Migration Toolkit for Runtimes 1.1

Web Console Guide

Use the Migration Toolkit for Runtimes web console to group your applications into projects for analysis.

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Legal Notice

Abstract

This guide describes how to use the Migration Toolkit for Runtimes web console to simplify migration or modernization of Java applications.

Table of Contents

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 WEB CONSOLE

This guide is for engineers, consultants, and others who want to use the Migration Toolkit for Runtimes (MTR) to migrate or modernize Java applications or other components. It describes how to install and use the web console to manage migration or modernization projects and analyze applications.

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 OpenJDK11 to OpenJDK 17
- 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.

1.3. ABOUT THE WEB CONSOLE

The web console for the Migration Toolkit for Runtimes allows a team of users to assess and prioritize migration and modernization efforts for a large number of applications. It allows you to group applications into projects for analysis and provides numerous reports that highlight the results.

CHAPTER 2. INSTALLING THE WEB CONSOLE

You can install the web console on Linux, Windows, macOS, or Red Hat OpenShift Container Platform.

2.1. INSTALLING THE WEB CONSOLE ON LINUX, WINDOWS, OR MACOS

You can install the web console on Linux, Windows, or macOS operating systems and access the web console in a browser.

The web console has been tested with Chrome and Firefox.

Prerequisites

- Java Development Kit (JDK) 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.

Procedure

1. Navigate to the MTR Download page and download the web console **Local install & OpenShift** file.
2. Extract the **.zip** file to a directory of your choice.

   NOTE

   If you are installing on a Windows operating system:

   1. Extract the **.zip** file to a folder named **LC_PSN** to avoid a **Path too long** error. Alternatively, extract the file with 7-Zip to a folder of any name you choose.
   2. If a **Confirm file replace** window is displayed during extraction, click **Yes to all**.

   When you encounter **<MTR_HOME>** in this guide, replace it with the actual path to your MTR installation.
3. By default, no authentication is required. If you wish to enable authentication, do this before starting the web console.

4. Start the web console:

   - Linux or macOS operating system:

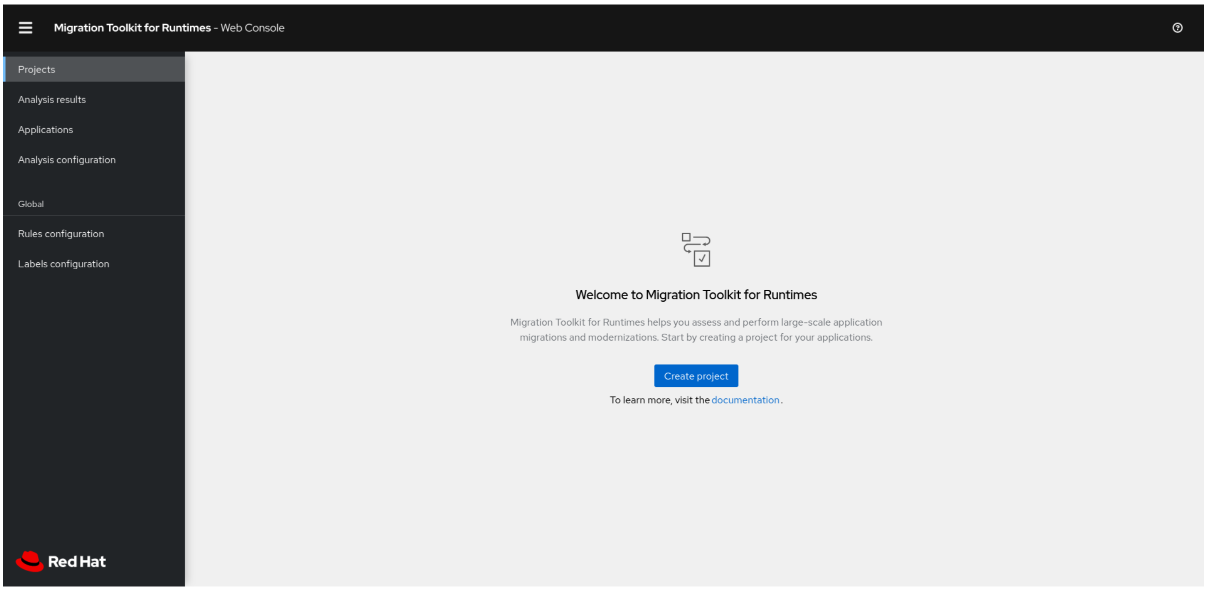
     ```
     $ <MTR_HOME>/run_windup.sh
     ```

   - Windows operating system:

     ```
     C:\<MTR_HOME>\run_windup.bat
     ```

5. Open a browser and navigate to **http://localhost:8080/windup-ui**.
   If authentication is not configured, the Projects screen is displayed in your browser.

Figure 2.1. MTR Projects screen



Welcome to Migration Toolkit for Runtimes

Migration Toolkit for Runtimes helps you assess and perform large-scale application migrations and modernizations. Start by creating a project for your applications.

To learn more, visit the documentation.

2.2. INSTALLING THE WEB CONSOLE ON OPENSHIFT CONTAINER PLATFORM 4.11 AND LATER

You can install the web console on OpenShift Container Platform 4.11 and later versions with the Migration Toolkit for Runtimes Operator.

Prerequisites

- 6 vCPUs, 8 GB RAM, and 40 GB persistent storage.
- One or more projects in which you can install the web console.

  IMPORTANT

  Do not install the web console in a default project.

- **cluster-admin** privileges to install the Migration Toolkit for Runtimes Operator.
- **project-admin-user** privileges to install the web console application in a project.

Configuring Red Hat Single Sign-on (SSO)

You must decide at installation time whether the web console requires authentication. If it does, you must first install and configure Red Hat SSO and input some RH SSO settings when instantiating the MTR Operator.

NOTE

Authentication can not be added or removed after installation.

1. Open the Red Hat SSO administration console.
2. Add a realm named **windup**.
3. In the realm, create a client named **windup-web**.
4. Check that **Access Type** is set to **public**. Set **Valid Redirect URIs** and **Web Origins** to *****. Click *Save*.
   Note that after the MTR operator has been instantiated the **Valid Redirect URIs** and **Web Origins** fields have to be set to the secure-mtr-web-console route.
5. Create a role named **user**.
6. Create a user with any name.
7. Set the credentials of the user, disable **Temporary**, and assign the role "user" to the user.

Installing the MTR Operator

1. Log in to the OpenShift web console as a user with **cluster-admin** privileges.
2. Click **Operators → OperatorHub**.
3. Use the **Search by keyword** field to locate the **Migration Toolkit for Runtimes** Operator.
4. Click **Install**.
5. Select a project from the **Installed Namespace** list and click **Install**.
6. Click **Operators → Installed Operators** to verify that the Operator is installed.

Installing the web console application

1. Log in to the OpenShift web console as a user with **project-admin-user** privileges.
2. Switch to the **Migration** perspective and click **+Add**.
3. In the **Add** view, click **Operator Backed**.
4. Click the **Migration Toolkit for Runtimes** Operator.
5. Click **Create**.
6. Review the application settings. If the web console requires authentication, input the RH SSO settings and click **Create**.
7. In the **Topology** view, click the **mtr-web-console** application and then click the **Resources** tab.

8. If authentication is required, set the RH SSO **Valid Redirect URIs** and **Web Origins** fields to the secure-mtr-web-console route.

9. Click the **secure-mtr-web-console** route to open the web console in a new browser window.

2.2.1. Troubleshooting a web console installation on OpenShift

This section describes how to troubleshoot a web console installation on OpenShift Container Platform.

2.2.1.1. Downloading logs using the OpenShift console

You can download pod logs using the OpenShift console.

Procedure

1. Open the OpenShift console and navigate to **Applications** → **Pods**.

2. Click the **mtr-web-console** pod.

3. Click **Logs**.

4. Click **Download** to download and save a log.

2.2.1.2. Downloading logs using the CLI

You can download pod logs using the CLI.

Procedure

1. Obtain the pod names:

   ```
   $ oc get pods -n <project-name>
   ```

   The output resembles the following:

   ```
   NAME                       READY     STATUS      RESTARTS   AGE
   eap-builder-1-build        0/1       Completed   0          1d
   mtr-postgresql-1-hfbdn     1/1       Running     0          1d
   mtr-sso-1-build            0/1       Completed   0          1d
   mtr-web-console-1-build    0/1       Completed   0          1d
   mtr-web-console-1-vt7s5    1/1       Running     1          1d
   sso-1-wjl2n                1/1       Running     1          1d
   ```

2. Use **oc logs** to examine the pod log:

   ```
   $ oc logs <pod>
   ```

NOTE

You can redirect the output to obtain a copy of the current log:

```
$ oc logs <pod> > ./<pod>.log
```

2.2.1.3. No route to host error

The **No route to host** error in the **mtr-web-console-executor** log indicates that the **mtr-web-console-executor** pod cannot connect to the **mtr-web-console** pod:

```
13:44:03,501 SEVERE [org.jboss.windup.web.messaging.executor.ExecutorBootstrap] (main) Could
not start messaging listener due to: Failed to connect to any server. Servers tried: [http-
remoting://192.0.2.4:8080 (java.net.NoRouteToHostException: No route to host)]:
javax.naming.CommunicationException: Failed to connect to any server. Servers tried: [http-
remoting://192.0.2.4:8080 (java.net.NoRouteToHostException: No route to host)]
```

This error occurs because the **mtr-web-console-executor** pod starts running before the **mtr-web-console** pod.

Check the **mtr-web-console-executor** log after the **mtr-web-console** pod has been running for a few minutes.

2.2.1.4. Resolving insufficient resources

The following conditions indicate insufficient resources:

- The **mtr-web-console** pod is not running and the following error is displayed on the **Events** tab of the **Pod Details** screen in the OpenShift console:

  ```
  0/9 nodes are available: 4 Insufficient cpu, 4 MatchNodeSelector, 9 Insufficient memory.
  ```

- The **mtr-web-console-deploy**, **mtr-web-console-executor-deploy**, and **mtr-web-console-postgresql-deploy** pods time out and the following error is displayed in the logs:

  ```
  error: update acceptor rejected mtr-web-console-executor-1: Pods for rc 'mtr/mtr-web-
  console-executor-1' took longer than 600 seconds to become available
  ```

Procedure

1. Install and run the cluster capacity tool to determine how many pods you can schedule.
2. Change the load on the cluster resources by performing one of the following actions:
   - Increase the limit ranges or the resource quotas of your project.
   - Reduce the requested resources of your project. The web console requires a minimum of 4 vCPUs and 8 GB RAM.
   - Run fewer jobs.
3. Redeploy the web console.

2.2.1.5. Reporting issues

MTR uses Jira as its issue tracking system. If you encounter an issue executing MTR, submit a Jira issue.

CHAPTER 3. USING THE WEB CONSOLE TO ANALYZE APPLICATIONS

You can create a project in the web console to analyze your applications.

Each project groups the applications for a specific analysis, which you can configure with custom rules and labels.

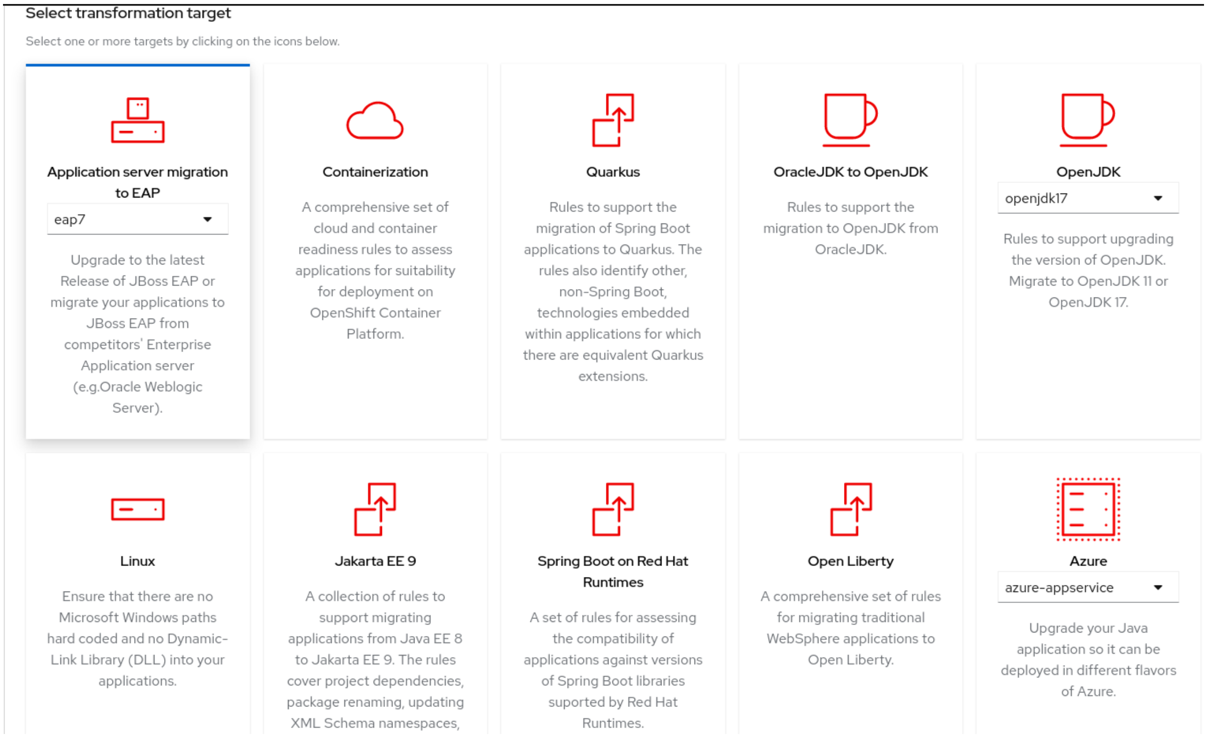
The analysis process generates reports that describe the readiness of your applications for migration or modernization.

3.1. CREATING A PROJECT

You can create a project in the web console with the **Create project** wizard.

Procedure

1. In the web console, click **Projects**.
2. Click **Create project**.
3. Enter a unique name for the project, an optional description, and click **Next**.
4. To upload applications, click the **Upload** tab, click **Browse**, select the application files you want to upload, and click **Close**.
   Uploading applications stores them directly on the MTR server.
5. To register a server path, click the **Server path** tab and enter the **Server-side path** of the application in the field.
   Registering the server path of an application ensures that MTR always uses the latest version.
6. Click **Next**.
7. Click one or more transformation targets.



Select transformation target

Select one or more targets by clicking on the icons below.

Application server migration to EAP
eap7
Upgrade to the latest Release of JBoss EAP or migrate your applications to JBoss EAP from competitors' Enterprise Application server (e.g.Oracle Weblogic Server).

Containerization
A comprehensive set of cloud and container readiness rules to assess applications for suitability for deployment on OpenShift Container Platform.

Quarkus
Rules to support the migration of Spring Boot applications to Quarkus. The rules also identify other, non-Spring Boot, technologies embedded within applications for which there are equivalent Quarkus extensions.

OracleJDK to OpenJDK
Rules to support the migration to OpenJDK from OracleJDK.

OpenJDK
openjdk17
Rules to support upgrading the version of OpenJDK. Migrate to OpenJDK 11 or OpenJDK 17.

Linux
Ensure that there are no Microsoft Windows paths hard coded and no Dynamic-Link Library (DLL) into your applications.

Jakarta EE 9
A collection of rules to support migrating applications from Java EE 8 to Jakarta EE 9. The rules cover project dependencies, package renaming, updating XML Schema namespaces,

Spring Boot on Red Hat Runtimes
A set of rules for assessing the compatibility of applications against versions of Spring Boot libraries suported by Red Hat Runtimes.

Open Liberty
A comprehensive set of rules for migrating traditional WebSphere applications to Open Liberty.

Azure
azure-appservice
Upgrade your Java application so it can be deployed in different flavors of Azure.

8. Click **Next**.

9. Select packages and click **>** to include them in the analysis.

10. Click **Next**.

11. If you want to add a custom rule, click **Add rule**.
    See the Rules Development Guide for more information.

    - To upload a ruleset file, click the **Upload** tab, click **Browse**, select one or more files, and click **Close**.
      A ruleset file must have a **.windup.xml** extension. The uploaded file is stored on the MTR server.

    - To register the server path of a ruleset file, click the **Server path** tab, enter the **Rules** path, and click **Save**.
      Registering the server path ensures that the MTR server always uses the latest version of the ruleset files.

12. Click **Next**.

13. If you want to add a custom label, click **Add label**.

    - To upload a labelset file, click the **Upload** tab, click **Browse**, select one or more files, and click **Close**.
      A labelset file must have a **.windup.label.xml** extension. The uploaded file is stored on the MTR server.

    - To register a server path, click the **Server path** tab, enter the **Labels path** of the label files in the field, and click **Save**.
      Registering the server path ensures that the MTR server always uses the latest version of the labelset files.

14. Click **Next**.

15. Review the following **Advanced options** and make any necessary changes:

    - **Target**
    - **Source**
    - **Exclude tags**: Rules with these tags are not processed.
    - **Additional classpath**: Enter a space-delimited list of additional **.jar** files or directories so that they are available for decompilation or other analysis.
    - **Application name**
    - **Mavenize group ID**
    - **Ignore path**: Enter a path for files to exclude from analysis.
    - **Export CSV**: Exports the report data as a CSV file.
    - **Export Summary**: Generates an **analysisSummary.json** export file in the output directory. The file contains analysis summary information for each application analyzed, including the number of incidents and story points by category, and all of the technology tags associated

with the analyzed applications.

- **Export reports zip**: Creates a **reports.zip** file in the output folder. The file contains the analysis output, typically, the reports. If requested, it can also contain the CSV export files.
- **Disable Tattletale**: Disables generation of a Tattletale report for each application.
- **Class Not Found analysis** Enables analysis of Java files that are not available on the class path.

  NOTE

  This option should not be used if some classes are unavailable for analysis.

- **Compatible Files report**: Generating a Compatible Files report might take a long time for large applications.
- **Exploded app**: The input directory contains the unpackaged source files of an application.
- **Keep work dirs**: Retains temporary files, for example, the graph database or extracted archive files, for debugging purposes.
- **Skip reports**: HTML reports are not generated. Must be enabled if you enabled **Export CSV**.
- **Allow network access**: Validates any XML files within the analyzed applications against their schema.

  NOTE

  This option might reduce performance.

- **Mavenize**: Creates a Maven project directory structure based on the structure and content of the application.
- **Source mode**: Indicates that the application files are raw source files, not compiled binaries. The sourceMode argument has been deprecated. There is no longer the need to specify it. MTR can intuitively process any inputs that are presented to it. In addition, project source folders can be analyzed with binary inputs within the same analysis execution.
- **Analyze known libraries**: Analyze known software artifacts embedded within your application. By default MTR only analyzes application code.

  NOTE

  This option might result in a longer execution time and a large number of migration issues being reported.

- **Transaction analysis**: [Tech Preview] Generates a Transactions report that displays the call stack, which executes operations on relational database tables. The Enable Transaction Analysis feature supports Spring Data JPA and the traditional **preparedStatement()** method for SQL statement execution. It does not support ORM frameworks, such as Hibernate.

NOTE

Transaction analysis is a Technology Preview feature only. Technology Preview features are not supported with Red Hat production service level agreements (SLAs) and might not be functionally complete. Red Hat does not recommend using them in production. These features provide early access to upcoming product features, enabling customers to test functionality and provide feedback during the development process.

- **Skip source code reports:** Adding this option skips generating a *Source code report* when generating the application analysis report. Use this advanced option when concerned about source code information appearing in the application analysis.

16. Click **Next**.

17. Review your project and click **Save** or **Save and run**.
    The project is displayed in the **Projects** screen.

3.2. RUNNING A SAVED ANALYSIS

You can run a saved analysis.

Procedure

1. In the web console, click **Analysis results**.

2. Select a project.

3. Click **Run analysis**.

A progress bar displays the progress of your analysis.

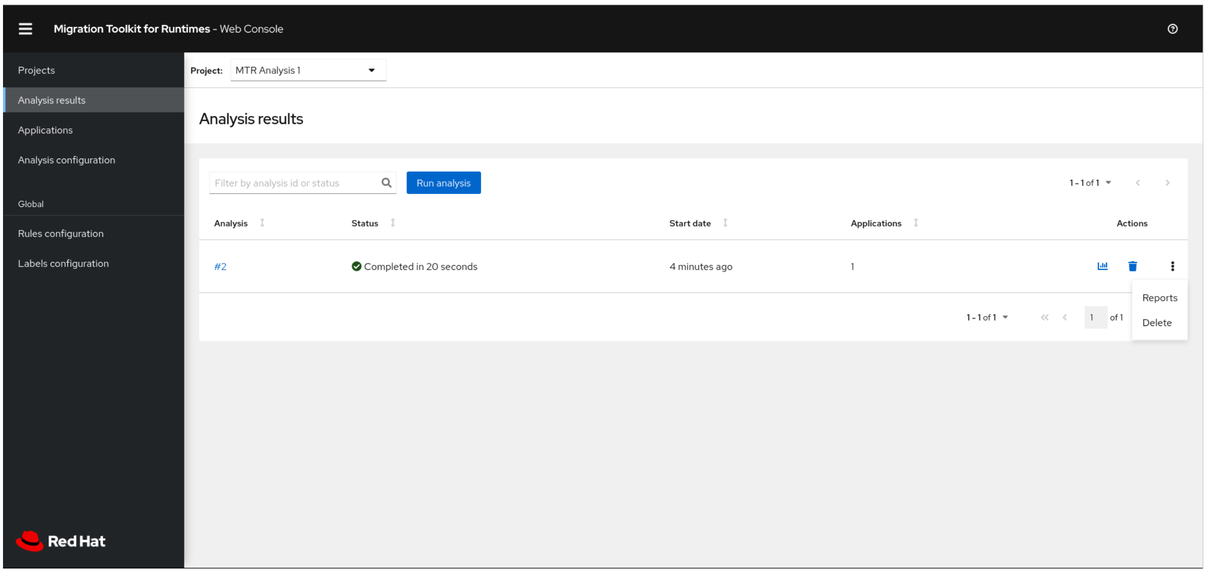
3.3. VIEWING ANALYSIS RESULTS

The results of all analyses are grouped and listed by project on the **Analysis results** screen.

Procedure

1. In the web console, click **Analysis results**.

2. Select a project from the list.



Analysis results

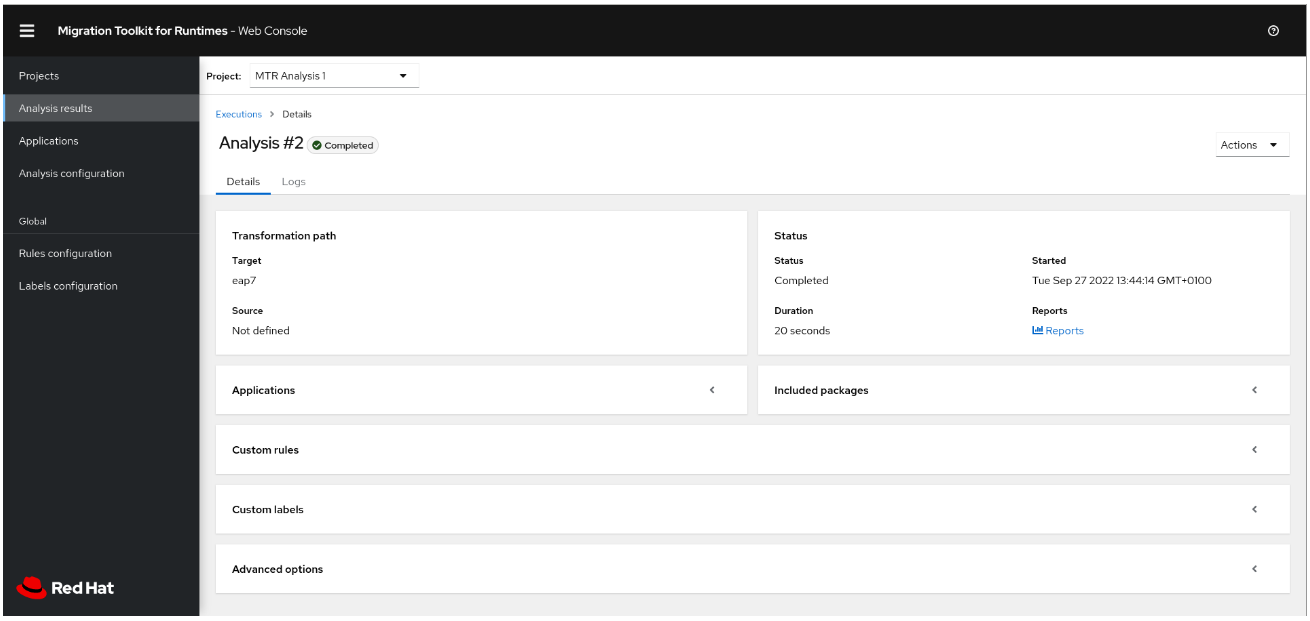
Analysis	Status	Start date	Applications	Actions
#2	Completed in 20 seconds	4 minutes ago	1	

The Analysis Reports can be accessed via the Reports bar chart icon or by the Reports action on the right-hand side of the screen.

3. Click on the number of the analysis you want to review to see details of the analysis configuration settings and the analysis execution statistics.
The results are displayed in the **Results** screen, which contains two tabs: **Details** and **Logs**.

The **Details** tab displays important details of the analysis, such as status, start date, duration, and configuration settings.

Figure 3.1. Analysis details screen



Analysis #2 Completed

Transformation path

Target
eap7

Source
Not defined

Status

Status
Completed

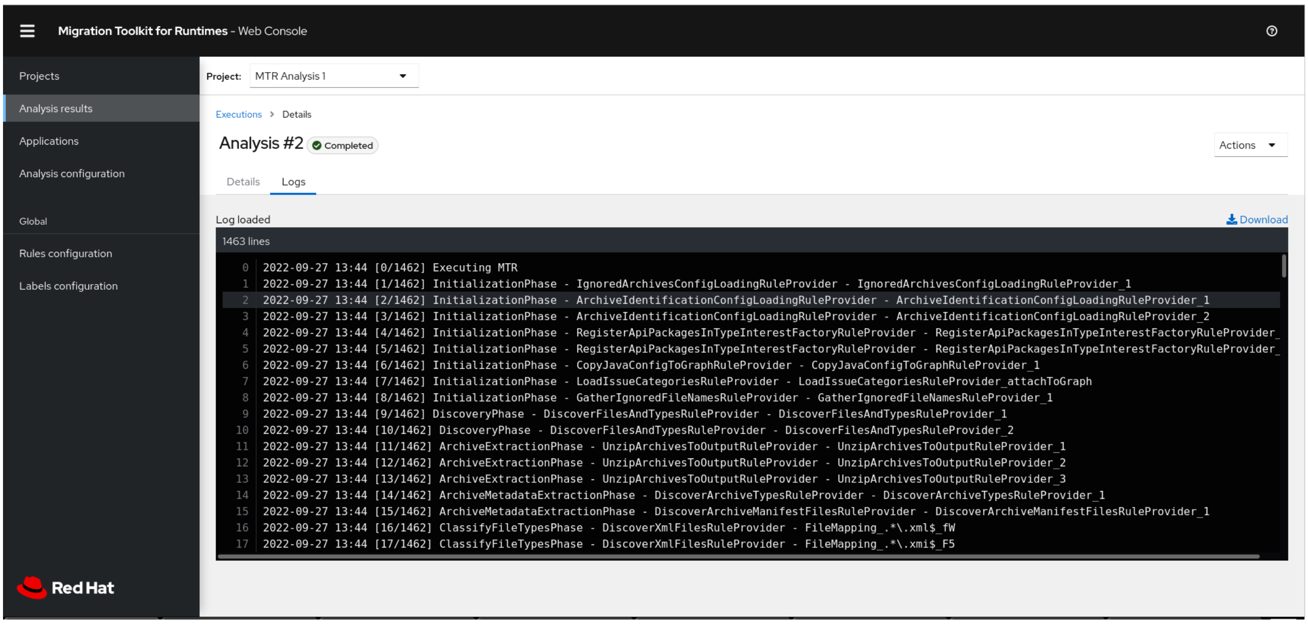
Started
Tue Sep 27 2022 13:44:14 GMT+0100

Duration
20 seconds

Reports
Reports

The **Logs** tab displays the logs generated during the analysis.

Figure 3.2. Analysis logs screen



```
2022-09-27 13:44 [0/1462] Executing MTR
2022-09-27 13:44 [1/1462] InitializationPhase - IgnoredArchivesConfigLoadingRuleProvider - IgnoredArchivesConfigLoadingRuleProvider_1
2022-09-27 13:44 [2/1462] InitializationPhase - ArchiveIdentificationConfigLoadingRuleProvider - ArchiveIdentificationConfigLoadingRuleProvider_1
2022-09-27 13:44 [3/1462] InitializationPhase - ArchiveIdentificationConfigLoadingRuleProvider - ArchiveIdentificationConfigLoadingRuleProvider_2
2022-09-27 13:44 [4/1462] InitializationPhase - RegisterApiPackagesInTypeInterestFactoryRuleProvider - RegisterApiPackagesInTypeInterestFactoryRuleProvider_
2022-09-27 13:44 [5/1462] InitializationPhase - RegisterApiPackagesInTypeInterestFactoryRuleProvider - RegisterApiPackagesInTypeInterestFactoryRuleProvider_
2022-09-27 13:44 [6/1462] InitializationPhase - CopyJavaConfigToGraphRuleProvider - CopyJavaConfigToGraphRuleProvider_1
2022-09-27 13:44 [7/1462] InitializationPhase - LoadIssueCategoriesRuleProvider - LoadIssueCategoriesRuleProvider_attachToGraph
2022-09-27 13:44 [8/1462] InitializationPhase - GatherIgnoredFileNamesRuleProvider - GatherIgnoredFileNamesRuleProvider_1
2022-09-27 13:44 [9/1462] DiscoveryPhase - DiscoverFilesAndTypesRuleProvider - DiscoverFilesAndTypesRuleProvider_1
2022-09-27 13:44 [10/1462] DiscoveryPhase - DiscoverFilesAndTypesRuleProvider - DiscoverFilesAndTypesRuleProvider_2
2022-09-27 13:44 [11/1462] ArchiveExtractionPhase - UnzipArchivesToOutputRuleProvider - UnzipArchivesToOutputRuleProvider_1
2022-09-27 13:44 [12/1462] ArchiveExtractionPhase - UnzipArchivesToOutputRuleProvider - UnzipArchivesToOutputRuleProvider_2
2022-09-27 13:44 [13/1462] ArchiveExtractionPhase - UnzipArchivesToOutputRuleProvider - UnzipArchivesToOutputRuleProvider_3
2022-09-27 13:44 [14/1462] ArchiveMetadataExtractionPhase - DiscoverArchiveTypesRuleProvider - DiscoverArchiveTypesRuleProvider_1
2022-09-27 13:44 [15/1462] ArchiveMetadataExtractionPhase - DiscoverArchiveManifestFilesRuleProvider - DiscoverArchiveManifestFilesRuleProvider_1
2022-09-27 13:44 [16/1462] ClassifyFileTypesPhase - DiscoverXmlFilesRuleProvider - FileMapping_.*\.xml$_fW
2022-09-27 13:44 [17/1462] ClassifyFileTypesPhase - DiscoverXmlFilesRuleProvider - FileMapping_.*\.xmi$_F5
```

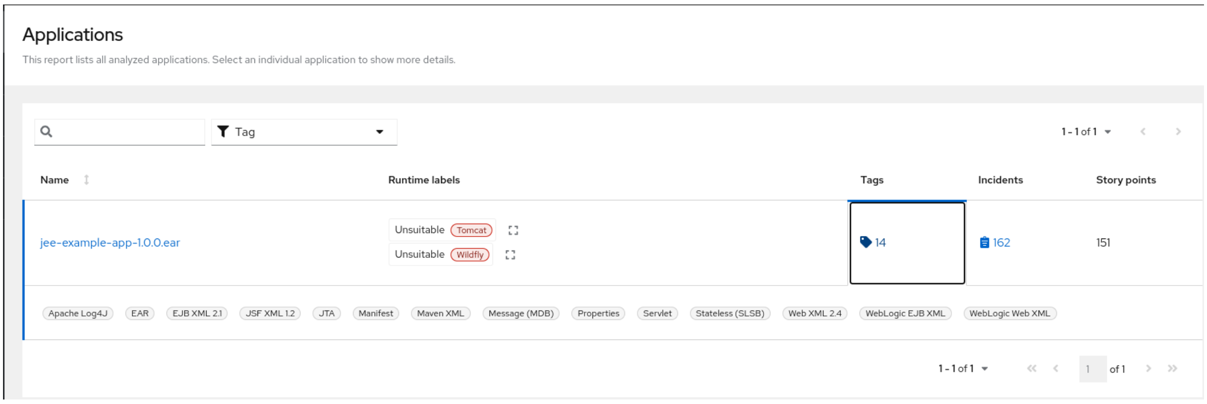
3.4. REVIEWING REPORTS

The MTR web console provides a set of detailed reports that can help you decide if you need to make any changes to your applications. You access these reports from the **Analysis results** screen.

The reports are described in detail in Reviewing the reports in the *CLI Guide*.

Procedure

1. In the web console, click **Analysis results**.
2. Click the **Reports** icon 📊 beside the analysis you want to investigate. The **All applications** screen of the reports is displayed.


Applications
This report lists all analyzed applications. Select an individual application to show more details.
Tag
1 - 1 of 1
1 - 1 of 1
1
of 1

Name	Runtime labels	Tags	Incidents	Story points
jee-example-app-1.0.0.ear	Unsuitable Tomcat Unsuitable Wildfly	14	162	151

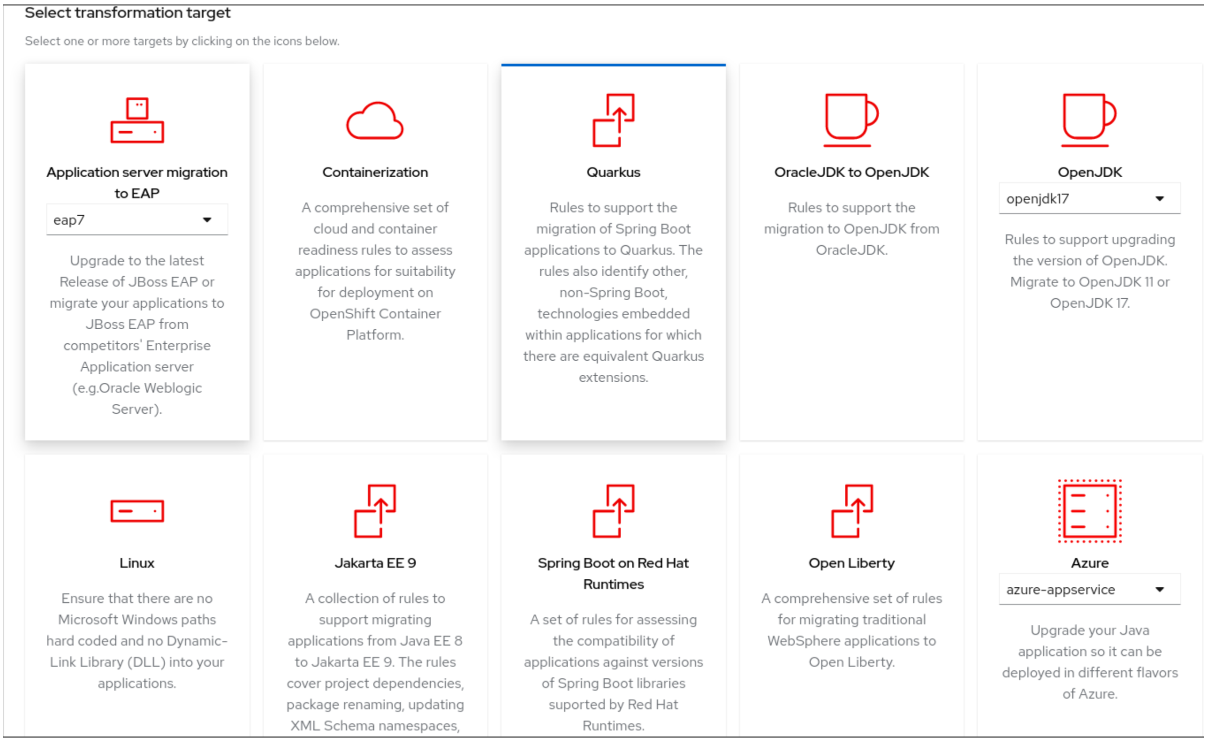
Apache Log4J · EAR · EJB XML 2.1 · JSF XML 1.2 · JTA · Manifest · Maven XML · Message (MDB) · Properties · Servlet · Stateless (SLSB) · Web XML 2.4 · WebLogic EJB XML · WebLogic Web XML

3.5. UPDATING AN ANALYSIS CONFIGURATION

You can update an analysis configuration, for example, with a different transformation target, advanced option, or a custom rule. Then you can run the updated analysis in your project.

Procedure

1. In the web console, click **Analysis configuration**.



Select transformation target

Select one or more targets by clicking on the icons below.

Application server migration to EAP

eap7 ▾

Upgrade to the latest Release of JBoss EAP or migrate your applications to JBoss EAP from competitors' Enterprise Application server (e.g.Oracle Weblogic Server).

Containerization

A comprehensive set of cloud and container readiness rules to assess applications for suitability for deployment on OpenShift Container Platform.

Quarkus

Rules to support the migration of Spring Boot applications to Quarkus. The rules also identify other, non-Spring Boot, technologies embedded within applications for which there are equivalent Quarkus extensions.

OracleJDK to OpenJDK

Rules to support the migration to OpenJDK from OracleJDK.

OpenJDK

openjdk17 ▾

Rules to support upgrading the version of OpenJDK. Migrate to OpenJDK 11 or OpenJDK 17.

Linux

Ensure that there are no Microsoft Windows paths hard coded and no Dynamic-Link Library (DLL) into your applications.

Jakarta EE 9

A collection of rules to support migrating applications from Java EE 8 to Jakarta EE 9. The rules cover project dependencies, package renaming, updating XML Schema namespaces,

Spring Boot on Red Hat Runtimes

A set of rules for assessing the compatibility of applications against versions of Spring Boot libraries suported by Red Hat Runtimes.

Open Liberty

A comprehensive set of rules for migrating traditional WebSphere applications to Open Liberty.

Azure

azure-appservice ▾

Upgrade your Java application so it can be deployed in different flavors of Azure.

2. Select a **Project**.

3. Click the appropriate tabs and make your changes.

4. Click **Save** or **Save and run**.
   The project is displayed in the **Projects** screen.

3.6. ADDING GLOBAL CUSTOM RULES

MTR includes a preconfigured set of global rules, which apply to all projects.

You can define your own custom global rules.

For information on writing custom MTR rules, see the MTR *Rules Development Guide*.

Procedure

1. In the web console, click **Rules configuration**.

2. Click **Add rules**.

3. To upload a ruleset file, click the **Upload** tab, click **Browse**, select one or more files, and click **Close**.
   A ruleset file must have a **.windup.xml** extension. The uploaded file is stored on the MTR server.

4. To register the server path of a ruleset file, click the **Server path** tab, enter the **Rules** path, and click **Save**.
   Registering the server path ensures that the MTR server always uses the latest version of the ruleset files.

   The **Custom rules** list displays the rules.

3.7. ADDING GLOBAL CUSTOM LABELS

MTR includes a preconfigured set of global labels, which apply to all projects.

You can define your own custom global labels.

Procedure

1. In the web console, click **Labels configuration**.
2. Click **Add label**.
3. To upload a labelset file, click the **Upload** tab, click **Browse**, select one or more files, and click **Close**.
   A labelset file must have a **.windup.label.xml** extension. The uploaded file is stored on the MTR server.
4. To register the server path of a labelset file, click the **Server path** tab, enter the **Labels** path, and click **Save**.
   Registering the server path ensures that the MTR server always uses the latest version of the labelset files.

   The **Custom labels** list displays the labels.

CHAPTER 4. CONFIGURING AUTHENTICATION FOR THE WEB CONSOLE ON LINUX, WINDOWS, OR MACOS

You can configure the web console to require authentication for access. To enable authentication, you have to install Red Hat Single Sign-On (SSO).

Enabling authentication

Procedure

1. Adjust the port number that the Red Hat SSO server opens to avoid conflicts with the port that the web console uses by entering the following:
   - For Linux and macOS:

     ```
     $ ./standalone.sh -Djboss.socket.binding.port-offset=<offset_value>
     ```

   - For Windows:

     ```
     > ...\bin\standalone.bat -Djboss.socket.binding.port-offset=<offset_value>
     ```

2. Open the Red Hat SSO administration console from **http://localhost:8180**:
   - Username: **admin**
   - Password: **admin**
3. Add a realm named **windup**.
4. In the realm, create a client named **windup-web**.
5. Check that **Access Type** is set to **public**.
6. Set **Valid Redirect URIs** to **http://localhost:8080/windup-ui/***.
7. Set **Web Origins** to ***** and click **Save**.
8. Create a role named **user**.
9. Create a user with any name.
10. Set the credentials of the user, disable **Temporary**, and assign the role "user" to the user.
11. Switch the web console to **Authentication required** mode by doing the following:
    a. Export the following ENV variables:
       - For Linux and macOS:

         ```
         export SSO_AUTH_SERVER_URL=http://localhost:8180/auth
         export SSO_REALM=windup
         export SSO_SSL_REQUIRED=EXTERNAL
         export SSO_CLIENT_ID=windup-web
         ```

       - For Windows:

```
set SSO_AUTH_SERVER_URL=http://localhost:8180/auth
set SSO_REALM=windup
set SSO_SSL_REQUIRED=EXTERNAL
set SSO_CLIENT_ID=windup-web
```

> **NOTE**
>
> Environment variables that are set by the **set** command in CMD are local, available to the current CMD session only. Use the Windows Control Panel to permanently set the environment variables.

b. Run the following script:

- For Linux and macOS:

```
$ <MTR_HOME>/switch_to_authentication_required.sh
```

- For Windows:

```
C:\<MTR_HOME>\switch_to_authentication_required.bat
```

12. Start the web console by entering the following:

- For Linux and macOS:

```
$ <MTR_HOME>/run_windup.sh
```

- For Windows:

```
C:\<MTR_HOME>\run_windup.bat
```

13. Open the browser at **http://localhost:8080/windup-ui**.

Disabling authentication

Procedure

1. Run the following script:

- For Linux and macOS:

```
$ <MTR_HOME>/switch_to_automatic_authentication.sh
```

- For Windows:

```
C:\<MTR_HOME>\switch_to_automatic_authentication.bat
```