Installation Guide
ARCAD CodeChecker

Version 24.0

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Prepared by the ARCAD Documentation Team

Contact ARCAD

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Country	Address	Account Contact	Support Contact
France	ARCAD Software (HQ) 55 Rue Adrastée 74650 Chavanod ARCAD Software 17 chemin de la plaine 07200, Saint-Didier-sous-Aubenas	+33 4 50 57 83 96 sales-eu@arcadsoftware.com	Worldwide 24/7: +1 603 371 3256 France only: +33 450 57 28 00 support@arcadsoftware.com ARCAD Helpdesk
Germany	ARCAD Software Deutschland GmbH c/o Pramex International GmbH Savignystr. 43, 60325 Frankfurt am Main		
China	ARCAD Software #2035, Yuehai Plaza, 180 Wanbo 2nd Road, Nancun, Panyu District, Canton	+86 (020)22324643 +86 (020)22324649 sales-asia@arcadsoftware.com	
India	ARCAD Software D-280/281/282, Vibhuti Khand Gomti Nagar, Lucknow		
Singapore	ARCAD Software 5 Shenton Way #22-04 UIC Building Singapore 068808		
USA	ARCAD Software 1 N. State St, 15th Floor Chicago, IL	+1 (603) 371-9074 +1 (603)-371-3256 (support calls only) sales-us@arcadsoftware.com	

Table 1: Contact ARCAD

Preface

Document purpose

This document is intended to guide users through the installation process for the following ARCAD CodeChecker module(s):

- The CodeChecker Server
- The CodeChecker Studio
- The ARCAD CodeChecker plug-in for RDi
- The ARCAD CodeChecker plug-in for Jenkins
- The ARCAD CodeChecker plug-in for SonarQube

Intended audience

This document is intended for system administrators, ARCAD administrators, or any person in charge of installing ARCAD products.

Publication record

Unless stated otherwise, all content is valid for the most current version of ARCAD CodeChecker listed as well as every subsequent version.

Product version	Document version	Publication Date	Update record
≥ 24.0	4.0	January, 2024	No functional changes
23.3	3.9	October, 2023	No functional changes
23.2	3.8	July, 2023	No functional changes
23.1	3.7	April, 2023	No functional changes
23.0	3.6	January, 2023	No functional changes

Table 2: ARCAD CodeChecker Installation Guide publication record

Related documentation

ARCAD technical documentation can be accessed from the product's online help or by logging into the Customer Portal on our website.

ARCAD Glossary
ARCAD CodeChecker User Guide

Table 3: Related documentation

Contents

1 About ARCAD CodeChecker

ARCAD CodeChecker automates the tasks of analyzing code quality, detecting complexity hotspots in your code, and ensuring a consistent level of quality throughout your application.

To determine code quality, ARCAD CodeChecker uses quality rules, metrics and metric models. A metric is a numeric value deduced from the analysis of a source code. A metric is based on a metric model, which defines the actions to carry out to retrieve a value during the code review process. Metrics are then used in conditional expressions called quality rules. If the metrics respect the conditions set by the quality rules, then the rules succeed. However, if the metrics do not respect the conditions, the quality rules fail and the source code analyzed does not meet the expected quality standards.

To carry out the code review process, you must associate a code review with a target to create a campaign. A code review enables you to define the quality rules to execute, and a target specifies the application and the source members on which these rules must be executed. When creating a campaign, a code review is associated with a target to define the context of the code analysis. When you launch a campaign, each source member contained in the defined target application is analyzed to determine if it complies with the quality rules specified, thus indicating the code quality of your applications.

ARCAD CodeChecker lets you easily define customized quality rules and metrics to measure code quality, and enables you to carry out the code review process during several development steps (coding, continuous integration, quality processes).

ARCAD CodeChecker analyzes applications written in the main languages used in IBM i environments:

- CL
- COBOL
- RPG (RPG III)
- RPGLE (RPG IV)

ARCAD CodeChecker is designed as a suite of tools:

- The CodeChecker Server stores all the entities required to set up and execute a code review process, and gives you access to all the standard predefined entities.
- The CodeChecker Studio enables you to access, create and manage all the entities required to set up and execute a code review process.
- The ARCAD CodeChecker plug-ins are used to execute quality rules directly on the source code, or to analyze the results of the code review / target associations.

ARCAD CodeChecker is also available as a service provider for external applications.

Figure 1: ARCAD CodeChecker in the ARCAD product suite

1.1 About the CodeChecker Server

The CodeChecker Server stores all the elements required to set up and execute a code review process, and gives access to the standard metric models and other predefined entities that are delivered with ARCAD CodeChecker.

The CodeChecker Server is also in charge of executing the code review process. When a campaign is launched, the server executes the active quality rules on the defined target application. The server analyzes the code quality and generates results, which can be viewed in the CodeChecker Studio or in the ARCAD CodeChecker plug-ins.

1.2 About the CodeChecker Studio

The CodeChecker Studio is an Eclipse-based application that connects to the CodeChecker Server. The studio is available as:

1. A stand-alone Rich Client Platform (RCP),
2. An RDi perspective.

> (i) **Note**
>
> Both versions of the studio have the same interface, offer the same features and use the CodeChecker Server the same way. However, the RDi perspective must be installed as a plug-in on RDi, whereas the RCP is a stand-alone application.

The CodeChecker Studio enables you to:

- create and manage all the entities required to set up a code review process (rule sets, quality rules, metrics, metric models and validation expressions),
- create and manage all the entities required to execute a code review process (code reviews, targets,

campaigns and schedules),

- activate specific rule sets and quality rules so they can be used in the studio or in the plug-ins.

1.3 About the ARCAD CodeChecker plug-ins

ARCAD CodeChecker is available as a plug-in for integrated modules.

The ARCAD CodeChecker plug-in for RDi

The ARCAD CodeChecker plug-in for RDi is designed for the RDi integrated development environment (IDE).

The plug-in is designed for developers working in the RDi IDE. It enables developers to test the quality of the source code they are working on by executing active rule sets or specific quality rules, and know instantly if the source code does not comply with the standards set for the development team. With the plug-in, developers can easily know which quality rules are failing and identify which part of their source code is causing the failure. The portions of code causing the failures are clearly identified, making it easy for developers to modify their source code to comply with the quality standards.

The ARCAD CodeChecker plug-in for Jenkins

The ARCAD CodeChecker for Jenkins plug-in is intended for development team managers, or any person in charge of the evolution of an application's source code. It enables you to test the quality of a build and generate an analysis report for the build. With this report, you can quickly identify the files that do not comply with the quality rules executed during the code review process. The plug-in also enables you to stop the build process if a FATAL quality rule is failing.

The ARCAD CodeChecker plug-in for SonarQube

The ARCAD CodeChecker solution for SonarQube integrates the results of code quality campaign in SonarQube, the open-source platform for continuous inspection of code quality. You can review issues raised in a campaign with the functionalities offered by the Sonar interface (code review, statistics, etc.). Like in the CodeChecker Studio, rule documentation is available for each issue in Sonar.

The solution is composed of:

- The ARCAD CodeChecker plug-in for SonarQube, to be installed on the SonarQube server. The plug-in is a SonarQube add-on that allows you to manage your source code quality with SonarQube.
- The Sonar Scanner, supplied by Sonar and fully managed on the CodeChecker Server side. The scanner is a Sonar component that ensures the communication of the CodeChecker Server with SonarQube.

SYSTEM REQUIREMENTS

2 System requirements for the CodeChecker Server

2.1 Windows

2.1.1 Hardware requirements

The following table lists the hardware components that are required for the CodeChecker Server on Windows x64.

Requirement	Value
System Architecture	64 bit processor
CPU	DUAL Core processor minimum
Physical memory (RAM)	2GB minimum, 4GB recommended[1]
Virtual memory	- If physical memory is between 2GB and 16GB, then set virtual memory to 1x the size of the RAM - If physical memory is more than 16GB, then set virtual memory to 16GB
Hard disk	RAID storage or any secured storage with redundancy, backup and monitoring
Disk Space	Typical Install Type total: 10GB[2]
Network	Any TCP/IP capable network interface

Table 4: CodeChecker Server Hardware Requirements - Windows

2.1.2 Software requirements

The following table lists the software requirements for the CodeChecker Server on Windows x64.

Requirement	Value
Operating system	Any Microsoft supported server OS with Java (eg windows server 2016 any version)
Network protocol	- TCP/IPv4 - TCP/IPv4 with SSL
Filesystem	NTFS or any journalized filesystem

Table 5: CodeChecker Server Software Requirements - Windows

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[1]Physical memory is used by this entity and all subsequent processes, operating systems and any other software installed on the server. Please refer to additional software vendors for additional physical memory requirements.
[2]This size can be higher depending on the options selected and typical usage of the software, refer to Hard Disk Space requirement planning section to determine your needs.

2.2 Linux

2.2.1 Hardware requirements

The following table lists the hardware components that are required for the CodeChecker Server on Linux x64.

Requirement	Value
System Architecture	AMD64 and Intel EM64T
CPU	DUAL Core processor minimum
Physical memory (RAM)	2GB minimum, 4GB recommended[1]
Virtual memory	• If physical memory is between 2GB and 16GB, then set virtual memory to 1x the size of the RAM • If physical memory is more than 16GB, then set virtual memory to 16GB
Hard disk	RAID storage or any secured storage with redundancy, backup and monitoring
Disk Space	Typical Install Type total: 10GB[2]
Network	Any TCP/IP capable network interface

Table 6: CodeChecker Server Hardware Requirements - Linux

2.2.2 Software requirements

The following table lists the software requirements for the CodeChecker Server on Linux x64.

Requirement	Value
Operating system	Linux 64bits with support for Java 8 64 bits
Runlevel	Server should be started in multi-user mode, commonly runlevel 3 or 5
Network protocol	• TCP/IPv4 • TCP/IPv4 with SSL
Filesystem	Ext3, ext4 or any journalized filesystem
SELINUX	Disabled

Table 7: CodeChecker Server Software Requirements - Linux

2.3 IBM i

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[1]Physical memory is used by this entity and all subsequent processes, operating systems and any other software installed on the server. Please refer to additional software vendors for additional physical memory requirements.
[2]This size can be higher depending on the options selected and typical usage of the software, refer to Hard Disk Space requirement planning section to determine your needs.

2.3.1 Hardware requirements

The following table lists the hardware components that are required for the CodeChecker Server on IBM i.

Requirement	Value
Physical memory (RAM)	RAM: 2GB minimum physical memory (4GB recommended)[1]
Disk Space	Typical Install Type total: 10GB[2]
Network	Any TCP/IP capable network interface

Table 8: CodeChecker Server Hardware Requirements - IBM i

2.3.2 Software requirements

The following table lists the software requirements for the CodeChecker Server on IBM i.

Requirement	Value
Operating system	IBM i ≥7.1
Network protocol	• TCP/IPv4 • TCP/IPv4 with SSL
Java JRE	JRE/JDK v8
At least one instance of the Remote Execution Server (REXEC) must be running.	

Table 9: CodeChecker Server Software Requirements - IBM i

2.3.3 Host name resolution

Typically, the partition on which you want to install the CodeChecker Server is connected to a network. Ensure that the partition host name is resolvable through a Domain Name System (DNS) or the centrally-maintained TCP/IP host table (go CFGTCP, option 10).

Use the PING command to ensure that your computer host name is resolvable.

> 🏴 **Example**
> PING RMTSYS(hostname)
> Verifying connection to host system
> hostname.domain.com at address 192.168.0.10.
> PING reply 1 from 192.168.0.10 took 18 ms. 256 bytes. TTL 64.

If your computer host name does not resolve, contact your system administrator.

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[1] Physical memory is used by this entity and all subsequent processes, operating systems and any other software installed on the server. Please refer to additional software vendors for additional physical memory requirements.
[2] This size can be higher depending on the options selected and typical usage of the software, refer to Hard Disk Space requirement planning section to determine your needs.

2.3.4 Users for the CodeChecker Server

Log into the system with a profile with the following special authorities:

- *ALLOBJ
- *JOBCTL

> ⚠️ **Important!**
> These rights are required only when installing the product.

3 System requirements for the CodeChecker Studio

3.1 Windows

3.1.1 Hardware requirements

The following table lists the hardware components that are required for the CodeChecker Studio on Windows x64.

Requirement	Value
System Architecture	64 bit processor
CPU	DUAL Core processor minimum
Physical memory (RAM)	2GB minimum, 4GB recommended
Virtual memory	• If physical memory is between 2GB and 16GB, then set virtual memory to 1x the size of the RAM • If physical memory is more than 16GB, then set virtual memory to 16GB
Disk Space	Typical Install Type total: 1GB
Video adapter	256 colors
Screen Resolution	1024x768 minimum
Network	Any TCP/IP capable network interface

Table 10: CodeChecker Studio Hardware Requirements - Windows

3.1.2 Software requirements

The following table lists the software requirements for the CodeChecker Studio on Windows x64.

Requirement	Value
Operating system	• Any Microsoft supported Windows OS 64bit
Network protocol	• TCP/IPv4 • TCP/IPv4 with SSL

Table 11: CodeChecker Studio Software Requirements - Windows

3.2 Linux

3.2.1 Hardware requirements

The following table lists the hardware components that are required for the CodeChecker Studio on Linux.

Requirement	Value
System Architecture	64 bit processor
Physical memory (RAM)	4GB minimum, 8GB recommended
Disk Space	Typical Install Type total: 1GB
Network	Any TCP/IP capable network interface

Table 12: CodeChecker Studio Hardware Requirements - Linux

3.2.2 Software requirements

The following table lists the software requirements for the CodeChecker Studio on Linux.

Requirement	Value
Operating system	• Any Linux 64bit OS
Network protocol	• TCP/IPv4 • TCP/IPv4 with SSL

Table 13: CodeChecker Studio Software Requirements - Linux

INSTALLATION

4 Installation notes

Please note the following important compatibility breaks in the server versions that require you to follow specific procedures to update your server.

- From **≤22.1 to ≥v22.2**

    If you are updating from any inferior version to ≥v22.1, you must follow the specific migration instructions. You cannot simply update the CodeChecker Server to ≥v22.2.

Migration from ≤22.1 to ≥v22.2

> ⚠ **Important!**
> If you are updating from any inferior version to ≥v22.1, you must follow the corresponding migration instructions. You cannot simply update the CodeChecker Server to ≥v22.2.

Updating from a version of ARCAD CodeChecker inferior to 22.2 requires to run a migration process.

Follow the subsequent steps to upgrade your product to its latest version:

Step 1   Update the ARCAD CodeChecker Server and Studio to the 22.1.1 version.

Step 2   From the ARCAD CodeChecker Studio, open the 🧰 **Configuration Categories** view.

Step 3   Open the **Database Scripts** section under the **Database** category.

Step 4   Select the **Update database to latest version** script from the **SQL Scripts** drop-down list.

Step 5   Click on the ⊕ **Actions** drop-down menu and select **Run**.

Step 6   Update the ARCAD CodeChecker Server and Studio to version 22.2.

> ⚠ **Important!**
> Once the update is complete, the server does not restart automatically: as of version 22.2, the server never restarts automatically after an update, so the update process, that needs to run operations on the server while it is not running, is not interrupted.

Step 7   Open a command terminal and go to the ARCAD CodeChecker Server installation folder. Open the **migration** folder and execute the **migrate.bat** script, on Windows or the **migrate.sh** script on Linux/IBM i.

> ℹ **Note**
> This script transfers the current server configuration into the **osgi.cm.ini** configuration file located in the Server installation folder.
>
> It will also update the ARCAD CodeChecker database and Campaigns summary files to make them compliant with the version

> ⓘ   22.2 format.

Result The migration is completed and the AFS options are available for use.

5 Installing the CodeChecker Server

The CodeChecker Server centralizes all the necessary elements to analyze an application's code quality. The server is the core of ARCAD CodeChecker because it is required to use the CodeChecker Studio and the plug-ins.

> ⚠ **Important!**
> Before installing or updating ARCAD CodeChecker, first read carefully the Release Notes.
>
> In these release notes, you will find all the information specific to each release of ARCAD CodeChecker, especially specific warnings you should be aware of before installing or upgrading the product (compatibility breaks, exceptional migration procedures, etc.).

5.1 Prerequisites

> ⮡ *Reference*
> For complete details about the technical prerequisites for ARCAD CodeChecker, refer to the System requirements on page 10.

5.2 Windows

The CodeChecker Server runs as a Windows service.

5.2.1 Install

The installation process takes approximately 5 minutes. It is a simple procedure similar to most other Windows applications. For trouble-free installation, it is recommended that you close all active Windows applications before beginning the installation.

> ⓘ **Note**
> If the tool is already installed on your computer, reinstalling it will update it to the new version automatically.

Follow the subsequent steps to install the CodeChecker Server on Windows.

Step 1 Copy the *.exe* file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2 From the **Select Setup Language** window, select the language for the installation.

Step 3 Review and accept the license agreement.

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Step 4 Confirm the installation location.

The **Select Destination Location** screen displays the default location where ARCAD elements will be installed. If you prefer to install the software elements in a different location, either type in the location, or click **Browse…** to navigate to and select the alternate location.

The default root location is *C:\Program files\ARCAD Solutions*.

A sub-folder for each ARCAD application you install will be created at this location.

> ⚠ *Warning!*
> The access rights to this folder can then be restricted to the user used to run the Server's Windows service.

Step 5 Install.

The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

To change a setup parameter, click **< Back** and return to the necessary screen.

If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

Step 6 Define the TCP ports to use.

> ⚠ **Important!**
> The ports defined here will be used to configure the connection.

Press **Enter/Next** to use the default ports.

The CodeChecker Server is an independent AFS server with an embedded H2 database.

The CodeChecker Server's default HTTP port is 5253, and the default HTTPS port is 52530.

To disable a port, enter 0 (zero) when asked for the port number.

> ⚠ **Important!**
> If you are using other ARCAD Group products on the same host, it is recommended to use the default ports to avoid any conflicts with other servers.

If an application is already using it, the default port number is incremented until a free port number is found. It is possible to manually change the port after installation.

Step 7 Select the Windows user account.

The CodeChecker Server runs as a Windows service. Select the user account that will be used to manage the service.

By default, the local system account is selected. If you do not want to use that account, you can select any user account with enough privileges to run a Windows service, and have a read and write access to the folder where ARCAD CodeChecker is installed.

Step 8   Complete the setup process. The final page of the wizard displays confirmation that the setup was a success. Click **Finish** to close the setup wizard.

Step 9   Verify the Windows Service is running.

The final screen of the installation process enables you to automatically open the Local Services Management Console. If the **Open Windows service** checkbox is selected, the **Services** window opens after clicking **Finish**. This window enables you to verify that its status is set to "Started".

Result   The CodeChecker Server is installed and available for use.

5.2.2 Update

> ⚠️ **Important!**
> If you are updating from any inferior version to ≥v22.1, you must follow the corresponding migration instructions. You cannot simply update the CodeChecker Server to ≥v22.2. Refer to .

When updating the server, the folders containing your configuration and files are kept. However, some personal configuration may be lost during the update. It is recommended to create a backup of your files before updating the server.

The following items are not impacted by the update:

- Database
- Drivers
- Files (including your custom groovy metrics)

> 🔴 *Warning!*
> Uninstalling the CodeChecker Server will remove all your data. Uninstalling and installing the new version of the server will overwrite the folders containing your configuration and files.

Updating the CodeChecker Server is similar to the installation process in that it is launched via the installation *.exe*. However, after the update is complete, the database must also be updated.

> ℹ️ **Note**
> If you are updating without uninstalling, the majority of the installation preferences are saved and automatically reused.
>
> To change the saved values, uninstall completely and define new values by reinstalling from scratch.

Follow the subsequent steps to update the CodeChecker Server on Windows.

Step 1 Copy the *.exe* file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2 From the **Select Setup Language** window, select the language for the installation.

Step 3 Review and accept the license agreement.

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Step 4 Install.

The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

To change a setup parameter, click **< Back** and return to the necessary screen.

If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

Step 5 Complete the setup process. The final page of the wizard displays confirmation that the setup was a success. Click **Finish** to close the setup wizard.

Step 6 Verify the Windows Service is running.

The final screen of the installation process enables you to automatically open the Local Services Management Console. If the **Open Windows service** checkbox is selected, the **Services** window opens after clicking **Finish**. This window enables you to verify that its status is set to "Started".

Result The CodeChecker Server is updated and available for use.

After any server update, you need to update the server's integrated database, to ensure that the database is fully compatible with the updated server.

> ⚠ **Important!**
> This step must be done **before starting the server service**.

To update the database, run the database update script supplied with the installation. The **dbupdate** file located in the **.\tools** folder.

5.2.3 Uninstall

Follow the subsequent steps to uninstall the CodeChecker Server from Windows.

Step 1 Log into the system with an administrator account.

Step 2 Either launch the *uninstall.exe* located in the installation directory

- or -

Open **Add or Remove Programs** (*Start > Control Panel*), find the module in the list of installed software and select **Uninstall**.

Step 3   Remove any remaining files in the installation path and remove any remaining configuration files in the user directory.

Result   The CodeChecker Server is completely uninstalled.

5.3 Linux

5.3.1 Install

Follow the subsequent steps to install the CodeChecker Server on Linux.

Step 1   Transfer the *.tar.gz* to the */tmp* directory on the target system.

Step 2   Open a terminal session and go to the installation directory.

> 🚩 ***Example***
> cd /opt

> ⓘ **Note**
> By default, the server is intended to be installed in the */opt* directory. If you install it in a different directory, you will have to update the server's scripts (see Step 7   Edit the scripts.).

Step 3   Execute the following command to extract the *tar.gz* archive into the current directory:

tar xzf CodeChecker-Server-*[version number]_Linux*.tar.gz

Step 4   [*Optional*] If you need to change the listening port(s) for the server, you must do so now.

The CodeChecker Server is an independent AFS server with an embedded H2 database.

The CodeChecker Server's default HTTP port is 5253, and the default HTTPS port is 52530.

To disable a port, enter 0 (zero) when asked for the port number.

> ⚠ **Important!**
> If you are using other ARCAD Group products on the same host, it is recommended to use the default ports to avoid any conflicts with other servers.

To change the ports, open the *configuration/com.arcadsoftware.server.restful.cfg* in a text editor and change the following properties:

- **port=***<new HTTP port number>* -or- *<0>* (zero) to disable the HTTP port
- **portssl=***<new HTTPS port number>* -or- *<0>* (zero) to disable the HTTPS port

Step 5 Create a specific user and group to run the server's process with the command:

adduser --system --no-create-home --group *name*

Step 6 Change the ownership of the installation directory to give it to the user and group that will run the CodeChecker Server:

chown *username*:*groupname* -R /opt/CodeChecker-Server

Step 7 Edit the scripts.

Open the following scripts in a text editor to set the variables to match your execution environment:

- *bin/CodeChecker-Server*
  - Line 8: set **AFS_HOME** to the installation directory if it was not installed in */opt/…* by default.
  - Line 12: set **AFS_USER** to the new user.

- *bin/CodeChecker-Server.service*
  - Lines 8-14: update the paths so they match the installation directory.
  - Line 16: set the user to the new user.
  - Line 17: set the group to be the new user's or any group of your choice.

- configuration files in the *configuration* folder

Step 8 [*Optional*] Execute the following commands to install the CodeChecker Server as a systemd service:

cd /etc/systemd/system
systemctl link /opt/CodeChecker-Server/bin/CodeChecker-Server.service
systemctl enable CodeChecker-Server
systemctl start CodeChecker-Server

Result The CodeChecker Server is installed and available for use.

> ⓘ **Note**
> The CodeChecker Server embeds, in the Linux packaging, the runtime of an open-source version of Java (OpenJDK 1.8). Depending on the needs of the host machine, this runtime can be replaced by an equivalent version managed by the operating system. To do so, delete the **jre** folder located in the server installation folder.

5.3.2 Update

> ⚠ **Important!**
> If you are updating from any inferior version to ≥v22.1, you must follow the corresponding migration instructions. You cannot simply update the CodeChecker Server to ≥v22.2. Refer to .

When updating the server, the folders containing your configuration and files are kept. However, some personal configuration may be lost during the update. It is recommended to create a backup of your files before updating the server.

The following items are not impacted by the update:

- Database
- Drivers
- Files (including your custom groovy metrics)

> ⚠️ **Warning!**
> Uninstalling the CodeChecker Server will remove all your data. Uninstalling and installing the new version of the server will overwrite the folders containing your configuration and files.

After the CodeChecker Server is updated, the database must also be updated.

Follow the subsequent steps to updatethe CodeChecker Server on Linux.

Step 1   Transfer the updated CodeChecker-Server.*tar.gz*. and the CodeChecker-Server-*[version number]_Linux_Update.sh* script to the */tmp* directory on the target system.

Step 2   Open a terminal session and go into the */tmp* directory: cd /tmp

Step 3   Mark the _*Update.sh* as being executable:

chmod +x CodeChecker-Server-*[version number]_Linux_*Update.sh

Step 4   Open the _*Update.sh* with a text editor and make the following changes:

- Line 9: uncomment and set the **AFS_HOME** variable to the installation directory.
- Line 10: change the **AFS_URL** to match the address and port the server is listening on.
- Line 12: change the **AFS_OSUSER** to the user running the server.
- Line 13: change the **AFS_OSGROUP** to the group running the server.
- Lines 16-19: uncomment the line corresponding to the way the server must be started.
- Lines 22-25: uncomment the line corresponding to the way the server must be stopped.

Step 5   Run the _*Update.sh*:

./CodeChecker-Server-*[version number]_Linux_*Update.sh

> ℹ️ **Note**
> You can keep the _*Update.sh* for future updates, unless stated otherwise in the release notes.

Result   The CodeChecker Server is updated and available for use.

After any server update, you need to update the server's integrated database, to ensure that the database is fully compatible with the updated server.

> ⚠️ **Important!**
> This step must be done **before starting the server service**.

To update the database, run the database update script supplied with the installation. The **dbupdate** file located in the **.\tools** folder.

5.3.3 Uninstall

Follow the subsequent steps to uninstall the CodeChecker Server on Linux.

Step 1 Stop the service using the service manager of your Linux distribution or use the script provided.

> 🚩 *Example*
> Service command:
>
> systemctl stop CodeChecker-Server
>
> Script command:
>
> /opt/CodeChecker-Server/bin/CodeChecker-Server stop

Step 2 Uninstall the service, if any, using the tools from your Linux distribution.

> 🚩 *Example*
> systemctl disable CodeChecker-Server
> rm /etc/systemd/system/CodeChecker-Server.service
> systemctl daemon-reload
> systemctl reset-failed

Step 3 Remove the software from the installation directory.

> 🚩 *Example*
> rm -rf /opt/CodeChecker-Server

Step 4 Remove any remaining files based on the server's configuration.

Result The CodeChecker Server is completely uninstalled.

5.4 IBM i

The CodeChecker Server can be installed and updated manually on IBM i or, depending on your security policy, remotely from any machine running Java.

> ℹ️ **Note**
> If the tool is already installed on your computer, reinstalling it will update it to the new version automatically.

5.4.1 Install

Follow the subsequent steps to install the CodeChecker Server on IBM i.

Step 1   Copy the installation *.jar* file to any directory (such as the */tmp*) on the target IBM i IFS or the machine that will orchestrate the remote installation.

Step 2   Launch the installation setup.

If you are installing manually on IBM i:

1.   Open a session on the target IBM i using the QSECOFR profile or an equivalent.
2.   Open a command line interpreter using the command QSH. Reach the location where you have copied your installation file.
3.   In the command line interpreter, launch the setup using the installation command.

> 🚩 *Example*
>   java -jar Setup_CodeChecker-Server-x.x.x._IBM i.jar

If you are installing remotely from Windows or Linux:

1.   Launch the setup from the location on the machine orchestrating the installation using the command above. This will open a prompt asking for the **Remote IBM i name/address**.

2.   Enter the name/address of the target IBM i.
3.   Login using the QSECOFR profile or an equivalent.

Step 3   Define the **AFS Starter Installation library** and iASP which will contain the AFS Starter (a utility program used to start the CodeChecker Server on IBM i).

By default they are **AFSSTARTER** and ***SYSBAS**.

Step 4   Define the installation location.

> 🚩 *Example*
>   */HOME/...*

Step 5   Define the TCP ports to use.

> ⚠ **Important!**
>   The ports defined here will be used to configure the connection.

Press **Enter**/**Next** to use the default ports.

The CodeChecker Server is an independent AFS server with an embedded H2 database.

The CodeChecker Server's default HTTP port is 5253, and the default HTTPS port is 52530.

To disable a port, enter 0 (zero) when asked for the port number.

> ⚠️ **Important!**
> If you are using other ARCAD Group products on the same host, it is recommended to use the default ports to avoid any conflicts with other servers.

If an application is already using it, the default port number is incremented until a free port number is found. It is possible to manually change the port after installation.

Step 6   Define the **Job user** that will run the CodeChecker Server.

Step 7   Define the job queue library (***LIBL**) then the job queue (**JOBQ**) in which the job will be submitted.

> 🚩 *Example*
> Job queue library [ARCAD_SYS]
> Job queue [ARCAD_CTL]

Step 8   Define the name of the AFS instance to register in the AFSSTARTER.

By default it is **PRODUCT-AFS-ID**.

Result   The CodeChecker Server is installed and available for use.

5.4.2 Update

> ⚠️ **Important!**
> If you are updating from any inferior version to ≥v22.1, you must follow the corresponding migration instructions. You cannot simply update the CodeChecker Server to ≥v22.2. Refer to Installation notes on page 18.

When updating the server, the folders containing your configuration and files are kept. However, some personal configuration may be lost during the update. It is recommended to create a backup of your files before updating the server.

The following items are not impacted by the update:

- Database
- Drivers
- Files (including your custom groovy metrics)

> ⓘ *Warning!*
> Uninstalling the CodeChecker Server will remove all your data. Uninstalling and installing the new version of the server will overwrite the folders containing your configuration and files.

Updating the CodeChecker Server is similar to the installation process in that it is launched via the installation *.jar* file. However, after the update is complete, the database must also be updated.

> ⓘ **Note**
>
> If you are updating without uninstalling, the majority of the installation preferences are saved and automatically reused.
>
> To change the saved values, uninstall completely and define new values by reinstalling from scratch.

Follow the subsequent steps to update the CodeChecker Server on IBM i.

Step 1 Copy the installation *.jar* file to any directory (such as the */tmp*) on the target IBM i IFS or the machine that will orchestrate the remote installation.

Step 2 Launch the installation setup.

If you are installing manually on IBM i:

1. Open a session on the target IBM i using the QSECOFR profile or an equivalent.
2. Open a command line interpreter using the command QSH. Reach the location where you have copied your installation file.
3. In the command line interpreter, launch the setup using the installation command.

> 🚩 *Example*
>   java -jar Setup_CodeChecker-Server-x.x.x._IBM i.jar

If you are installing remotely from Windows or Linux:

1. Launch the setup from the location on the machine orchestrating the installation using the command above. This will open a prompt asking for the **Remote IBM i name/address**.

2. Enter the name/address of the target IBM i.
3. Login using the QSECOFR profile or an equivalent.

Step 3 Define the installation location.

> 🚩 *Example*
>   */HOME/...*

Point to original installation location to use the same settings defined for the original installation (ports, installation location, service user).

Result The CodeChecker Server is updated and available for use.

After any server update, you need to update the server's integrated database, to ensure that the database is fully compatible with the updated server.

> ⚠ **Important!**
>   This step must be done **before starting the server service**.

To update the database, run the database update script supplied with the installation. The **dbupdate** file located in the **.\tools** folder.

5.4.3 Uninstall

Follow the subsequent steps to uninstall the CodeChecker Server on IBM i.

Step 1 Open a session on the IBM i where the server is installed, using the QSECOFR profile or an equivalent.

Step 2 Stop and delete the service using the following commands:

```
ADDLIBLE <AFSSTARTER LIBRARY NAME>
ENDAFSSVR CODECHECKR
DLTAFSSVR CODECHECKR DELETE(*YES)
```

Result The CodeChecker Server is completely uninstalled.

6 Installing the CodeChecker Studio as a stand-alone RCP

The CodeChecker Studio as a stand-alone RCP can be installed on Windows or Linux.

> ⚠️ **Important!**
> Before installing or updating ARCAD CodeChecker, first read carefully the Release Notes.
>
> In these release notes, you will find all the information specific to each release of ARCAD CodeChecker, especially specific warnings you should be aware of before installing or upgrading the product (compatibility breaks, exceptional migration procedures, etc.).

6.1 Prerequisites

> 📌 *Reference*
> For complete details about the technical prerequisites for ARCAD CodeChecker, refer to the System requirements on page 10.

6.2 Windows

6.2.1 Install

The installation process takes approximately 5 minutes. It is a simple procedure similar to most other Windows applications. For trouble-free installation, it is recommended that you close all active Windows applications before beginning the installation.

> ℹ️ **Note**
> If the tool is already installed on your computer, reinstalling it will update it to the new version automatically.

Follow the subsequent steps to install the CodeChecker Studio on Windows.

Step 1   Copy the *.exe* file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2   From the **Select Setup Language** window, select the language for the installation.

Step 3   Review and accept the license agreement.

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Step 4   Confirm the installation location.

The **Select Destination Location** screen displays the default location where ARCAD elements will be installed. If you prefer to install the software elements in a different location, either type in the location, or click **Browse...** to navigate to and select the alternate location.

The default root location is *C:\Program files\ARCAD Solutions*.

A sub-folder for each ARCAD application you install will be created at this location.

> ⚠ *Warning!*
> The access rights to this folder can then be restricted to the user used to run the Server's Windows service.

Step 5   Confirm the program's shortcut location.

The **Select Start Menu Folder** screen displays the default location where a shortcut will be created in your computer's Start menu. If you prefer to install the shortcut under a different group, either type the location here, or click **Browse...** to navigate to and select the alternate location.

The default root folder is *ARCAD Solutions*.

If you do not want to create a start menu folder, select the **Don't create a Start Menu folder** checkbox.

Step 6   Install.

The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

To change a setup parameter, click **< Back** and return to the necessary screen.

If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

Step 7   Complete the setup process. The final page of the wizard displays confirmation that the setup was a success. Click **Finish** to close the setup wizard.

Check the **Launch** check box to automatically open the CodeChecker Studio.

Result   The CodeChecker Studio is installed and available for use.

6.2.2 Update

Updating the CodeChecker Studio is similar to the installation process in that it is launched via the installation *.exe*.

> ℹ **Note**
> If you are updating without uninstalling, the majority of the user-defined configurations in the studio are saved in the user directory (the default is:

> ℹ️   *C:\Users\<user>\arcad\<module>).*

Follow the subsequent steps to update the CodeChecker Studio on Windows.

Step 1   Copy the *.exe* file to your machine and execute it to launch the wizard. Your profile must have administrator privileges to run the execution file.

Step 2   From the **Select Setup Language** window, select the language for the installation.

Step 3   Review and accept the license agreement.

       The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully. When you have reviewed the agreement, select **I accept the agreement**.

Step 4   Install.

       The **Ready to Install** screen enables you to review and change or confirm the setup parameters provided and to launch the installation.

       To change a setup parameter, click **< Back** and return to the necessary screen.

       If you agree with the installation parameters displayed, click **Install** to start the copy phase of the installation process. The process may take a moment while the windows services are launched.

       As the installation proceeds, a status bar displays its progress. Each element copied appears above the status bar. Click **Cancel** to interrupt the installation.

Step 5   Complete the setup process. The final page of the wizard displays confirmation that the setup was a success. Click **Finish** to close the setup wizard.

       Check the **Launch** check box to automatically open the CodeChecker Studio.

Result   The CodeChecker Studio is updated and available for use.

6.2.3 Uninstall

Follow the subsequent steps to uninstall the CodeChecker Studio on Windows.

Step 1   Log into the system with an administrator account.

Step 2   Either launch the *uninstall.exe* located in the installation directory

       - or -

       Open **Add or Remove Programs** (*Start > Control Panel*), find the module in the list of installed software and select **Uninstall**.

Step 3   Remove any remaining files in the installation path and remove any remaining configuration files in the user directory.

Result   The CodeChecker Studio is completely uninstalled.

6.3 Linux

6.3.1 Install

Follow the subsequent steps to install the CodeChecker Studio on Linux.

Step 1   Transfer the *.tar.gz* to the */tmp* directory on the target system.

Step 2   Open a terminal session and go to the installation directory: cd /opt

Step 3   Execute the following command to extract the *tar.gz* archive into the current directory:

tar xzf CodeChecker-Studio.tar.gz

Step 4   Change the ownership of the installation directory to give it to the user and group that will run the CodeChecker Studio:

chown username:groupname -R /opt/CodeChecker-Studio

Result   The CodeChecker Studio is installed and available for use.

6.3.2 Update

Follow the subsequent steps to update the CodeChecker Studio on Linux.

Step 1   Completely delete the CodeChecker-Studio directory:

rm -rf /opt/CodeChecker-Studio

Step 2   Install the CodeChecker Studio from scratch following the installation instructions.

Result   The CodeChecker Studio is updated and available for use.

6.3.3 Uninstall

To uninstall the CodeChecker Studio on Linux, remove the software from the installation directory.

rm -rf /opt/CodeChecker-Studio

The CodeChecker Studio is completely uninstalled.

7 Installing the ARCAD CodeChecker plug-ins for RDi

There are two ARCAD CodeChecker plug-ins for RDi:

1. The CodeChecker Studio plug-in, which enables development team managers, or any person in charge of setting code-quality requirements, to create and manage quality rules in RDi.
2. The ARCAD CodeChecker plug-in, which enables developers to execute quality rules directly in RDi and to control the source code quality during the development process.

7.1 Prerequisites

RDi v9.6 or v9.8

7.2 Installing

ARCAD CodeChecker is an Eclipse plug-in that can be installed on RDi. It is installed via an individual installation package.

Follow the subsequent steps to install the ARCAD CodeChecker plug-in(s).

Step 1 Download the installation package to your Local Site Repository. ARCAD delivers Eclipse plug-in packages in a .zip file. Save this .zip to your local environment. This location is the local site repository.

> ℹ️ **Note**
> The PC on which your Eclipse tool is installed must be able to access this location. It is recommended to save the installation files on the same PC or a shared network that the PC is connected to. There is no need to unzip this file after you save it to your local environment.
>
> After installation, it is recommend that you keep this location. Eclipse will continue to recognize it, so when updates are available, you can copy them into this folder.

Step 2 From the **Help** menu of the Eclipse IDE, select **Install New Software**.

> ⚠️ **Important!**
> You must be logged in as an administrator.

Step 3 From the **Install** dialog, click the **Add** button.

Step 4 In the **Add Repository** dialog, enter a recognizable name, then click **Archive...** This creates a link to the Local Site Repository that you can come back to and that will be used for automatic updates.

Step 5   Navigate to and select the ARCAD plug-ins installation .zip file that you saved to your local environment. Click **OK**.

> **Result**   The **Location** field in the **Add Repository** dialog is set to the .zip file's path. You can add new versions to this path later to update.

> Click **OK**.

Step 6   Select the plug-in(s) to install.

> Click **Next >** to continue.

Step 7   Review the selected features in the **Install Details** dialog.

> Click **Next >** to continue.

Step 8   Review and accept the license agreement

> The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully.

> When you have reviewed the agreement, select **I accept the terms of the license agreements**.

Step 9   Review and confirm the trusted certificates.

> Click **OK**.

Step 10   Click the **Finish** button to launch the installation.

Step 11   Restart the workbench. Click **Yes** to restart.

Result   ARCAD CodeChecker is installed and available for use.

7.3 Updating

Updating ARCAD plug-ins is similar to the original installation process. The prerequisites are the same and you must already have a previous version of the plug-in installed.

> **ⓘ Note**
>
> When there is a major upgrade (as opposed to a simple cumulative patch) or a name change in one of the ARCAD plug-ins, then it is recommended to uninstall the current plug-in and restart your platform before installing the new plug-ins.
>
> Upgrading ARCAD plug-ins only works correctly when the names of the installation files have not changed.

> **ⓘ Note**
>
> If you try to re-install plug-ins instead of search for updates, as long as the correct .zip archive is selected, the plug-ins will update instead of reinstall. However, it is suggested to follow the following procedure to update plug-ins.

Follow the subsequent steps to update the ARCAD CodeChecker plug-in(s).

Step 1 Save the new version of the installation *.zip* in your Local Site repository (created when you first installed the plug-ins).

Step 2 From the **Help** menu of the Eclipse IDE, select **Check for Updates**.

> ⚠️ **Important!**
>   You must be logged in as an administrator.

Step 3 The **Available Updates** dialog displays all of the plug-ins found in your update location that are out of date. Select the plug-in(s) to update.

Click **Next >** to continue.

Step 4 Review and confirm the updates.

Click **Next >** to continue.

Step 5 Review and accept the license agreement

The **License Agreement** page presents the ARCAD license agreement for you to review. Please read it carefully.

When you have reviewed the agreement, select **I accept the terms of the license agreements**.

Step 6 Review and confirm the trusted certificates.

Click **OK**.

Step 7 Click the **Finish** button to launch the installation.

Step 8 Restart the workbench. Click **Yes** to restart.

Result ARCAD CodeChecker is installed and available for use.

> ℹ️ **Note**
>   Once the update is completed, the IBM i should be updated as well to avoid version compatibility issues. Each user must upgrade their plug-ins, however the upgrade to the server is only performed once.

7.4 Uninstalling

When there is a major upgrade (as opposed to a simple cumulative patch) or a name change in one of the ARCAD plug-ins, then it is recommended to uninstall the current plug-in(s) and restart your platform before installing the new plug-in(s).

Follow the subsequent steps to uninstall the ARCAD CodeChecker plug-in(s).

Step 1 From the **Help** menu of the Eclipse IDE, select **Installation Details**.

> ⚠️ **Important!**
>   You must be logged in as an administrator.

Step 2 Click the **What is already installed** link in the lower right-hand corner of the **Install** dialog.

Step 3 Select the plug-in(s) to remove and click the **Uninstall** button.

Step 4 Click **Finish** to confirm.

Step 5 Restart the workbench.

Result The selected plug-in(s) is/are uninstalled.

8 Installing the ARCAD CodeChecker plug-in for Jenkins

The ARCAD CodeChecker plug-in for Jenkins is designed for Jenkins, an open-source tool used for continuous integration. The plug-in enables development team managers, or any person in charge of the evolution of an application's source code, to test the quality of a build.

8.1 Prerequisites

1. Jenkins must be installed. The plug-in is compatible with Jenkins ≥v**2.190.1**.

   > 📥 *Reference*
   >
   > For more information about installing Jenkins, refer to the [Jenkins Installation Guide](#).

2. The ARCAD-Commons plug-in must be installed on Jenkins. This plug-in, common to many ARCAD products on Jenkins, only needs to be installed once, no matter how many ARCAD product plug-ins are installed on Jenkins. To install the ARCAD-Commons plug-in, click **Manage Jenkins** in the left menu of the dashboard, then click **Manage Plugins** and open the **Advanced** tab. In the **Upload Plugin** section, click **Choose File…** and navigate to the location where the file is stored. Select the *arcad-commons.hpi* file and click **Open**. Click **Upload**.

8.2 Install the ARCAD CodeChecker for Jenkins plug-in

Follow the subsequent steps to install an ARCAD plug-in on Jenkins.

Step 1   Open Jenkins in a navigator.

Step 2   To access the plug-in install page, click **Manage Jenkins** in the left menu of the dashboard, then click **Manage Plugins** and open the **Advanced** tab.

Step 3   In the **Upload Plugin** section, click **Choose File…** and navigate to the location where the installation file is stored. Select the *.hpi* file that corresponds to the product and click **Open**.

Step 4   Click **Upload**.

Step 5   To complete the installation, check **Restart Jenkins when installation is complete and no jobs are running**, and wait for Jenkins to restart.

Result   The plug-in is installed and available for use.

8.3 Uninstall the ARCAD CodeChecker for Jenkins plug-in

Follow the subsequent steps to uninstall an ARCAD plug-in from Jenkins.

Step 1   To access the plug-in uninstall page, click **Manage Jenkins** in the left menu of the home page, then click **Manage Plugins** and open the **Installed** tab.

Step 2 Click **Uninstall** for the individual plug-in, then click **Yes** to confirm.

Result The plug-in is now uninstalled.

9 Installing the ARCAD CodeChecker solution for SonarQube

The ARCAD CodeChecker solution for SonarQube integrates the results of code quality campaign in SonarQube, the open-source platform for continuous inspection of code quality. You can review issues raised in a campaign with the functionalities offered by the Sonar interface (code review, statistics, etc.). Like in the CodeChecker Studio, rule documentation is available for each issue in Sonar.

The solution is composed of:

- The ARCAD CodeChecker plug-in for SonarQube, to be installed on the SonarQube server. The plug-in is a SonarQube add-on that allows you to manage your source code quality with SonarQube.
- The Sonar Scanner, supplied by Sonar and fully managed on the CodeChecker Server side. The scanner is a Sonar component that ensures the communication of the CodeChecker Server with SonarQube.

> **Reference**
> For more information about the ARCAD CodeChecker solution for SonarQube, refer to the *ARCAD CodeChecker User Guide*.

9.1 Prerequisites

- ARCAD CodeChecker version 22.0 or above.
- The latest version of SonarQube must be installed, preferably the LTS distribution.

> **Reference**
> To get the latest version of SonarQube, go to the [SonarQube download page](#).
>
> Refer to the [prerequisites](#) for SonarQube and the [installation](#) procedure.

9.2 Installing the plug-in

The installation materials is composed of a Java archive for the ARCAD CodeChecker plug-in for SonarQube.

Before installing the plug-in, make sure that the SonarQube server is stopped.

Step 1 To install the plug-in in SonarQube, copy the *sonar-codechecker-plugin-24.0.jar* file to the **extensions/plugins** folder located in the SonarQube installation directory.

Step 2 Restart the servers. The CodeChecker Server must be started before starting the SonarQube Server.

Result The ARCAD CodeChecker plug-in for SonarQube is installed and available for use.

To uninstall the plug-ins, remove the *.jar* file from the **sonarqube-x.x.x/extensions/plugins** folder located in the SonarQube installation directory, then restart SonarQube.

> **Reference**
>
> For more information about installing plug-ins for SonarQube, refer to the [SonarQube documentation](#).

9.3 Installing the Sonar Scanner

… automatically

Prerequisites

This installation makes it possible to install the Sonar Scanner directly from ARCAD CodeChecker.

This installation being fully automated, the CodeChecker Server must be able to call the SonarQube Scanner [update site](#) through a HTTP request first.

> **Note**
>
> The [Sonar Scanner](#) website contains all the available versions.

Once the prerequisites are set, follow the subsequent steps to install the SonarQube Scanner:

Step 1 Right-click on the ARCAD CodeChecker Server in the navigation bar of the CodeChecker Studio.

Step 2 Click on 🔧 **Preferences** to open the **Preferences** menu.

Step 3 Open the ⚙ **Sonar Integration** settings page.

Step 4 Click **Update** to install the Sonar Scanner.

Result The most recent version of the Sonar Scanner is now installed in ARCAD CodeChecker. A dialog opens to confirm the installation is successful and the current version number is displayed.

To update the Sonar Scanner when a new version is released, click the **Update** button in the ⚙ **Sonar integration preferences** settings page.

If the latest version is already installed, a warning dialog opens to let you know that the Sonar Scanner cannot be updated, as it is already installed in its latest version.

… manually

If Sonar Scanner cannot be installed automatically through ARCAD CodeChecker, it is possible to install it manually.

To do so:

Step 1 Go to the [Sonar Scanner](#) website.

Step 2 Download the zip distribution named **Any (requires a pre-installed JVM)**.

Step 3 Move the zip file to the **ARCAD Solutions\ARCAD-CodeChecker Server\sonarscanner** directory.

Step 4 Restart the CodeChecker Server from the Windows Services.

Result   The most recent version of the Sonar Scanner is installed in ARCAD CodeChecker. Open the ⤦
Sonar integration preferences menu to make sure the latest version is installed.

> ⓘ **Note**
>
> The manual installation replaces any Sonar Scanner version
> installed, even if the installed version is more recent.

Uninstalling the SonarQube Scanner

To uninstall the Sonar Scanner from ARCAD CodeChecker, clear the **ARCAD Solutions\ARCAD-CodeChecker Server\sonarscanner** directory.