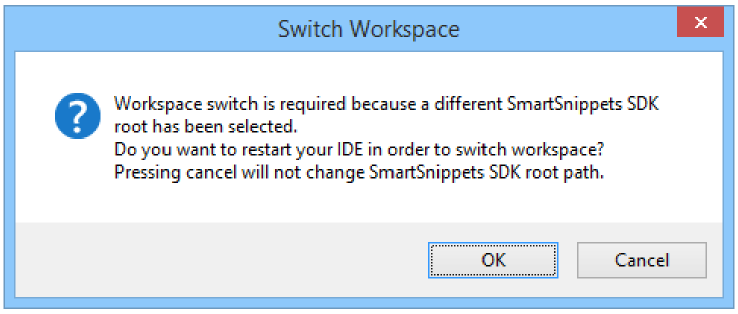
Figure 23: More Options on SDK Welcome Page

The functionality of the welcome page is described with more details in the following sections.

3.1 Provided Configurations

SDK Root directory selection (Figure 22 point 3): User can configure from here the root path for the SDK/Workspace that would like to use.

When change in the above path introduced, SmartSnippets™ Studio will ask user if it is ok to go for a restart so it can switch to the new workspace. If user selects to cancel from the **Switch Workspace** dialog box, the SDK root path will not change.



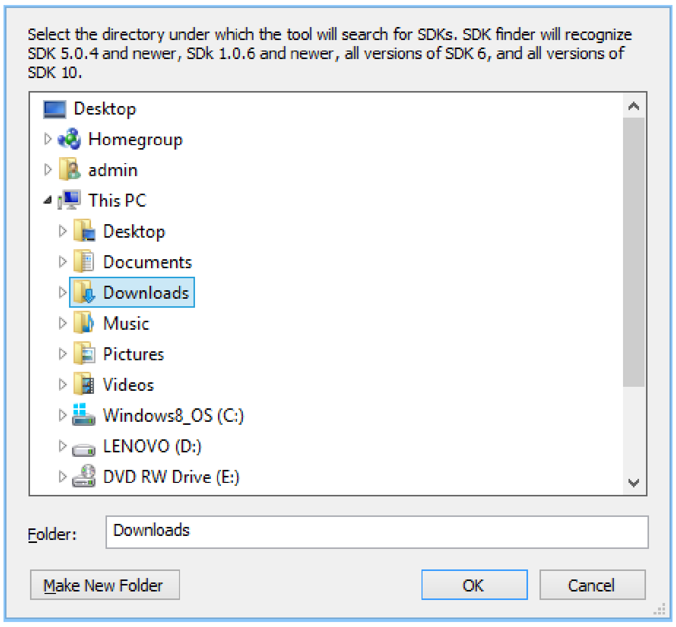
Workspace switch is required because a different SmartSnippets SDK root has been selected.
Do you want to restart your IDE in order to switch workspace?
Pressing cancel will not change SmartSnippets SDK root path.

Figure 24: Switch Workspace Verification

In case that user is not using the latest SDK per chip family, an appropriate message is getting prompted, so to let the user know that he can go and download the latest one.

User can download the latest SDK by clicking the Download link (Figure 22 point 4).

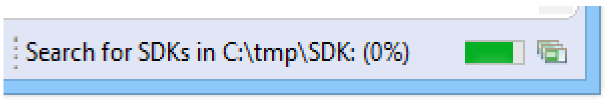
SDK finder (Figure 23 point 19): SDK finder is a tool that searches on the local computer for valid SDKs. User select the startup directory (Figure 25) and a background process starts searching (Figure 26). When finished, results are presented in a table (Figure 27). If the **Use this SDK** button is clicked, the switch workspace verification is shown (Figure 24) and the new SDK is used after restart.



Select the directory under which the tool will search for SDKs. SDK finder will recognize SDK 5.0.4 and newer, SDk 1.0.6 and newer, all versions of SDK 6, and all versions of SDK 10.

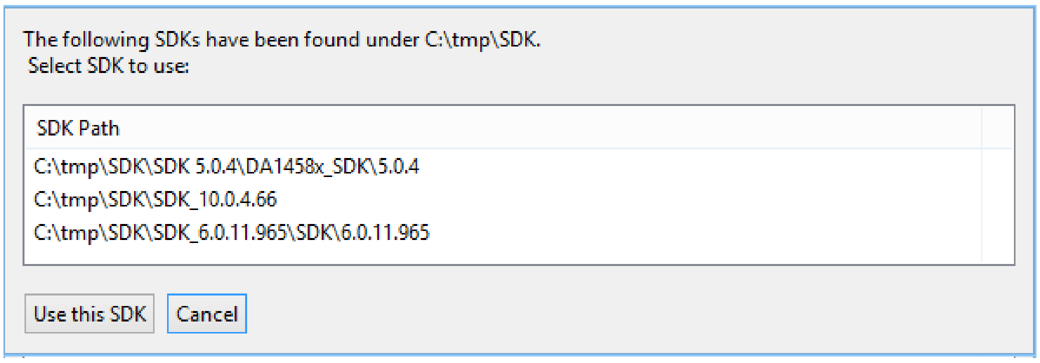
Folder: Downloads

Figure 25: SDK Finder Select Root Directory to Search



Search for SDKs in C:\tmp\SDK: (0%)

Figure 26: SDK Finder Active Search Indicator



The following SDKs have been found under C:\tmp\SDK.
Select SDK to use:

SDK Path
C:\tmp\SDK\SDK 5.0.4\DA1458x_SDK\5.0.4
C:\tmp\SDK\SDK_10.0.4.66
C:\tmp\SDK\SDK_6.0.11.965\SDK\6.0.11.965

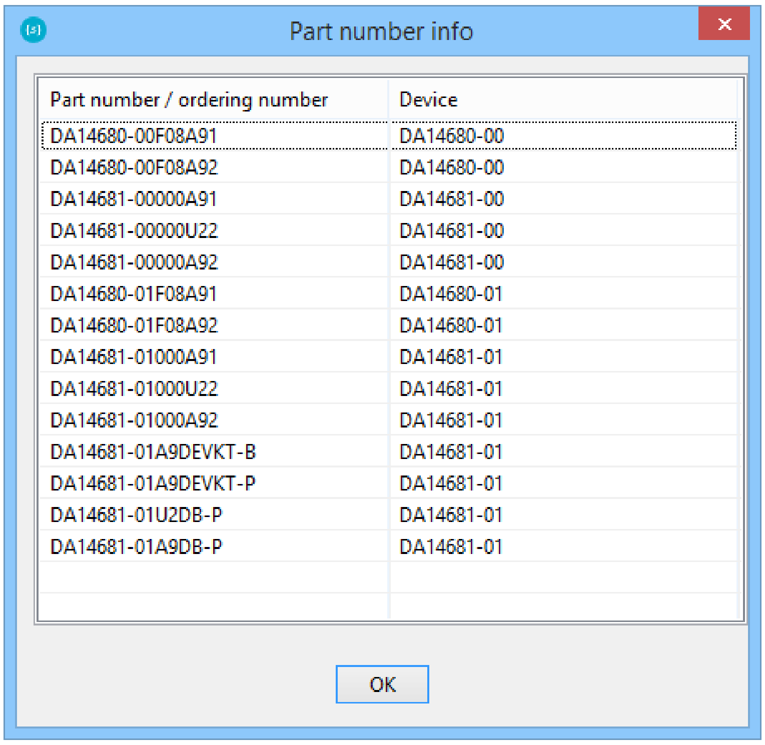
Figure 27: SDK Finder Results

Note: Tool process time depends on filesystem tree of the selected root search folder.

Family selection (Figure 23 point 20): If SKD supports more than one product family, user can select the family to work with. This option filter project's build configuration, welcome page's resources section, device selection as well as the results on some tools such as SDK Inspector.

Device selection (Figure 22 point 5): User can select the connected device from a list of supported devices.

For DA1468x SDKs, user can see a list of part numbers and matching devices displayed in (Figure 28) by clicking the "here" link (Figure 22 point 7).



Part number / ordering number	Device
DA14680-00F08A91	DA14680-00
DA14680-00F08A92	DA14680-00
DA14681-00000A91	DA14681-00
DA14681-00000U22	DA14681-00
DA14681-00000A92	DA14681-00
DA14680-01F08A91	DA14680-01
DA14680-01F08A92	DA14680-01
DA14681-01000A91	DA14681-01
DA14681-01000U22	DA14681-01
DA14681-01000A92	DA14681-01
DA14681-01A9DEVKT-B	DA14681-01
DA14681-01A9DEVKT-P	DA14681-01
DA14681-01U2DB-P	DA14681-01
DA14681-01A9DB-P	DA14681-01

Figure 28: Part Number Info Dialog Box

In cases that user is not aware about the selected hardware, there is always the option to detect the connected devices by clicking the **Detect connected devices(s)** button (Figure 22 point 6).

A notification message will appear on the top right side of the welcome page, informing the user about the currently detected devices.

3.2 Notifications

In Figure 22, point 8 presents a notification that indicates a wrong configuration in Segger tools. User is advised to manually correct the error according to the notification's instructions.

The notification is automatically dismissed when user corrects the error or can be closed by clicking the X button.

3.3 Listed Tools

Welcome screen contains a list of shortcuts to Tools so that the user can easily launch other applications from within SmartSnippets™ Studio.

IDE: (Figure 22 point 9): Switches to the IDE workbench in the C/C++ perspective.

SmartSnippets Toolbox: (Figure 22 point 10): Launches SmartSnippets Toolbox as an external application.

Ozone Debugger: (Figure 22 point 11): Opens SEGGER Ozone (JLink Debugger) as an external application. The path where user installed Ozone is set through Window > Preferences > Run/Debug > SEGGER Ozone.

System View: (Figure 22 point 12): Opens System View tool as an external application.

Keil IDE: (Figure 22 point 13): Opens Keil IDE as an external application instead of C/C++ perspective inside the IDE. Note that for DA14580/581/583 SDKs, C/C++ perspective is not available.

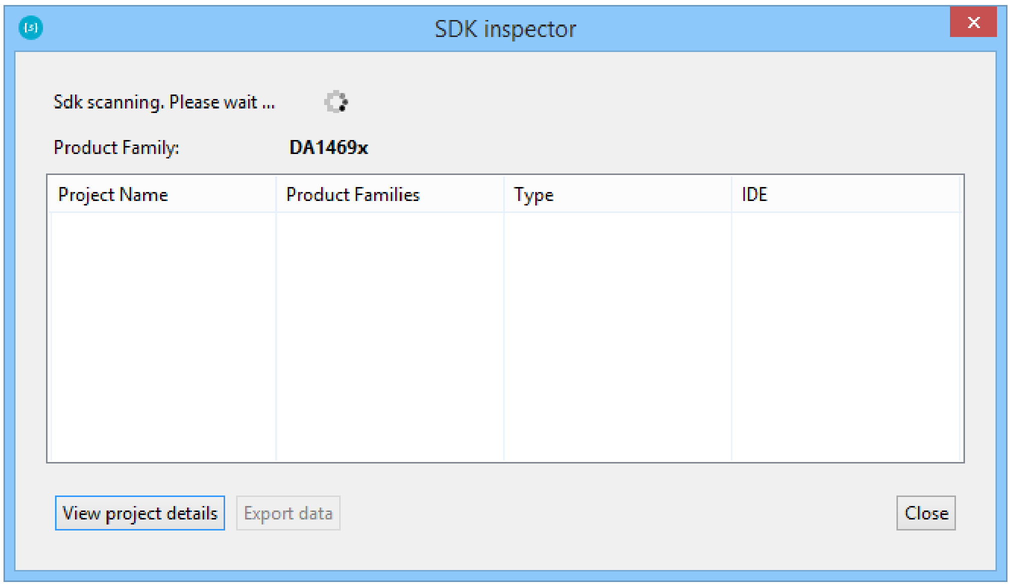
IAR Embedded workbench (Figure 23 point 22): Opens IAR Embedded workbench as an external application.

SDK inspector (Figure 23 point 21)**:** Scans SDK root folder for projects. The following platforms are currently supported: *Eclipse CDT* projects and *uVision Keil*. Also shows new user projects created with Studio.

If tool is enabled by the SDK the icon is shown on the welcome page as in Figure 29.

Figure 29: SDK Inspector Icon

Scan process starts when opening application. A spinning icon and empty table indicate that process is still running (Figure 30).



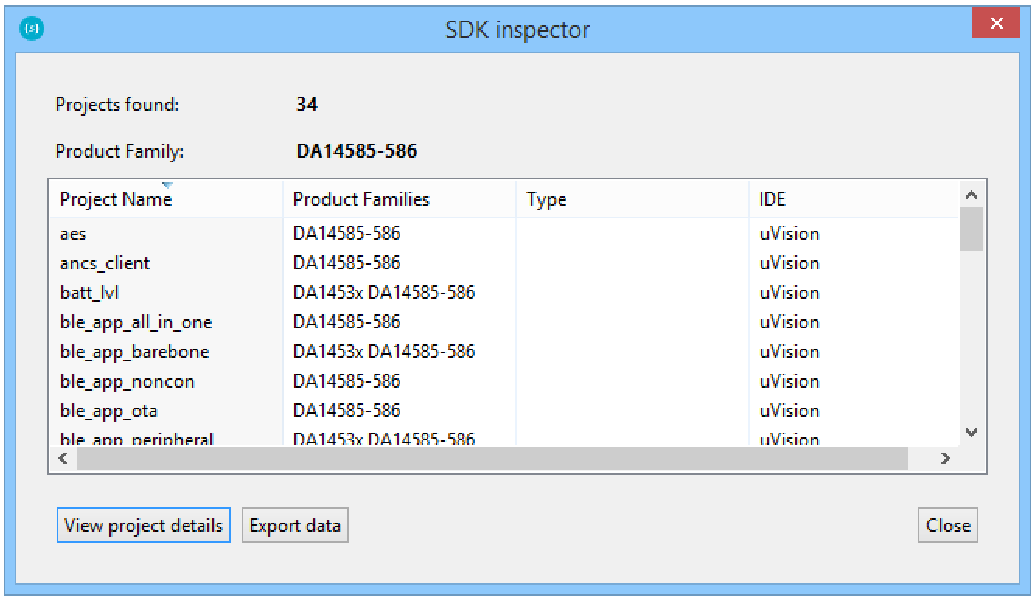
Sdk scanning. Please wait ...

Product Family: **DA1469x**

Project Name	Product Families	Type	IDE

Figure 30: SDK Inspector Scan Process

When done, projects are shown on the table (Figure 31). Projects are filtered based on *Product Family* selection of the welcome screen. This filter is shown on top of the table.



Projects found: 34

Product Family: DA14585-586

Project Name	Product Families	Type	IDE
aes	DA14585-586		uVision
ancs_client	DA14585-586		uVision
batt_lvl	DA1453x DA14585-586		uVision
ble_app_all_in_one	DA14585-586		uVision
ble_app_barebone	DA1453x DA14585-586		uVision
ble_app_noncon	DA14585-586		uVision
ble_app_ota	DA14585-586		uVision
ble_app_peripheral	DA1453x DA14585-586		uVision

Figure 31: SDK Inspector Project Table

Project table has the following columns:

- Project name
- Product families. SDK inspector tries to find the supported families for a project using search patterns in SDK's config.xml file in combination with some code embedded patterns. An example of such pattern is for example:

```
<studio_config>
  <sdk_search>
    <Eclipse id=".cproject">
       <family id="DA1468x">name="(.*)DA1468[0123]-0[01](.*)"</family>
       <family id="DA14585-586">name="(.*)DA1458[56](.*)"</family>
      <family id="DA1468x">file="startup_DA1468x.s"</family>
    </Eclipse>
    <uVision id=".uvprojx">
       <family id="DA14585-586">name="(.*)_58[56]"</family>
      <family id="DA14585-586">file="startup_DA14585_586.s"</family>
    </uVision>
</sdk_search>
```

  Where *name=""* means to search for project's build configuration names that match this pattern. If match assign this project to corresponding family id. A project may support more than one product families.

  Pattern *file=""* means to search in project's dependency files for files that match the given pattern.

  This is a best effort process. If no product family found, the table field is blank.

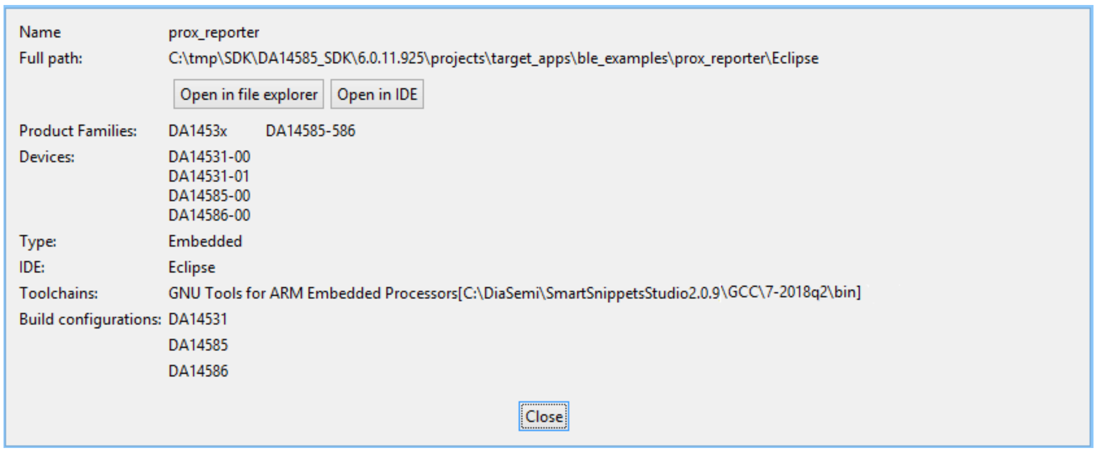
- Type. Applies only for Eclipse project. Two values are possible. *Native* and *embedded*.
- IDE. Either Eclipse or uVision.

The **Export data** button exports table contents in comma-separated text .csv format.

User can have access to project details with one of the following ways:

- Select project from the table and press the View project details button
- Right click on project row and click details on the context menu
- Double click on project row

Figure 32 shows an example of a project details view for an Eclipse type project.

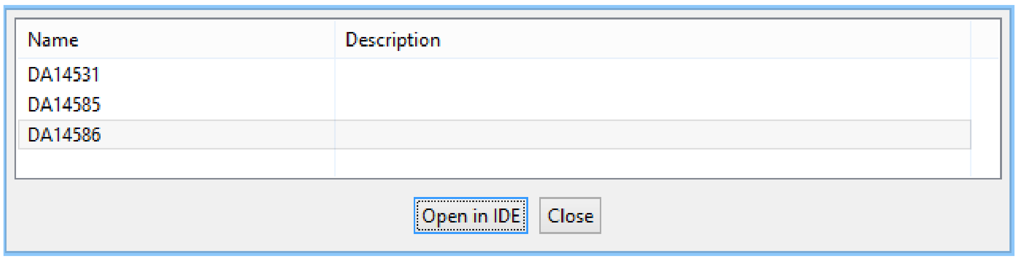


Name	prox_reporter
Full path:	C:\tmp\SDK\DA14585_SDK\6.0.11.925\projects\target_apps\ble_examples\prox_reporter\Eclipse
Product Families:	DA1453x DA14585-586
Devices:	DA14531-00 DA14531-01 DA14585-00 DA14586-00
Type:	Embedded
IDE:	Eclipse
Toolchains:	GNU Tools for ARM Embedded Processors[C:\DiaSemi\SmartSnippetsStudio2.0.9\GCC\7-2018q2\bin]
Build configurations:	DA14531 DA14585 DA14586

Figure 32: SDK Inspector Project Details of Eclipse Project

The new information here is:

- Full path. User may open full path in system's file explorer
- Product Families: Product families found to be supported by this project
- Devices. Just present the devices supported by the product families found. If no product families are found, this field is blank
- Toolchain. Applies for Eclipse projects only (Figure 32). If project have already imported into the workspace the toolchain name and path (only for Cross ARM GCC) is shown here. Toolchain is searched with respect to the hierarchy *project settings-workspace settings-global settings*
- If project is not imported into the workspace then, workspace default values or values taken from project's configuration is shown
- Build configurations. Here shown all project's build configurations, filtered by the selected family, plus those configurations that could not match to a product family
- Open in IDE button. When clicked, a table with all available build configurations are shown (Figure 33)



Name	Description
DA14531	
DA14585	
DA14586	

Figure 33: Select Build Configuration to Open

User selects the preferred build configuration. When the confirmation message is accepted (Figure 34) SDK inspector closes and project with the selected build configuration is opened at IDE (Figure 35).

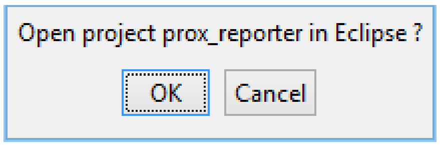

Open project prox_reporter in Eclipse ?

Figure 34: SDK Inspector. Confirm Open Project in IDE

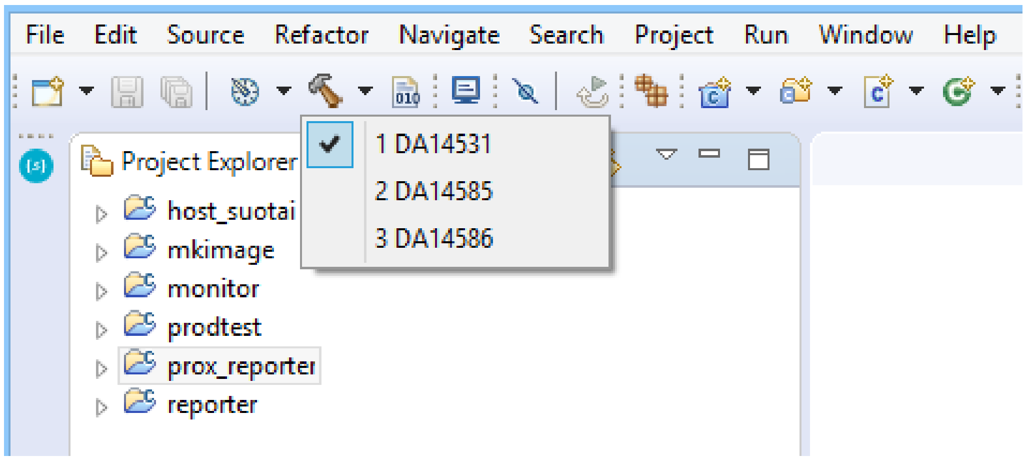
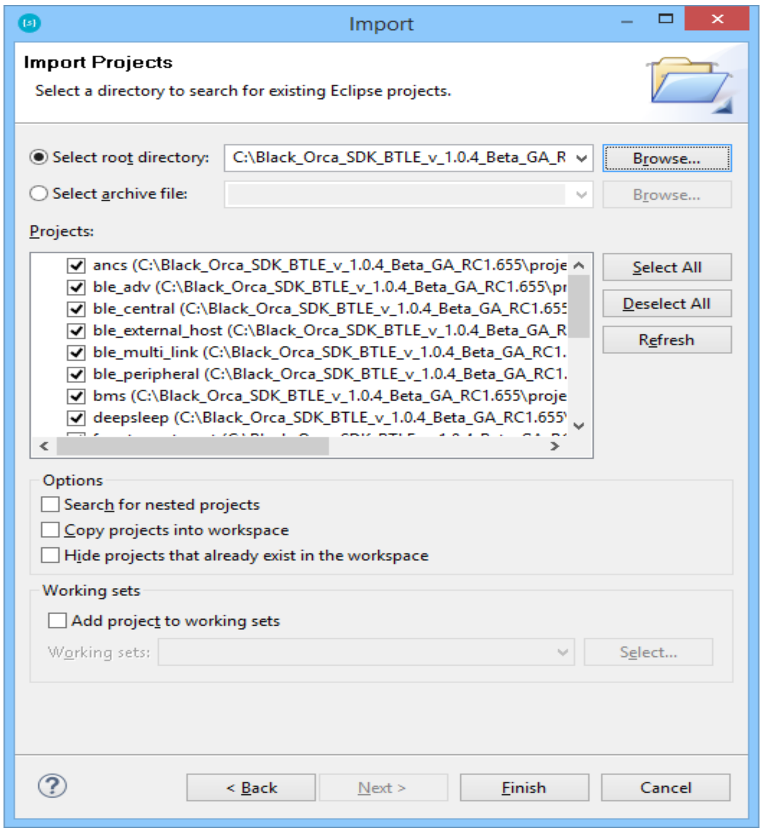


Figure 35: SDK Inspector Selected Project and Build Configuration

3.4 Resources

API Documentation: (Figure 22 point 14): Opens the Dialog Semiconductor's SDK Documentation located inside doc/html folder of the SDK. To work correctly, the location of a proper SDK should be given in point 3.

Software Resources: (Figure 22 point 15): Opens a dialog to the SDK root directory structure. After selecting a directory, the available projects are shown. The selected projects are imported in the workspace and SmartSnippets™ Studio switches to C/C++ perspective. Figure 36 shows an example of using Software Examples of welcome page to import projects from the SDK into the workspace. Import of software resources is not available for DA14580/581/583 SDKs.


Import

Import Projects

Select a directory to search for existing Eclipse projects.

(●) Select root directory: C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_R

( ) Select archive file:

Projects:

- [✓] ancs (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.655\proje
- [✓] ble_adv (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.655\pr
- [✓] ble_central (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.655
- [✓] ble_external_host (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_R
- [✓] ble_multi_link (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.
- [✓] ble_peripheral (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.
- [✓] bms (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.655\proje
- [✓] deepsleep (C:\Black_Orca_SDK_BTLE_v_1.0.4_Beta_GA_RC1.655\

Options

- [ ] Search for nested projects
- [ ] Copy projects into workspace
- [ ] Hide projects that already exist in the workspace

Working sets

- [ ] Add project to working sets

Working sets:

Figure 36: Import a Project

Product documentation: (Figure 22 point 16): Hereby you can find a collection of links to portals or directories containing product documentation.

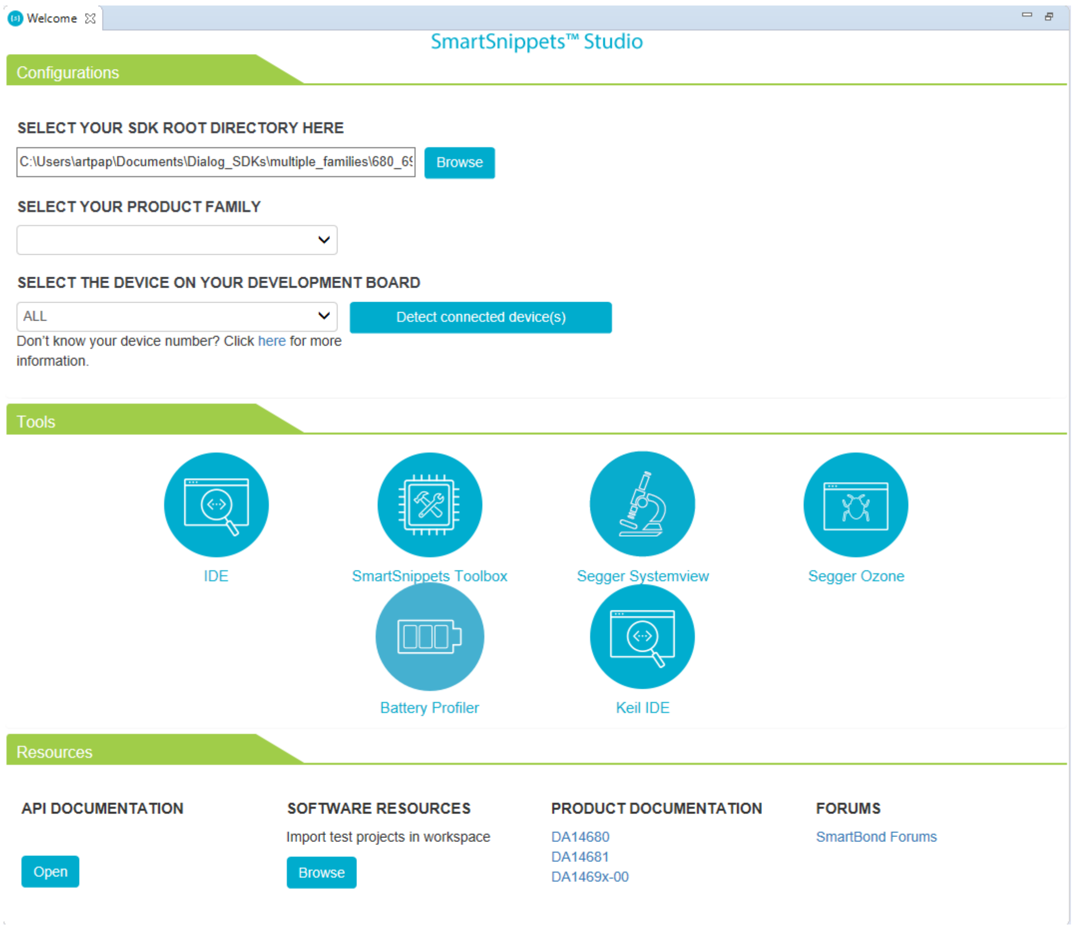
Forums (Figure 22 point 17): Hereby you can find a collection of links to SmartSnippets™ Studio forums.

Find Your Partner (Figure 22 point 18): Collection of links to SmartBond Partner Ecosystem.

To get access to the repositories under points 15, 16, and 17 visible in Figure 22 the user must register for an account.

3.5 SDKs for More than One Family

When SDK which supports more than one family is loaded for first time, configuration and information for all supported families is presented on the welcome page. The user can select one of the available families from the respective drop-down box. Then devices, tools, and resources of the selected family are presented only. The family selected by the user is saved in the workspace and the next time the same SDK is used, the configuration of the last selected family will be presented. Available build and debug configurations (if any), are also filtered by family and by device. When no specific device has been selected, all the build and debug configurations of the selected family are available.



SELECT YOUR SDK ROOT DIRECTORY HERE

C:\Users\artpap\Documents\Dialog_SDKs\multiple_families\680_69

SELECT YOUR PRODUCT FAMILY

SELECT THE DEVICE ON YOUR DEVELOPMENT BOARD

ALL

Don't know your device number? Click here for more information.

API DOCUMENTATION

SOFTWARE RESOURCES

Import test projects in workspace

PRODUCT DOCUMENTATION

DA14680
DA14681
DA1469x-00

FORUMS

SmartBond Forums

Figure 37: No Family Selected

4 SmartBond Projects

Dialog's SmartBond™ family is the simplest route to delivering the most power-friendly and flexible Bluetooth® Smart connected products to the market.

See http://www.dialog-semiconductor.com/bluetooth-smart for more details.

In the following chapters, we provide project examples based on SDK's supported family members and tools.

4.1 Build a Simple Application in Keil

This section explains how the user can select, build, and run a simple software application on a development board using KEIL IDE.

Furthermore, it provides step-by-step instructions for setting up one of the example projects, build and eventually execute it via the debug mode in any of the supported devices. However, for the needs of this demonstration we will use a DA14585/586 device and for that reason we need to choose the appropriate SDK as well.

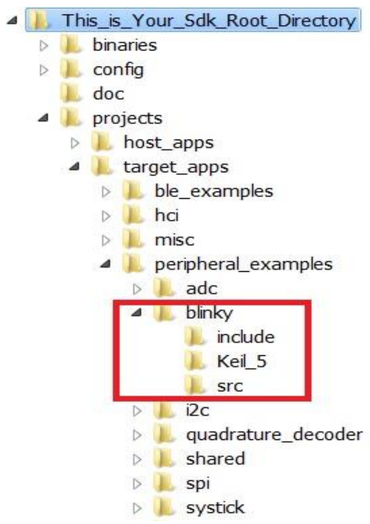
For more information regarding KEIL Environment, visit Keil Website.

Blinky is a simple application which demonstrates basic device initialization and LED blinking functionality.

Once SDK is successfully unzipped, blinky-example source code can be found under the directory 'peripheral_examples'.

To get started, go through the following steps:

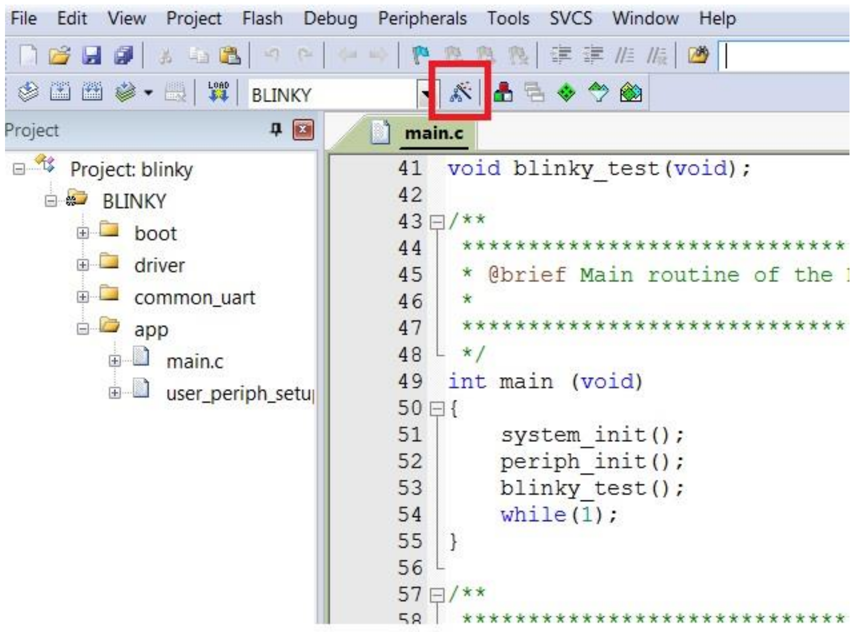
1. Open the folder containing the SDK files. This is the folder where you extracted the SDK zip file.
2. In `<sdk_root_directory>\projects\target_apps\peripheral_examples\blinky\Keil\_5`, double-click blinky.uvproj to open the project in Keil.



```
This_is_Your_Sdk_Root_Directory
  binaries
  config
  doc
  projects
    host_apps
    target_apps
      ble_examples
      hci
      misc
      peripheral_examples
        adc
        blinky
          include
          Keil_5
          src
        i2c
        quadrature_decoder
        shared
        spi
        systick
```

Figure 38: Blinky Project Directory

The development environment should look like in Figure 39 when the project is opened with Keil.



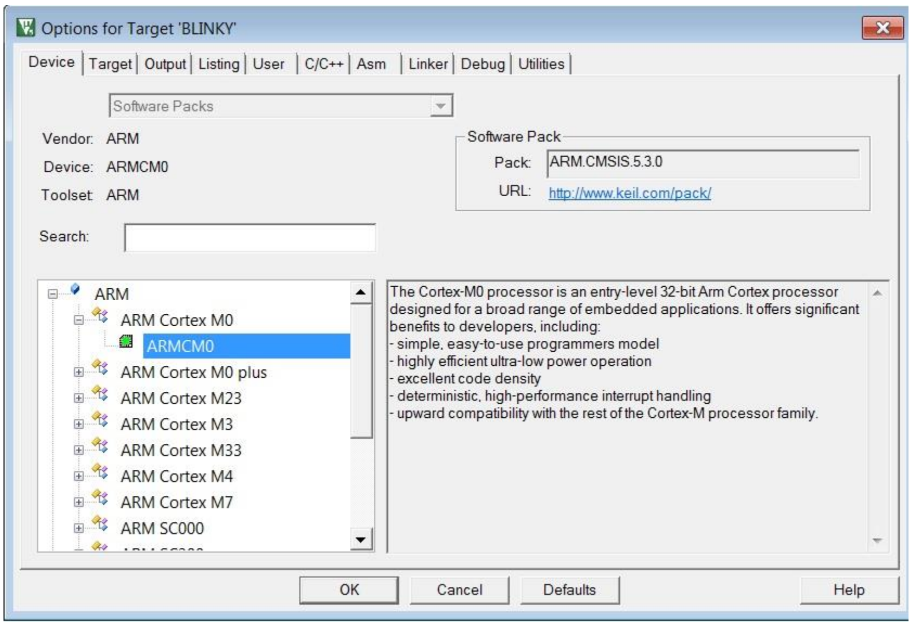
```
void blinky_test(void);

/**
 ******************************
 * @brief Main routine of the
 *
 ******************************
 */
int main (void)
{
    system_init();
    periph_init();
    blinky_test();
    while(1);
}

/**
 ******************************
```

Figure 39: Blinky Project Keil Workspace

3. Click the **Target Options** button, then click the **Device** tab. The dialog box should look like Figure 40.



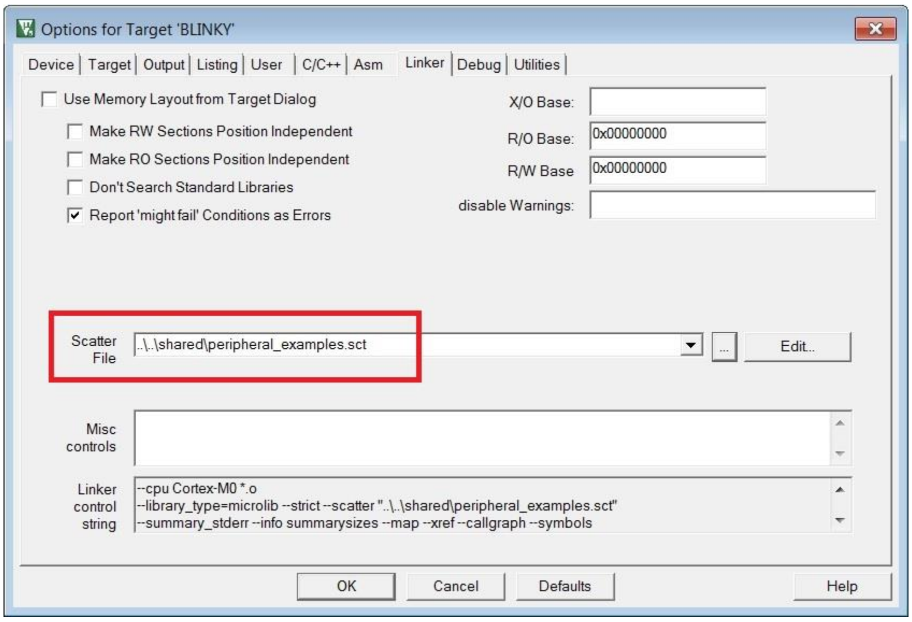
Vendor: ARM
Device: ARMCM0
Toolset: ARM

Software Pack
Pack: ARM.CMSIS.5.3.0
URL: http://www.keil.com/pack/

The Cortex-M0 processor is an entry-level 32-bit Arm Cortex processor designed for a broad range of embedded applications. It offers significant benefits to developers, including:
- simple, easy-to-use programmers model
- highly efficient ultra-low power operation
- excellent code density
- deterministic, high-performance interrupt handling
- upward compatibility with the rest of the Cortex-M processor family.

Figure 40: Blinky Project Options

4. Then click the **Linker** tab. Scatter files (`.sct`) are used for selecting memory areas.


Options for Target 'BLINKY'

Device | Target | Output | Listing | User | C/C++ | Asm | Linker | Debug | Utilities

Use Memory Layout from Target Dialog

Make RW Sections Position Independent

Make RO Sections Position Independent

Don't Search Standard Libraries

[✓ Report 'might fail' Conditions as Errors]

X/O Base:

R/O Base: 0x00000000

R/W Base: 0x00000000

disable Warnings:

Scatter File: ..\..\shared\peripheral_examples.sct

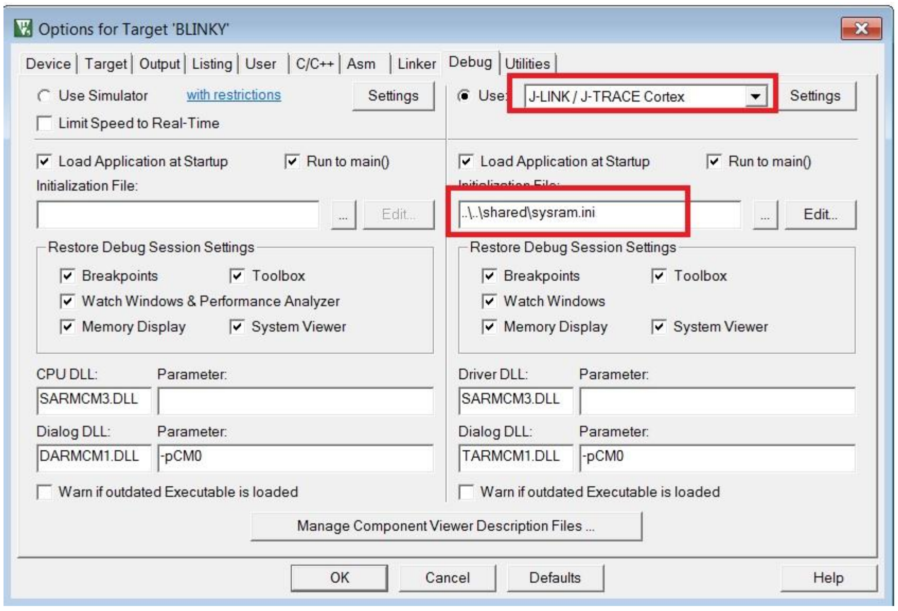
Misc controls:

Linker control string:

```
--cpu Cortex-M0 *.o
--library_type=microlib --strict --scatter "..\..\shared\peripheral_examples.sct"
--summary_stderr --info summarysizes --map --xref --callgraph --symbols
```

Figure 41: Blinky Project Scatter File

5. Click the **Debug** tab and ensure **J-LINK/J-TRACE Cortex** is selected and that the **Initialization File** is set correctly to **.sysram.ini**.


Options for Target 'BLINKY'

Device | Target | Output | Listing | User | C/C++ | Asm | Linker | Debug | Utilities

Use Simulator with restrictions — Settings

Limit Speed to Real-Time

[✓ Load Application at Startup] [✓ Run to main()]

Initialization File:

Restore Debug Session Settings: [✓ Breakpoints] [✓ Toolbox] [✓ Watch Windows & Performance Analyzer] [✓ Memory Display] [✓ System Viewer]

CPU DLL: SARMCM3.DLL — Parameter:

Dialog DLL: DARMCM1.DLL — Parameter: -pCM0

Warn if outdated Executable is loaded

[✓ Use: J-LINK / J-TRACE Cortex] — Settings

[✓ Load Application at Startup] [✓ Run to main()]

Initialization File: ..\..\shared\sysram.ini

Restore Debug Session Settings: [✓ Breakpoints] [✓ Toolbox] [✓ Watch Windows] [✓ Memory Display] [✓ System Viewer]

Driver DLL: SARMCM3.DLL — Parameter:

Dialog DLL: TARMCM1.DLL — Parameter: -pCM0

Warn if outdated Executable is loaded

Figure 42: Blinky Project: Debug Option

6. Next, click the **Settings** button and check that the SW Device has been detected correctly.

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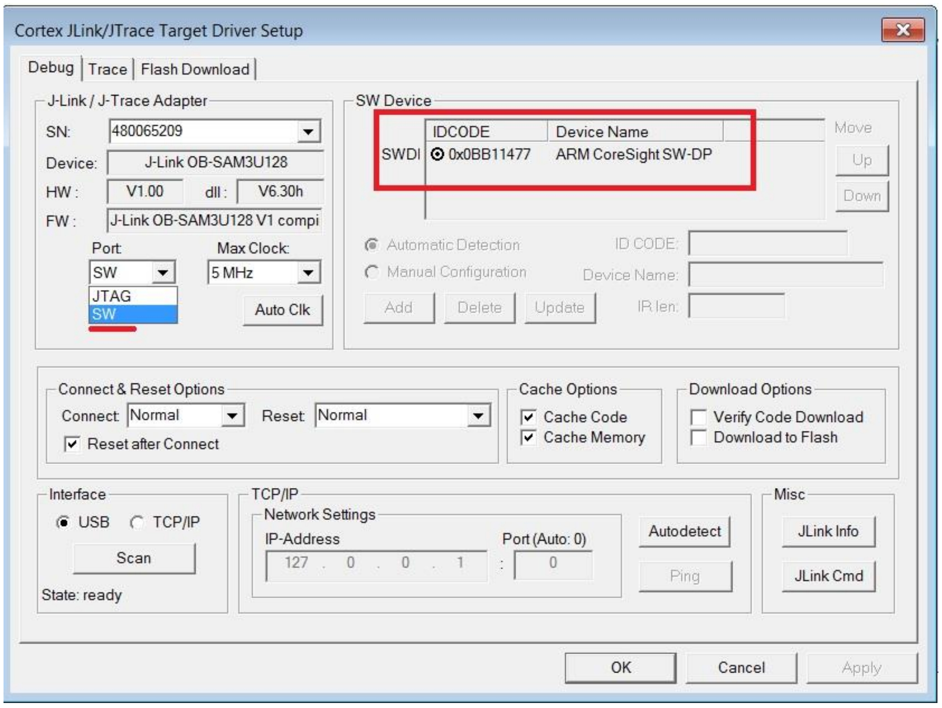

Cortex JLink/JTrace Target Driver Setup

Debug | Trace | Flash Download

J-Link / J-Trace Adapter
SN: 480065209
Device: J-Link OB-SAM3U128
HW: V1.00 dll: V6.30h
FW: J-Link OB-SAM3U128 V1 compi
Port: SW (JTAG, SW)
Max Clock: 5 MHz
Auto Clk

SW Device

	IDCODE	Device Name
SWDI	0x0BB11477	ARM CoreSight SW-DP

Automatic Detection
Manual Configuration
ID CODE:
Device Name:
IR len:
Add Delete Update
Move Up Down

Connect & Reset Options
Connect: Normal Reset: Normal
[✓] Reset after Connect

Cache Options
[✓] Cache Code
[✓] Cache Memory

Download Options
[ ] Verify Code Download
[ ] Download to Flash

Interface
(●) USB ( ) TCP/IP
Scan
State: ready

TCP/IP
Network Settings
IP-Address: 127 . 0 . 0 . 1
Port (Auto: 0): 0
Autodetect
Ping

Misc
JLink Info
JLink Cmd

OK Cancel Apply

Figure 43: Blinky Project: Jlink Setup

7. You can click **OK** to save the settings in both windows. All settings have now been saved and you can continue to build the example.
8. You can build the project by pressing **F7** key or clicking the **Build** button.

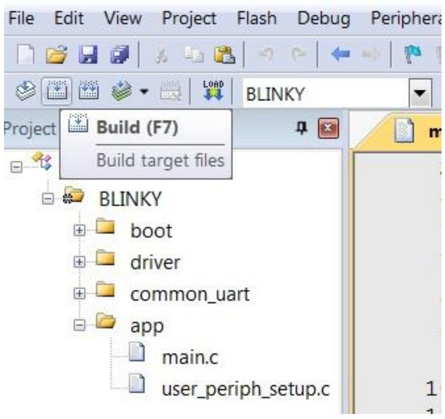


Figure 44: Blinky Project: Project Building

9. Make sure that you have a UART connection between your PC and the motherboard. Check the COM number on your PC. The COM port numbers can be found in the Windows Device Manager **(Control Panel > Device Manager > Ports (COM & LPT))**.

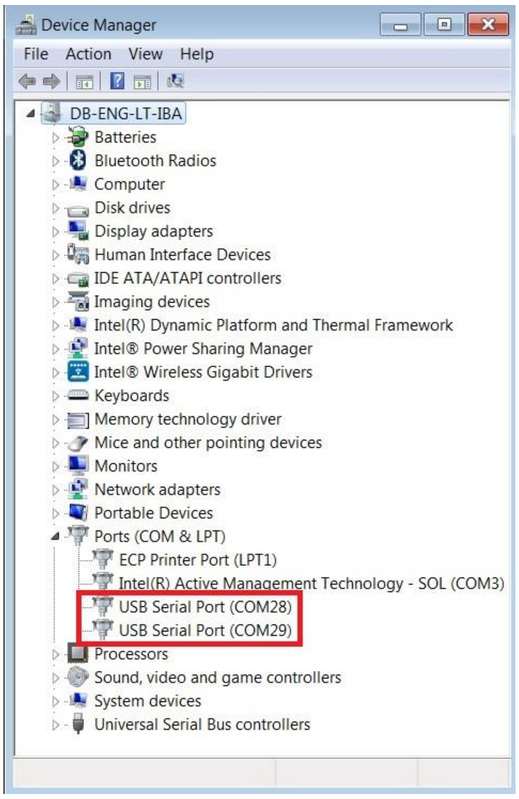


Figure 45: Device Manager Ports

10. Select **Setup > Serial Port** to configure the port with the following values:

    Baud Rate: 115200

    Data bits: 8

    Parity: None

    Stop bits: 1

    Flow control: None

11. In Keil, select **Debug** > **Start/Stop Debug Session**.

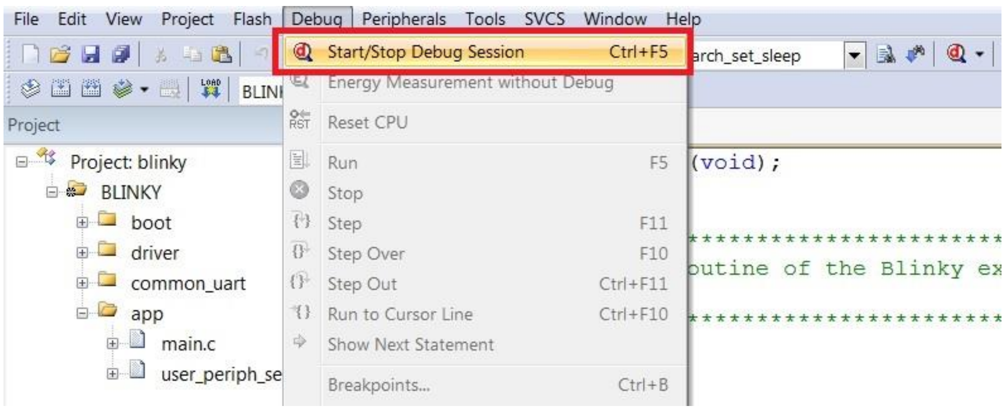
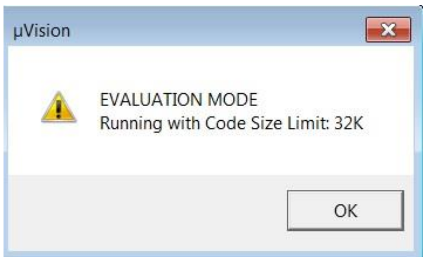


Figure 46: Blinky Project: Start Debug Session

12. If a non-licensed version of Keil is used, the following dialog box is displayed. Click **OK**.



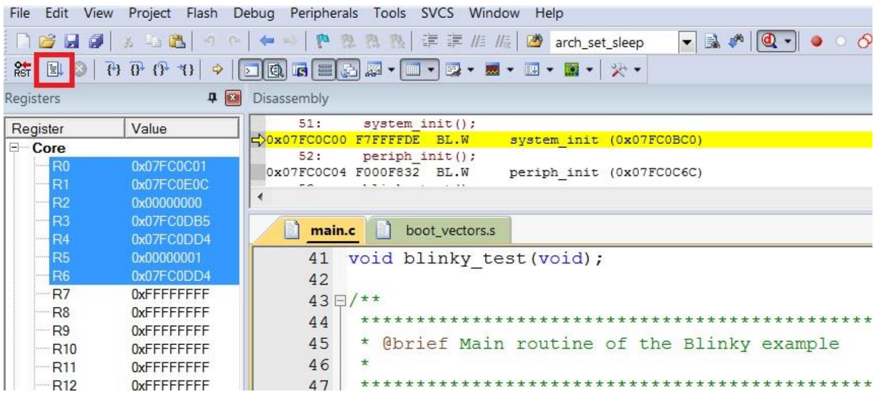
µVision

EVALUATION MODE
Running with Code Size Limit: 32K

OK

Figure 47: Keil Lite Pop Up Window

13. Press **F5** or click the **Run** button to start code execution.



Register	Value
Core	
R0	0x07FC0C01
R1	0x07FC0E0C
R2	0x00000000
R3	0x07FC0DB5
R4	0x07FC0DD4
R5	0x00000001
R6	0x07FC0DD4
R7	0xFFFFFFFF
R8	0xFFFFFFFF
R9	0xFFFFFFFF
R10	0xFFFFFFFF
R11	0xFFFFFFFF
R12	0xFFFFFFFF

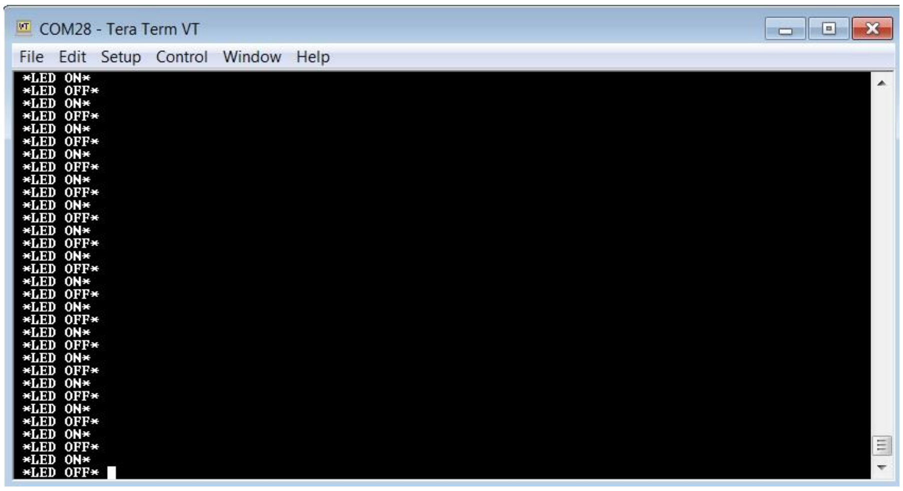
```
    51:     system_init();
0x07FC0C00 F7FFFFDE  BL.W     system_init (0x07FC0BC0)
    52:     periph_init();
0x07FC0C04 F000F832  BL.W     periph_init (0x07FC0C6C)
```

```
void blinky_test(void);

/**
 ************************************************
 * @brief Main routine of the Blinky example
 *
 ************************************************
```

Figure 48: Blinky Project: Code Execution

User can verify that the procedure got completed successfully once the blinky message is displayed on the UART terminal screen Figure 49 and the green LED is blinking on DA14585/586 Demo board. This indicates that the program downloaded successfully and row running on target device.



```
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
*LED ON*
*LED OFF*
```

Figure 49: Blinky Project: Blinky Message on Terminal

4.2 Build a Project in Eclipse/Gcc

This section explains how the user can select, build, and run/debug among other options a software application on a development board using GCC & Eclipse IDE.

Furthermore, it provides step-by-step instructions for importing one of the example projects, build and eventually execute it via the debug mode to any of the supported devices.

4.2.1 Import a Project to Eclipse

1. Select **File/Import** and select **Existing Projects into Workspace**.

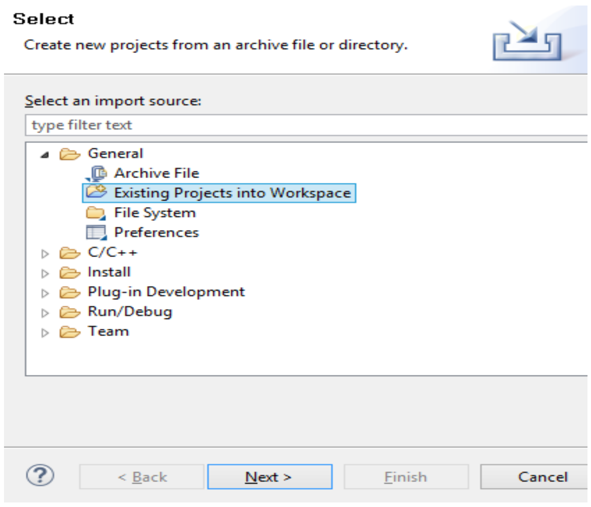


Figure 50: Importing a Project into the Eclipse Workspace

Important Note*: Importing a project to Eclipse IDE* ***should only happen*** *if first the proper workspace is pre-selected, and the right SDK exported to it. Otherwise,* ***no tools*** *installed, no valid configuration is done, and so on. If this is the case, see Section* ***2.1****.*

2. A new dialog box will appear when **Next** is selected.

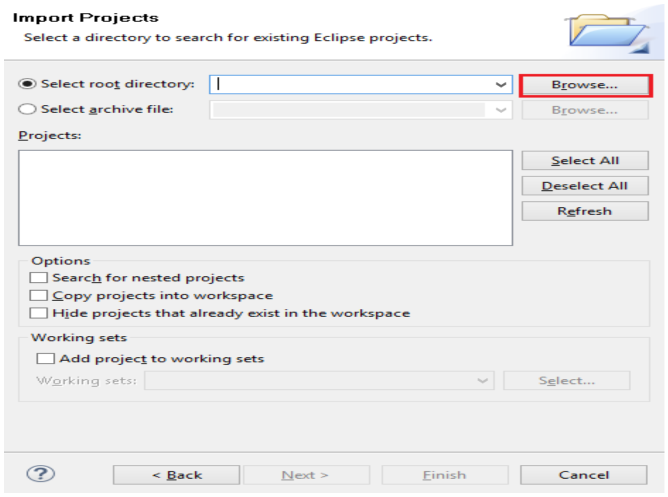

Import Projects
Select a directory to search for existing Eclipse projects.
Select root directory:
Browse...
Select archive file:
Browse...
Projects:
Select All
Deselect All
Refresh
Options
Search for nested projects
Copy projects into workspace
Hide projects that already exist in the workspace
Working sets
Add project to working sets
Working sets:
Select...
< Back
Next >
Finish
Cancel

Figure 51: Browse in Root Directory to Import a Project

3. The user can now select the root directory of the project by clicking the **Browse** button.

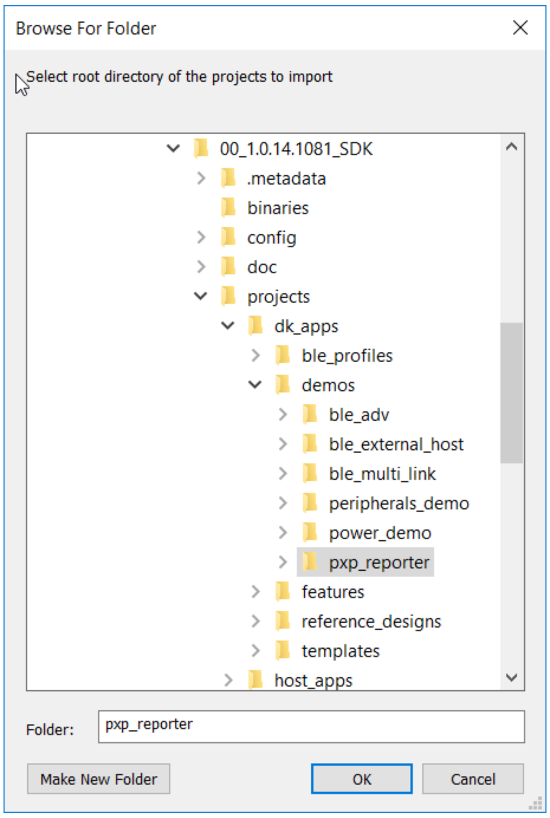
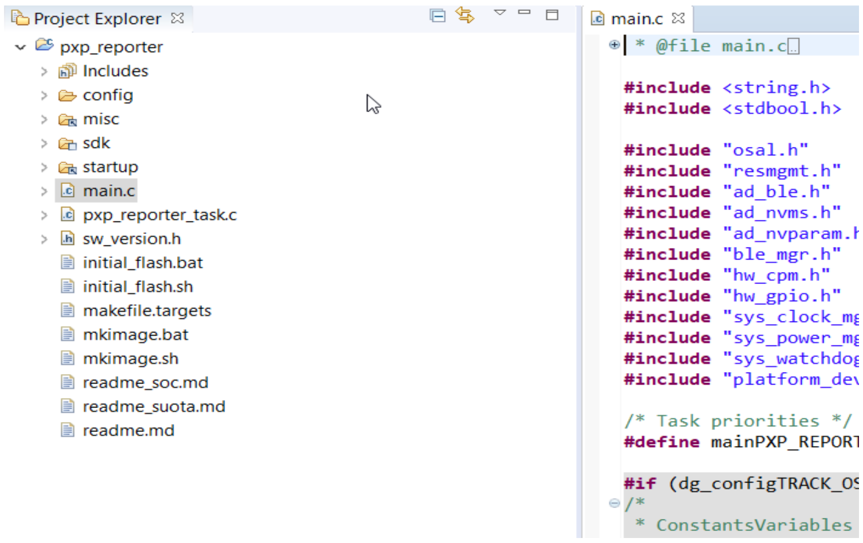


Figure 52: Browse and Select pxp_reporter

4. Once the project has been selected, user can click **OK** to confirm and finally click **Finish** to import the selected project into the Eclipse workspace. The imported project appears in the Project Explorer.



```
 * @file main.c

#include <string.h>
#include <stdbool.h>

#include "osal.h"
#include "resmgmt.h"
#include "ad_ble.h"
#include "ad_nvms.h"
#include "ad_nvparam.h
#include "ble_mgr.h"
#include "hw_cpm.h"
#include "hw_gpio.h"
#include "sys_clock_mg
#include "sys_power_mg
#include "sys_watchdog
#include "platform_dev

/* Task priorities */
#define mainPXP_REPORT

#if (dg_configTRACK_OS
/*
 * ConstantsVariables
```

Figure 53: Pxp_reporter Has Been Imported

4.2.2 Create a New Debug Configuration

1. Connect the Development Kit (Basic or Pro) to the PC.
2. Select the project on Project Explorer window and select **Debug Configurations** from the toolbar.

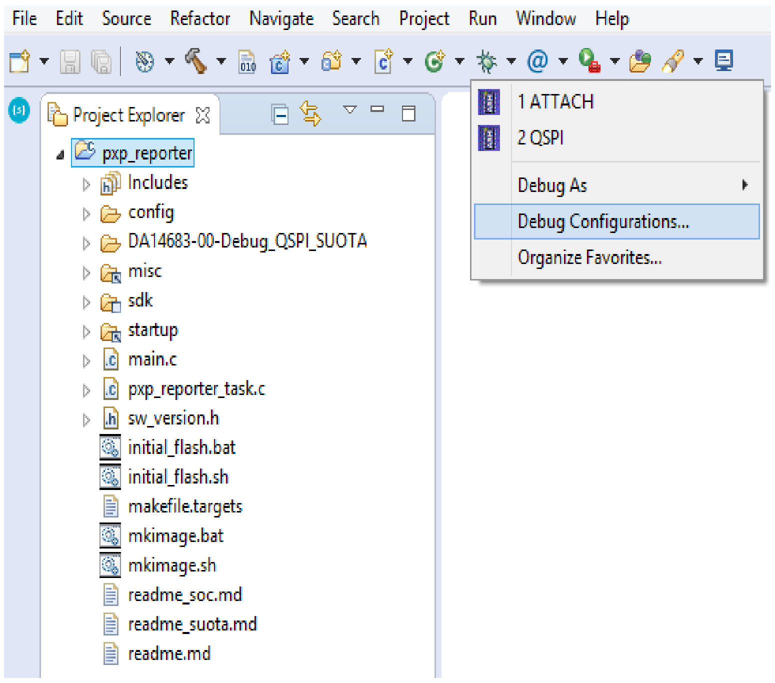


Figure 54: Create New Debug Configuration

3. Right-click the **SmartBond** category of Debug Configurations.

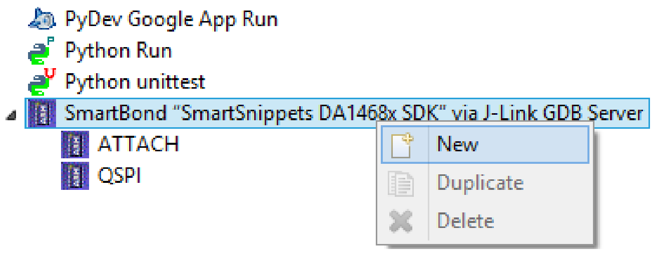
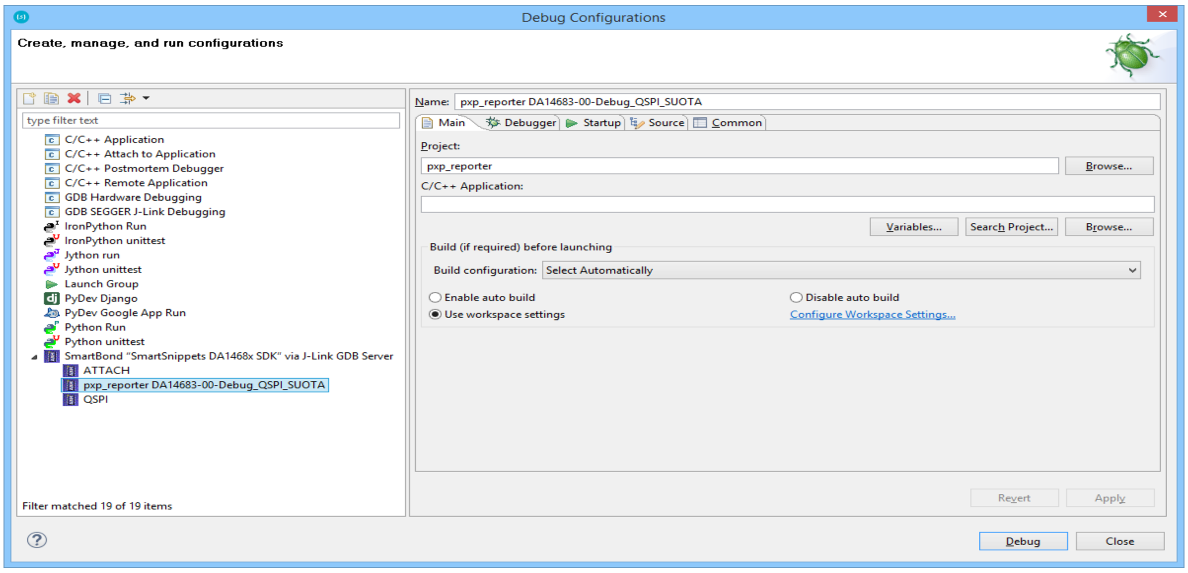


Figure 55: New SmartBond Debug Configuration

Note: You can see all your debug configurations by pressing **Run** > **Debug Configurations**. Every change applied at a Debug Configuration will be saved at the respective launch file found inside the project.

Clicking **Debug** at a debug configuration also launches a Debug Session.



Create, manage, and run configurations

Filter matched 19 of 19 items

Name: pxp_reporter DA14683-00-Debug_QSPI_SUOTA

Project: pxp_reporter

C/C++ Application:

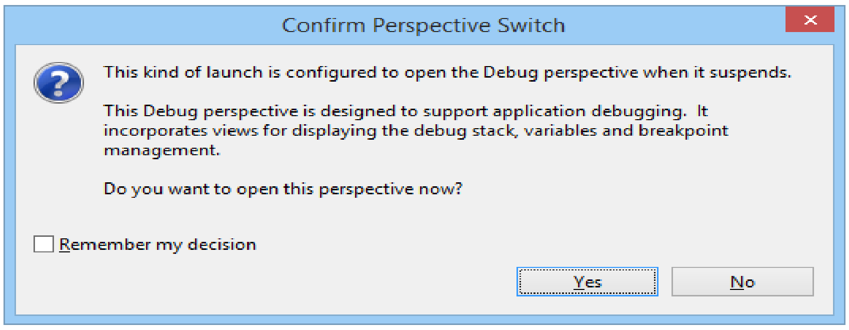
Build (if required) before launching

Build configuration: Select Automatically

○ Enable auto build ○ Disable auto build

● Use workspace settings Configure Workspace Settings...

Figure 56: Debug Configuration Setup



This kind of launch is configured to open the Debug perspective when it suspends.

This Debug perspective is designed to support application debugging. It incorporates views for displaying the debug stack, variables and breakpoint management.

Do you want to open this perspective now?

☐ Remember my decision

Figure 57: Confirm Perspective Switch Screen

To open the Debug perspective, if not opened automatically, user can click one of the available perspectives shown in the upper right corner of Eclipse or click **Window** > **Perspective** > **Open Perspective** > **Debug**.

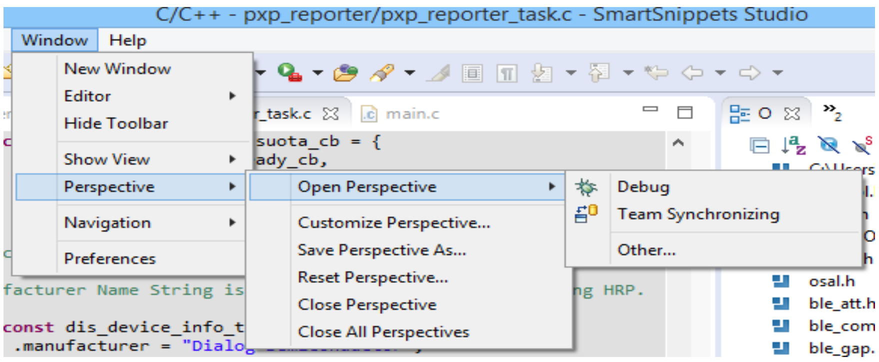
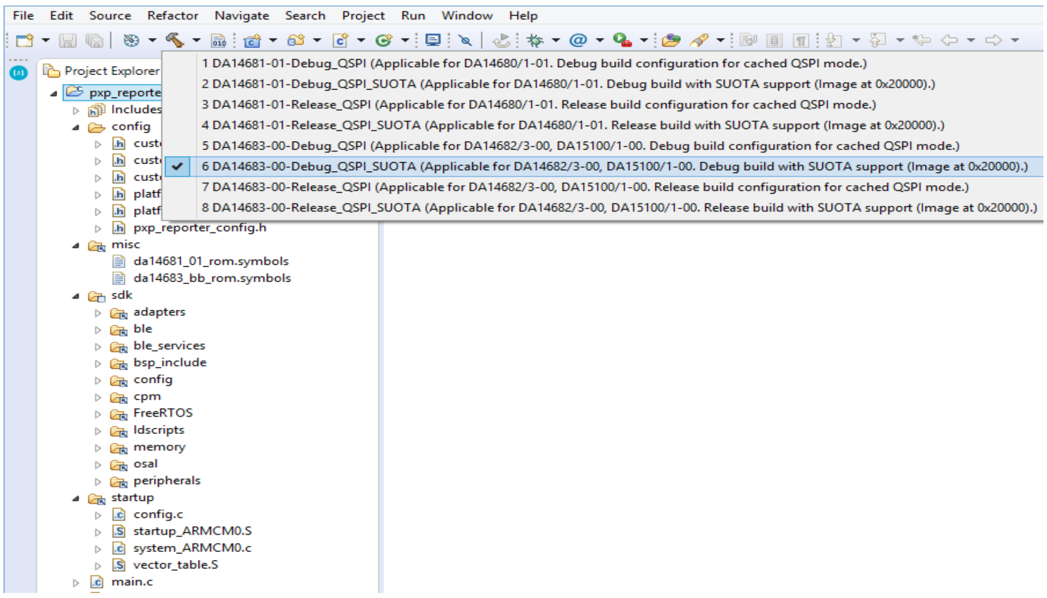


Figure 58: Debug Perspective

4.2.3 Build and Run with Debug Option Enabled

1. To build a project with the debug option enabled, first select the project name. Immediately the build icon will highlight. Click the down arrow of the build icon to select a debug build mode.



1 DA14681-01-Debug_QSPI (Applicable for DA14680/1-01. Debug build configuration for cached QSPI mode.)
2 DA14681-01-Debug_QSPI_SUOTA (Applicable for DA14680/1-01. Debug build with SUOTA support (Image at 0x20000).)
3 DA14681-01-Release_QSPI (Applicable for DA14680/1-01. Release build configuration for cached QSPI mode.)
4 DA14681-01-Release_QSPI_SUOTA (Applicable for DA14680/1-01. Release build with SUOTA support (Image at 0x20000).)
5 DA14683-00-Debug_QSPI (Applicable for DA14682/3-00, DA15100/1-00. Debug build configuration for cached QSPI mode.)
✓ 6 DA14683-00-Debug_QSPI_SUOTA (Applicable for DA14682/3-00, DA15100/1-00. Debug build with SUOTA support (Image at 0x20000).)
7 DA14683-00-Release_QSPI (Applicable for DA14682/3-00, DA15100/1-00. Release build configuration for cached QSPI mode.)
8 DA14683-00-Release_QSPI_SUOTA (Applicable for DA14682/3-00, DA15100/1-00. Release build with SUOTA support (Image at 0x20000).)

Figure 59: Building with Debug Option

2. Check console for any errors.
3. If build get completed with success, a new folder is crated with the name of the selected build configuration. In the above example a folder named DA14683-00-Debug_QSPI_SUOTA is created with a file pxp_reporter.elf inside.

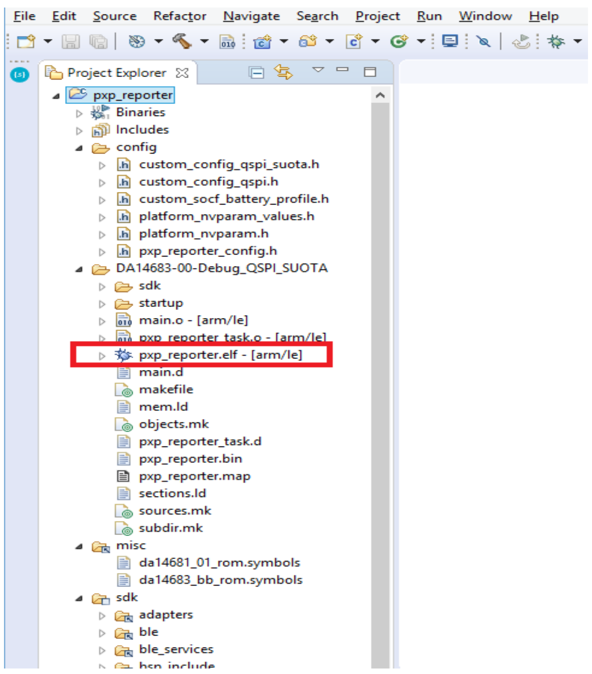


Figure 60: xxx.elf File in Debug Folder

After that point you can execute in run/debug mode by selecting on the drop-down menu in the icon the appropriate option to execute/debug on target. In this case we can select the QSPI option and the Debug Perspective should come forward.

4.2.4 Use Global Debug Configurations

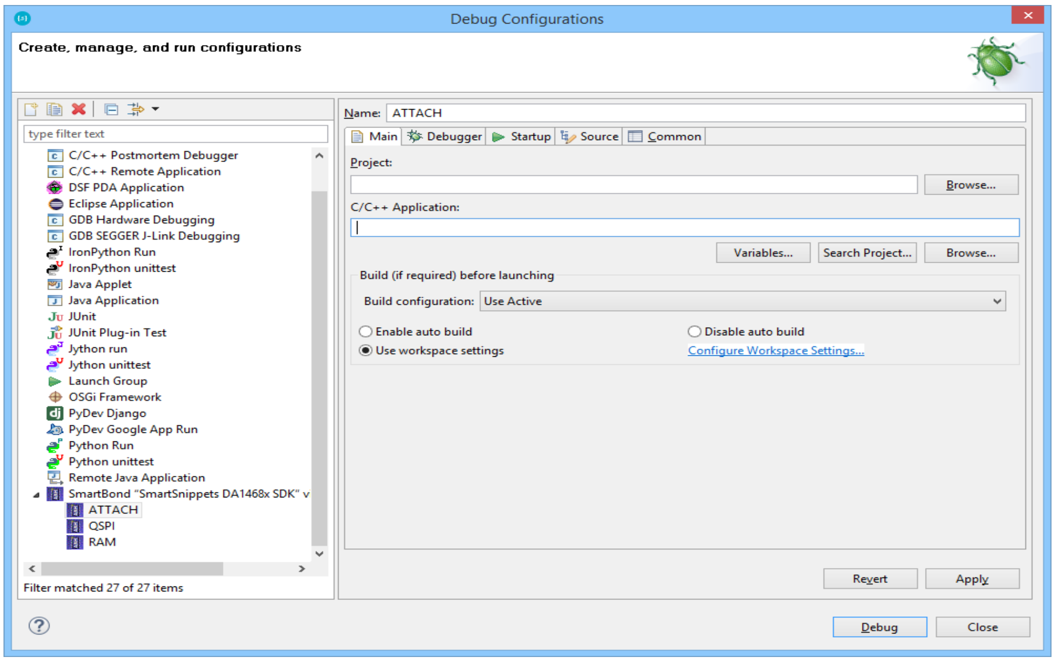
SmartSnippets™ Studio has three built-in debug configurations for SmartBond devices.

These configurations are global, meaning that instead of belonging to a specific project they are dynamic and are getting applied to the project that is currently selected. The debug configurations are the following:

- **RAM:** Executes from RAM
- **QSPI:** Resets and executes from QSPI (requires an image flashed in QSPI)
- **ATTACH:** Attaches to a running target

Figure 61 shows Debug Configurations Manager with RAM, QSPI and ATTACH debug configurations.

Notice that when no project has been selected yet, C/C++ Application and Project fields are empty.



Debug Configurations

Create, manage, and run configurations

type filter text

- C/C++ Postmortem Debugger
- C/C++ Remote Application
- DSF PDA Application
- Eclipse Application
- GDB Hardware Debugging
- GDB SEGGER J-Link Debugging
- IronPython Run
- IronPython unittest
- Java Applet
- Java Application
- JUnit
- JUnit Plug-in Test
- Jython run
- Jython unittest
- Launch Group
- OSGi Framework
- PyDev Django
- PyDev Google App Run
- Python Run
- Python unittest
- Remote Java Application
- SmartBond "SmartSnippets DA1468x SDK" v
  - ATTACH
  - QSPI
  - RAM

Filter matched 27 of 27 items

Name: ATTACH

Main | Debugger | Startup | Source | Common

Project:

Browse...

C/C++ Application:

Variables... | Search Project... | Browse...

Build (if required) before launching

Build configuration: Use Active

○ Enable auto build ○ Disable auto build

● Use workspace settings Configure Workspace Settings...

Revert | Apply

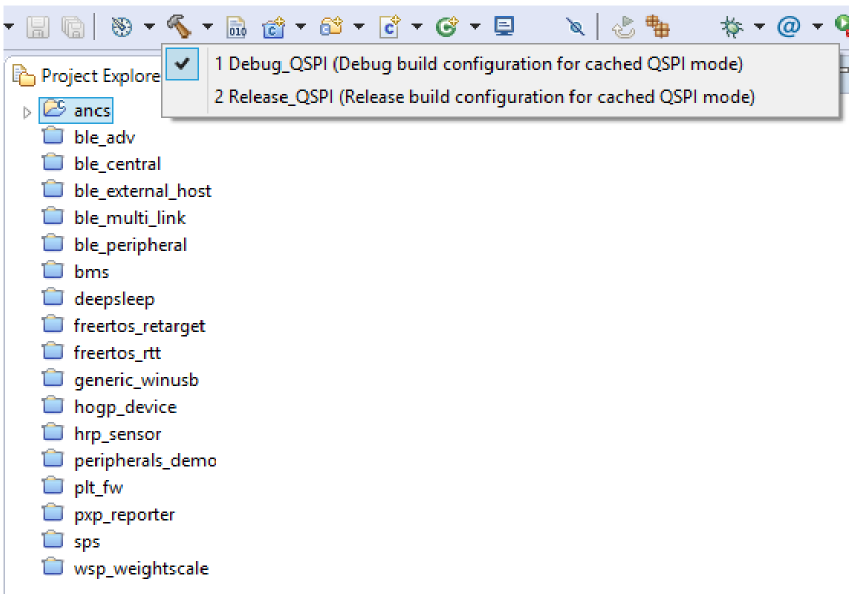
Debug | Close

Figure 61: Global Debug Configurations when no Project is Currently Selected

To use RAM debug configuration, the user has to build a project with a Debug_RAM or Release_RAM build configuration.

When a RAM active build configuration has been selected, QSPI debug configuration is not available.

When a build configuration suitable for debugging with RAM debug configuration is not present in the selected project, the respective RAM debug configuration is hidden from the list of available SmartBond debug configurations. For example, project “ancs” (Figure 62) has only QSPI suitable build configurations, so RAM debug configuration will not be available.

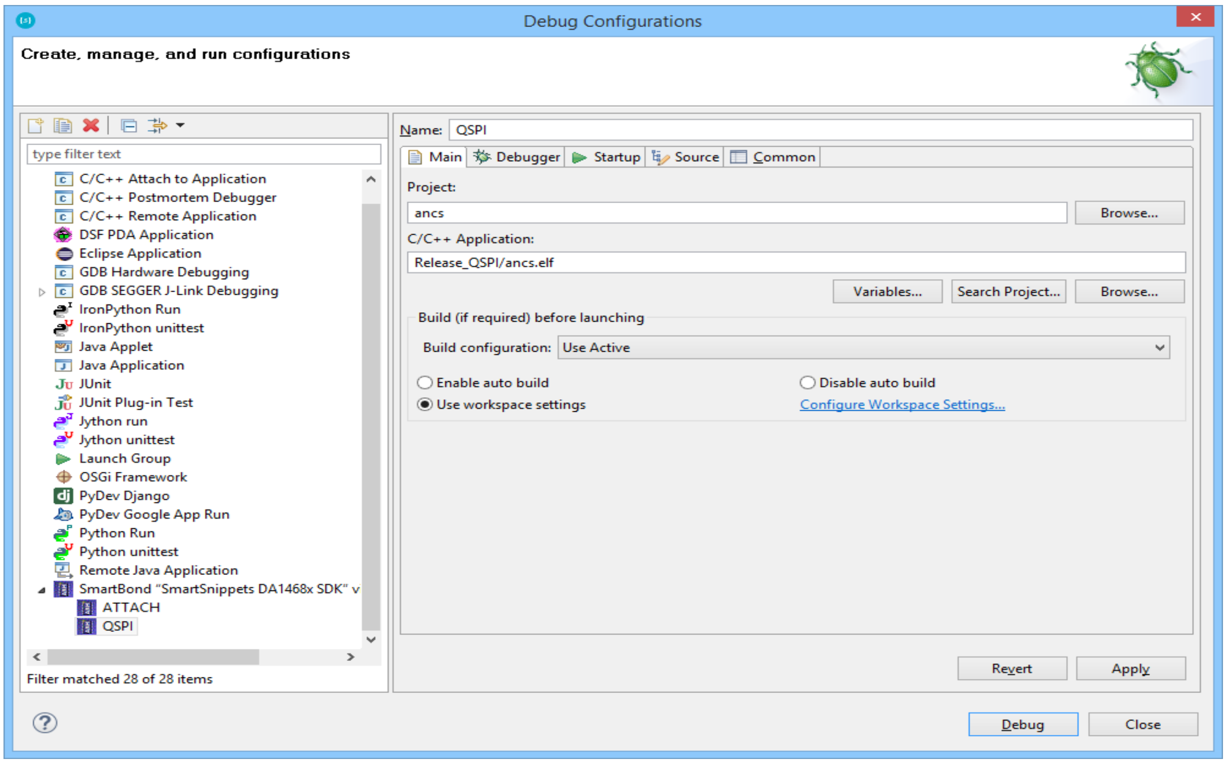


1 Debug_QSPI (Debug build configuration for cached QSPI mode)
2 Release_QSPI (Release build configuration for cached QSPI mode)

Figure 62: Available Build Configurations

Similarly, when user wants to debug with a QSPI debug configuration, a QSPI build configuration should be selected.

ATTACH debug configuration option can be used in combination with any build configuration. If user selects the project in the Project Explorer and opens the Debug Configurations Manager, fields C/C++ Application and Project will be prefilled with project-specific settings.



Debug Configurations

Create, manage, and run configurations

Name: QSPI

Project: ancs

C/C++ Application: Release_QSPI/ancs.elf

Build (if required) before launching

Build configuration: Use Active

Enable auto build
Disable auto build
[✓ Use workspace settings]

Figure 63: Example of Hidden RAM Debug Configuration for a Project

To control which build configurations are required to enable a debug configuration, the user can specify a set of valid substrings that should be part of the name of the RAM build configurations and QSPI build configurations respectively. By default, a build configuration containing the string "QSPI" is suitable for debugging with the QSPI debug configuration and a build configuration containing the string "RAM" is suitable for the RAM debug configuration.

To change these default values, the user can enter a set of comma-separated values in `RAM_BUILD_CONFIGURATION_NAMES` and `QSPI_BUILD_CONFIGURATION_NAMES` variables in `C:\DiaSemi\SmartSnippetsStudio2.0\CDT\ configuration\config.ini` file. If these variable names are not existing in the config.ini file mentioned above, user needs to provide a value for them.

For example, entering `RAM_BUILD_CONFIGURATION_NAMES = Debug_RAM, R_RAM, Debug_Memory` in the config.ini file means that any project that contains build configurations with names `Debug_RAM` or `R_RAM` or `Debug_Memory`, can be launched with the RAM debug configuration.

4.2.5 Use SDK-Specific Debug Configurations

Users can place their own debug configurations under `<sdk_root>\config` folder. The three global launch configurations (RAM, QSPI, ATTACH) will be created by default even if "config" folder does not exist or being empty. Nevertheless, if user places `.launch` files with names `RAM.launch` or `QSPI.launch` or `ATTACH.launch` under `<sdk_root>\config` folder, the respective global launch configurations will be initialized from these files.

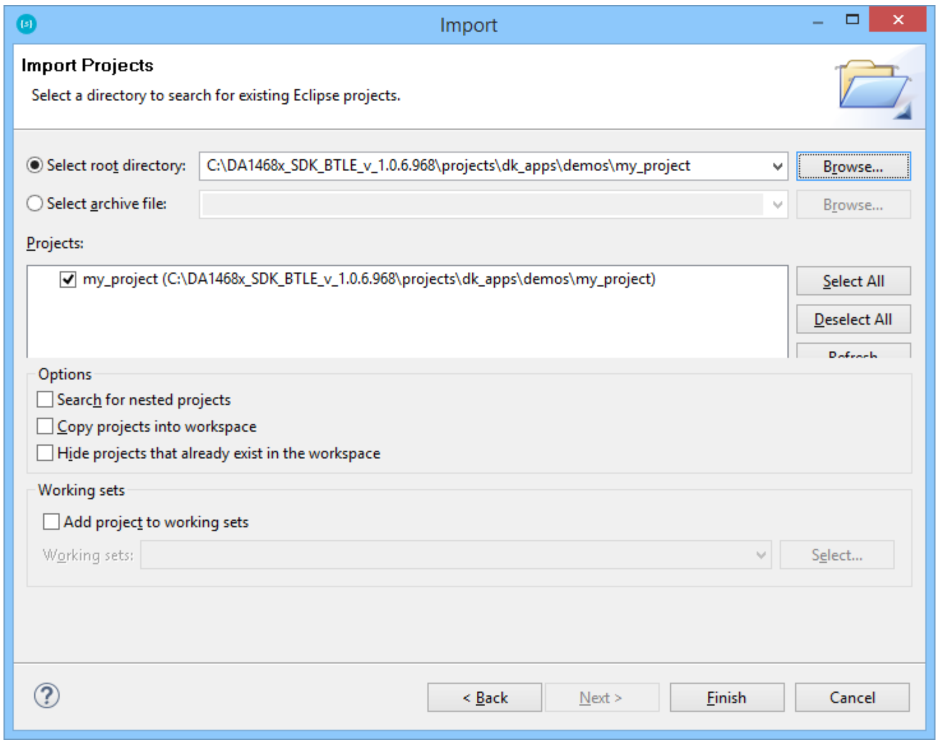
Note that the global launch configurations are automatically saved inside the workspace under the `.metadata\.plugins\org.eclipse.debug.core\.launches` subfolder.

If the user would like to update the global launch configurations with any recent modifications made on the `.launch` files located under the `<sdk_root>\config` folder, it is required to delete the respective files in .metadata\.plugins\org.eclipse.debug.core\.launches subfolder first so that the modified `.launch` files are copied to the workspace.

4.2.6 Clone a Project outside the SDK Folder Structure

Cloning a project is needed in case you want to use an existing SmartBond project provided inside the SmartSnippets SDK and use it as a basis for developing your own application. In case the new project folder needs to be created outside the SDK folder structure, this section gives a small how-to guide (see Section 4.2.7 for a simpler way in case the new project folder can be created inside the SDK folder structure):

1. Navigate to <sdk_root>\projects\dk_apps\demos.
2. Create a folder with the desired project name (for example, "my_project").
3. Choose a project. For example, "pxp_reporter" project, located inside "projects/dk_apps/demos" folder, can be used. Copy the contents of the "pxp_reporter" folder to the "my_project" folder.
4. Browse in "my_project" and find the following files:
   a. .cproject
   b. .project
5. Open them with a text editor. Find and replace every "pxp_reporter" string with the string "my_project". Save them and quit.
6. Start SmartSnippets™ Studio and import the project "my_project" to the workspace.



Import

Import Projects

Select a directory to search for existing Eclipse projects.

(●) Select root directory: C:\DA1468x_SDK_BTLE_v_1.0.6.968\projects\dk_apps\demos\my_project

( ) Select archive file:

Projects:

☑ my_project (C:\DA1468x_SDK_BTLE_v_1.0.6.968\projects\dk_apps\demos\my_project)

Options

☐ Search for nested projects

☐ Copy projects into workspace

☐ Hide projects that already exist in the workspace

Working sets

☐ Add project to working sets

Working sets:

Figure 64: Import my_project Project in SmartSnippets™ Studio

7. Rename (right-click) the files containing the old project's name to the new project's name, for example, "pxp_reporter_task.c" > "my_project_task.c". This can be either done from eclipse's project explorer or windows project folder.

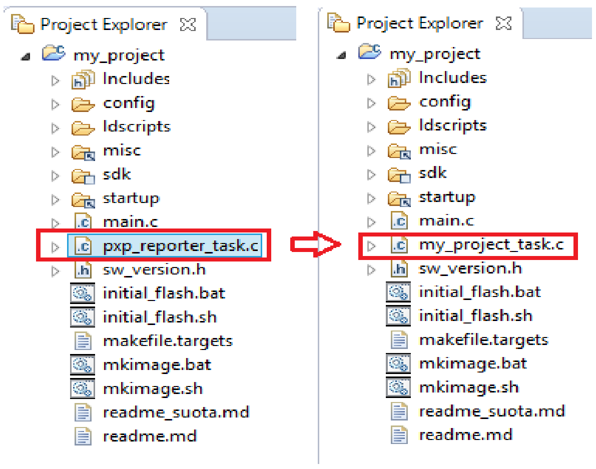
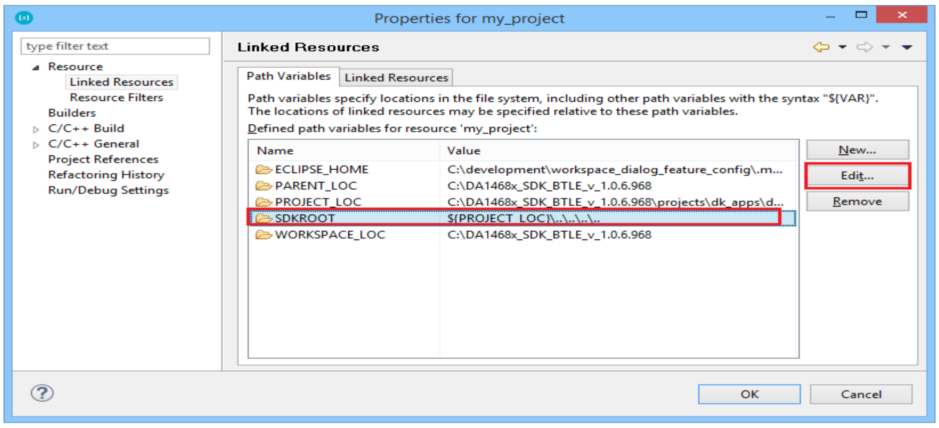


Figure 65: Change to Appropriate Name

8. Right-click to the project and navigate to properties:
   a. Select **Linked Resources** under **Resource**.



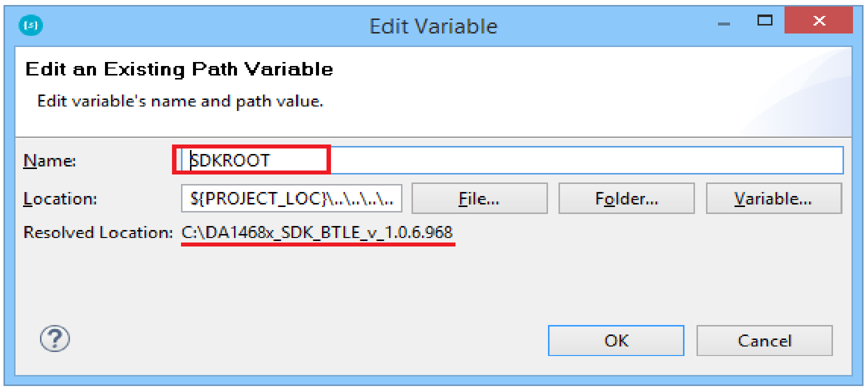
Path variables specify locations in the file system, including other path variables with the syntax "${VAR}".
The locations of linked resources may be specified relative to these path variables.

Defined path variables for resource 'my_project':

Name	Value
ECLIPSE_HOME	C:\development\workspace_dialog_feature_config\.m...
PARENT_LOC	C:\DA1468x_SDK_BTLE_v_1.0.6.968
PROJECT_LOC	C:\DA1468x_SDK_BTLE_v_1.0.6.968\projects\dk_apps\d...
SDKROOT	${PROJECT_LOC}\..\..\..\..
WORKSPACE_LOC	C:\DA1468x_SDK_BTLE_v_1.0.6.968

Figure 66: Match the 'SDKROOT' to the Root File of the SDK

b. If required, edit **SDKROOT** to match the root folder of the SDK.


Edit Variable
Edit an Existing Path Variable
Edit variable's name and path value.
File...
Folder...
Variable...
OK
Cancel

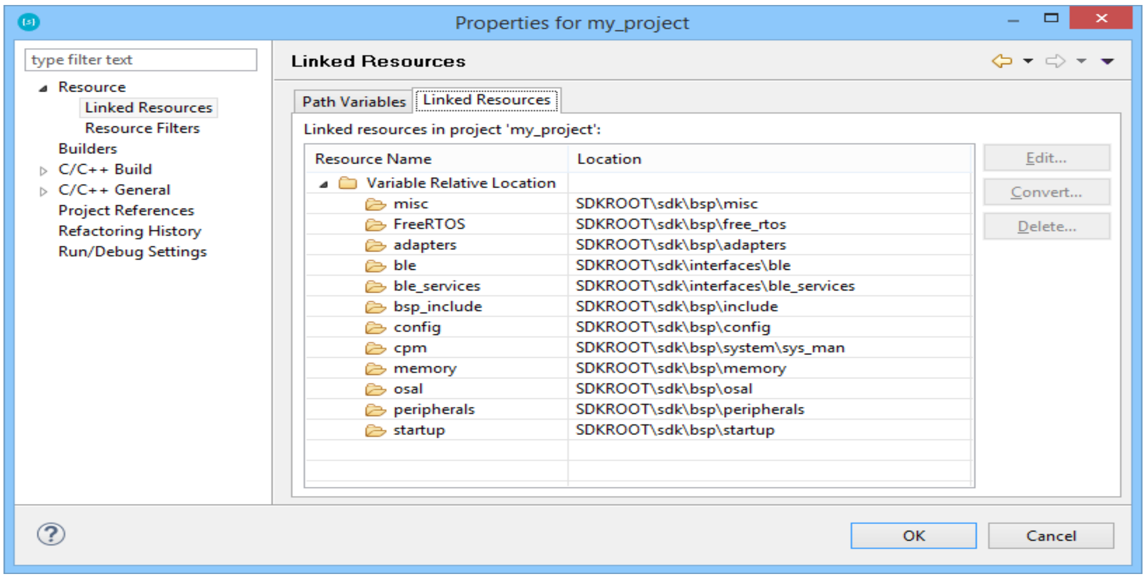
Name: SDKROOT

Location: ${PROJECT_LOC}\..\..\..\..

Resolved Location: C:\DA1468x_SDK_BTLE_v_1.0.6.968

Figure 67: Edit the Right Path for "SDKROOT"

c. Then, click the **Linked Resources** tab and fix the invalid variable relative locations if any.



Linked resources in project 'my_project':

Resource Name	Location
Variable Relative Location	
misc	SDKROOT\sdk\bsp\misc
FreeRTOS	SDKROOT\sdk\bsp\free_rtos
adapters	SDKROOT\sdk\bsp\adapters
ble	SDKROOT\sdk\interfaces\ble
ble_services	SDKROOT\sdk\interfaces\ble_services
bsp_include	SDKROOT\sdk\bsp\include
config	SDKROOT\sdk\bsp\config
cpm	SDKROOT\sdk\bsp\system\sys_man
memory	SDKROOT\sdk\bsp\memory
osal	SDKROOT\sdk\bsp\osal
peripherals	SDKROOT\sdk\bsp\peripherals
startup	SDKROOT\sdk\bsp\startup

Figure 68: Fix the Invalid Variables

d. Click **Settings** under **C/C++ Build**. In the **Configuration** menu, select **All configurations**, then click **Libraries** under **Cross ARM C Linker**, and edit Library search path (-L) if required, to match the SDK root directory. Click **Apply**, then click **OK** and exit.

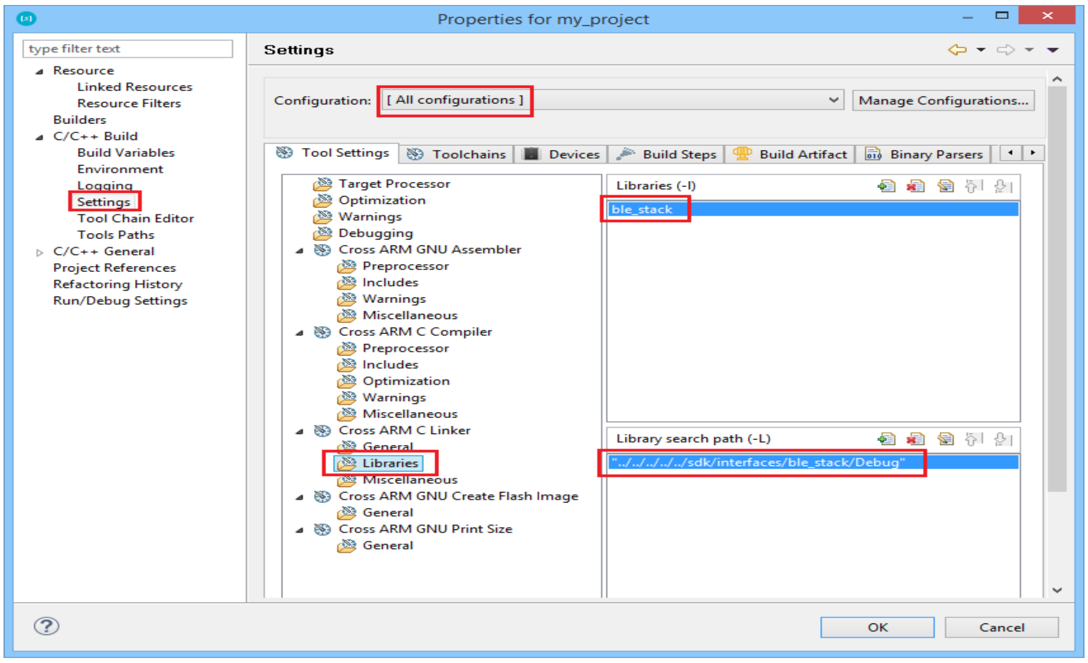


Figure 69: Setup the Path for the Libraries

9. Right-click “my_project” and click **Refresh**.

Then you can build the project.

4.2.7 Copy Projects in a Workspace

Cloning is needed when user wants to copy an existing SDK project to another location outside the SDK folder structure and work from there (see Section 4.2.6 for a detailed guide). If the user has the option to copy an existing project under the same location as the original one, the following guide requires less actions, since no references or relative paths need to change:

1. Select the project to be copied. Right-click and then click **Copy**.

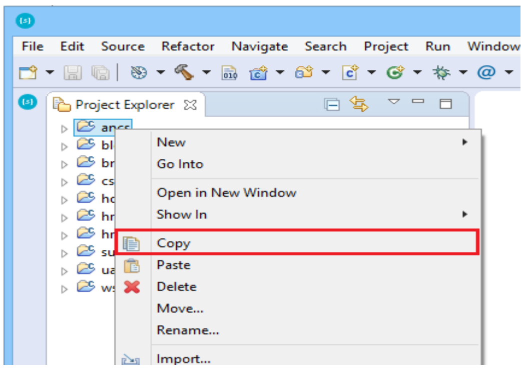


Figure 70: Copy a Project. Step 1

2. Right-click into the workspace and click **Paste**.

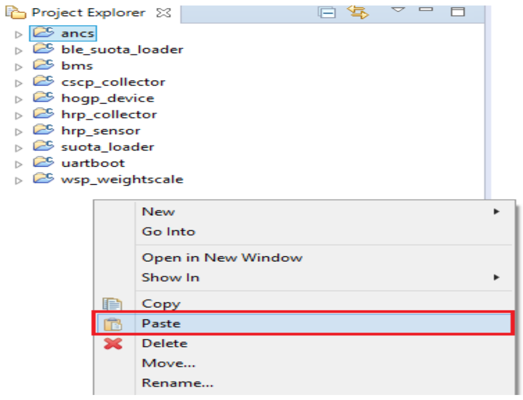
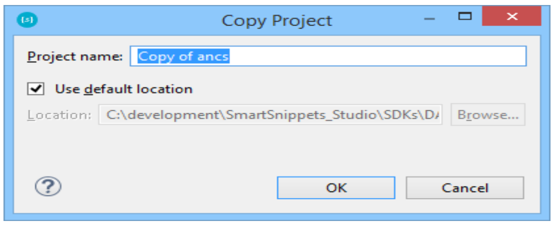


Figure 71: Copy a Project. Step 2

3. Copy project dialog box appears.



Copy Project

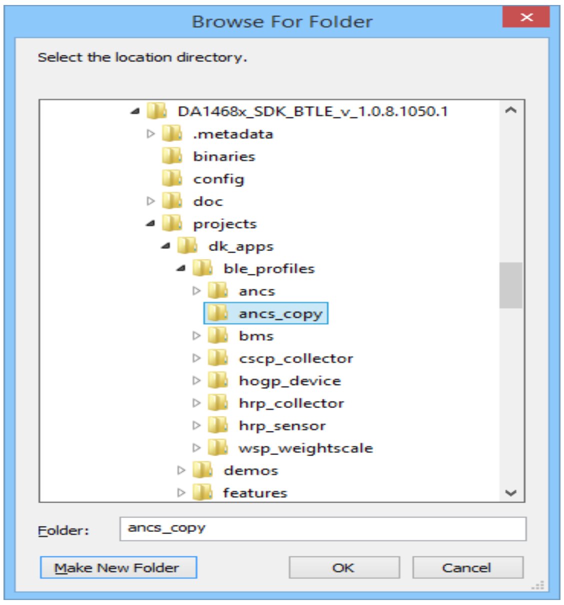
Project name: Copy of ancs

[✓] Use default location

Location: C:\development\SmartSnippets_Studio\SDKs\D/

Figure 72: Copy Project Dialog Box

4. Clear the **Use default location** checkbox and browse to the same location as the original project. Create a new folder, select it, and click OK.



Browse For Folder

Select the location directory.

Folder: ancs_copy

Figure 73: Folder for Copied Project Should be at the Same Location as the Original

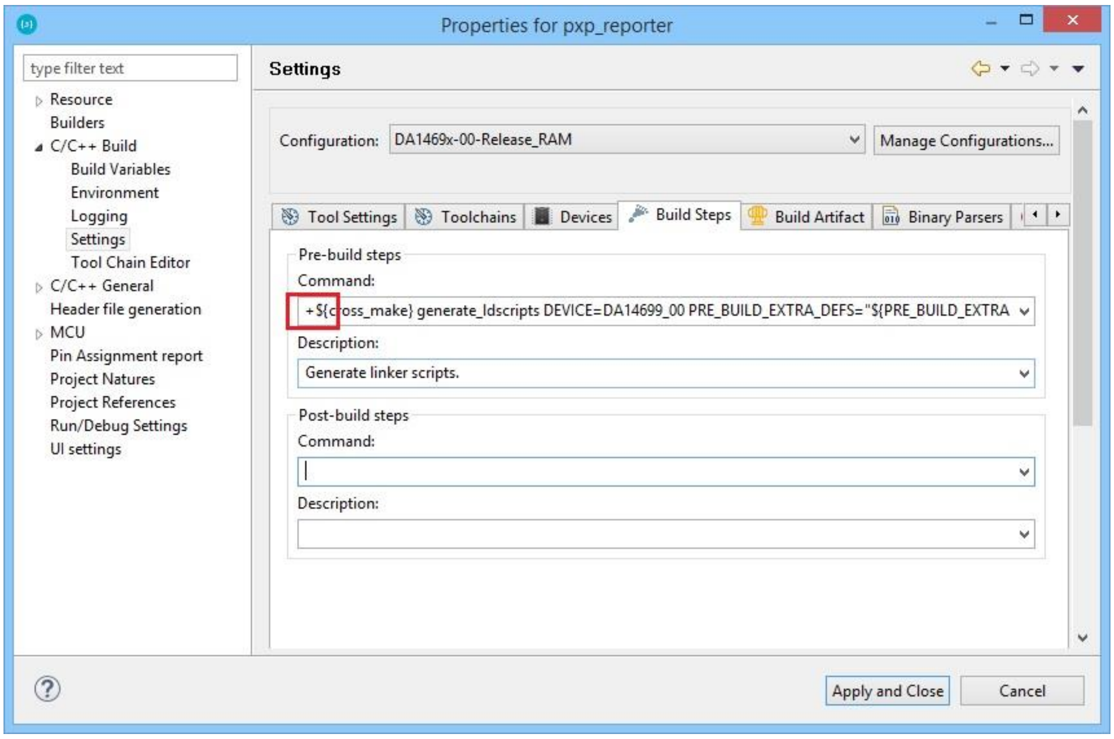
5. In the copy project dialog box, enter a project name different than the original one and click OK. The new copied project is ready for development. All project preferences, properties, and relative paths have been copied from the original project.

If a project is copied to a directory, in another level in the directory structure than the original project, an error may occur during the link step. For example, DA1468x SDK projects in directories *projects\dk_apps\ble_profiles* and *projects\dk_apps\demos* are using the *ble_stack_da1468x* library that resides inside the SDK and is not copied together with the project. To resolve such issues, some changes are needed in the project settings. See Section 15.18 and follow steps 8 to 10 in Section 4.2.6 to fix the libraries' paths and build the copied project without errors.

4.2.8 Enable Parallel Make Compilation

To enable GNU Make parallel compilation support for a project, apply the following configuration:

1. Right-click a project found in project explorer and select **Settings**.
2. Click the **Build Steps** tab under the path **C/C++ Build** > **Settings** > **Build Steps**.
3. Add "+" symbol in the beginning of the **Pre-build steps** command, as in Figure 74.



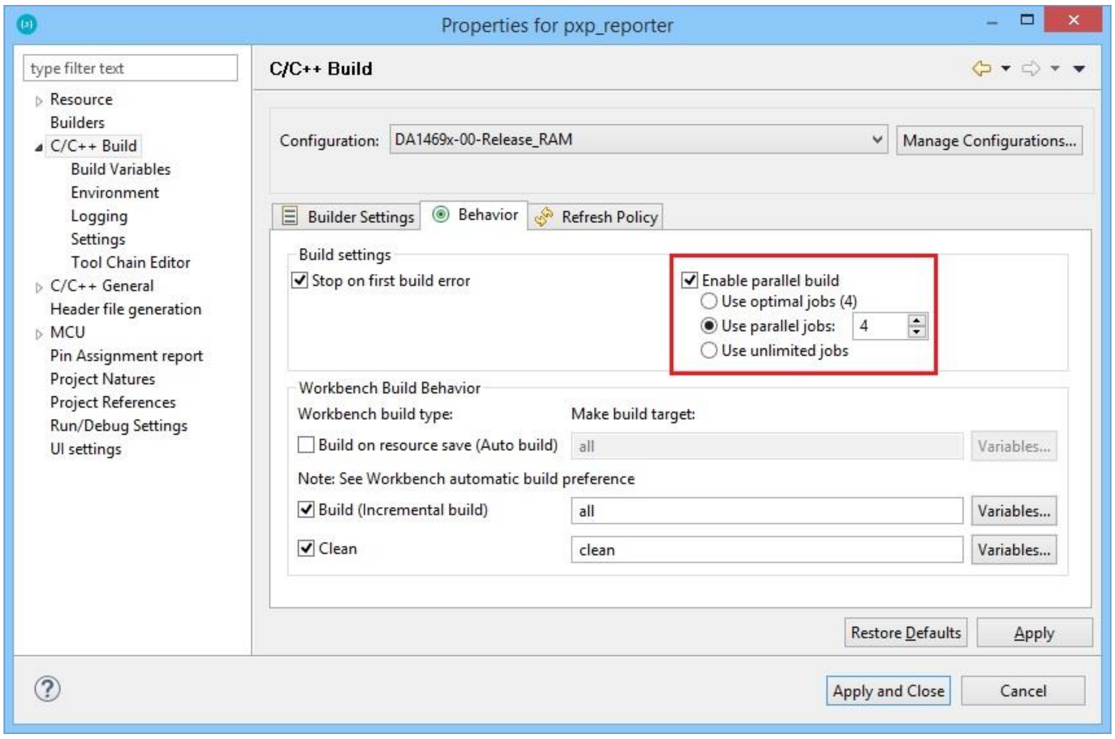
Configuration: DA1469x-00-Release_RAM

Pre-build steps
Command:
```
+${cross_make} generate_ldscripts DEVICE=DA14699_00 PRE_BUILD_EXTRA_DEFS="${PRE_BUILD_EXTRA
```
Description: Generate linker scripts.

Post-build steps
Command:
Description:

Figure 74: Correct Prebuild Steps Command for Enabling Parallel Build

4. Click the **Behavior** tab under the path **C/C++ Build** > **Behavior**.



Configuration: DA1469x-00-Release_RAM

Build settings
- [✓] Stop on first build error
- [✓] Enable parallel build
  - ○ Use optimal jobs (4)
  - ● Use parallel jobs: 4
  - ○ Use unlimited jobs

Workbench Build Behavior

Workbench build type: Make build target:
- [ ] Build on resource save (Auto build): all

Note: See Workbench automatic build preference
- [✓] Build (Incremental build): all
- [✓] Clean: clean

Figure 75: Behavior Tab to Enable Make's Parallel Build

5. Enable parallel build option by specifying the amount of used parallel jobs.
6. Select **Apply and Close** to save and exit configuration wizard.
7. Locate the "makefile.targets" file under the project explorer's project structure.
8. Edit the file accordingly to support parallel compilation and remove the ".NOTPARALLEL" indicator.
9. Finally, clean and build your project.

5 Scripts

To use or test a project, the binary must be loaded to the ProDK. This procedure is supported by the scripts, which are included in the SmartSnippets DA1468x and DA1469x SDKs and are located in the following path:

```
<sdk_root >/utilities/scripts
```

Note that for DA1468x RDs the path is:

```
<dk_root>/sdk_680/utilities/scripts
```

5.1 Import Scripts

To import the scripts to SmartSnippets™ Studio, follow the same procedure as importing a project:

1. Select **File/Import** and select **Existing Projects into Workspace**.

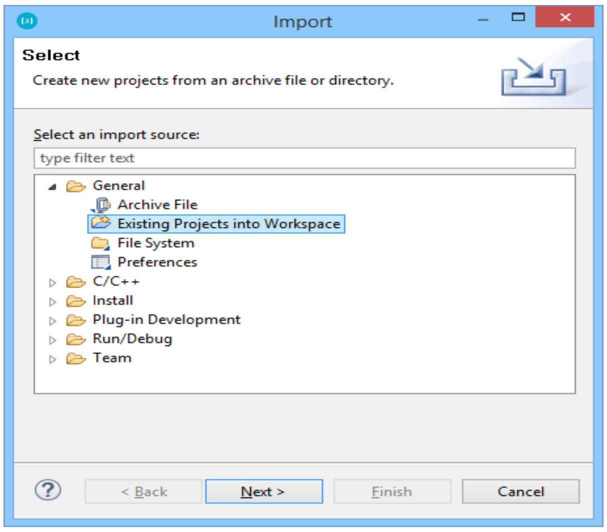


Figure 76: Importing a Project into the Eclipse Workspace

2. A new dialog box appears when **Next** is clicked.

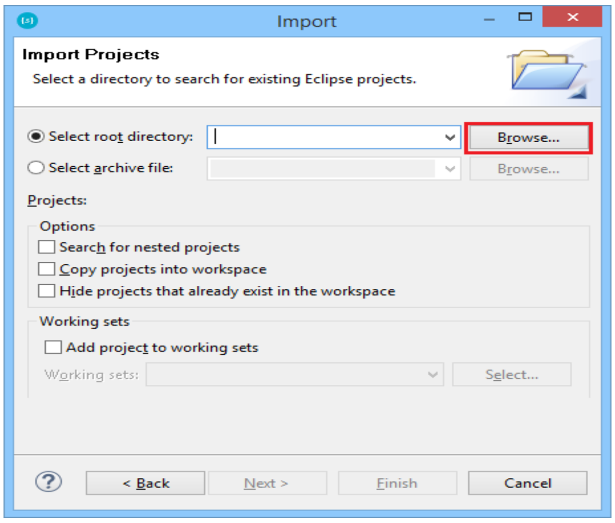

Import
Import Projects
Select a directory to search for existing Eclipse projects.
Select root directory:
Browse...
Select archive file:
Browse...
Projects:
Options
Search for nested projects
Copy projects into workspace
Hide projects that already exist in the workspace
Working sets
Add project to working sets
Working sets:
Select...
< Back
Next >
Finish
Cancel

Figure 77: Browse in Root Directory to Import a Project

3. Click the **Browse** button to select the directory path where to import the project from. Select the path <sdk_root> > utilities > scripts as shown in Figure 78.

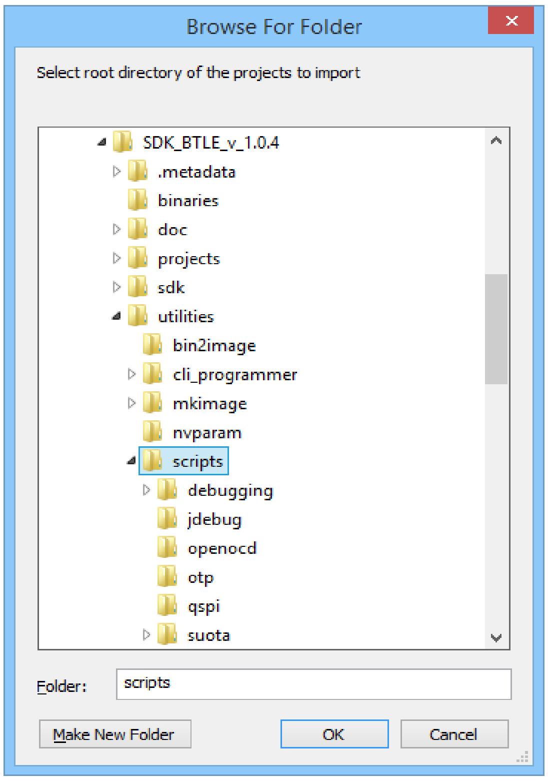


Figure 78: Browse and Select Scripts

4. Click **OK** to confirm and then **Finish** to import the selected project into the Eclipse workspace.

Now the scripts are available for use. Note that there are more scripts available in the SDK, but they are filtered depending on the Operating System. Figure 79 shows the supported scripts for Windows.

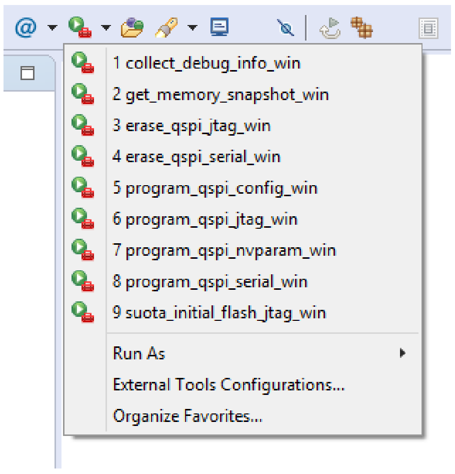
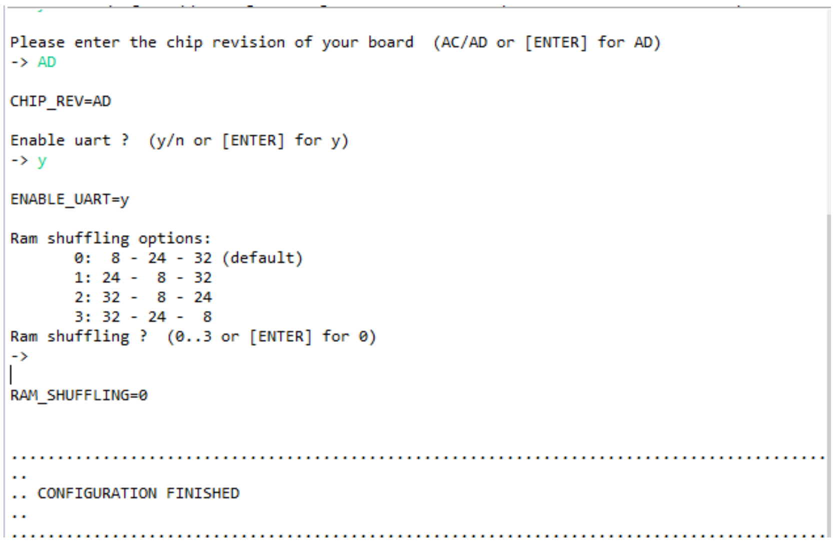

1 collect_debug_info_win
2 get_memory_snapshot_win
3 erase_qspi_jtag_win
4 erase_qspi_serial_win
5 program_qspi_config_win
6 program_qspi_jtag_win
7 program_qspi_nvparam_win
8 program_qspi_serial_win
9 suota_initial_flash_jtag_win
Run As
External Tools Configurations...
Organize Favorites...

Figure 79: Scripts

5.2 Execute Scripts

If a project has been successfully built, you can load it to the device using `program_qspi_serial_win` (`program_qspi_serial_linux` for Linux). Alternatively, the binary can be loaded to the Pro DK with the script `program_qspi_jtag_win` which is faster. Loading a binary file is performed by the scripts. To use a script for the first time, QSPI needs to be configured. Figure 80 shows the information needed to configure QSPI.



```
Please enter the chip revision of your board  (AC/AD or [ENTER] for AD)
-> AD

CHIP_REV=AD

Enable uart ?  (y/n or [ENTER] for y)
-> y

ENABLE_UART=y

Ram shuffling options:
       0:  8 - 24 - 32 (default)
       1: 24 -  8 - 32
       2: 32 -  8 - 24
       3: 32 - 24 -  8
Ram shuffling ?  (0..3 or [ENTER] for 0)
->

RAM_SHUFFLING=0


.........................................................................................
..
.. CONFIGURATION FINISHED
..
.........................................................................................
```

Figure 80: Configure QSPI

To change the configuration, choose `program_qspi_config_win`.

6 Makefile Generation

SmartBond and SmartSnippets SDK projects are configured in such a way so that Eclipse generates Makefiles that can be executed by GNU Make. Eclipse uses them to build the projects, but the Makefiles can also be executed from the command line, which is very helpful for users (especially Linux) who want to maintain their projects based on Makefiles.

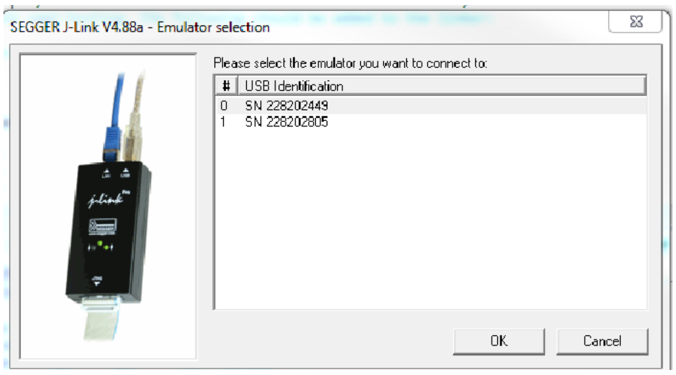
Note that on Linux manual building of `/utilities/bin2image` is required.

7 JTAG Connection

For debugging purposes, the Segger JLink adaptor is used. Typically, the JLink adaptor is a small box with a JTAG/SWD interface to the ARM processor core on the DK, and an USB or Ethernet interface to the PC. SWD is the ARM-specific interface with only two wires that supports the same functionality as the more known JTAG interface.

JLink adaptors are available in several tastes. Dialog has integrated a Segger JLink adaptor on the DK itself. It can be connected to the PC via the USB interface named USB2(DBG). See also DA1468x/DA1510x Pro DK user manual (Ref. [3]).

Typically, during a debug session, only one JTAG SWD interface is used. When more than one JTAG/SWD interfaces are connected to the PC, where the debug session takes place, the following window appears asking the user to select which one should be used. Select that appropriate serial number and click the **OK** button. A timeout message will be issued if user does not make a selection within a specific timeframe.



Please select the emulator you want to connect to:

#	USB Identification
0	SN 228202449
1	SN 228202805

Figure 81: Selecting the JTAG Connection

8 Dialog’s Code Formatter

Dialog provides a code formatter for SmartSnippets™ Studio. When an SDK is used for the first time, Dialog’s default code formatter is selected automatically in SmartSnippets™ Studio.

User can override the default code formatter by navigating to **Window** > **Preferences** > **C/C++** > **Code Style** > **Formatter**. If user wants to restore the default code formatter, he/she is advised to select **Import**, navigate to the **Other** folder (should be under folder SmartSnippetsStudio2.0.6\CDT\Other of the installation directory), and select *Dialog_formatter.xml.*

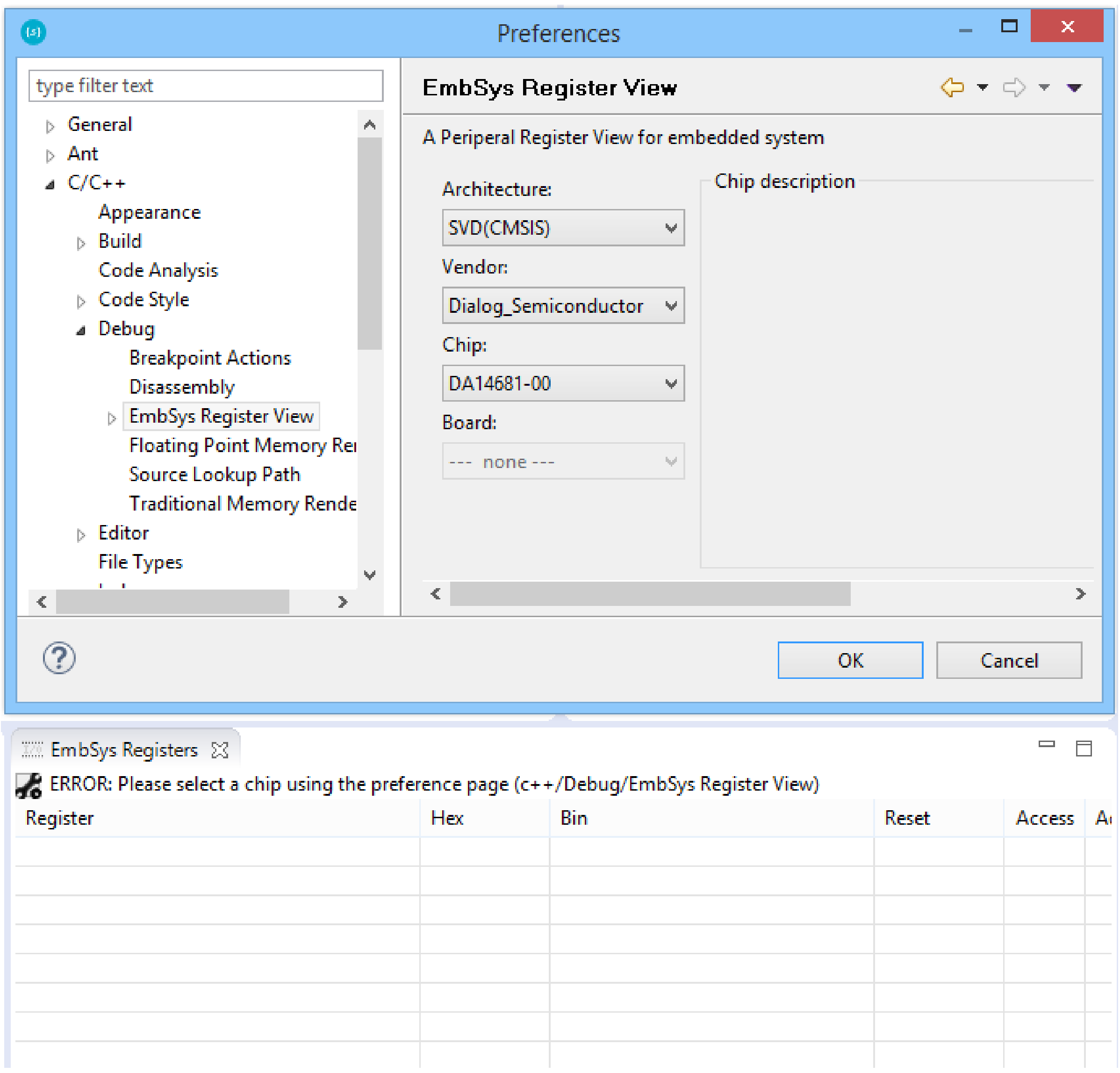
9 CMSIS File for DA1468x_00 and DA1469x Registers

The ARM Cortex Microcontroller Software Interface Standard (CMSIS) is a vendor-independent hardware abstraction layer for the Cortex-M processor series and specifies debugger interfaces.

The CMSIS enables consistent and simple software interfaces to the processor for interface peripherals, real-time operating systems, and middleware. It simplifies software reuse, reducing the learning curve for new microcontroller developers and cutting the time-to-market for devices.

To update the EmbSys Registers preferences page:

1. Click from the EmbSys Registers view to open the EmbSys Registers Preferences page. If EmbSys View is not visible, you can add it to the workbench by selecting **Window** > **Show View** > **Other** > **Debug** > **EmbSys Registers**.



EmbSys Register View

A Periperal Register View for embedded system

Architecture: SVD(CMSIS)

Vendor: Dialog_Semiconductor

Chip: DA14681-00

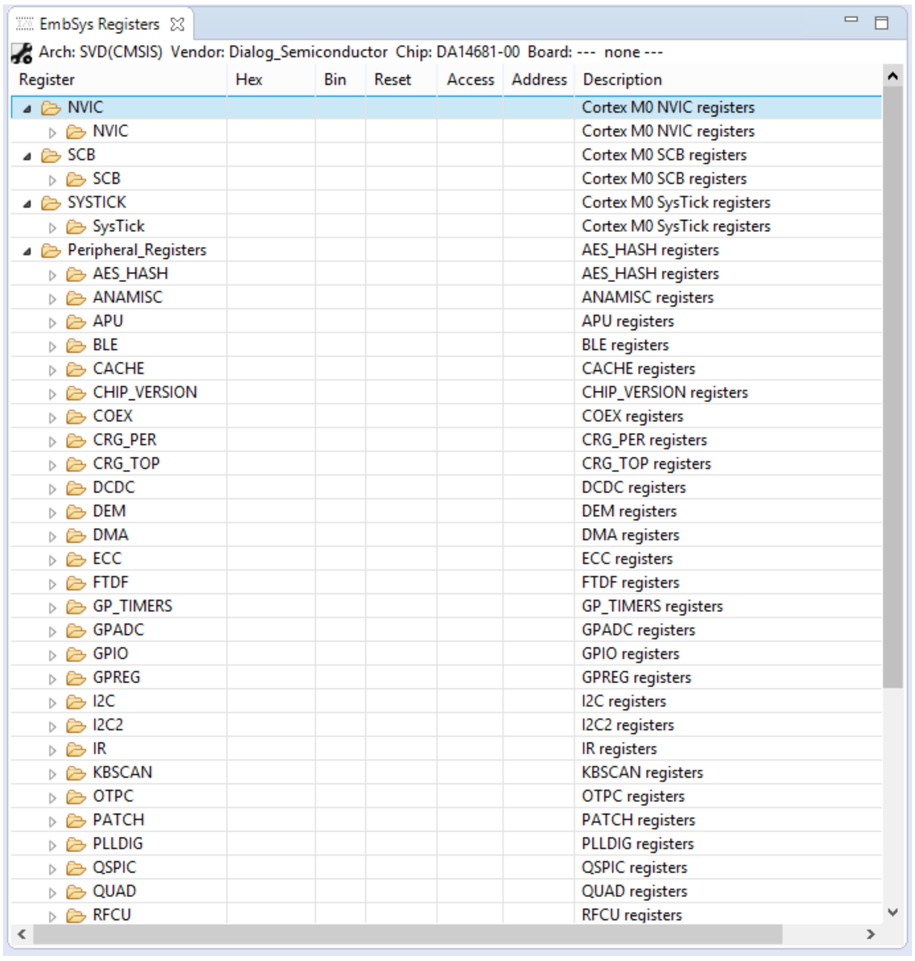
Board: --- none ---

Chip description

ERROR: Please select a chip using the preference page (c++/Debug/EmbSys Register View)

Figure 82: Selecting CMSIS file for DA1468x_00 Registers

2. Select **SVD(CMSIS)** in the **Architecture** list and **Dialog_Semiconductor** in the **Vendor** list, as in Figure 82.
3. Select the Chip of your preference.
4. Click the OK button and EmbSys Registers' view will be populated as shown in Figure 83.



EmbSys Registers

Arch: SVD(CMSIS) Vendor: Dialog_Semiconductor Chip: DA14681-00 Board: --- none ---

Register	Hex	Bin	Reset	Access	Address	Description
NVIC						Cortex M0 NVIC registers
NVIC						Cortex M0 NVIC registers
SCB						Cortex M0 SCB registers
SCB						Cortex M0 SCB registers
SYSTICK						Cortex M0 SysTick registers
SysTick						Cortex M0 SysTick registers
Peripheral_Registers						AES_HASH registers
AES_HASH						AES_HASH registers
ANAMISC						ANAMISC registers
APU						APU registers
BLE						BLE registers
CACHE						CACHE registers
CHIP_VERSION						CHIP_VERSION registers
COEX						COEX registers
CRG_PER						CRG_PER registers
CRG_TOP						CRG_TOP registers
DCDC						DCDC registers
DEM						DEM registers
DMA						DMA registers
ECC						ECC registers
FTDF						FTDF registers
GP_TIMERS						GP_TIMERS registers
GPADC						GPADC registers
GPIO						GPIO registers
GPREG						GPREG registers
I2C						I2C registers
I2C2						I2C2 registers
IR						IR registers
KBSCAN						KBSCAN registers
OTPC						OTPC registers
PATCH						PATCH registers
PLLDIG						PLLDIG registers
QSPIC						QSPIC registers
QUAD						QUAD registers
RFCU						RFCU registers

Figure 83: The EmbSys Registers Screen

10 Doxygen Documentation

Doxygen is a tool that extracts documentation from source file comments and generates output in HyperText Markup Language (HTML). To build the Doxygen documentation:

1. Check if your project contains already a .doxyfile. If not, you can add it by right-clicking a project and selecting **New** > **Other** > **Doxyfile**.

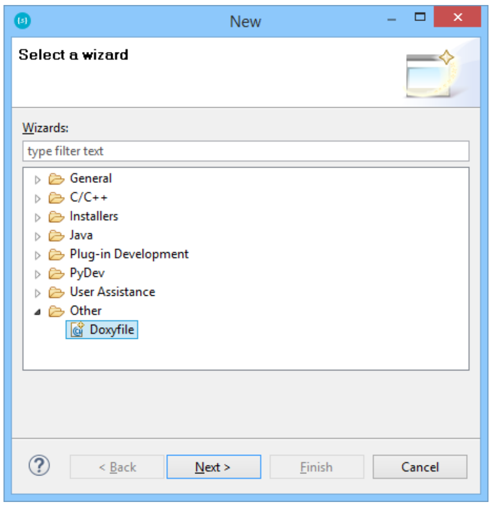


Figure 84: Doxygen Wizard

2. Build the doxygen documentation by right-clicking on the doxyfile and selecting **Build Documentation**.

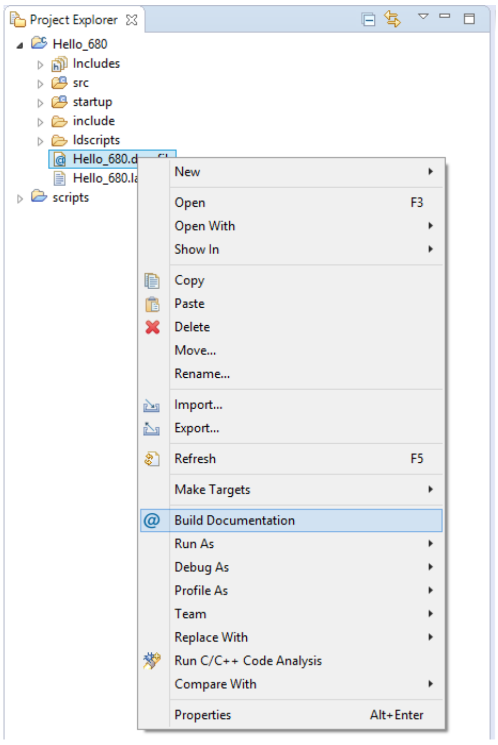


Figure 85: Building Doxygen Documentation

Alternatively, you can build the documentation by clicking the @▾ button on top menu and selecting the .doxyfile of the project you want to build documentation for.

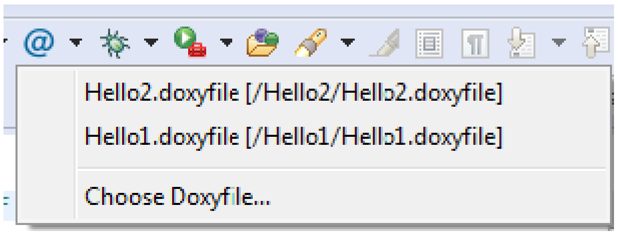

Hello2.doxyfile [/Hello2/Hello2.doxyfile]
Hello1.doxyfile [/Hello1/Hello1.doxyfile]
Choose Doxyfile...

Figure 86: Choosing which Doxygen File to Build

3. After building the documentation, you can find the contents in the **html** and **latex** folders.

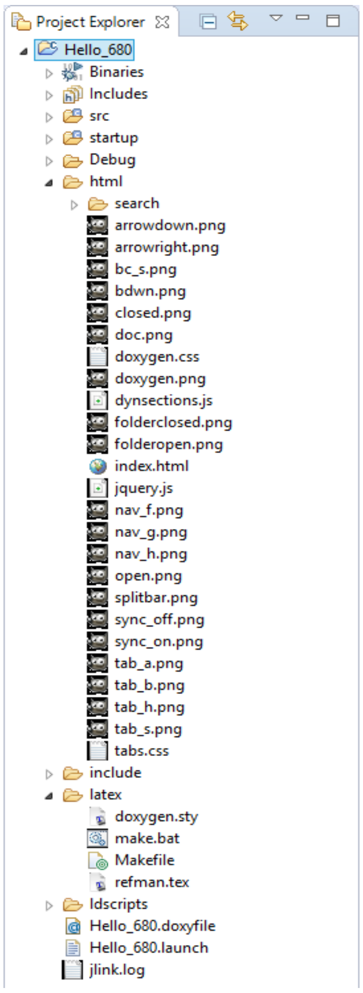
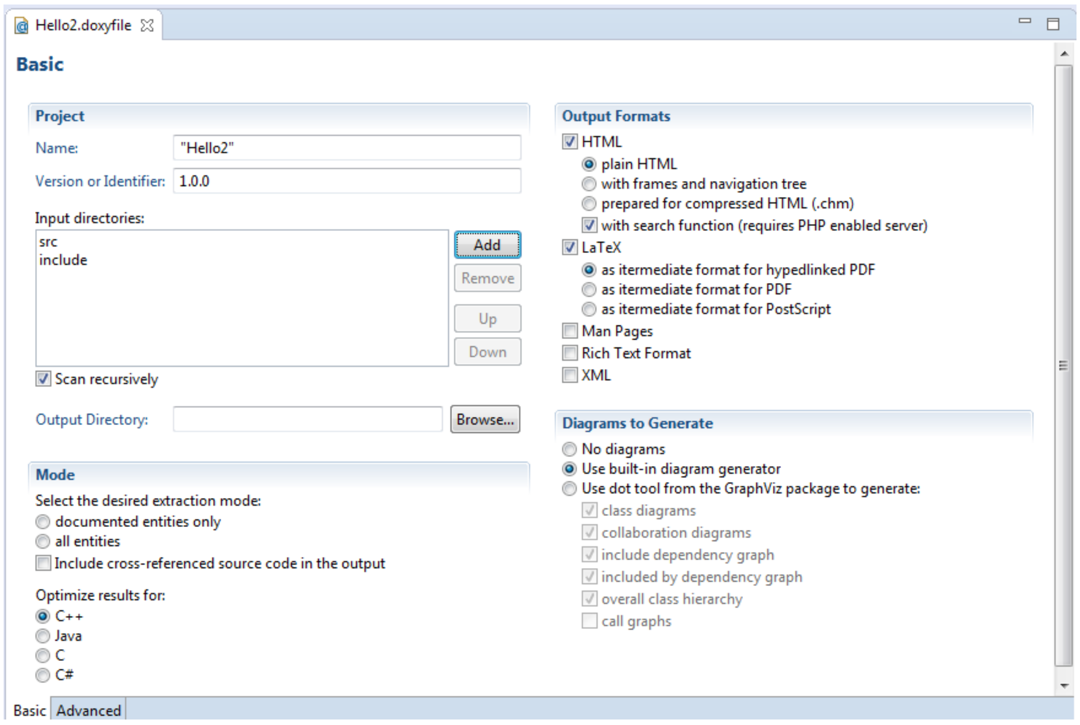

```
Project Explorer
Hello_680
  Binaries
  Includes
  src
  startup
  Debug
  html
    search
    arrowdown.png
    arrowright.png
    bc_s.png
    bdwn.png
    closed.png
    doc.png
    doxygen.css
    doxygen.png
    dynsections.js
    folderclosed.png
    folderopen.png
    index.html
    jquery.js
    nav_f.png
    nav_g.png
    nav_h.png
    open.png
    splitbar.png
    sync_off.png
    sync_on.png
    tab_a.png
    tab_b.png
    tab_h.png
    tab_s.png
    tabs.css
  include
  latex
    doxygen.sty
    make.bat
    Makefile
    refman.tex
  ldscripts
  Hello_680.doxyfile
  Hello_680.launch
  jlink.log
```

Figure 87: Project Explorer with Doxygen Generated Documentation

Note: It is possible to copy a .doxyfile to another project and build documentation for it. You can open a doxygen file in doxygen editor, by right-clicking on it and selecting **Open With** > **Doxyfile Editor**. Now you can easily set up any project specific settings, like project name, version, input folders, and so on.



Hello2.doxyfile

Basic

Project

Name: "Hello2"

Version or Identifier: 1.0.0

Input directories:
src
include

Add | Remove | Up | Down

[✓] Scan recursively

Output Directory: Browse...

Mode

Select the desired extraction mode:
- ○ documented entities only
- ○ all entities
- [ ] Include cross-referenced source code in the output

Optimize results for:
- ● C++
- ○ Java
- ○ C
- ○ C#

Output Formats
- [✓] HTML
  - ● plain HTML
  - ○ with frames and navigation tree
  - ○ prepared for compressed HTML (.chm)
  - [✓] with search function (requires PHP enabled server)
- [✓] LaTeX
  - ● as itermediate format for hypedlinked PDF
  - ○ as itermediate format for PDF
  - ○ as itermediate format for PostScript
- [ ] Man Pages
- [ ] Rich Text Format
- [ ] XML

Diagrams to Generate
- ○ No diagrams
- ● Use built-in diagram generator
- ○ Use dot tool from the GraphViz package to generate:
  - [✓] class diagrams
  - [✓] collaboration diagrams
  - [✓] include dependency graph
  - [✓] included by dependency graph
  - [✓] overall class hierarchy
  - [ ] call graphs

Basic | Advanced

Figure 88: Editing File with Doxyfile Editor

11 SEGGER Terminal Configuration

SEGGER Real Time Terminal is an alternative for semi hosting. It enables a very fast way to redirect printf statements from the board to the Telnet Terminal in our Eclipse environment.

To establish the connection to the board, set up the Telnet terminal as follows:

1. Select **Window** > **Show View** > **Other**.
2. In the window that appears, select **Terminal** and click **OK**.

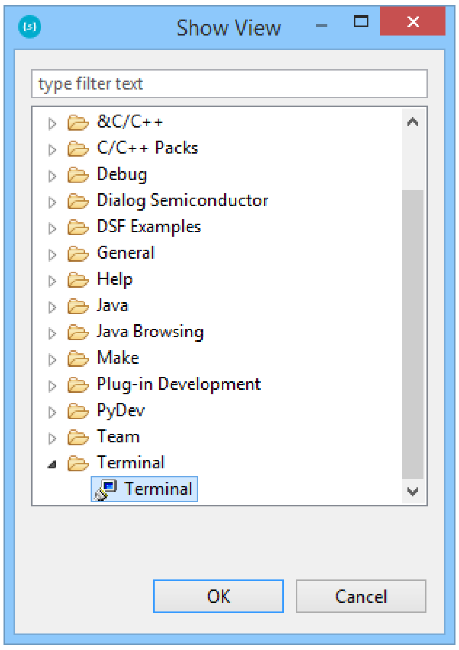


Figure 89: Adding the Terminals View

3. A terminal window is added to the layout.

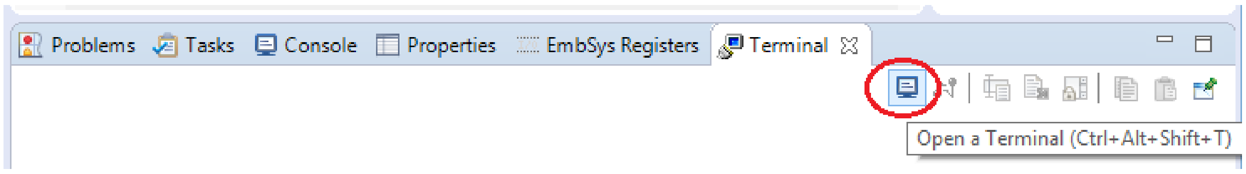
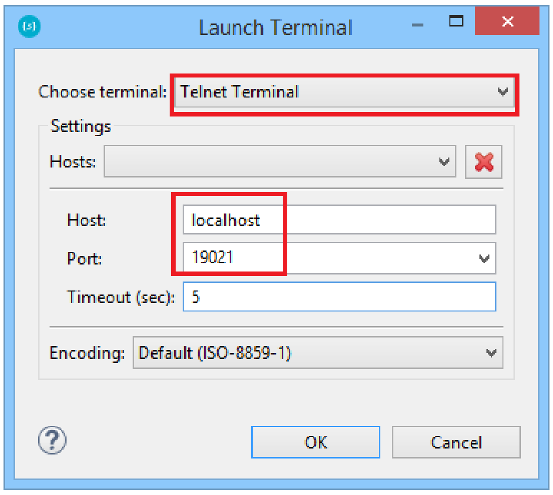


Figure 90: The Layout with the Terminal View Included

4. Click the Terminal icon (circled in red above). The **Launch Terminal** window appears.



Choose terminal: Telnet Terminal

Settings

Hosts:

Host: localhost

Port: 19021

Timeout (sec): 5

Encoding: Default (ISO-8859-1)

Figure 91: The Terminal Settings Screen

5. Select **Telnet Terminal**, fill in localhost in the **Host** field and 19021 in the Port field.
6. Click OK. A telnet terminal session will be started.

After completing the setup of the Terminal window, user can launch it in any perspective by pressing CTRL+ALT+t.

12 Serial Terminal View

SmartSnippets™ Studio comes installed with the RxTx plugin which enables serial terminal connection with the development board (http://rxtx.qbang.org/wiki/index.php/Main_Page)

1. Select **Window** > **Show View** to locate and open the terminal view.
2. Click the **Open a terminal** button.

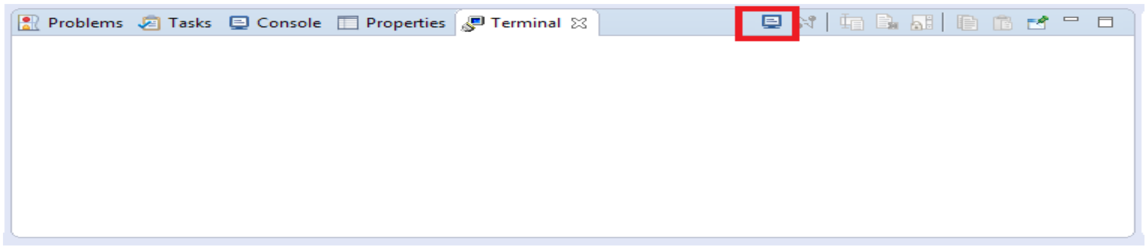
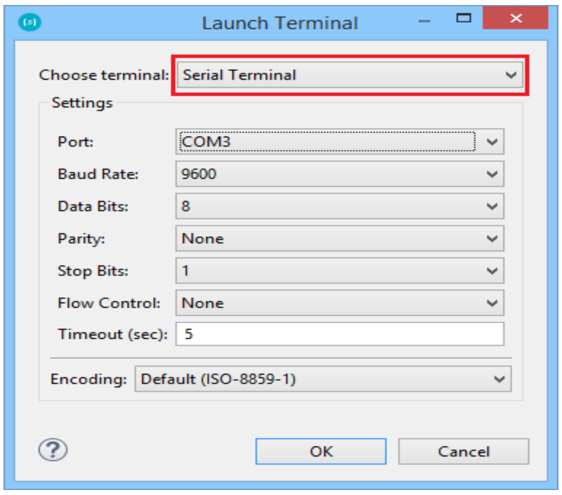


Figure 92: The RxTx Terminal View

3. Select **Serial Terminal** from the list.


Launch Terminal

Choose terminal: Serial Terminal

Settings

Port: COM3

Baud Rate: 9600

Data Bits: 8

Parity: None

Stop Bits: 1

Flow Control: None

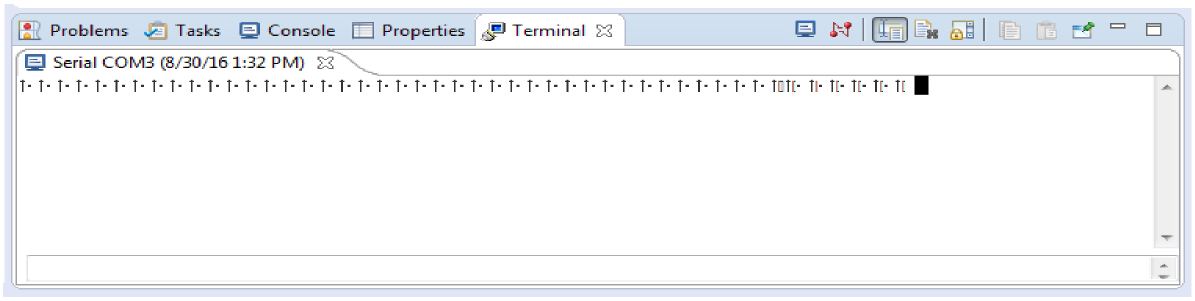
Timeout (sec): 5

Encoding: Default (ISO-8859-1)

Figure 93: The RxTx Launch Terminal Window

4. Select the UART port, Baud Rate and click **OK**.

The serial output should be shown on the terminal window.



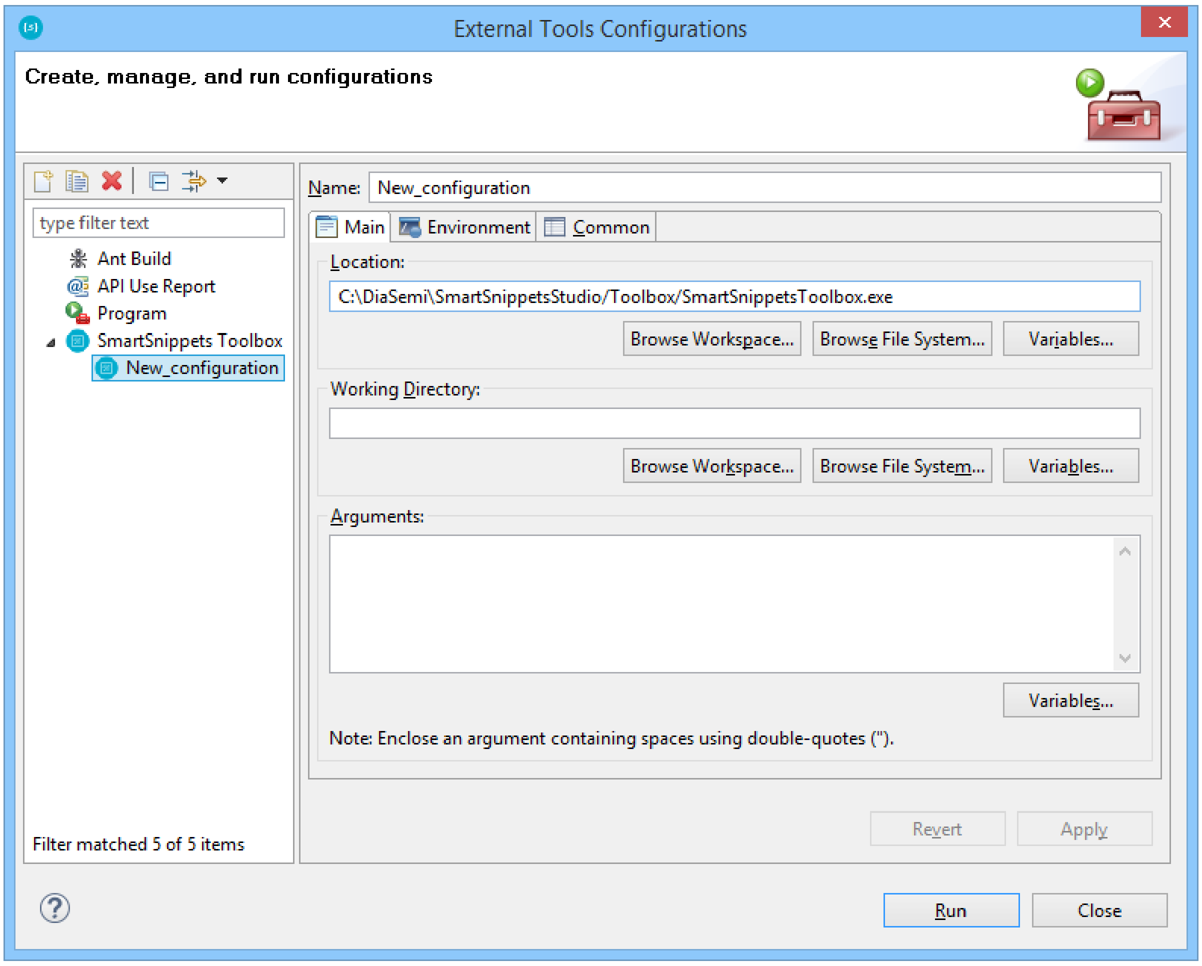
Serial COM3 (8/30/16 1:32 PM)

Figure 94: An Example of the RxTx Terminal Window

13 Launch SmartSnippets Toolbox as an External Tool

To launch SmartSnippets Toolbox through SmartSnippets™ Studio:

1. Select **Run** > **External Tools** > **External Tools Configuration** > **SmartSnippets Toolbox** > **New**. A new configuration which launches SmartSnippets Toolbox is created. If needed, the default path can be changed on the **Main** tab. This step is only needed to be performed once.



External Tools Configurations

Create, manage, and run configurations

Name: New_configuration

Location: C:\DiaSemi\SmartSnippetsStudio/Toolbox/SmartSnippetsToolbox.exe

Note: Enclose an argument containing spaces using double-quotes (").

Filter matched 5 of 5 items

Figure 95: Create New Configuration

2. Click the **Run** button. From now on, the new configuration that launches SmartSnippets Toolbox should appear directly under **Run** > **External Tools**.

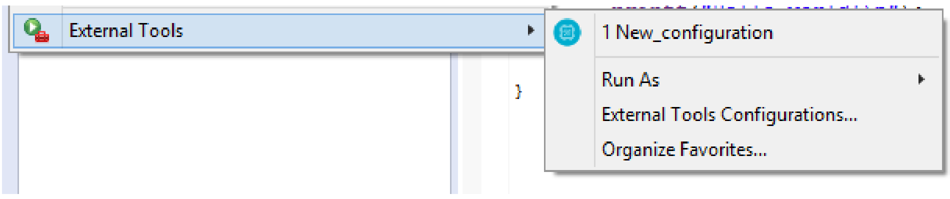


Figure 96: New Configuration under External Tools

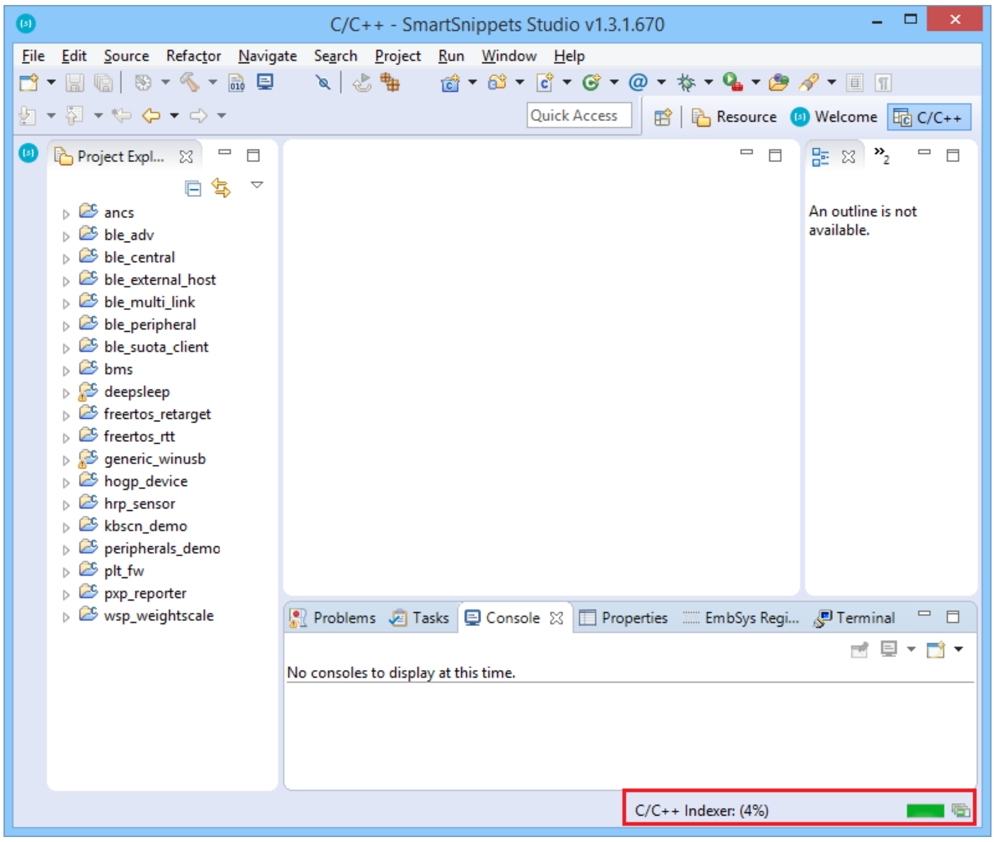
14 Advanced Settings

SmartSnippets™ Studio comes with a set of variables whose values are pointing to the installation paths that have been used to install the different tools or are getting updated as the user changes project or build configuration. These variables are intended to be used in scripts or any other Studio projects. They can be found under **Windows** > **Preferences** > **Run/Debug** > **String Substitution**.

15 Troubleshooting

15.1 Project Errors while Builder is Still Active

After creating a new template project, wait for the Indexer to finish before building the project. Invoking build, while indexer is still active will result in a project with build errors and should be avoided. Figure 97 shows the Indexer in action, after creating template project 680Test.



An outline is not available.

No consoles to display at this time.

C/C++ Indexer: (4%)

Figure 97: Errors/Warnings while Indexer is Still Running

Notice that while the Indexer is still active, 680Test project has a red marker, indicating errors. After the indexer finishes, there will be no errors at the template project.

15.2 Debug Session Launching Stops without any Error Indication

This may be an indication that the firmware used by the JTAG Debugger is older than the SEGGER J-Link GDB server version used. The user is advised to disconnect and reconnect the JTAG debugger and launch a new debug session. Now a message should pop up, informing users that they should update the debugger firmware.

15.3 Linux Installation Errors

If an error occurs while installing in Linux, check the installation log located at: `<user_home>/.SmartSnippets_Studio_installation_<version>.log`

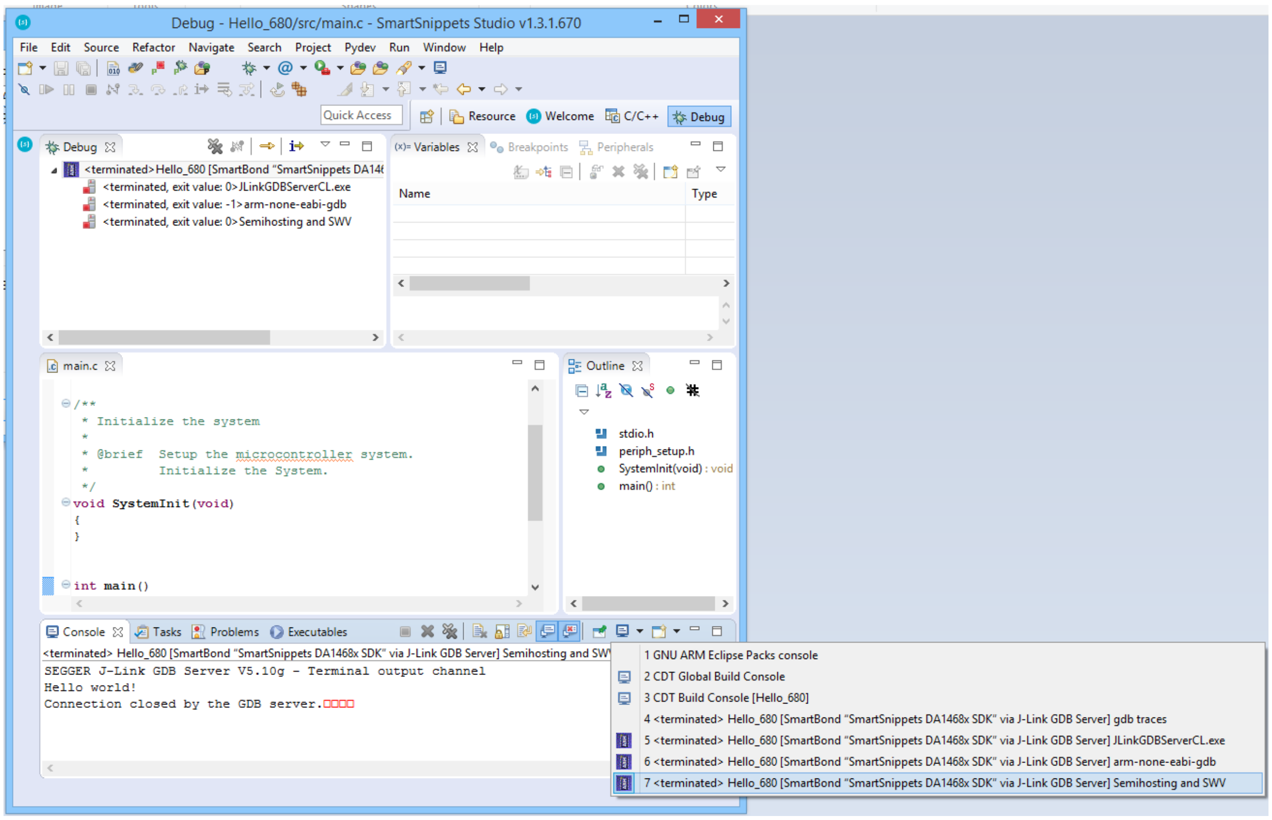
15.4 Debugger GDB Crash

In case GDB crashes randomly, remove all breakpoints and try again.

15.5 Semihosting

Semihosting is a mechanism for ARM targets to communicate input/output requests from application code to a host computer running a debugger. This mechanism could be used, for example, to enable functions in the C library, such as printf() and scanf(), to use the screen and keyboard of the host rather than having a screen and keyboard on the target system.

On some installations, semihosting (that is --specs=rdimon.specs in Properties > C/C++ build > settings > linker > Misc > Other linker flags) does not work, and the debugger fails to start. The solution is to use --specs=nosys.specs instead, in which case, of course, semihosting is not available.



```
<terminated>Hello_680 [SmartBond "SmartSnippets DA14
    <terminated, exit value: 0>JLinkGDBServerCL.exe
    <terminated, exit value: -1>arm-none-eabi-gdb
    <terminated, exit value: 0>Semihosting and SWV
```

```
/**
 * Initialize the system
 *
 * @brief  Setup the microcontroller system.
 *         Initialize the System.
 */
void SystemInit(void)
{
}

int main()
```

```
<terminated> Hello_680 [SmartBond "SmartSnippets DA1468x SDK" via J-Link GDB Server] Semihosting and SW
SEGGER J-Link GDB Server V5.10g - Terminal output channel
Hello world!
Connection closed by the GDB server.□□□□
```

1 GNU ARM Eclipse Packs console
2 CDT Global Build Console
3 CDT Build Console [Hello_680]
4 <terminated> Hello_680 [SmartBond "SmartSnippets DA1468x SDK" via J-Link GDB Server] gdb traces
5 <terminated> Hello_680 [SmartBond "SmartSnippets DA1468x SDK" via J-Link GDB Server] JLinkGDBServerCL.exe
6 <terminated> Hello_680 [SmartBond "SmartSnippets DA1468x SDK" via J-Link GDB Server] arm-none-eabi-gdb
7 <terminated> Hello_680 [SmartBond "SmartSnippets DA1468x SDK" via J-Link GDB Server] Semihosting and SWV

Figure 98: Selecting Semihosting Console

15.6 Debugger Silent Mode Issue

On some installations, debugger does not work in silent mode. In this case, in the respective launch Run > Debug configurations > Debugger tab, clear the Silent checkbox. Note that all SmartSnippets DA1468x SDK projects are distributed with a debug launcher with silent mode switched off.

Application output for Semi Hosting can be seen in Semihosting and SWV console. In case another console has the focus while the application is running, the user can switch to semihosting console by selecting the 🖥 ▾ icon from the console view.

15.7 Indexer

Sometimes, the static code analysis tool may find unresolved symbols and other errors, even though compilation passes. This usually happens after code refactoring, or file renaming. Solution: Rebuild index (Project > C/C++ Index > Rebuilt)

15.8 JLink

When using two or more JLink connections to connect to multiple boards simultaneously, the connection may randomly stop on one of them. This is due to the limited bandwidth of the USB hub used. Attaching the JLink connections directly on the laptop solves the problem.

15.9 Wrong Proposed Workspace Path

While starting SmartSnippets™ Studio, if the workspace launcher proposes a folder that does not seem to have the correct format (for example, two folder paths one next to each other), try restarting the machine. Or just press the **Browse** button to select the workspace path.

15.10 Manual Plug-In Updates

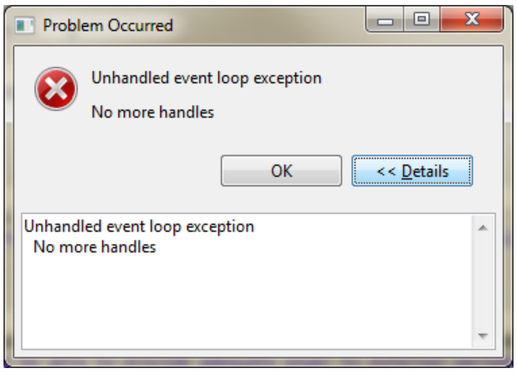
Every SmartSnippets™ Studio release version comes together with a set of plug-ins that have been tested thoroughly for compatibility with the main applications and with each other. It is highly recommended that SmartSnippets™ Studio users do not manually update plug-ins to their latest versions. Updated plug-ins cannot be tested using the currently system-installed version of SmartSnippets™ Studio and its plug-ins, and that way compatibility cannot be reassured. Every new SmartSnippets™ Studio release will include all the latest versions for the included plug-ins too.

15.11 Internal Browser does not Start after a Plug-In Addition or Update

It may happen that an addition or update on existing plug-ins produces conflicts with the internal browser leading to the last one not able to proper start. As a workaround, go to **Windows** > **Preferences** > **General** > **Web Browser** and select **Use external web browser**.

15.12 Unhandled Event Loop Exception when Opening a Project

From time to time, when trying to open a closed project, the following error may appear.



```
Unhandled event loop exception

No more handles
```

```
Unhandled event loop exception
  No more handles
```

Figure 99: Error when Trying to Open a Project

If this happens, restart the application. Projects will open without problems.

15.13 Couldn't Reserve Space for Cygwin's Heap when Building a Project

When trying to build an SDK project, the following error may appear:

```
D:\DiaSemi\SmartSnippetsStudio2.0.6\Tools\mingw64_targeting32\msys\1.0\bin\make.exe:
*** Couldn't reserve space for cygwin's heap, Win32 error 0
```

This happens because the external library msys-1.0.dll is not built to be position independent. In such an event, try the following:

1. Reboot the system.

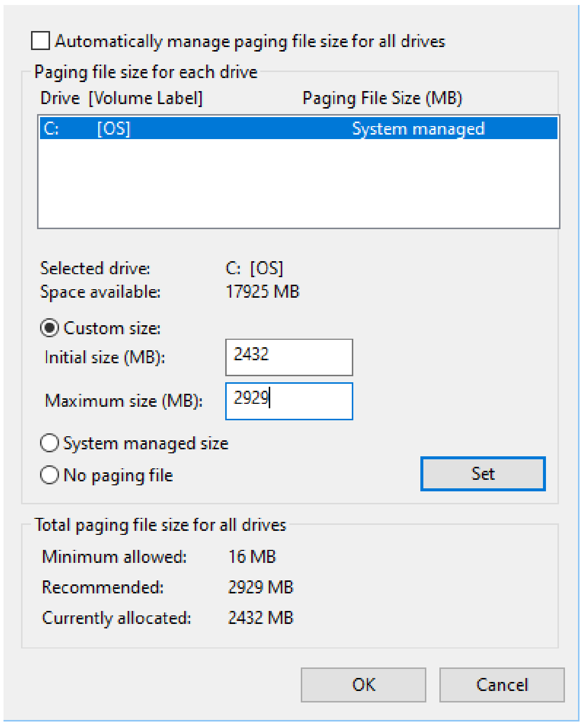
2. Use the dll rebase to force the library load at a new address:

```
$ rebase.exe -b 0x50000000 msys-1.0.dll
```

3. Change the Virtual Memory settings. As an example, for Windows 7 go to **Control Panel** > **System and Security** > **System** > **Advanced System Settings**. On the **Advanced** tab, click the performance **Settings** button and select **Advanced** tab, and click the **Change** button. Enter a custom size value as follows for Initial Size (MB) and Maximum Size (MB):

   Initial Size (MB) = Currently Allocated (shown at the bottom)

   Maximum Size (MB) = Recommended (shown at the bottom)


☐ Automatically manage paging file size for all drives

Paging file size for each drive

Drive [Volume Label]	Paging File Size (MB)
C: [OS]	System managed

Selected drive: C: [OS]
Space available: 17925 MB

● Custom size:
Initial size (MB): 2432
Maximum size (MB): 2929

○ System managed size
○ No paging file

Total paging file size for all drives

Minimum allowed:	16 MB
Recommended:	2929 MB
Currently allocated:	2432 MB

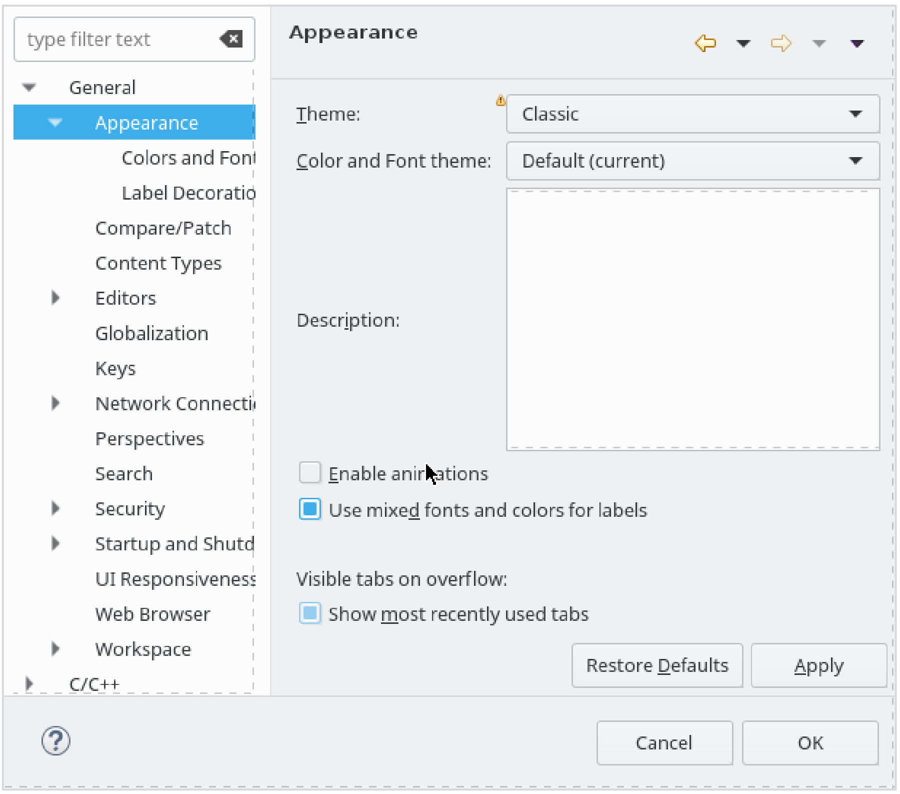
Figure 100: Change Virtual Memory Settings

4. Click the **Set** button, click **OK**, and reboot PC to take effect.

15.14 Application Crashes or Buttons and Dialogs not Responding on Linux with GTK3

There are known issues with Eclipse using the GTK3 library, especially with the KDE desktop environment. If you experience buttons not responding or certain menus that are not open, there are two potential solutions:

- First try to switch theme to classic from **Window** > **Preferences** > **Appearance**



Appearance

Theme: Classic

Color and Font theme: Default (current)

Description:

[ ] Enable animations

[✓] Use mixed fonts and colors for labels

Visible tabs on overflow:

[ ] Show most recently used tabs

Figure 101: Switch Theme to Classic

- Restart SmartSnippets™ Studio

If it does not solve the problem force SmartSnippets™ Studio to use GTK2 instead of GTK3. Add these lines in SmartSnippets_Studio.ini before “pluginCustomization”:

```
--launcher.GTK_version
2
```

Restart SmartSnippets™ Studio.

15.15 Errors when Running erase_qspi_jtag_win and suota_initial_flash_jtag_win scripts

If earlier installations of SmartSnippets™ Studio and Segger tools exist under different user accounts, the new user must uninstall SmartSnippets™ Studio and the Segger tools from the user account that had been used when they were initially installed to remove them completely before she/he can install and run SmartSnippets™ Studio flawlessly. Otherwise, errors like the following ones may occur while trying to run *suota_initial_flash_jtag_win* and *erase_qspi_jtag_win* scripts:

```
Jlink.exe is not recognized as an internal or external command, operable program or batch file.
```

```
Failed to bind socket cannot open gdb interface
```

15.16 Errors after Importing a Project

Importing a project to Eclipse IDE should only happen if first the proper workspace is normally provided, and the right SDK exported to it.

Otherwise, no tools installed, no valid configuration is done, and so on. If this is the case, you are advised to go and fix this issue by repeating the **Select Workspace** procedure.

15.17 Errors after Renaming a Project

In general, it is strongly recommended to avoid renaming existing projects since this does not allow the user to modify the folder name, plus not all references are updated automatically. Instead, it is recommended to see Section 4.2.6 and Section 4.2.7 for details about the steps to be following when cloning a project outside the original SDK folder structure or copying under the same SDK folder structure. After copying it, the user could delete the initial project.

15.18 Errors after Copying a Project

If a project has not been copied properly, some compile errors related to relative paths may occur, for example:

```
Invoking: Cross ARM C Linker

c:/diasemi/smartsnippetsstudio2.0.6/gcc/4_9-2015q3/bin/../lib/gcc/arm-none-
eabi/4.9.3/../../../../arm-none-eabi/bin/ld.exe: cannot find -lble_stack_da14681_01

collect2.exe: error: ld returned 1 exit status

make: *** [Copy of ancs.elf] Error 1
```

See Section 4.2.6 and Section 4.2.7 for details about the steps to be following when cloning a project outside the original SDK folder structure or copying under the same SDK folder structure.

15.19 Error: BAD ELF Interpreter: No such File or Directory. Make Error 126 or 127 on Linux

Support for 32-bit executables should be added (see also Section 1.2).

For CentOS and Fedora install with:

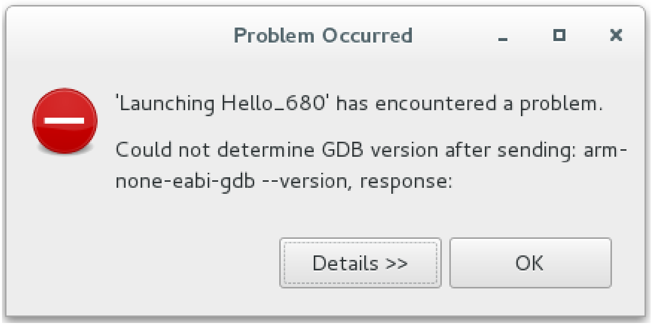
```
sudo yum install glibc.i686
```

For Ubuntu install with:

```
sudo apt-get install libz1:i386 libncurses5:i386 libbz2-1.0:i386
```

15.20 Could not Determine GDB Version on Linux

If an error as in Figure 102 occurs, when trying to run a project, then ncurses library needs to be installed.



'Launching Hello_680' has encountered a problem.

Could not determine GDB version after sending: arm-none-eabi-gdb --version, response:

Figure 102: Could not Determine GDB Version

For CentOS and Fedora install with:

```
sudo yum install ncurses-libs.i686
```

15.21 Blank Welcome Screen when Opening SmartSnippets™ Studio

Install `libwebkitgtk-1.0-0` and `libwebkit-3.0-0` for Ubuntu. See Section 1.2 for more details.

15.22 Error on awk: "function strtonum never defined" when Running External Script

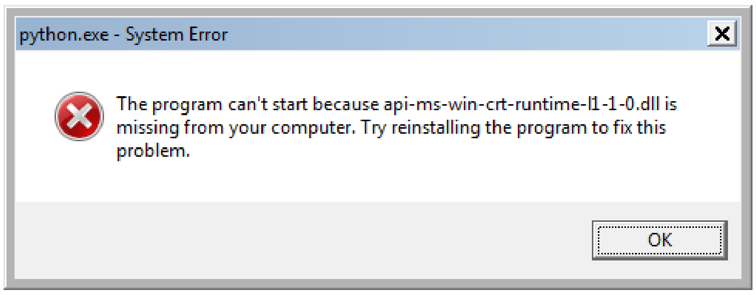
Install gawk. See Section 1.2 for more details.

15.23 SmartSnippets™ Studio Error: Cannot Register Python Interpreter

SmartSnippets™ Studio cannot register the bundled Python interpreter in Windows. User cannot use the PyDev plugin to run python scripts. This may have been caused by not updated windows system or missing windows library.

Solution:

- Move into Python installation directory `<install_dir>/SmartSnippetsStudio/Python35` and run a test python command, for example, "python --version". If the error as in Figure 103 occurs, there are two solutions:


python.exe - System Error

The program can't start because api-ms-win-crt-runtime-l1-1-0.dll is missing from your computer. Try reinstalling the program to fix this problem.

Figure 103: Unable to Register Python due to System Error

  - Update windows system using "Windows update" functionality
  - Download and install Update for Universal C Runtime in Windows. Restart SmartSnippets™ Studio

15.24 CentOS 7 and Ozone J-Link Debugger

CentOS 7 comes with `libstdc++.so.6.0.19` (part of GNU GCC compiler), which is not compatible with latest versions of Ozone J-Link debugger. This results in Ozone exiting with error "`Could not open J-Link shared library. Exit now`".

As a workaround user can follow these steps:

1. Download and install gcc 4.9.1 or later which contains `libstdc++.so.6.0.20`
2. Set LD_LIBRARY_PATH to include the 64-bit library folder of GCC. E.g. in .bash_profile add lines:

```
LD_LIBRARY_PATH=/home/user/gcc-4.9.4/lib64
export LD_LIBRARY_PATH
```

15.25 Python Interpreter Error on Linux: ImportError: libtk8.6.so: Cannot Open Shared Object File: No such File or Directory

Python program uses a module , for example, tkinter that requires Tcl/Tk to run.

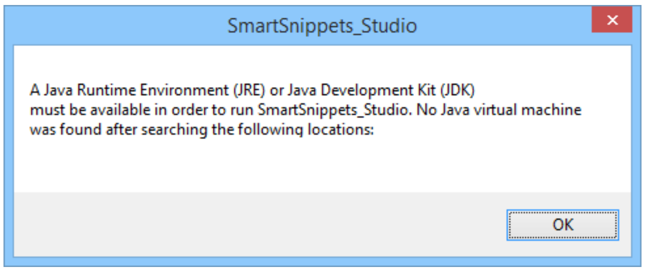
There are two ways to resolve this issue:

1. Install Tcl/Tk on the system:
   a. For Ubuntu
      `sudo apt-get install tk tcl`

2. Download and install ActiveState ActiveTcl® (https://www.activestate.com/activetcl/downloads) and update LD_LIBRARY_PATH to point to the lib directory (e.g. in .bash_profile add lines `LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/opt/ActiveTcl-8.6/lib`)

15.26 Error when Starting SmartSnippets™ Studio Application

If the message as in Figure 104 appears when executing SmartSnippets™ Studio application, check if the file `<install_dir>/SmartSnippetsStudioX.Y/CDT/SmartSnippets_Studio.ini` contains `-vm` option and `-pluginCustomization` option with correct option values.

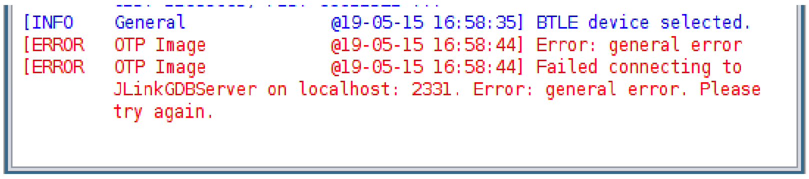


A Java Runtime Environment (JRE) or Java Development Kit (JDK) must be available in order to run SmartSnippets_Studio. No Java virtual machine was found after searching the following locations:

Figure 104 : Error when Starting Application

15.27 Error when Connecting DA1468x or DA1469x Family Chip with JTAG on Linux

If an error as in Figure 105 occurs when you try to connect to a DA1468x or DA1469x chip on Linux with JTAG, check that the `netstat` utility is installed on computer.



```
[INFO    General              @19-05-15 16:58:35] BTLE device selected.
[ERROR   OTP Image            @19-05-15 16:58:44] Error: general error
[ERROR   OTP Image            @19-05-15 16:58:44] Failed connecting to
         JLinkGDBServer on localhost: 2331. Error: general error. Please
         try again.
```

Figure 105 : Error when Connecting DA1468x or DA1469x Chip

See Section 1.2 on how to install netstat utility based on Linux distribution.

15.28 Warning on Linux about Missing libqtgui4

On Linux system, click the SystemView icon from the welcome page (Figure 106) and if the message occurs as in Figure 107, see Section 1.2 on how to install the missing library.

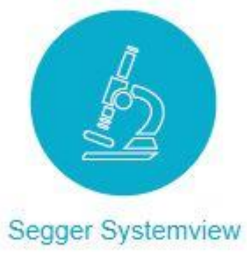
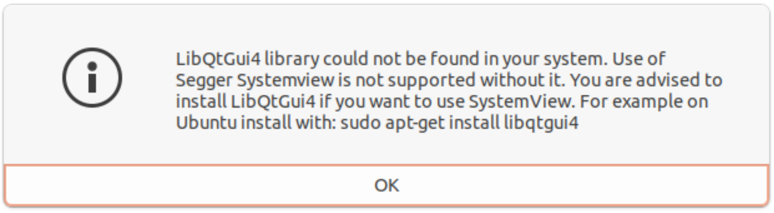


Figure 106: Welcome Page SystemView Icon



LibQtGui4 library could not be found in your system. Use of Segger Systemview is not supported without it. You are advised to install LibQtGui4 if you want to use SystemView. For example on Ubuntu install with: sudo apt-get install libqtgui4

Figure 107: Missing libQtGui4 Warning

15.29 Build Error when Workspace Path Contains Spaces

It is possible that user get build error if the Studio workspace path contains spaces. For example:

```
Generate linker scripts.
make[2]: *** No rule to make target 'mem.ld', needed by 'generate_ldscripts'.  Stop.
```

Use a workspace that does not contain spaces in path.

Revision History

Revision	Date	Description
1.0	19-Nov-2015	First released version
1.1	15-Apr-2016	Updated for SmartSnippets™ Studio v1.1
1.2	26-Aug-2016	Updated for SmartSnippets™ Studio v1.2
1.3	18-Nov-2016	Updated for SmartSnippets™ Studio v1.3
1.4	22-Dec-2016	Updated for SmartSnippets™ Studio v1.4
1.5	06-Apr-2017	Updated for SmartSnippets™ Studio v1.5
1.6	23-Jun-2017	Updated for SmartSnippets™ Studio v1.6
2.0.3	02-Feb-2018	Updated for SmartSnippets™ Studio v2.0.3
2.0.5	18-May-2018	Updated for SmartSnippets™ Studio v2.0.5
2.0.6	07-Nov-2018	Updated for SmartSnippets™ Studio v2.0.6
2.0.7	08-Feb-2019	Updated for SmartSnippets™ Studio v2.0.7
2.0.8	03-Apr-2019	Updated for SmartSnippets™ Studio v2.0.8
2.0.10	20-Sep-2019	Updated for SmartSnippets™ Studio v2.0.10
2.0.14	29-May-2020	Updated for SmartSnippets™ Studio v2.0.14
2.0.16	24-Dec-2020	Updated for SmartSnippets™ Studio v2.0.16
2.0.18	16-Dec-2021	Updated for SmartSnippets™ Studio v2.0.18
2.0.20	13-May-2022	Updated for SmartSnippets™ Studio v2.0.20 Editorial corrections Rebranded to Renesas

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Status Definitions

Status	Definition
DRAFT	The content of this document is under review and subject to formal approval, which may result in modifications or additions.
APPROVED or unmarked	The content of this document has been approved for publication.