

S32 Design Studio for ARM, Version 2018.R1

Getting Started

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Chapter

1

Installation Manual

Topics:

- [System Requirements](#)
- [How to download S32DS ARM v2018.R1](#)
- [How to install S32DS ARM v2018.R1](#)

System Requirements

To maximize performance, the S32DS ARM v2018.R1 tools should be installed on a computer with the recommended system configuration. While the tools will operate on a computer with the minimum configuration, the limited hardware will restrict its ability to function at desired performance levels.

Table 1: Requirements for Windows platform

<p>Recommended Configuration</p> <ul style="list-style-type: none"> • PC with 2.6GHz Intel® Pentium® compatible processor or better • 4 GB of RAM • 7 GB of disk space (when installing all product features or all updates) • 5 GB of temporary storage (required only during the product installation) • USB port for communications with target hardware • Ethernet port for communications with target hardware (optional)
<p>Operational Minimum Configuration</p> <ul style="list-style-type: none"> • PC with 1.8 GHz Intel® Pentium® compatible processor • 2 GB of RAM • 7 GB of disk space (when installing full product or updates) • 5 GB of temporary storage (required only during the product installation) • USB port for communications with target hardware
<p>Java Runtime</p> <ul style="list-style-type: none"> • Java Runtime Environment 1.8 32-bit (included in the installation package)
<p>Host Operating System Support</p> <ul style="list-style-type: none"> • Microsoft® Windows® 7 32-bit and 64-bit • Microsoft® Windows® 8 32-bit and 64-bit • Microsoft® Windows® 8.1 32-bit and 64-bit • Microsoft® Windows® 10 32-bit and 64-bit <p>Note: S32 Design Studio for ARM, Version 2018.R1 supports all flavors and editions of the above operating systems as limited to the requirements of the Java Runtime Environment.</p>

Table 2: Requirements for Linux platform

<p>Recommended Configuration</p> <ul style="list-style-type: none"> • PC with 2.6GHz Intel® Pentium® compatible processor or better • 4 GB of RAM • 6.7 GB of disk space (when installing all product features or all updates) • 4.8 GB of temporary storage (required only during the product installation) • USB port for communications with target hardware • Ethernet port for communications with target hardware (optional)
<p>Operational Minimum Configuration</p> <ul style="list-style-type: none"> • PC with 1.8 GHz Intel® Pentium® compatible processor • 2 GB of RAM • 6.7 GB of disk space (when installing all product features or all updates)

- 4.8 GB of temporary storage (required only during the product installation)
- USB port for communications with target hardware

Java Runtime

- Java Runtime Environment 1.8 64-bit (must be installed separately)

Host Operating System Support

- Ubuntu 14.04 64-bit
- Debian 8 64-bit
- CentOS 7 64-bit

Installation prerequisites for Linux platform

Following prerequisites and preliminary steps are required to be met before you install S32 Design Studio for ARM, Version 2018.R1.

- The user account installing the product must be a member of sudoers group
- Compatibility libraries necessary to run 32-bit toolchain on 64-bit Linux have to be installed

Table 3: Installing 32-bit compatibility libraries

Platform	Libraries	Installing
Ubuntu 14	<ul style="list-style-type: none"> • lib32z1 • lib32ncurses5 • lib32bz2-1.0 	<code>sudo apt-get install lib32z1 lib32ncurses5 lib32bz2-1.0</code>
Ubuntu 16	<ul style="list-style-type: none"> • libc6:i386 • libncurses5:i386 • libstdc++6:i386 • lib32z1 	<code>sudo dpkg --add-architecture i386</code> <code>sudo apt-get update</code> <code>sudo apt-get install libc6:i386 libncurses5:i386 libstdc++6:i386 lib32z1</code>
Debian	<ul style="list-style-type: none"> • lib32z1 • lib32ncurses5 • lib32stdc++6 	<code>sudo apt-get install lib32z1 lib32ncurses5 lib32stdc++6</code>
CentOS	<ul style="list-style-type: none"> • glibc.i686 	<code>sudo yum install glibc.i686</code>

- An up-to-date version of MAKE utility has to be installed.

Table 4: Updating MAKE

Platform	Installing
Ubuntu	<code>sudo apt-get install make</code>
Debian	<code>sudo apt-get install build-essential</code>
CentOS	<code>sudo yum install make</code>

- The `ncurses-devel.i686` library should be installed in order to run debug sessions on CentOS:

Table 5: Preparing debugging for CentOS

Platform	Installing
CentOS	<code>sudo yum install ncurses-devel.i686</code>

- Webkit1 for GTK2 should be installed

Table 6: Installing Webkit1

Platform	Installing
All supported Linux	<code>sudo apt-get install libwebkitgtk-1.0-0</code>

- TCL package should be installed

Note: This package is required to run the scripts found in the `Project_Settings` container within the typical project.

Table 7: Installing TCL

Platform	Installing
All supported Linux	<code>sudo apt-get install tcl</code>

How to download S32DS ARM v2018.R1

Registering on site

To register, perform these steps:

1. Go to the NXP site: www.nxp.com and click **Account**.

The screenshot shows the 'ACCOUNT' section of the NXP website. It features a 'Sign In' form with the following elements:

- A header with 'ACCOUNT' and a dropdown arrow.
- A 'Sign In' title.
- An 'Email Address' label above a text input field.
- A 'Password' label above a text input field.
- An orange 'Sign In' button.
- A blue link: 'Forgot your password?'.
- A footer with the text: 'Don't have an account? Register Now'.

2. Click **Register Now**, Registration form appears:

The screenshot shows the NXP website's registration page. At the top, there is a navigation bar with the NXP logo, language selection (ENGLISH), and a cart icon. Below this is a secondary navigation bar with links for PRODUCTS, SOLUTIONS, SUPPORT, and ABOUT, along with a search bar. The main content area is titled 'Registration' and features a 'Create an Account' section. This section includes a list of benefits: Product Samples, Software and tools, On-demand training and live courses, and Technical help. To the right is a registration form with the following fields: First Name, Last Name, Email (with a note to use work email for faster response), Retype Email, Password (with a note for minimum 6 characters, 1 number, 1 letter, no spaces), Retype Password, and Country (a dropdown menu with 'Please Select' as the current selection).

3. Fill all required fields and click **Register**.
4. Make sure to verify the provided email address by following the verification link sent to you in the registration confirmation email.

Downloading S32DS ARM v2018.R1 installer

This section describes how to download the offline installer.

Note: The downloaded installer package contains the complete S32DS ARM v2018.R1 tool. The installer package can be used on the computer without internet access.

To download the offline installer, perform these steps:

1. Go to the following S32 Design Studio IDE site: nxp.com/S32DS. The S32 Design Studio IDE **Overview** page appears:

The S32 Design Studio IDE is a complimentary integrated development environment for Automotive and Ultra-Reliable Power Architecture (e200 core) and Arm based MCUs that enables editing, compiling and debugging of designs. Based on, open-source software including Eclipse IDE, GNU Compiler Collection (GCC) and GNU Debugger (GDB), the S32 Design Studio IDE offers designers a straightforward development tool with no code-size limitations. NXP software, along with the S32 Design Studio provide a comprehensive enablement environment that reduces development time.

The S32 Design Studio IDE is offered in three options:

- S32 Design Studio IDE for Power Architecture® based MCUs**
Targeted to support Power Architecture Automotive MCUs, the S32 Design Studio IDE for Power Architecture is a complimentary integrated development environment that enables editing, compiling and debugging of your designs.
- S32 Design Studio IDE for Arm® based MCUs**
Targeted to support Arm based Automotive MCUs, the S32 Design Studio IDE for Arm is a complimentary integrated development environment that enables editing, compiling and debugging of your designs.
- S32 Design Studio for Vision**
Integrated Development Environment (IDE) for NXP Automotive processors designed to support safe computation-intensive vision and sensor fusion applications.

2. Choose one of the options offered and open the **Downloads** tab.
3. Click **Download** next to the **S32DS ARM v2018.R1 – Windows** hyperlink. If you have not logged in, you will be directed to the **NXP Sign In** page. Enter your e-mail address and password provided during registration on the **nxp.com** site, and then click the **Sign in** button.

Sign in

Email Address

Password

Remember me ⓘ

[Sign in](#)

[Forgot your password?](#)

Not yet registered?
Start here to become a new member

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Why register?

Get easy access to all your embedded design needs when you register on nxp.com:

- Download software and tools
- Order product samples
- Get technical help
- Access on-demand training and register for live courses
- Receive weekly Design News to stay up-to-date—particularly with errata and new documentation
- Track your browsing history for easy access to previously viewed items
- System Update: NXP support tickets area now uses your www.nxp.com email and password. Logon to www.nxp.com to see existing tickets. If you don't have an account, [register here](#).

Still having trouble logging in? >

If this is your first login, you will be required to review and agree to the Access Agreement before access is granted. By clicking "Register" you signify your ACCEPTANCE OF THE TERMS contained in the Access Agreement.

4. Write down the Software Activation Code (hereinafter also referred to as **Application ID**) sent in the notification email. If necessary, upon registering, return to the **Overview** page.
5. On the **Software Terms and Conditions** page review the text of license terms as you scroll down it, and then click **I Agree**.

NXP > Software & Support > Software Terms and Conditions

Software & Support

- Product List
- Product Search
- Order History
- Recent Product Releases
- Recent Updates

Licensing

- License Lists
- Offline Activation

FAQ

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Software Terms and Conditions

S32 Design Studio for ARM v2018 R1

Please read the following agreement and click "I AGREE" at the bottom before downloading your software.

provision will be replaced with a provision that is valid and enforceable and that comes closest to the intention underlying the invalid or unenforceable provision.

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The software you are about to download is subject to export control laws and regulations. By downloading this software, you agree that you will not knowingly, without prior written authorization from the competent government authorities, export or reexport - directly or indirectly - any software downloaded from this website to any prohibited destination, end-user, or end-use.

- On the **Files** tab, in the **File name** column, click the link next to the S32DS product for your target platform. Alternatively, select the checkbox in the table header, and then click **Download selected files** to download all selected installer packages.
- Confirm the download and specify the location where you want the installer package to be saved.

Obtaining activation code

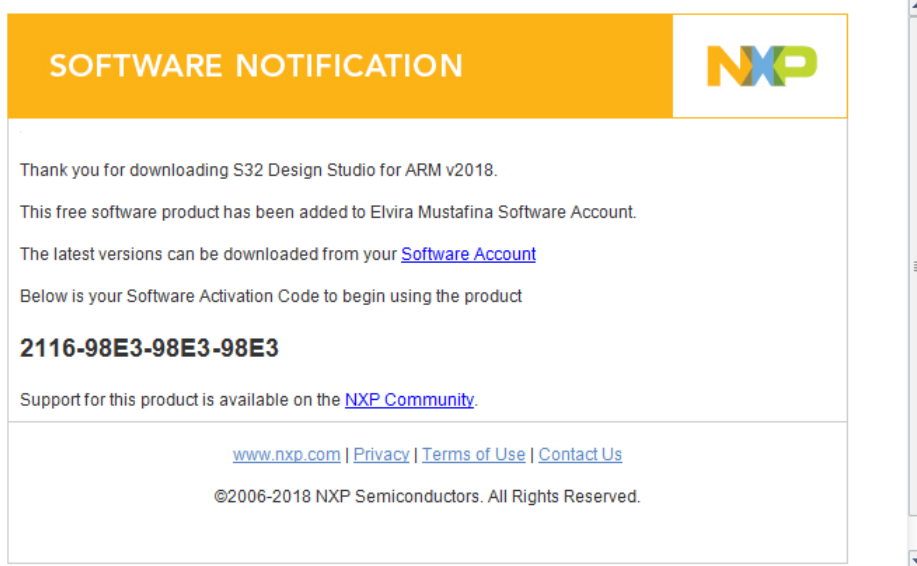
Refer to the notification email sent to you after registering on the NXP site.

NXP Software Notification- Thank you for your interest in S32 Design Studio for ARM v2018

nxp@flexnetoperations.com

Sent: 20.12.2017 12:48

To: Elvira Mustafina



Alternatively, sign in on the NXP web to obtain Activation code.

1. Open the **Sign In or Register** page: www.nxp.com/security/login. The **My Account** page opens after signing in.
2. Click **Software Licensing and Support** and then click **Product List**. On the **Product Information** page follow the *S32DS ARM v2018.R1* link.

Version	Description	
2018	S32 Design Studio for ARM v2018 R1	Download Log
2.0	S32 Design Studio for ARM v2.0	Download Log
2.0	Design Studio for VISION	Download Log
2.0	S32 Design Studio for PA E200	Download Log

3. The **Software Terms and Conditions** page opens. Read the text of agreement, as you scroll down it, and then click **I Agree**:

NXP > Software & Support > Software Terms and Conditions

Software & Support

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- Product Search
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provision will be replaced with a provision that is valid and enforceable and that comes closest to the intention underlying the invalid or unenforceable provision.

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22. ASSIGNMENT. No portion of this Agreement may be assigned or otherwise transferred by you, without NXP's prior written consent. NXP may assign this Agreement, or any part of this Agreement, in its sole discretion.

The software you are about to download is subject to export control laws and regulations. By downloading this software, you agree that you will not knowingly, without prior written authorization from the competent government authorities, export or reexport - directly or indirectly - any software downloaded from this website to any prohibited destination, end-user, or end-use.

4. The **Product Download** page opens. Click the **License Keys** tab to open the **License Information** page. Write down or copy the **Activation Code**, you will need it to continue the installation.

Note: Codes depicted in this document are provided for illustration only and are fictitious.

NXP > Software & Support > License Information

Software & Support

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- Order History
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Licensing

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License Information

S32 Design Studio for ARM v2018 R1

Item Description	S32 Design Studio for ARM v2018
Order Number	S32-DS-ARM_v2018_108270627
Purchase Order Number	
Total Number of Licenses:	100
Activation Code	2116-98E3-98E3-98E3

License Applicable to Product(s):

Version	Description
2018	S32 Design Studio for ARM v2018 R1 (View EULA)
100 Available	

How to install S32DS ARM v2018.R1

To install S32DS ARM v2018.R1, perform these steps:

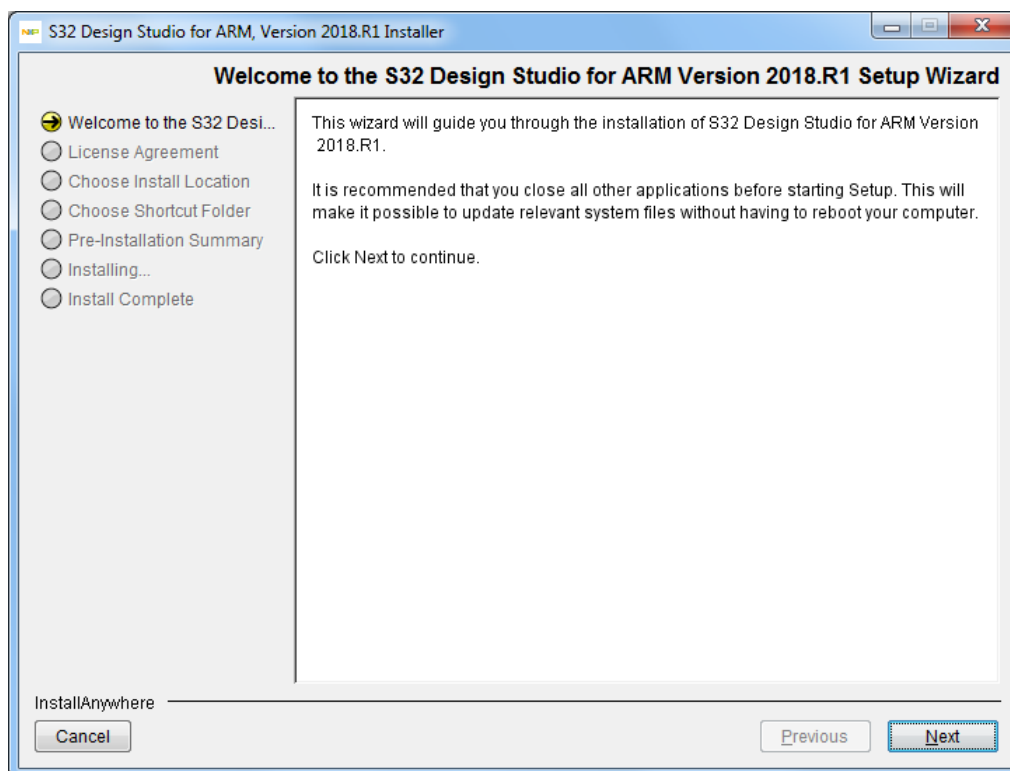
1. Go to the location where you saved the S32DS ARM v2018.R1 offline installer package, and then do one of the following depending on the target platform:

Platform	Action
Windows	Double-click the package to start the installation of S32DS ARM v2018.R1. The user account designated for installing S32DS ARM v2018.R1 must be a member of local Administrators security group. If User Account Control (UAC) is enabled, Windows will ask you to elevate the privileges when you run the installation package. When asked by UAC, grant the S32DS ARM v2018.R1 installer permissions to make changes on your computer.
Linux	<p>Follow the procedure:</p> <ul style="list-style-type: none"> • Open terminal window. • Navigate to the directory with the downloaded BIN file: <code>cd ~/S32DS</code> • Add the execute permissions to the binary: <code>chmod a+x ./<install_name>.bin</code> • Run the installer: <code>./<install_name>.bin</code> <p>Note: The user account used to install S32DS ARM v2018.R1 has to be a member of sudoers group. You do not have to have the root privileges to install the product.</p>

The S32 Design Studio splash screen appears.

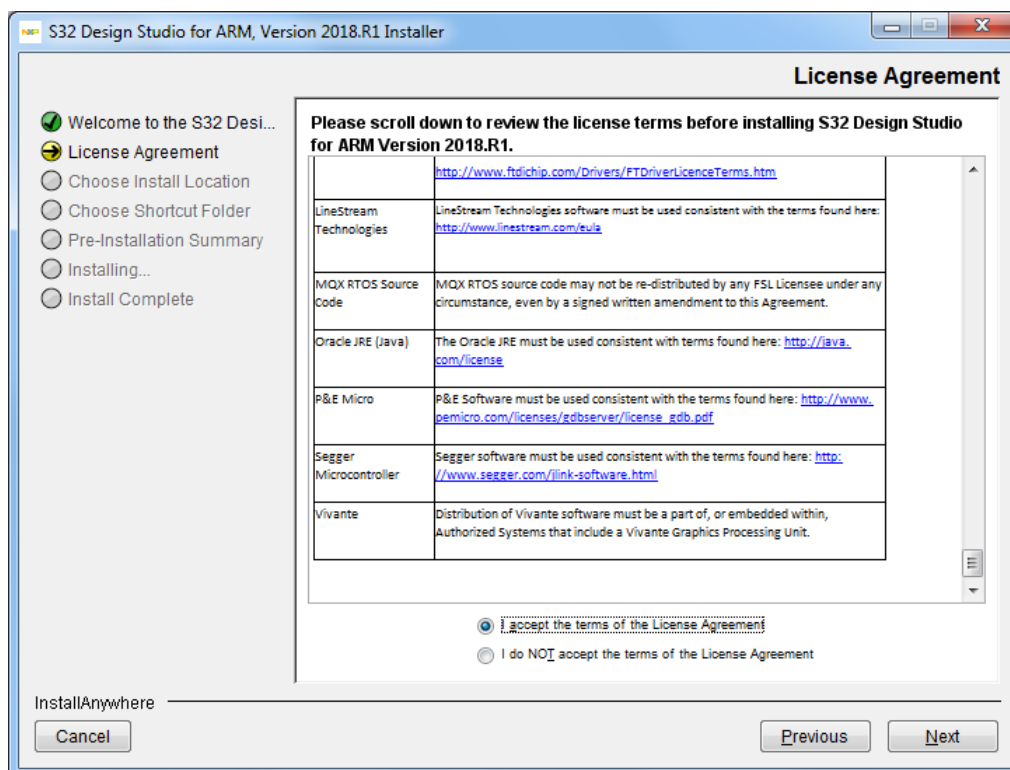


2. When the install wizard appears, click the **Next** button:

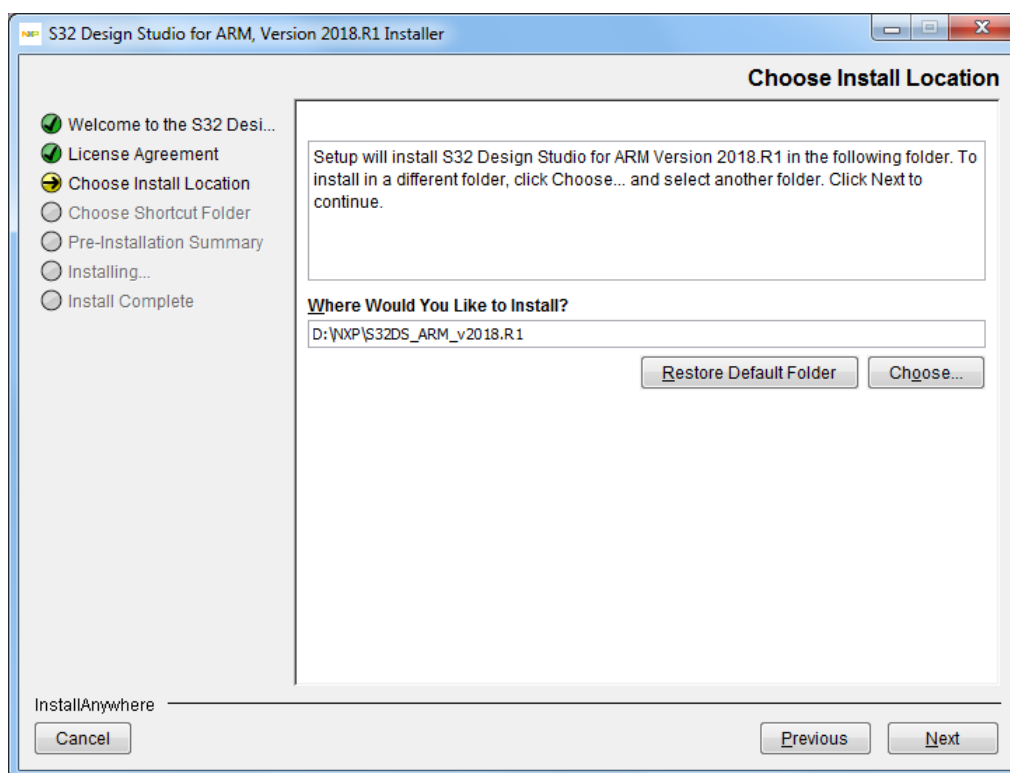


If you install S32DS ARM v2018.R1 on Windows, the **Choose additional feature(s)** page opens.

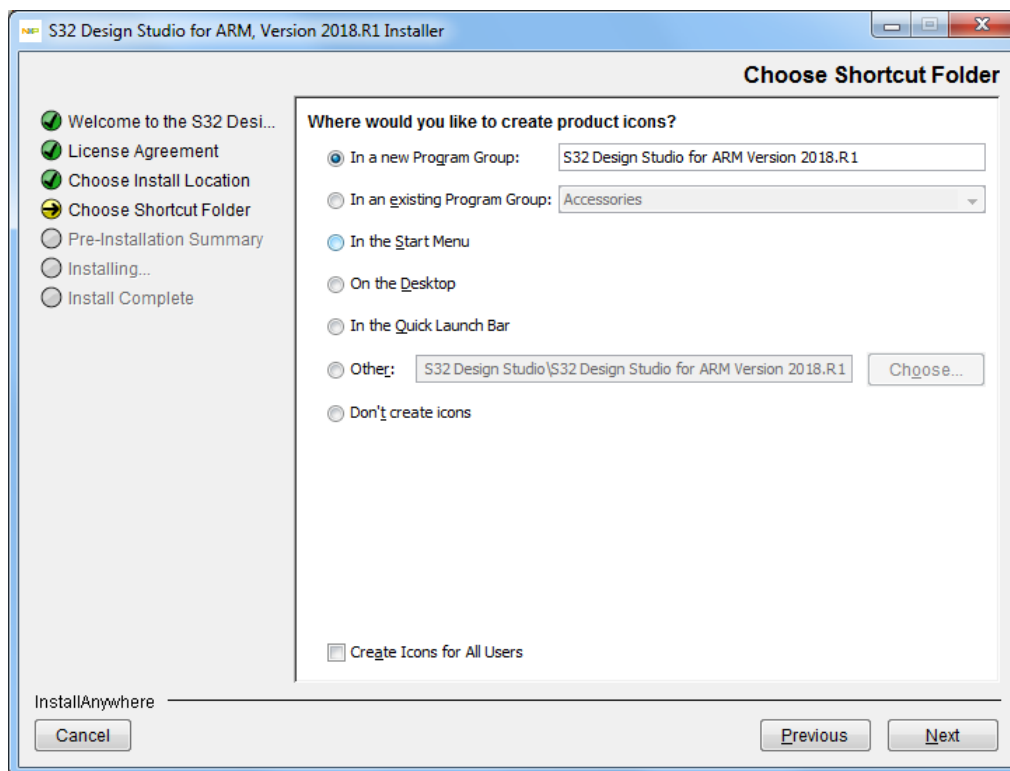
3. Choose the installation type for S32DS ARM v2018.R1, and then click **Next**:
4. Review the text of license terms as you scroll down it, and then select the **I accept the terms...** option. Click **Next**:



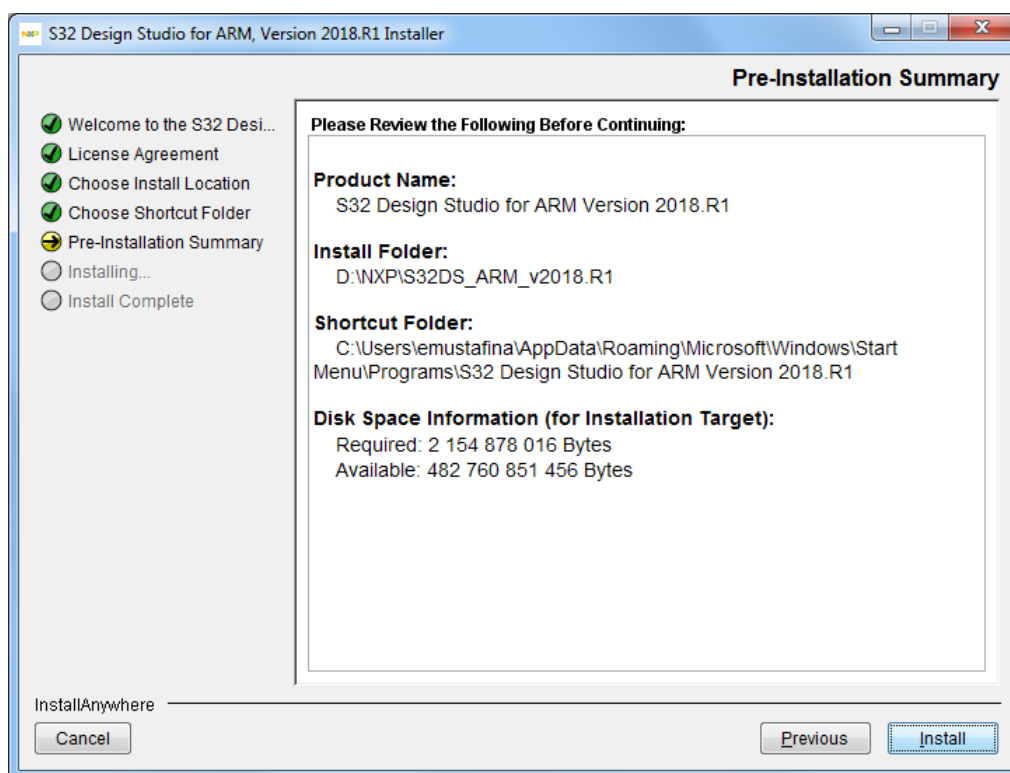
5. Specify the install location for S32DS ARM v2018.R1. Click **Next**:



6. Choose the folder for S32DS ARM v2018.R1 program shortcuts; select **Create Icons for All Users** if you want the shortcuts to be available for all users of this computer. Click **Next**:



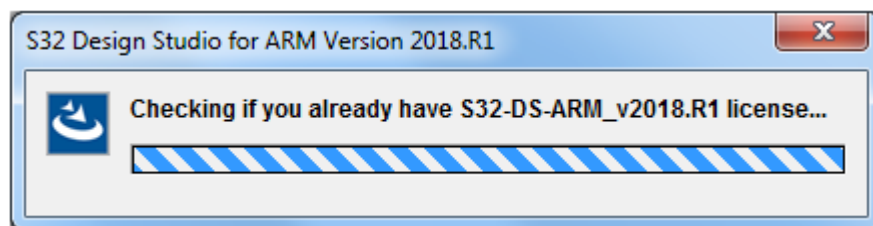
7. Review the pre-installation summary before installing:



8. Click the **Install** button. Depending on the target platform, you may need to confirm elevation of the installation process.

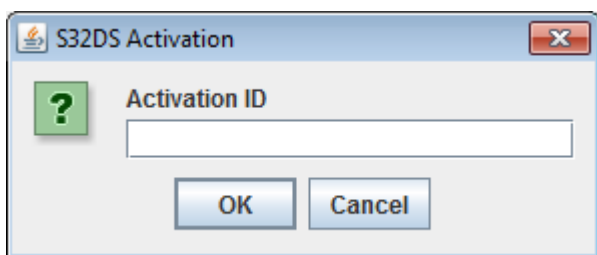
Platform	Action
Windows	The wizard checks for existence of C++ runtime installed, and, if necessary, start installing required libraries from the Microsoft Visual C++ 2010 and 2013 packages. No user input required.
Linux	The wizard prompts you to enter your password in the terminal window. When Enter your sudoer password in the Console... message appears, switch to the terminal window from which you have started installing S32DS ARM v2018.R1, and then enter your user account password.

9. The installation continues by checking your Windows permissions and installing Flexera Windows licensing services on your computer. The services are required to license your copy of S32DS ARM v2018.R1.
10. The installation looks for the S32DS ARM v2018.R1 license on your computer:



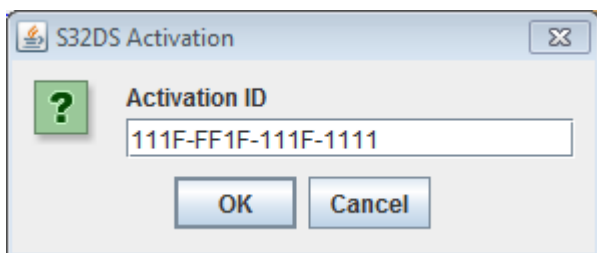
Note: S32DS ARM v2018.R1 requires its own license and cannot be licensed by using licenses issued for any previous version of S32DS.

11. If no valid license is found on your computer, the installer notifies you and asks you to provide the **Activation ID** to obtain the license. The **S32DS Activation** dialog box opens.

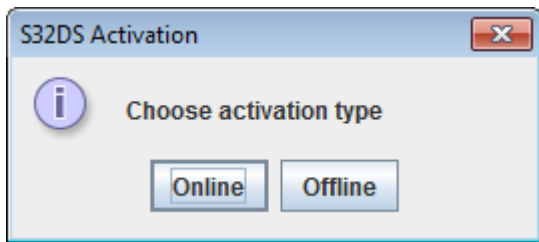


Note: If you click **Cancel**, the installation rolls back.

12. Insert the code into the **Activation ID** field. Click **OK**.



13. Choose the activation type for S32DS ARM v2018.R1:



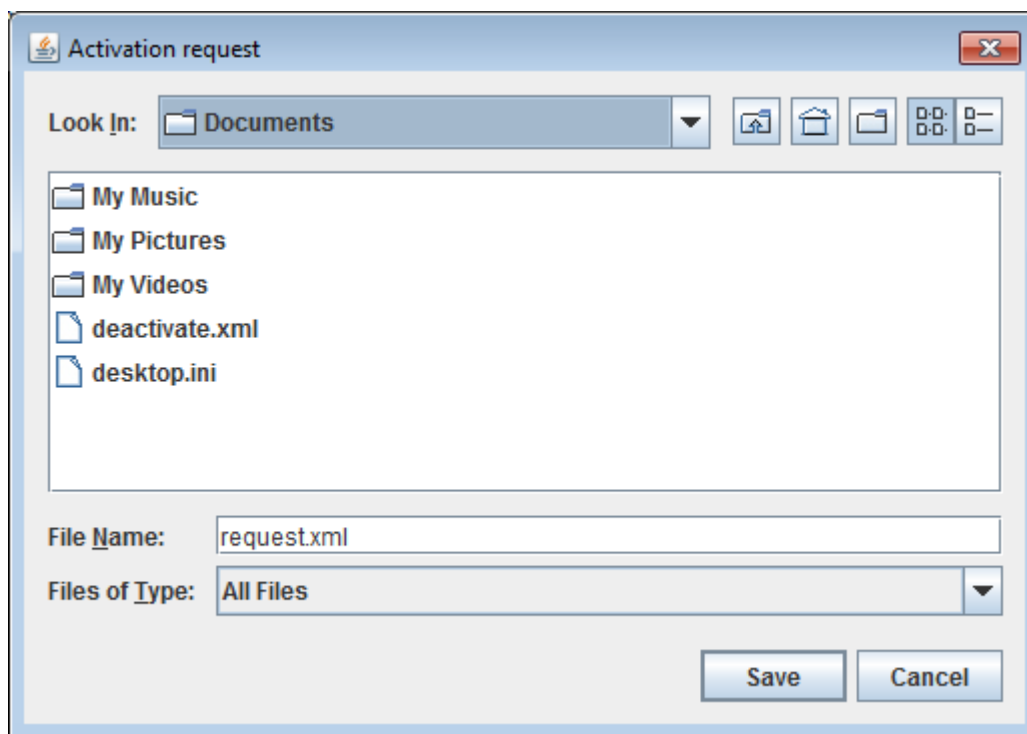
- *Online* activation

If you click **Online**, the installer sends an activation request to a remote online activation server and automatically activates your copy of S32DS ARM v2018.R1. If entered **Activation ID** is valid and activation succeeds, S32DS ARM v2018.R1 will be automatically licensed and registered on your computer.

- *Offline* activation

If you click **Offline**, the Activation request dialog box appears that allows you to activate S32DS ARM v2018.R1 without internet connectivity. You will need another internet enabled device to obtain the activation details for the computer where you are installing S32DS ARM v2018.R1.

- After you click **Offline** in the S32DS Activation message box, the **Activation request** dialog box appears allowing you to prepare the XML file with the request for offline activation. This file can be later used on a computer with access to the NXP site to activate your copy of S32DS ARM v2018.R1.

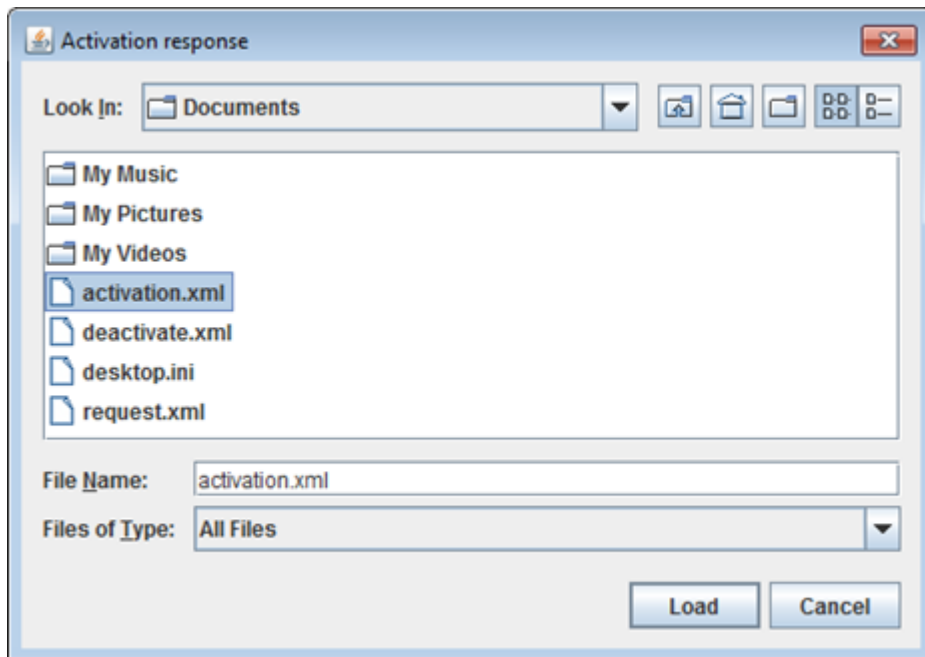


- b) Select a location to store the XML file with the request for offline activation, and then click **Save**.
- c) Copy the saved **request.xml** file on a flash drive, and then take it to the computer with internet access. On that computer, sign in on the NXP web site: www.nxp.com/security/login. Open the **My Account** page that you were using to download the installation package, and then click **Offline Activation**.

Note: You do not necessary have to license the S32DS ARM v2018.R1 in this installation session. Once you have created the offline activation request file, you can close the installer.

- d) After you obtain the **activation.xml** on another computer, you can run the installer again. If computer configuration did not change, the installer would generate the **request.xml** with the same data as was created in the first installation session. The newly generated request yields to the **activation.xml** you have obtained on the computer with internet access.
- e) On NXP site, on the **Offline Activation** page, browse for the **request.xml** file created on the offline computer, and then click **Process** to submit the request file to the NXP licensing service

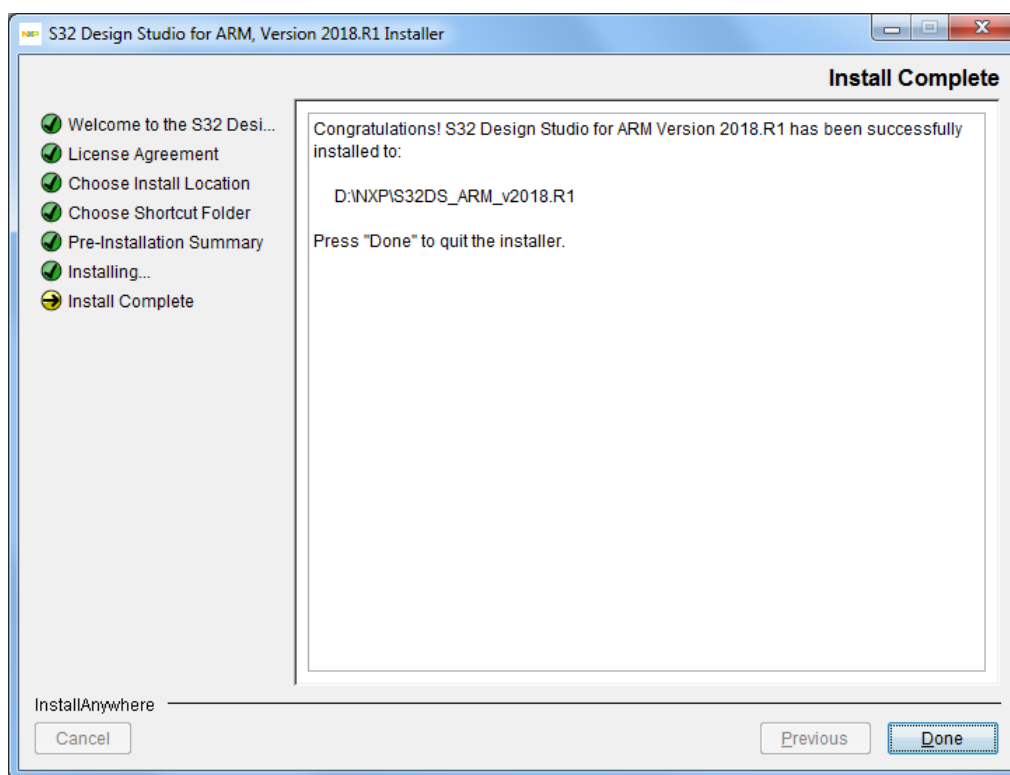
- f) Wait while the **Offline Activation** service processes the activation request, and then download the provided **activation.xml**.
- g) Copy the downloaded **activation.xml** file on a flash drive, and then take it to the computer without internet access. If you have previously closed the installer, run the installer again and generate the **request.xml** file. Leave the generated request file intact.
- h) After you save the activation request file, **Activation response** dialog box appears. Locate the **activation.xml** file obtained on the computer with online connection. Click **Load**.



14. If activation is successful, the installation continues automatically. Wait a few seconds while the S32DS ARM v2018.R1 software installs.

Note: During the installation process, additional drivers are installed, and you may be prompted to proceed with the installation wizards of the specific drivers.

15. Wait until the S32DS ARM v2018.R1 installer finishes the installation and opens the **Install Complete** page. Click **Done** to close the wizard:

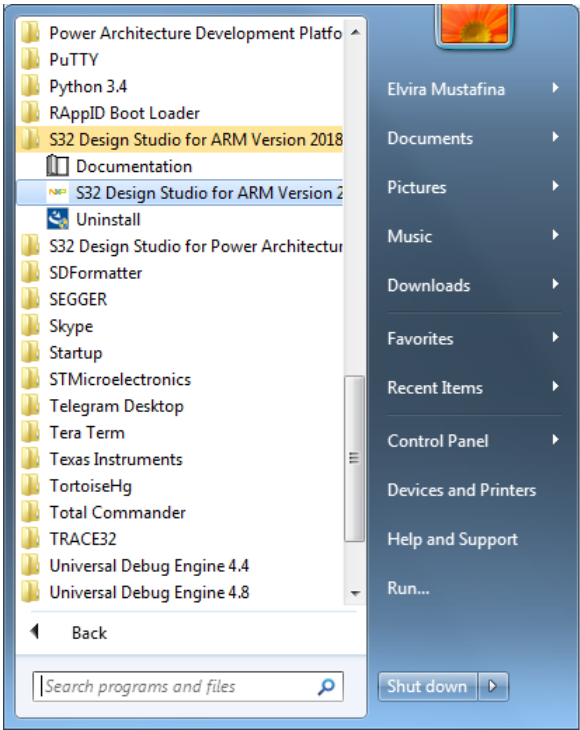
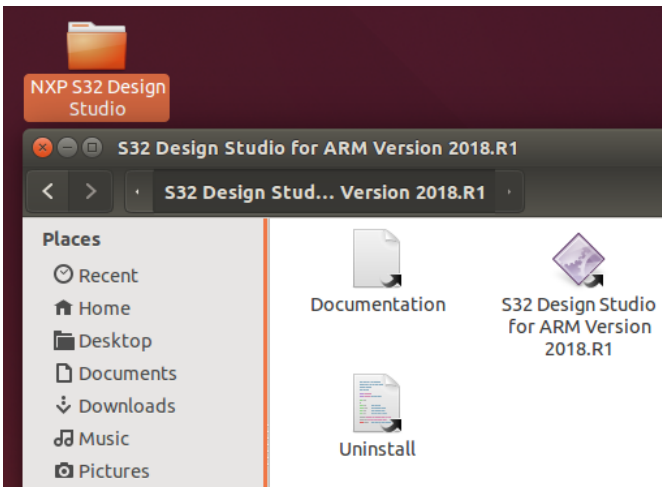


16. Depending on the target platform, do one of the following to start S32DS ARM v2018.R1:

Platform	Action
Windows	Locate the shortcuts depending on your selection during the installation
Linux	Double-click the S32DS ARM v2018.R1 icon on the desktop

If you have chosen the default location for product shortcuts, open the NXP S32 Design Studio program group in the Windows **Start > All Programs** menu, and then click S32DS ARM v2018.R1.

Table 8: Starting product

Platform	Action
Windows	 <p>The screenshot shows the Windows Start menu with the application 'S32 Design Studio for ARM Version 2018.R1' highlighted. The menu includes various system folders like Documents, Pictures, Music, Downloads, Favorites, Recent Items, Control Panel, Devices and Printers, Help and Support, and Run... A search bar at the bottom contains the text 'Search programs and files'.</p>
Linux	 <p>The screenshot shows a Linux desktop environment. A window titled 'S32 Design Studio for ARM Version 2018.R1' is open, displaying the application's interface. The desktop background is dark red. A sidebar on the left shows 'Places' with options: Recent, Home, Desktop, Documents, Downloads, Music, and Pictures. On the desktop, there are icons for 'Documentation', 'S32 Design Studio for ARM Version 2018.R1', and 'Uninstall'.</p>

Note: New functionality including support for new devices can be added to S32DS ARM v2018.R1 with updates, patches and service packs. Refer to **Reference Manual > Introduction > Installing updates, patches and service packs** topic in S32 Design Studio for ARM, Version 2018.R1 Documentation for details.

Congratulations!

You have installed S32DS ARM v2018.R1!

Chapter

2

Quick Start Guide

Topics:

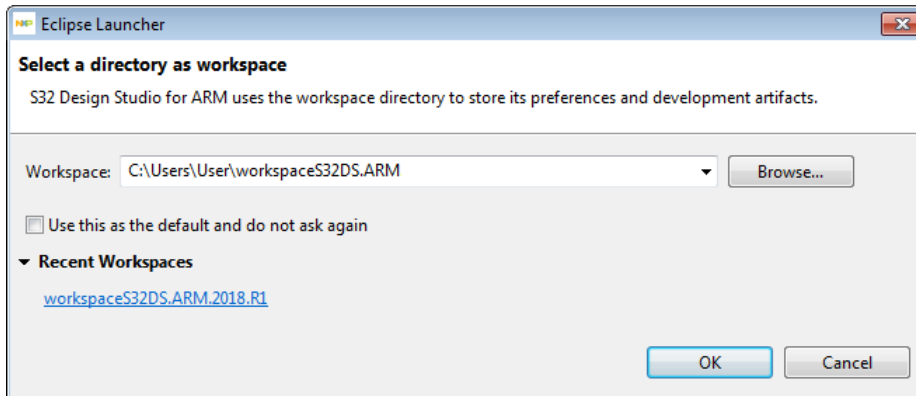
- [Starting the S32DS ARM v2018.R1](#)
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Starting the S32DS ARM v2018.R1

To start S32 Design Studio for ARM, Version 2018.R1 and begin to work with it:

1. Select S32DS ARM v2018.R1 from the **Start > All Programs** menu or double-click on the desktop icon. **Eclipse Launcher** dialog box appears, it allows you to select where the workspace should be located.

Note: Workspace is the directory where S32DS ARM v2018.R1 stores projects that you create or import.



2. Select a directory as workspace:

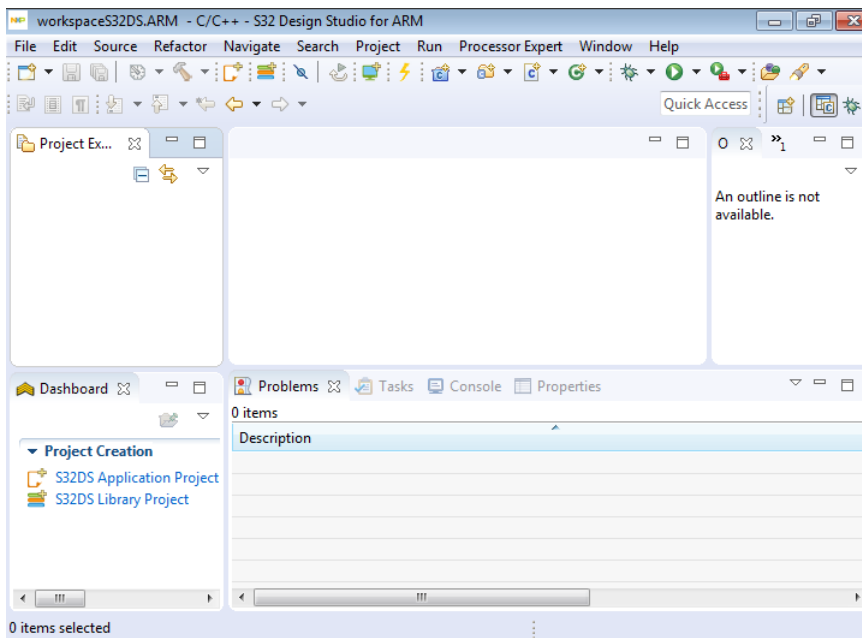
- To choose the default workspace and store your projects in the default location click **OK**.
- To use a workspace different from the default, click **Browse** button. **Select Workspace Directory** dialog box appears. Select directory or click **Make New Folder** to create a new directory for storing your projects. Click **OK**.

Tip: Select the **Use this as the default and do not ask again** checkbox in the **Eclipse Launcher** dialog box to set the chosen path as the default location for storing your projects.

Note:

You can change the default location of your workspace later in **Window > Preferences > General > Workspace**.

3. S32DS ARM v2018.R1 launches. Browse through the **Getting Started** tab and close it, Workbench appears:



Creating and building a project

To create and build a project, perform these steps:

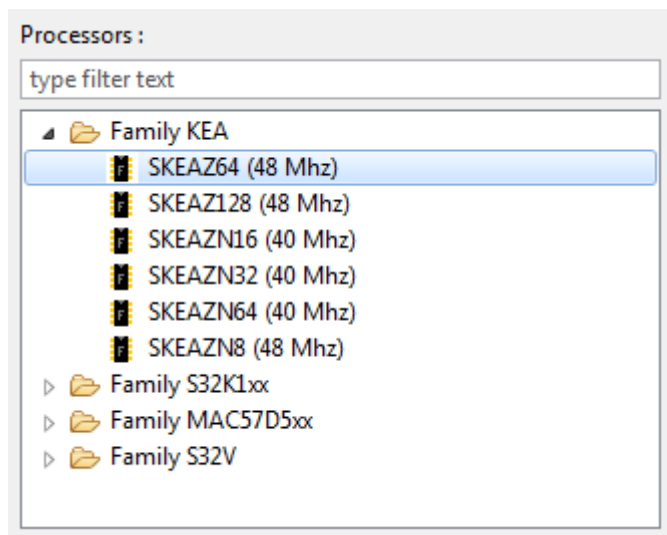
1. Select **File > New > S32DS Application Project** or **S32DS Library Project** from the menu bar. The first page of the wizard appears.

Tip: For details, refer to the **Project creation wizards** topic in **Reference** manual.

2. Specify a name for the new project in the **Project name** text box.

Note: The **Location** field shows the default project location. If you want to change this location, clear the **Use default location** checkbox. Click **Browse** and use the subsequent dialog box to specify a new location. Click **OK**.

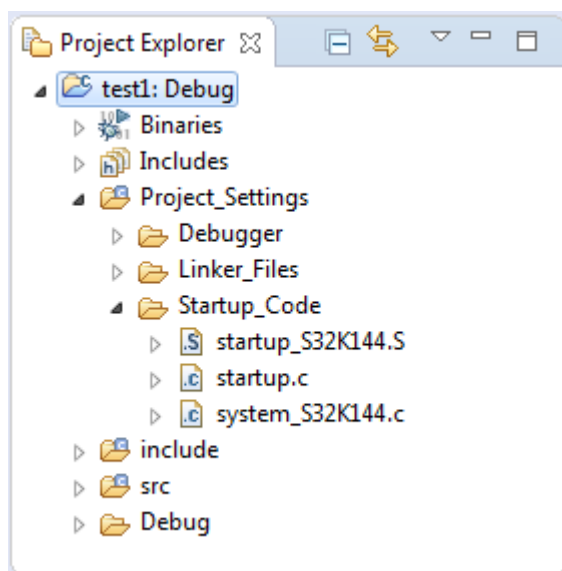
3. Expand the **Processors** tree control and select the processor:




4. Click **Next**. The second page of the wizard appears.
5. Check the project settings, select required cores and parameters. Click **Finish**.

Note: The S32DS ARM v2018.R1 creates the new projects according to core numbers and your specifications.

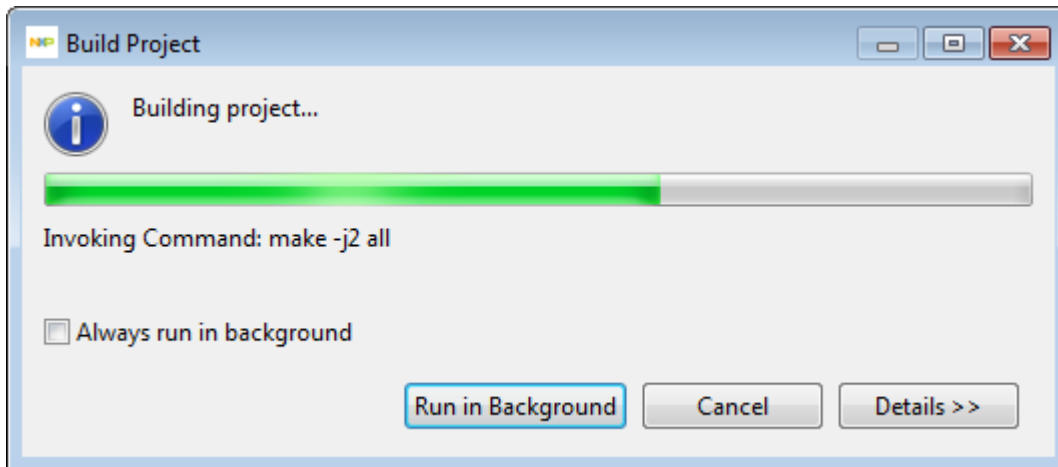
6. Select and expand a project in the **Project Explorer** view of the Workbench window:



The new project is ready for use.

7. There are several ways to build the project:
- Right-click and select **Build Project**
 - Choose **Project > Build Project** from the menu bar
 - Click  on the toolbar


The process of project building starts:



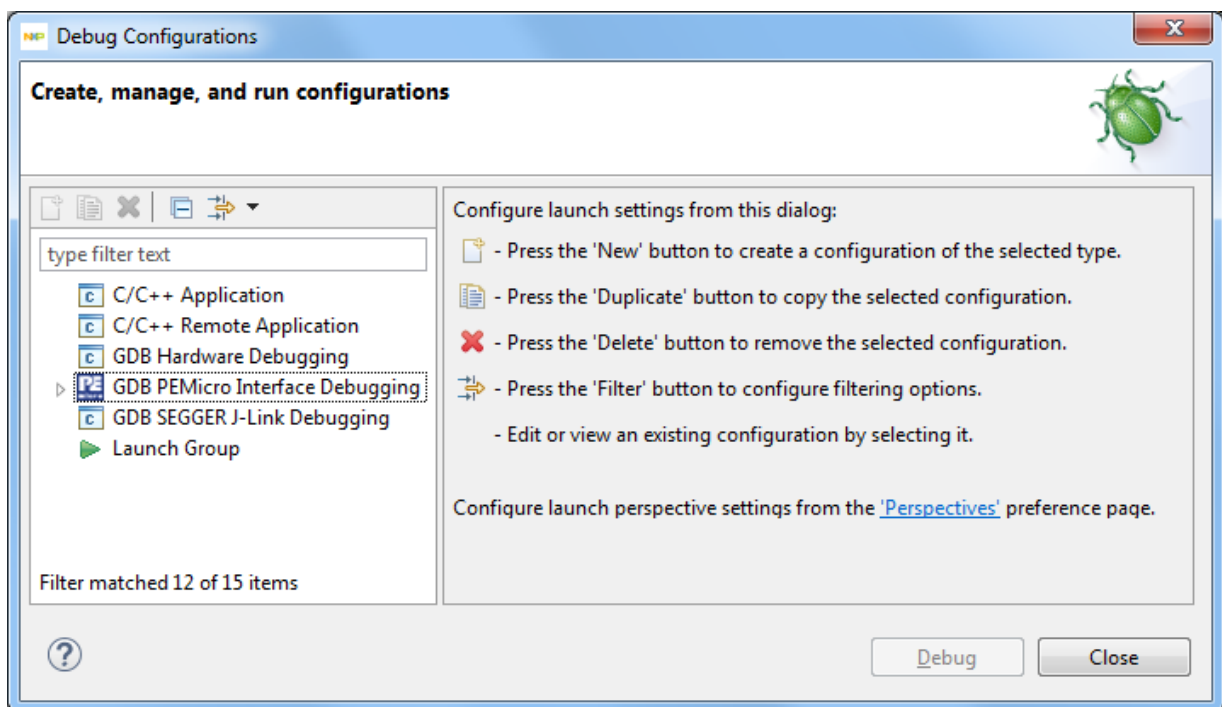
8. If a build generates any errors or warnings, you can see those in the **Problems** view. Read through the build messages in the **Console** view - the project should build successfully.

Debugging a project

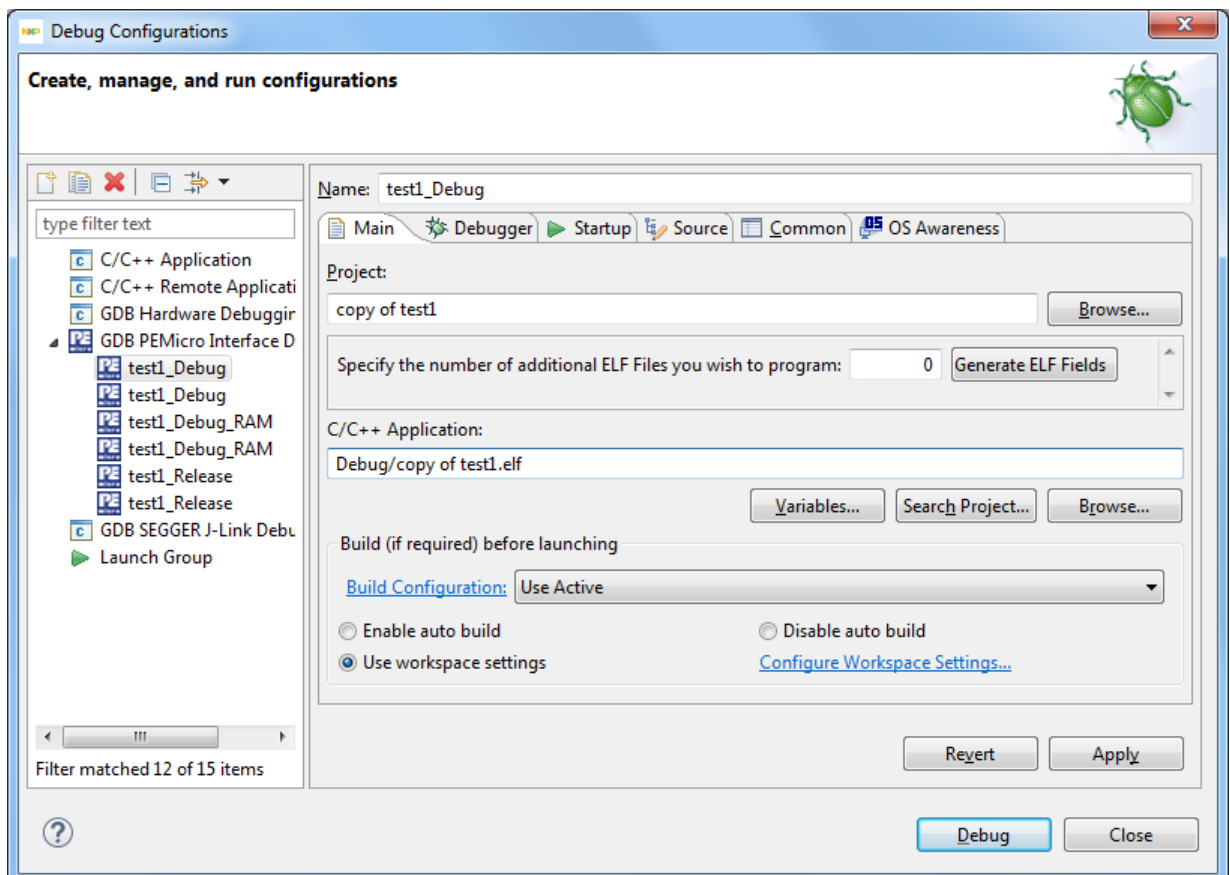
To debug a project, perform the following steps:

1. Set debug configuration for project.
 - a) Select the project in the **Project Explorer** view.
 - b) There are several ways to open **Debug configurations**:
 - Right-click and select **Debug as > Debug Configurations...**
 - Choose **Run > Debug Configurations...** from the menu bar
 - Click an arrow next to  on the toolbar and select **Debug Configurations...**)

The **Debug Configurations** dialog box appears.

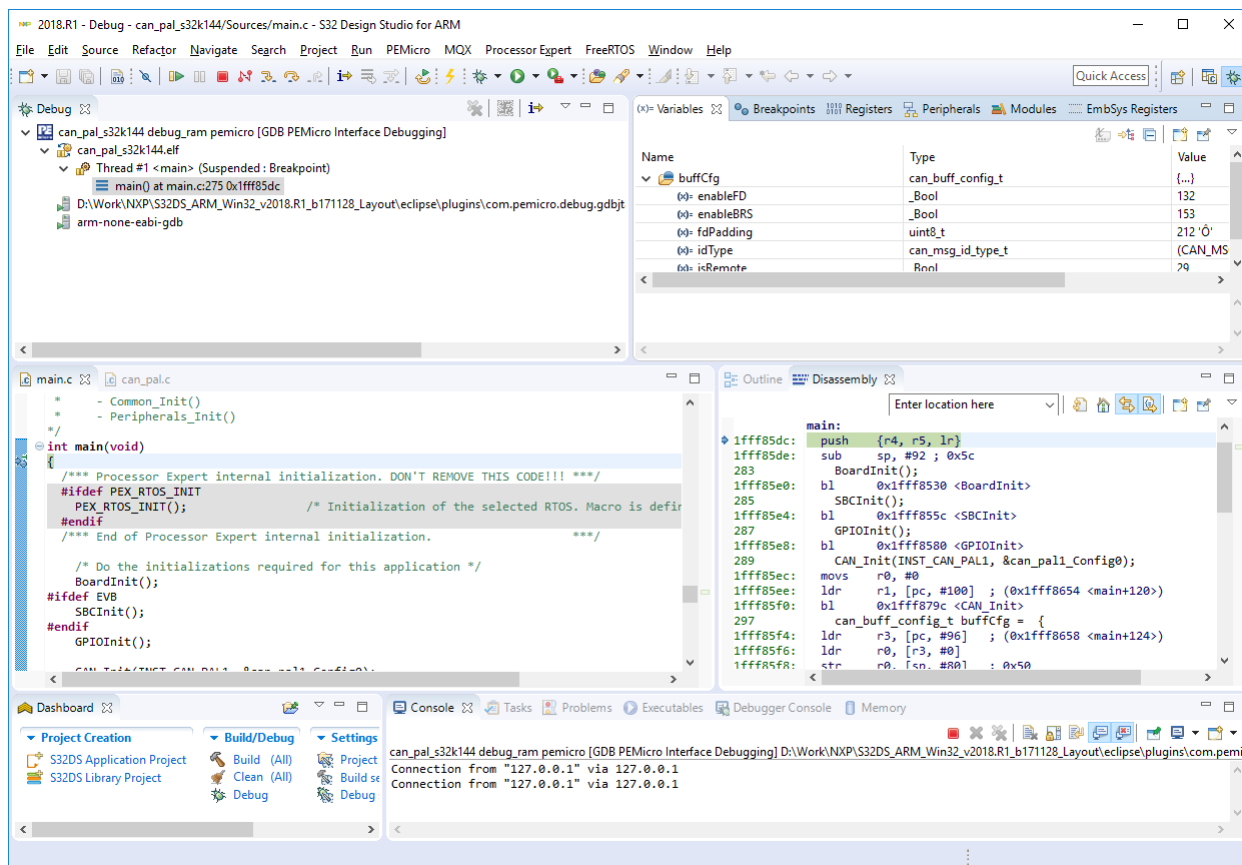


- c) Select required debug configuration. The debug configuration name is composed from the project name, run-control interface and build configuration. Tabs with settings appear:



- d) Change settings if required and click **Apply** to save the changes.

- Click **Debug** - the debugger downloads program to processor memory and the **Debug** perspective appears. The execution halts at the first statement of **main()** and program counter icon on the marker bar points to the next statement to be executed.



- Set and run to breakpoint:
 - Double-click on the marker bar next to a statement - the breakpoint indicator (blue dot) appears next to the statement
 - From the **Debug** view, select **Run > Resume** from the menu bar - the debugger executes all statements up to but not including the breakpoint statement.
- Control program:
 - From the **Debug** view, select **Run > Step Over** from the menu bar - the debugger executes breakpoint statement and halts at next statement
 - From the **Debug** view, select **Run > Resume** from the menu bar - the debugger resumes program execution
 - From the **Debug** view, select **Run > Terminate** - the debug session ends.

Congratulations!

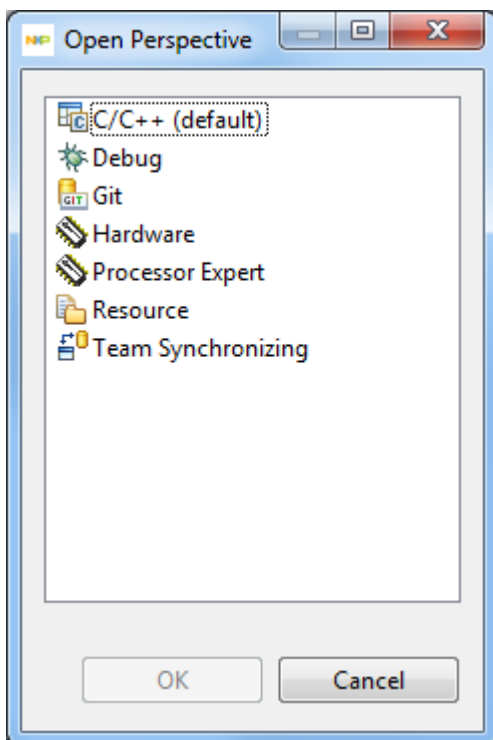
You have created, built, and debugged a project using S32DS ARM v2018.R1!

Perspectives

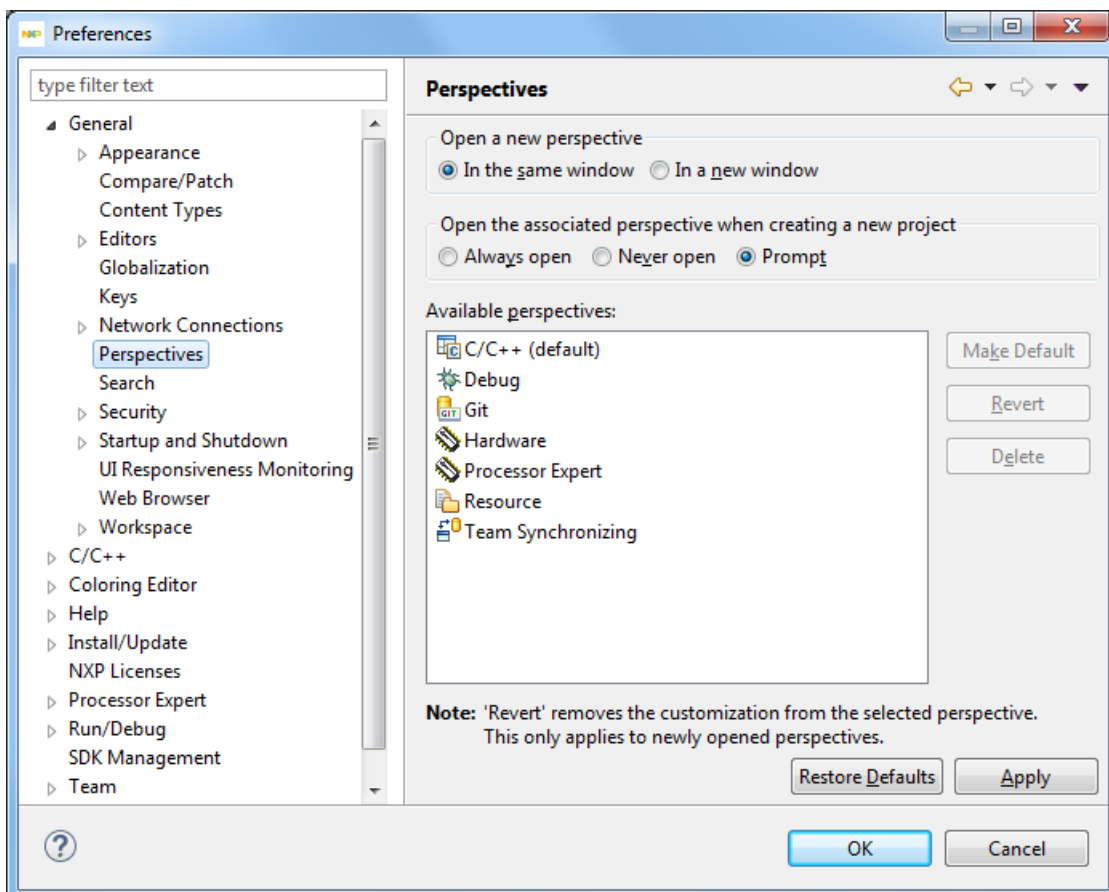
A perspective defines the initial set and layout of views in the Workbench window. One or more perspectives can exist in a single Workbench window. Perspectives define visible action sets, which you can change to customize a perspective.

Perspectives can be opened either in the same (existing) Workbench window, hiding the current perspective, or in a new Workbench window.

- To open a new perspective click the **Open Perspective** button on the shortcut bar on the left side of the Workbench window and select the perspective that you want to open:



- To manage Perspectives go to **Window > Preferences > General > Perspectives**:

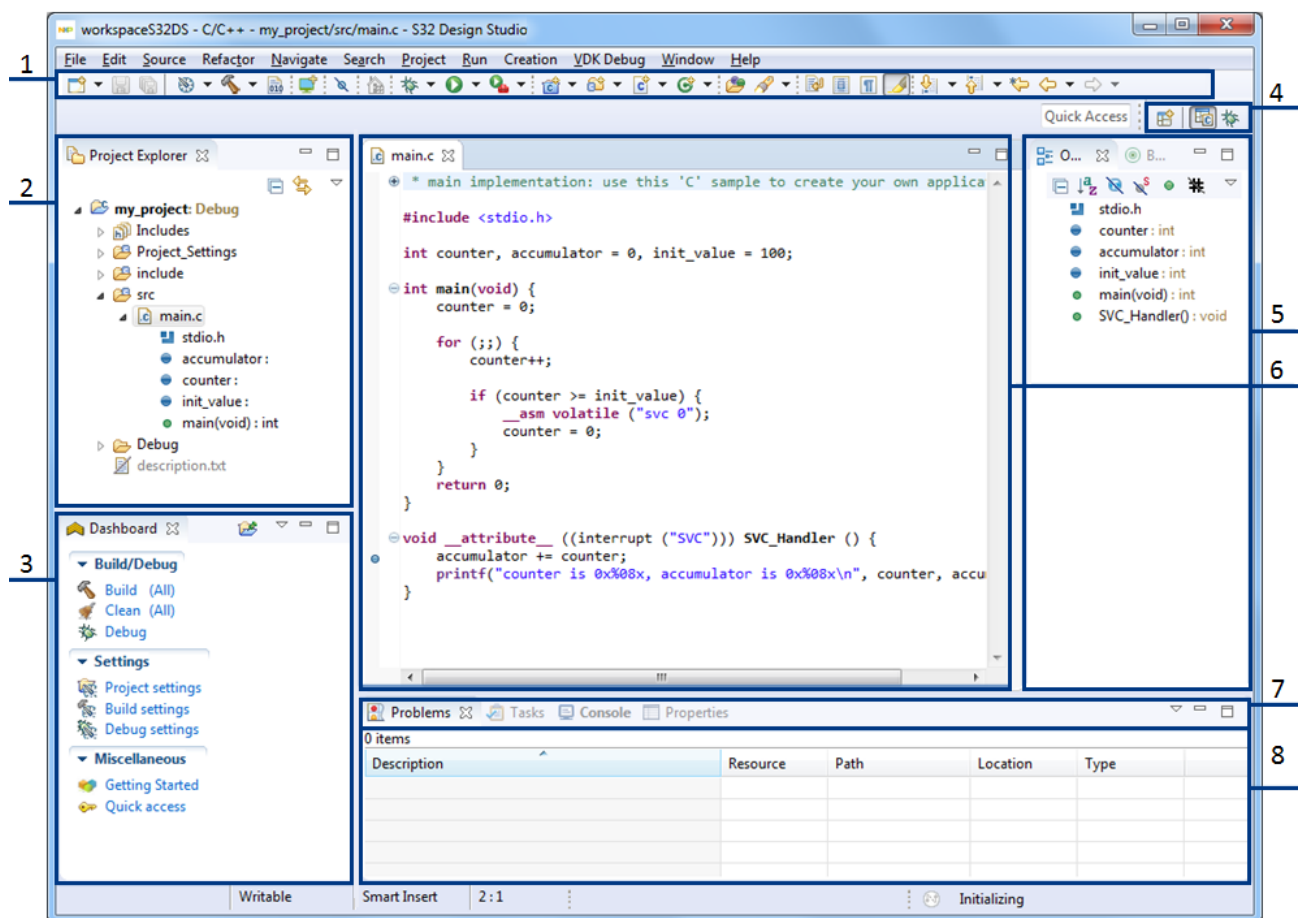


Here you can set what happens when you open a new perspective and specify the perspective behavior when a new project is created.

- To open other views in a perspective, select **Window > Show View > Other** and select a new view from the **Show View** dialog box.
- To save the changes made in the current perspective, select **Window > Perspective > Save Perspective As...**
- To return the perspective to its original state, select **Window > Perspective > Reset Perspective...**
- To activate a view that is part of a tabbed view or view stack, click its tab.
- Press **Ctrl+F6** to switch between editors, **Ctrl+F7** to switch between views, **Ctrl+F8** to switch between perspectives, and **F12** to activate the editor.
- To see a complete list of the currently available key bindings in the editor or view you are currently working with, press **Ctrl+Shift+L**.

C/C++ Perspective

The **C/C++ Perspective** is tuned for working with C/C++ projects.

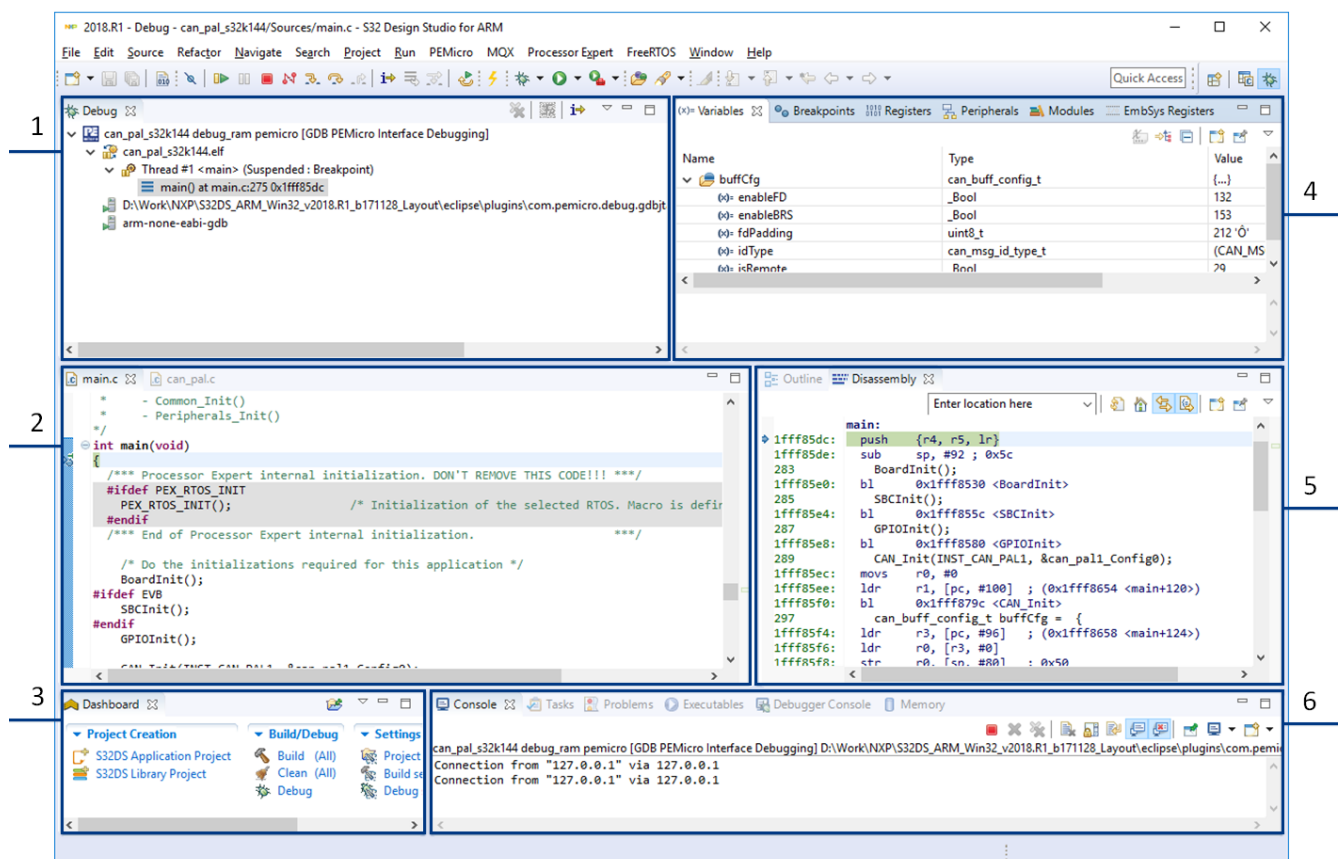


1. The **Workbench toolbar**. The contents of the toolbar change based on the active editor. Actions in the toolbar may apply to particular views, so these actions may be enabled or disabled based on the state of the currently active view or editor.
2. The **Project Explorer** view provides a hierarchical view of the resources in the Workbench. From here, you can open files for editing or select resources for operations such as exporting. Right-click on any resource in the **Project Explorer** view to open a pop-up menu that allows you to perform operations such as copying, moving, creating new resources, comparing resources with each other, or performing team operations. To quickly import files and folders to your project, drag them from the Windows file system to the **Project Explorer** view. Similarly, to export files and folders, drag them from a view to the Windows file system.

3. The **Dashboard** view provides quick access to some basic features and frequently used functions.
4. The **Perspective switcher** provides quick access to perspectives that are currently open. It also has a button that can open new perspectives.
5. The **Outline** view displays an outline of a structured file that is currently open in the editor area, and lists structural elements. The contents of the outline view are editor-specific. For example, for a Java source file, the structural elements are classes, variables, and methods. The contents of the toolbar are also editor-specific.
6. The **Editor** area allows to modify the contents of files in the Workbench. For more details, see [Editor area](#).
7. Tabbed views or View stack (**Problems, Tasks, Console, Properties** views).
8. The **Problems** view lists the error, filename and folder. If you select an error the associated file will appear in the **Editor** view, and the cursor and text highlighting will display the line where the error was encountered.

Debug Perspective

The **Debug perspective** lets you manage the debugging or running of a program in the Workbench. You can control the execution of your program by setting breakpoints, suspending launched programs, stepping through your code, and examining the contents of variables.



1. The **Debug** view shows the target debugging information in a tree hierarchy and allows you to manage the debugging or running of a program in the workbench. It displays the stack frame for the suspended threads for each target you are debugging. Each thread in your program appears as a node in the tree. It displays the process for each target you are running. If the thread is suspended, its stack frames are shown as child elements.
2. The **Editor** area allows to modify the contents of files in the Workbench. For more details, see [Editor area](#).
3. The **Dashboard** view provides quick access to some basic features and frequently used functions.
4. The **Variables** view shows all static variables for each process that you debug (global variables are displayed in the **Expressions** view). Use the view to observe changes in variable values as the program executes in the currently-selected stack frame.
5. The **Disassembly** view shows the loaded program as assembly language instructions mixed with source code for comparison. The next instruction to be executed is indicated by an arrow marker and highlighted in the view.

You can perform these tasks in the **Disassembly** view:

- Set breakpoints at the start of any assembly language instruction
 - Enable and disable breakpoints and set their properties
 - Step through the disassembled instructions of your program
 - Jump to specific instructions in the program
6. The **Console** view displays the output of a process and allows you to provide keyboard input to a process. There are numerous consoles available, see the Open Console dropdown list for those available to you.

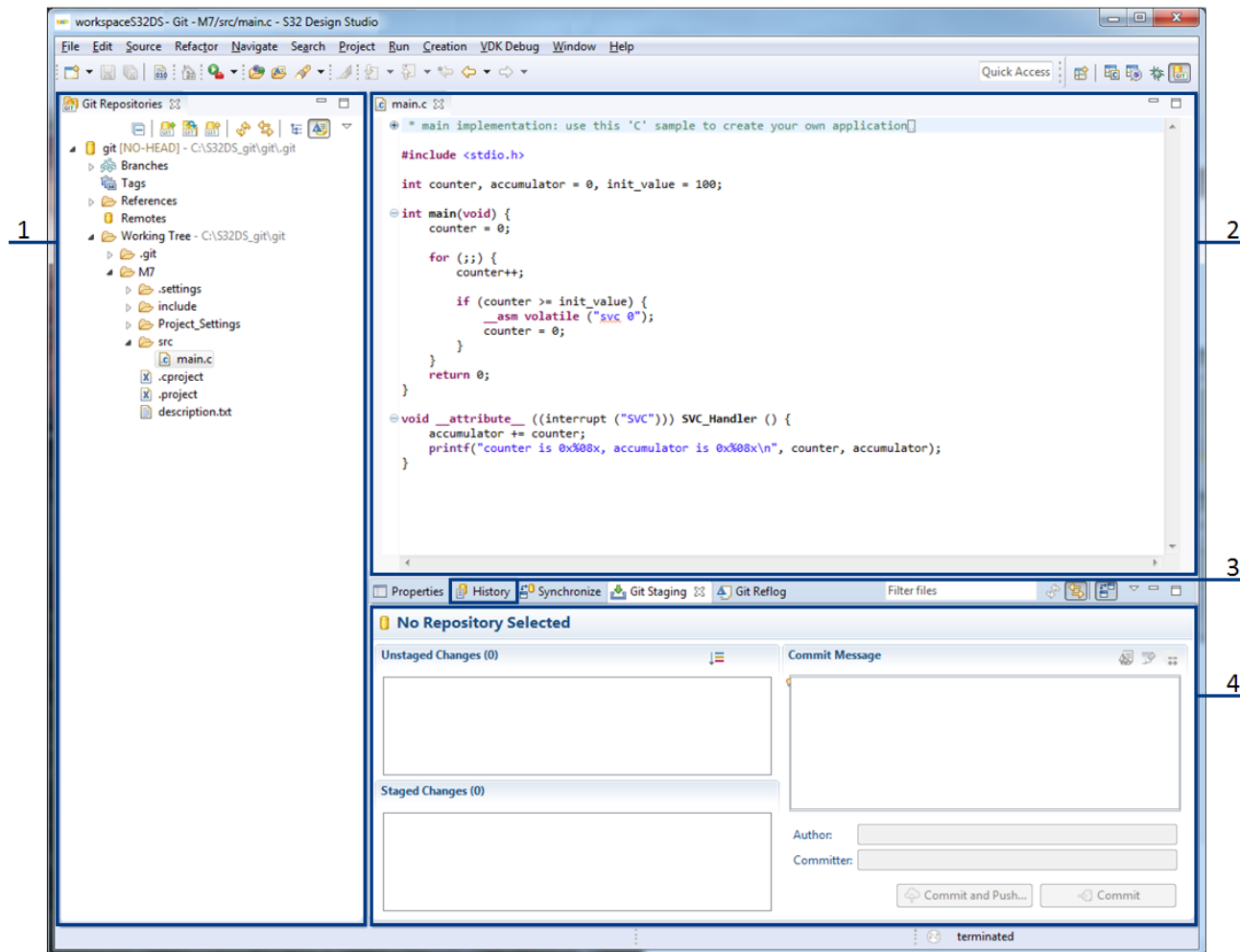
The output console shows several kinds of text, each in a different color:

- Standard output
- Standard error
- Standard input

Build console provides also highlighting of build problems. You can use double-click on a highlighted line to open code in an editor when error parsers are able to determine file and line from build output.

Git Perspective

The **Git Perspective** provides interface to Git operations.



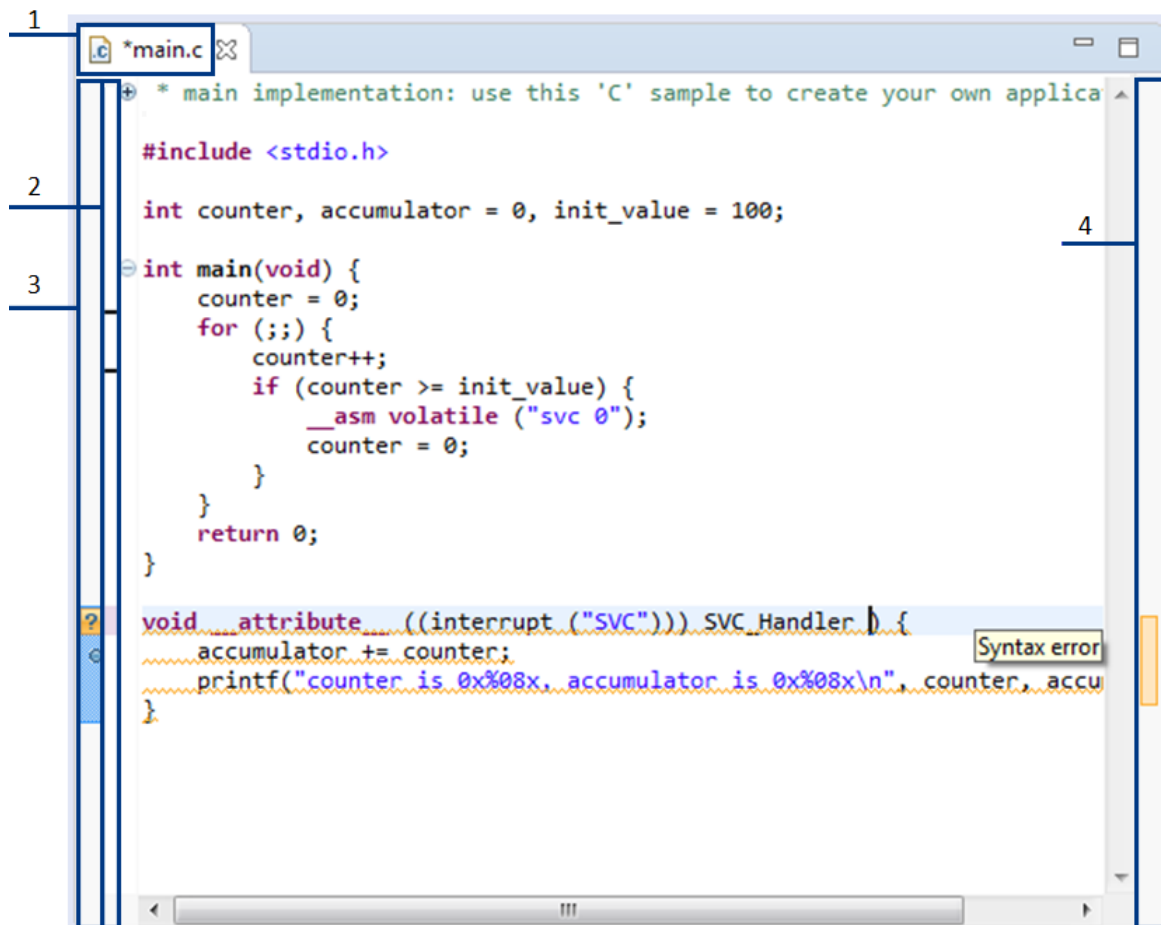
1. The **Git Repositories** view:

- Root node represents the Repository itself. The node text indicates the name of the Repository and its location in the local file system.

- *Branches* node allows browsing and manipulation of tags.
 - *Tags* node allows browsing and manipulation of tags and branches.
 - *References* node lists other references which are not branches or tags, most notably the "HEAD" and "FETCH_HEAD" symbolic references.
 - *Remotes* node allows browsing and manipulating the remote configurations used for Fetch and Push.
 - *Working Tree* node displays the location and structure of the working directory on the local file system (only in case of a development, or non-bare Repository, for bare Repositories, this node is always a leaf).
2. The **Editor** area allows to modify the contents of files in the Workbench. For more details, see [Editor area](#).
 3. The **History** view:
 - *Commit Graph* (upper pane) displays the commit log (or commit history) in reverse chronological order (newest commit on top).
 - *Revision Comment* area (on the left side) shows the commit message and a textual Diff of the file or files in the commit.
 - *Revision Detail* area (on the right side) shows a table of the files that were changed by the commit.
 4. The **Git Staging** view:
 - *Unstaged Changes* pane shows unstaged changes which have not yet been transferred to the git index.
 - *Staged Changes* pane shows changes which have already been "added" (staged) to the Git index.
 - *Commit message* editor allows to edit the commit message for the commit.
 - *Commit* and *Commit and Push* buttons commit the staged changes only.

Editor area

The **Editor area** allows to modify the contents of files in the Workbench.



1. An asterisk sign (*) appearing at the left side of the tab indicates that the editor has unsaved changes.
2. Quick diff, which displays color-coded indication for additions, deletions, or changes made to the contents of a file.
3. Marker bar, which displays:
 - Breakpoints (Auto, Hardware, Software, Disabled).
 - Markers (bookmarks, warnings, tasks, indexers, errors).
4. Icons that flag error, warning, task and bookmark markers. You can view extra information by placing the mouse cursor over the marker.

Tips and Tricks:

- To open a list of all open editors and quickly switch between editors, press **Ctrl+E**.
- You can open a file in the **Editor** area by dragging the item from the **Project Explorer** view and dropping it over the **Editor** area.
- To activate single-click opening for editors, use the **Open mode** options in the **Window > Preferences > General** page. In single-click mode, a single-click on a file selects and immediately opens the file.
- Double-clicking in the marker bar (see mark 3 on the picture) sets or removes breakpoints.
- To move lines up and down in the editor, press **Alt+Arrow Up** and **Alt+Arrow Down**.
- To activate code completion, press **Ctrl+Space**.
- To activate quick diff, right-click the markerbar (see mark 2 on the picture) and select **Show Quick Diff** from the context menu.
- When the mouse cursor is placed over a change in Quick Diff (see mark 1 on the picture), a hover displays the original content, which can be restored using the marker bar context menu.

Menus and Keyboard Shortcuts

(some menus/items can be hidden in any perspective)

File Menu		
New Menu	Alt+Shift+N	>
Open File...		
Close	Ctrl+W	
Close All	Ctrl+Shift+W	
Save	Ctrl+S	
Save As...		
Save All	Ctrl+Shift+S	
Revert		
Move...		
Rename...	F2	
Refresh	F5	
Convert Line Delimiters To		>
Print...	Ctrl+P	
Switch Workspace		
Restart		>
Import...		

File Menu	
Export...	
Properties	Alt+Enter
Exit	

Edit Menu	
Undo	Ctrl+Z
Redo	Ctrl+Y
Cut	Ctrl+X or Shift+Delete
Copy	Ctrl+C
Paste	Ctrl+V
Delete	Delete
Select All	Ctrl+A
Expand Selection To	>
Find/Replace...	Ctrl+F
Find Word	
Find Next	Ctrl+K
Find Previous	Ctrl+Shift+K
Incremental Find Next	Ctrl+J
Incremental Find Previous	Ctrl+Shift+J
Add Bookmark...	
Add Task...	
Smart Insert Mode	
Insert ChangeLog entry	
Show Tooltip Description	F2
Word Completion	Alt+/ Ctrl+I
Quick Fix	Ctrl+I
Content Assist	Ctrl+Space
Parameter Hints	Ctrl+Shift+ Space
Set Encoding...	

Source Menu	
Toggle Comment	
Add Block Comment	
Remove Block Comment	
Shift Right	

Source Menu	
Shift Left	
Correct Indentation	
Format	
Add Include	Ctrl+Shift+N
Sort Lines	
Implement Method...	
Generate Getters and Setters...	
Surround With	>

Refactor Menu	
Rename	
Extract Local Variable	
Extract Constant	
Extract Function	
Toggle Function	
Hide Method	
Apply Script	
Create Script	
History	

Search Menu	
Search...	Ctrl+H
File...	
Remote...	
C/C++...	
Text	>
Find Text in Workspace	Ctrl+Alt+G

Project Menu	
Open Project	
Close Project	
Build All	Ctrl+B
Build Configurations	>
Build Project	
Build Working Set	>

Project Menu	
Clean	
Make Target	>
Make Target Build...	Shift+F9
Rebuild Last Target	F9
Properties	

Run Menu	
Instruction Stepping Mode	
Move to Line (C/C++)	
Resume At Line (C/C++)	
Resume	
Suspend	
Terminate	
Disconnect	
Resume Without Signal	
Step Into	F5
Step Over	F6
Step Return	F7
Run to Line	
Run	Ctrl+F11
Debug	F11
Run History	>
Run As	>
Run Configurations	
Debug History	>
Debug As	>
Debug Configurations	
Toggle Breakpoint	Ctrl+Shift+B
Toggle Line Breakpoint	
Toggle Method Breakpoint	
Toggle Watchpoint	
Skip All Breakpoints	
Remove All Breakpoints	
Breakpoint Types	>

Run Menu		
Reset		
External Tools		>

Navigate		
Go Into		
Go To		>
Open Declaration	F3	
Open Type Hierarchy	F4	
Open Call Hierarchy	Ctrl+ Alt+H	
Open Include Browser	Ctrl+ Alt+I	
Toggle Source/Header	Ctrl+Tab	
Open Element...	Ctrl+Shift+T	
Open Type in Hierarchy...	Ctrl+ Shift+H	
Open Element in Call Hierarchy...		
Open Resource...	Ctrl+ Shift+R	
Open Task...	Ctrl+F12	
Activate Task...	Ctrl+F9	
Deactivate Task...	Ctrl+ Shift+F9	
Show In	Alt+ Shift+W	>
Quick Outline	Ctrl+O	
Next Item	Ctrl+.	
Previous Item	Ctrl+,	
Last Edit Location	Ctrl+Q	
Go To Line...	Ctrl+L	
Backward history	Alt+Left	>
Forward history	Alt+Right	>

Window Menu		
New Window		
Editor		>
Hide Toolbar		
Open Perspective		>
Show View	Alt+Shift+Q, Q	>
Show Breakpoints View	Alt+Shift+Q, B	
Show Cheat Sheets View	Alt+Shift+Q, H	

Window Menu	
Show Console View	Alt+Shift+Q, C
Show Error Log View	Alt+Shift+Q, L
Show History View	Alt+Shift+Q, Z
Show Outline View	Alt+Shift+Q, O
Show Problems View	Alt+Shift+Q, X
Show Search View	Alt+Shift+Q, S
Show Synchronize View	Alt+Shift+Q, Y
Show Task List View	Alt+Shift+Q, K
Show Variables View	Alt+Shift+Q, V
Customize Perspective...	
Save Perspective As...	
Reset Perspective...	
Close Perspective	
Close All Perspectives	
Navigation	>
Show System Menu	Alt+ -
Quick Access	Ctrl +3
Maximize Active View of Editor	Ctrl+M
Activate Editor	F12
Next Editor	Ctrl+F6
Previous Editor	Ctrl+Shift+F6
Switch to Editor...	Ctrl+Shift+E
Next View	Ctrl+F7
Previous View	Ctrl+Shift+F7
Next Perspective	Ctrl+F8
Previous Perspective	Ctrl+Shift+F8
Refresh Debug Views	
Preferences	

Help Menu	
Help Contents	
Search	
Dynamic Help	
Key Assist...	Ctrl+Shift+L

Help Menu	
Tips and Tricks...	
Report Bug or Enhancements...	
Cheat Sheets...	
Check for Updates	
Install New Software...	
Installation Details	
Eclipse Marketplace...	
Documentation	
About S32DS ARM v2018.R1	

Text Editing	
Delete a line of text	Ctrl+D
Show Ruler Context Menu	Ctrl+F10

Navigation	
Expand the current tree	Ctrl+Shift+<Numpad Multiply>

Using of the Task-Focused UI	
Make Landmark	Ctrl+Shift+Alt+Up
Make Less Interesting	Ctrl+Shift+Alt+Down
Open Remote Task	Ctrl+Shift+Alt+F12

> Denotes a hierarchical menu

Note: Most of these menu items are dynamic and will change relative to the active context.

Quick links

- S32 Design Studio page (overview, downloads) www.nxp.com/S32DS
- S32 Design Studio community (for publicly shared cases) community.nxp.com/community/s32/s32ds
- Technical support (for confidential issues) www.nxp.com/support Hardware and Software link

How to Reach Us:**Home Page:**nxp.com**Web Support:**nxp.com/support

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