



# Migration Toolkit for Runtimes 1.2

## IntelliJ IDEA Plugin Guide

Identify and resolve migration issues by analyzing your applications with the Migration Toolkit for Runtimes plugin for IntelliJ IDEA.



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## Abstract

This guide describes how to use the Migration Toolkit for Runtimes plugin for IntelliJ IDEA to simplify the migration of Java applications.

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## MAKING OPEN SOURCE MORE INCLUSIVE

Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see [our CTO Chris Wright's message](#).

# CHAPTER 1. INTRODUCTION

## 1.1. ABOUT THE MTR PLUGIN FOR INTELLIJ IDEA

You can migrate and modernize applications by using the Migration Toolkit for Runtimes (MTR) plugin for IntelliJ IDEA.

The MTR plugin analyzes your projects using customizable rulesets, marks issues in the source code, provides guidance to fix the issues, and offers automatic code replacement, if possible.

The plugin supports both the Community Edition and the Ultimate version of IntelliJ IDEA.

## 1.2. ABOUT THE MIGRATION TOOLKIT FOR RUNTIMES

### What is the Migration Toolkit for Runtimes?

The Migration Toolkit for Runtimes (MTR) is an extensible and customizable rule-based tool that simplifies the migration and modernization of Java applications.

MTR examines application artifacts, including project source directories and application archives, and then produces an HTML report highlighting areas needing changes. MTR supports many migration paths, including the following examples:

- Upgrading to the latest release of Red Hat JBoss Enterprise Application Platform
- Migrating from Oracle WebLogic or IBM WebSphere Application Server to Red Hat JBoss Enterprise Application Platform
- Containerizing applications and making them cloud-ready
- Migrating from Java Spring Boot to Quarkus
- Updating from Oracle JDK to OpenJDK
- Upgrading from OpenJDK 8 to OpenJDK 11
- Upgrading from OpenJDK 11 to OpenJDK 17
- Upgrading from OpenJDK 17 to OpenJDK 21
- Migrating EAP Java applications to Azure
- Migrating Spring Boot Java applications to Azure

For more information about use cases and migration paths, see the [MTR for developers](#) web page.

### How does the Migration Toolkit for Runtimes simplify migration?

The Migration Toolkit for Runtimes looks for common resources and known trouble spots when migrating applications. It provides a high-level view of the technologies used by the application.

MTR generates a detailed report evaluating a migration or modernization path. This report can help you to estimate the effort required for large-scale projects and to reduce the work involved.

### How do I learn more?

See the [Introduction to the Migration Toolkit for Runtimes](#) to learn more about the features, supported configurations, system requirements, and available tools in the Migration Toolkit for Runtimes.



## CHAPTER 2. INSTALLING THE MTR PLUGIN FOR INTELLIJ IDEA

You can install the MTR plugin in the Ultimate and the Community Edition releases of IntelliJ IDEA.

### Prerequisites

The following are the prerequisites for the Migration Toolkit for Runtimes (MTR) installation:

- Java Development Kit (JDK) is installed. MTR supports the following JDKs:
  - OpenJDK 11
  - OpenJDK 17
  - Oracle JDK 11
  - Oracle JDK 17
  - Eclipse Temurin™ JDK 11
  - Eclipse Temurin™ JDK 17
- 8 GB RAM
- macOS installation: the value of **maxproc** must be **2048** or greater.
- The latest version of **mtr-cli** from the [MTR download page](#)

### Procedure

1. In IntelliJ IDEA, click the **Plugins** tab on the Welcome screen.
2. Enter **Migration Toolkit for Runtimes** in the Search field on the **Marketplace** tab.
3. Select the **Migration Toolkit for Runtimes (MTR) by Red Hat** plugin and click **Install**. The plugin is listed on the **Installed** tab.

## CHAPTER 3. ANALYZING YOUR PROJECTS WITH THE MTR PLUGIN

You can analyze your projects with the MTR plugin by creating a run configuration and running an analysis.

### 3.1. CREATING A RUN CONFIGURATION

You can create multiple run configurations to run against each project you import to IntelliJ IDEA.

#### Procedure

1. In the **Projects** view, click the project you want to analyze.
2. On the left side of the screen, click the **Migration Toolkit for Runtimes** tab.  
If this is your first configuration, the run configuration panel is displayed on the right.
3. If this is not your first configuration, right-click configuration in the list and select **New configuration**.  
The run configuration panel is displayed on the right.
4. Complete the following configuration fields:
  - **cli**: Enter the path to the cli executable. For example: `$HOME/mtr-cli-1.2.6.GA-redhat-00001/bin/mta-cli`.
  - **Input**: Click **Add** and enter the input file or directory.
  - **Target**: Select one or more target migration paths.



#### NOTE

The location shown in the **Output** is set by the plugin.

5. In the list of configurations, right-click the new configuration and select **Run Analysis**.  
The **Console (MTR)** terminal emulator opens, displaying information about the progress of the analysis.

When the analysis is completed, you can click either **Report** or **Results** below the name of the configuration file you ran.

- **Reports** opens the MTR report, which describes any issues you need to address before you migrate or modernize your application. For more information, see [Reviewing the reports](#) in the *CLI Guide*.
- **Results** opens a directory displaying hints (issues) per application.

# CHAPTER 4. REVIEWING AND RESOLVING MIGRATION ISSUES

You can review and resolve migration issues identified by the MTR plugin in the left pane.

## 4.1. REVIEWING ISSUES



You can use the MTR plugin icons to prioritize issues based on their severity. You can see which issues have a *Quick Fix* automatic code replacement and which do not.

The results of an analysis are displayed in a directory format, showing the *hints* and *classifications* for each application analyzed.

A *hint* is a read-only snippet of code that contains a single issue that you should or must address before you can modernize or migrate an application. Often a Quick Fix is suggested, which you can accept or ignore.

A *classification* is a file that has an issue but does not have any suggested Quick Fixes. You can edit a classification.

### Procedure

1. In the Migration Toolkit for Runtimes view, select a run configuration directory in the left pane.
2. Click **Results**.  
The modules and applications of the run configuration are displayed, with hints and classifications beneath each application.
3. Prioritize issues based on the following icons, which are displayed next to each hint:
  -  : You must fix this issue in order to migrate or modernize the application.
  -  : You might need to fix this issue in order to migrate or modernize the application
4. Optional: To learn more about a hint, right-click it and select **Show More Details**.

## 4.2. RESOLVING ISSUES

You can resolve issues by doing one of the following:


- Using a *Quick Fix* to fix a code snippet that has a hint
- Editing the code of a file that appears in a classification


### 4.2.1. Using a Quick Fix

You can use a Quick Fix automatic code replacement to save time and ensure consistency in resolving repetitive issues. Quick Fixes are available for many issues displayed in the **Hints** section of the **Results** directory.

### Procedure

1. In the left pane, click a hint that has an error indicator.


Any Quick Fixes are displayed as child folders with the Quick Fix icon (  ) on their left side.

2. Right-click a Quick Fix and select **Preview Quick Fix**.  
The current code and the suggested change are displayed in the **Preview Quick Fix** window.
3. To accept the suggested fix, click **Apply Quick Fix**.
4. Optional: Right-click the issue and select **Mark As Complete**.  
A green check (  ) is displayed by the hint, replacing the error indicator.

#### 4.2.2. Editing the code of a file

You can directly edit a file displayed in the **Classifications** section of the **Results** directory. These files do not have any Quick Fixes.

##### Procedure

1. In the left pane, click the file you want to edit.
2. Make any changes needed to the code and save the file.
3. Optional: Right-click the issue and select **Mark as Complete** or **Delete**.  
If you select **Mark as Complete**, a green check (  ) is displayed by the hint, replacing the error indicator.