

Reflection for the Web

Installation Guide

13.0

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Contents

Reflection for the Web 13.0 Installation Guide	5
1 Introduction	7
In this guide	7
2 Preparing to Install	9
Prerequisites	9
System Requirements	10
Server requirements	10
Management and Security Server	10
Administrator workstation	10
Terminal session (client)	11
3 Using the Automated Installer	15
Installing Reflection for the Web	15
A. Install Management and Security Server on the <i>same</i> machine.	16
Next steps	17
B. Use an existing installation of Management and Security Server on the <i>same</i> machine.	17
Continue with the automated installer.	17
Next steps	18
C. Use an existing installation of Management and Security Server on a <i>different</i> machine.	18
NOTE: If you are upgrading from version 12.2	18
Step 1. Install Reflection for the Web on a different machine.	19
Step 2. Install the Reflection for the Web activation file.	19
Next steps	20
4 Manual Installation	21
Prerequisites and System Requirements	21
Manual Installation Procedures	21
Step 1. Download and extract the product file.	21
Step 2. Edit and deploy the component war files.	22
Step 3. Install the Reflection for the Web activation file.	23
Step 4. Copy other activation files to the correct locations.	24
Step 5. Optional: Install add-on products.	24
Installation Variations	24
Installing with no JRE.	24
Note: Individual Components	24
5 Using the Reflection for the Web Launcher	25
Deployment Options	25
Standard: Java plug-in only	26
Hybrid: Java plug-in or Reflection for the Web Launcher, as available	27
Launcher: Reflection for the Web Launcher only	28
Browser-specific behaviors	29
Distributing the Launcher Installer	30
Use a software deployment system	30

Enable individual downloads	30
About JRE security updates	31
6 Upgrading to version 13.0	33
Upgrading from Reflection for the Web 12.1 or higher	33
Upgrading from earlier versions	34
Update the Activation Files for Components and Add-On Products	34
Use of JSP templates to customize pages or sessions	35
Upgrading custom static sessions	35
7 Uninstalling Reflection for the Web	37
Terms	39
8 Technical References	41
Reflection for the Web Launcher: a Web Start (JNLP) solution	41
Why the change?	41
Our solution: Reflection for the Web Launcher	42
Reflection for the Web Overview	42

Reflection for the Web 13.0 Installation Guide

Reflection for the Web 13.0 includes **Management and Security Server** version **12.6** to configure and manage secure web-based sessions to a variety of hosts.

Your Reflection for the Web license also entitles you to the **Security Proxy** (*except the Limited Edition*) and the **Terminal ID Manager**.

This guide introduces the **Reflection for the Web Launcher** and walks you through the steps to install and upgrade to Reflection for the Web 13.0.

[What's New](#)

[As a reminder](#)

[If you are evaluating](#)

What's New

At a glance, here's what's new in Reflection for the Web version 13.0:

- ◆ Introduced **Reflection for the Web Launcher**, a client-side application that uses Web Start (JNLP) to launch Reflection for the Web sessions.

As you phase out Oracle's JRE or the Java plug-in, choose one of three Java-based deployment options: **Standard**, **Hybrid**, or **Launcher**. For background, see [Reflection for the Web Launcher: a Web Start \(JNLP\) solution](#).

- ◆ Updated Management and Security Server (MSS) to 12.6.
- ◆ Updated Apache Tomcat to 9.0.19.

See also Reflection for the Web 13.0 [Release Notes](#).

As a reminder

Note these reminders as you begin to use version 13.0.

- ◆ **Compatibility requirements.** Be sure to upgrade components and add-on products.

The **Security Proxy** (and any MSS Add-on product) must be the same `<major>.<minor>.<update>` version as Management and Security Server (MSS).

For example, when you upgrade to Reflection for the Web 13.0, which uses MSS version 12.6, be sure to upgrade the Security Proxy to version 12.6.

- ◆ **TLS** is required for security.

- ◆ **Cumulative changes.** The changes in Reflection for the Web [12.3 SP1 Update 2](#) are included in version 13.0.
- ◆ **Reference Guide** is available as a separate document.
The [Reflection for the Web Reference Guide](#) includes the Scripting, HTML examples, and other advanced topics.

If you are evaluating

If you are running an evaluation copy, the product will be fully functional for 120 days. During that time you can install, configure, and test Reflection for the Web.

Follow the installation steps in this guide, and then walk through the evaluation scenario presented in [Evaluating Reflection for the Web](#).

Please contact [Micro Focus](#) or your authorized reseller to obtain the full-use version of the software.

Related topics

- ◆ [Introduction](#)
- ◆ [Preparing to Install](#)

1 Introduction

Reflection for the Web is a web application that requires **Host Access Management and Security Server (MSS)** to create, secure, and manage terminal sessions. Sessions are configured and managed in the MSS **Administrative Console**.

NOTE: Reflection for the Web 13.0 includes Management and Security Server (MSS) version 12.6 and is *not* compatible with earlier versions of MSS.

In this guide

Use this guide to install or upgrade to Reflection for the Web version 13.0.

Be sure to check out the **Reflection for the Web Launcher** as a means of launching your links list and Reflection for the Web sessions *without* the need for Oracle's JRE or the Java plug-in.

- ◆ [Preparing to Install](#)
- ◆ [Using the Automated Installer](#)
- ◆ [Using the Reflection for the Web Launcher](#)
- ◆ [Upgrading to version 13.0](#)
- ◆ Technical Reference: [Reflection for the Web Launcher: a Web Start \(JNLP\) solution](#)
- ◆ Technical Reference: [Reflection for the Web Overview](#)

2 Preparing to Install

Reflection for the Web 13.0 includes Management and Security Server (MSS) version 12.6.

During installation, the Reflection for the Web automated installer looks for a compatible installation of Management and Security Server on your machine. If detected, you can use the existing one.

If not, you can install Management and Security Server as part of the Reflection for the Web installation.

The automated installer presents these options:

- ◆ Install Management and Security Server on the *same machine* where Reflection for the Web will be installed.
- ◆ Use the *existing* [compatible] local installation of Management and Security Server on your system.
- ◆ Use a *remotely hosted installation* of Management and Security Server.

NOTE: For initial testing, you can install Reflection for the Web and Management and Security Server on a workstation; however, we recommend installing on a server operating system for production.

Be sure to check:

- ◆ [Prerequisites](#)
- ◆ [System Requirements](#)

Prerequisites

Before installing Reflection for the Web 13.0, be sure that:

Table 2-1 Prerequisites

-
- | | |
|--------------------------|---|
| <input type="checkbox"/> | <p>Your version of Management and Security Server is 12.6 or higher.</p> <p>The Reflection for the Web automated installer provides the option to upgrade Management and Security Server when both products are on the same machine. If Management and Security Server is installed on a different machine (remotely hosted), be sure to upgrade it to version 12.6 or higher.</p> |
| <input type="checkbox"/> | <p>Any Reflection for the Web or Management and Security Server component currently running is shut down.</p> <p>If an earlier version was installed with an automated installer, the 13.0 automated installer will close the components for you.</p> |
| <input type="checkbox"/> | <p>The necessary account permissions are available to install components on the target server.</p> <p>If you plan to use X.509 client certificates or secure LDAP access control, make sure the account used to run the Administrative Server has permission to write to the Java SDK certificate authority certificates file (<i>cacerts</i>). The default location in Windows is:</p> |

`C:\Program Files\Micro Focus\MSS\jre\lib\security`

NOTE: Optional components, including the Security Proxy Server and Terminal ID Manager, can be installed along with Reflection for the Web or added later.

System Requirements

System Requirements

Reflection for the Web components can be installed on a single server or on separate servers.

NOTE: Security updates for JREs that are used by **Reflection for the Web** and **Management and Security Server (MSS)** are made available through product updates.

Check the requirements for each component:

- ◆ [Server requirements](#)
- ◆ [Management and Security Server](#)
- ◆ [Administrator workstation](#)
- ◆ [Terminal session \(client\)](#)

Server requirements

- ◆ Server-class 64-bit operating system (Windows, Linux, or UNIX)

For production, a server-class system is required.

For initial testing or evaluation, a workstation could be used.

- ◆ A private OpenJDK (non-Oracle) JRE 1.8.0_<nnn> is installed by the automated installer, where <nnn> is the most recent security release as of this product release date.

Management and Security Server

The system requirements for Management and Security Server are specified in the [Management and Security Server Installation Guide](#). Note the CPU requirements: 3.40 GHz (4 cores) and 8GB of RAM.

Administrator workstation

To be able to configure and manage Reflection for the Web in the MSS Administrative Console, the administrator needs:

- ◆ 64-bit or 32-bit Microsoft Windows
- ◆ Internet Explorer 11 with the Java 8 plug-in or higher

Terminal session (client)

The client requirements depend on how (and whether) you are deploying the **Reflection for the Web Launcher**, which is configured in Management and Security Server.

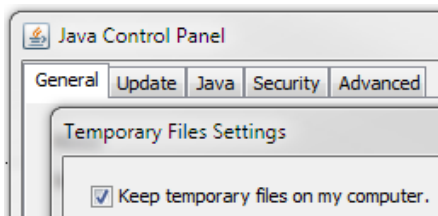
For instance, with the **Standard** option, user workstations can still use Internet Explorer 11 with the Java plug-in. However, with Reflection for the Web Launcher's **Hybrid** or **Launcher** option, *any browser* can be used.

See the [Deployment Options](#) to determine the appropriate option for your environment.

Client requirements, based on your environment:

- ◆ [Standard deployment option](#)
- ◆ [Hybrid deployment option](#)
- ◆ [Launcher deployment option](#)

NOTE: If you use another JRE that supports Java Web Start, such as one for Oracle or IBM, the Java configuration must have Java caching enabled. That is, the option to **Keep temporary files on my computer** must be enabled in the Java console.



Standard deployment option

This option supports an environment that uses Oracle's JRE or a Java browser plug-in.

- ◆ Internet Explorer v11 with the Oracle Java 1.8 plug-in or higher that can run trusted applets

Note: OpenJDK does not support the Java plug-in for browsers on Microsoft Windows.

Depending on your version of Java, note these specific requirements:

- ◆ [Java 1.8.<n>](#)
- ◆ [Java 1.9 or higher](#)
- ◆ [Unlimited Strength Jurisdiction Policy Files](#)

Java 1.8.<n>

- ◆ **Supported browsers:** Internet Explorer 11
- ◆ Unlimited Strength Jurisdiction Policy Files

NOTE: Beginning with **Java 1.8.0_162**, the Java Cryptography extension (JCE) unlimited strength policy files are installed by default. No further configuration is needed.

If you are using an earlier version, you may need to install the policy files. See [Unlimited Strength Jurisdiction Policy Files](#)

Java 1.9 or higher

Note: Oracle no longer provides a free Java (JRE) with Long Term Support for businesses, and may remove the Java browser plug-in. For highlights of Oracle's policy changes and our response, see [Reflection for the Web Launcher: a Web Start \(JNLP\) solution](#).

For Java 1.9 or higher:

- ◆ **Supported browser:** Internet Explorer 11 (64-bit)
- ◆ Unlimited Strength Jurisdiction Policy Files
As noted, the policy files are installed by default. No further action is required.
- ◆ [Internet Explorer configuration](#)
- ◆ [TLS connections](#)

Internet Explorer configuration

Java 1.9 (or higher) requires these settings.

- 1 In Internet Explorer 11 (64-bit), open **Internet Options** to the **Security** tab.
- 2 Check **Enable Protected Mode*** (requires restarting Internet Explorer) for **each** zone:
 - ◆ Internet
 - ◆ Local intranet
 - ◆ Trusted sites
 - ◆ Restricted sitesClick **Apply**.
- 3 Click the **Advanced** tab.
- 4 Scroll to the **Security** section, and check **Enable Enhanced Protected Mode***.
- 5 Click **Apply** and **OK**. Close Internet Explorer.
- 6 Restart your computer for the changes to take effect.

TLS connections

To make TLS connections with Java 1.9 or higher, apply this configuration:

1. Open the **Java 9 Control Panel** to the **Desktop Settings** tab.
One or more JREs are listed.
2. In the **Runtime Parameters** column, add this text to *each* line:

```
--illegal-access=warn
```

Desktop Settings				
		Web Settings	Security	Advanced
Search here ...				
Product	Architecture	Type	Path	Runtime Parameters
9.0.1	amd64	System	C:\Program Files\Java\jre-9.0.1\bin\javaw.e...	--illegal-access=warn
9.0.1	x86	User	C:\Program Files (x86)\Java\jre-9.0.1\bin\ja...	--illegal-access=warn

3. Click **Apply**.

Unlimited Strength Jurisdiction Policy Files

For TLS connections to your host, Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files may be required. *Unlimited strength* policy files contain no restrictions on cryptographic strengths, in contrast to the *strong* but limited cryptography policy files bundled in some JREs.

Applying the JCE Unlimited Strength Jurisdiction Policy Files

Beginning in Java 1.8.0_151, changes were made to the way the policy files are provided and enabled. Follow the steps for your version of Java.

Table 2-2 Steps to enable JCE Unlimited Strength Jurisdiction Policy Files

Java version	Required action
1.8.0_162 or higher	Unlimited strength policy files are enabled by default. No further configuration is needed.
1.8.0_151 or 1.8.0_152	The policy files are included but must be enabled. <ol style="list-style-type: none">1. Open <code>jre\lib\security\java.security</code>.2. Search for the line <code>#crypto.policy=unlimited</code> and remove the <code>#</code> character to uncomment the line.
earlier than 1.8.0_151	The policy files must be downloaded and installed. <ol style="list-style-type: none">1. Download the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files from your JRE or JDK provider, such as Oracle or IBM. Be sure to download the correct files for your version of Java: Oracle: http://www.oracle.com/technetwork/java/javase/downloads/jce8-download-2133166.html IBM: https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?source=jcesdk2. Uncompress and extract the downloaded file. The download includes a <code>Readme.txt</code> and two <code>.jar</code> files with the same names as the existing policy files.3. Locate the two existing policy files: <code>local_policy.jar</code> <code>US_export_policy.jar</code> On UNIX, look in <code><java-home>/lib/security/</code> On Windows, look in <code>C:\Program Files\Java\jre<version>\lib\security\</code>4. Replace the existing policy files with the unlimited strength policy files you extracted. <p>NOTE: The JCE Unlimited Strength Jurisdiction Policy Files must be applied <i>each time</i> you upgrade your JRE.</p>

Hybrid deployment option

The requirements in a mixed environment need to support all users' workstations.

- ◆ Users whose workstations use Oracle's Java or the Java plug-in must meet the [Standard deployment option](#) requirements.
 - ◆ Users who are transitioning away from Oracle's Java will install *Reflection for the Web Launcher* on their workstations, and must meet the [Launcher deployment option](#) requirements.
-

Launcher deployment option

This option supports Reflection for the Web Launcher exclusively.

- ◆ 64-bit or 32-bit Microsoft Windows
- ◆ Any browser, including Google Chrome, Mozilla Firefox, Internet Explorer 11, or Microsoft Edge
- ◆ **Reflection for the Web Launcher**

Reflection for the Web Launcher installs a JRE from OpenJDK. The JRE includes the most recent security update as of the Reflection for the Web release date.

- ◆ **JavaScript** is a soft requirement

When the Reflection for the Web Launcher is configured for **Launcher** deployment in MSS, browsers that support JavaScript will automatically launch the links list applet and emulator sessions. Otherwise, the user will need to click **Display Links List** to launch the links list and the sessions.

Related topics

- ◆ [Using the Automated Installer](#)
- ◆ [Using the Reflection for the Web Launcher](#)

3 Using the Automated Installer

Installing Reflection for the Web by using the automated installer is the simplest way to get up and running. You can use the automated installer on Linux and Windows. For Solaris, use the [Installing with no JRE](#) option.

- ♦ [Installing Reflection for the Web](#)
- ♦ [A. Install Management and Security Server on the *same machine*.](#)
- ♦ [B. Use an existing installation of Management and Security Server on the *same machine*.](#)
- ♦ [C. Use an existing installation of Management and Security Server on a *different machine*.](#)

In this section:

Installing Reflection for the Web

Follow these steps to install Reflection for the Web with either a new or existing installation of Management and Security Server.

- 1 From the Micro Focus download site, download and extract the `.zip` file for your edition of Reflection for the Web. The package includes all supported platforms.
- 2 Run the Reflection for the Web automated installer for your edition and platform. For example:

```
rwebenterprise-<version>-prod-wx64.exe  
rwebairlines-<version>-prod-linuxx64.sh
```

NOTE

1. To install on Solaris, use the “no JRE” installer: `unix-nojre-automated.sh`. See [Installing with no JRE](#).
2. You can run the automated installer in **console mode**, using a `-c` parameter.
This option, frequently for non-Windows systems, uses a command line for input and output rather than a graphical interface. All screens present the information on the console and allow you to enter the same information as in the automated installer.

-
- 3 Click **Next** to install Reflection for the Web.
 - 4 The Reflection for the Web automated installer detects whether Management and Security Server is installed on the same machine and provides options for installation.

Continue with the instructions for your installation scenario (A, B, or C):

- A. [Install Management and Security Server on the *same machine*](#) where Reflection for the Web will be installed
- B. [Use an existing installation of Management and Security Server on the *same machine*](#) where Reflection for the Web will be installed.
- C. [Use an existing installation of Management and Security Server on a *different machine*.](#)

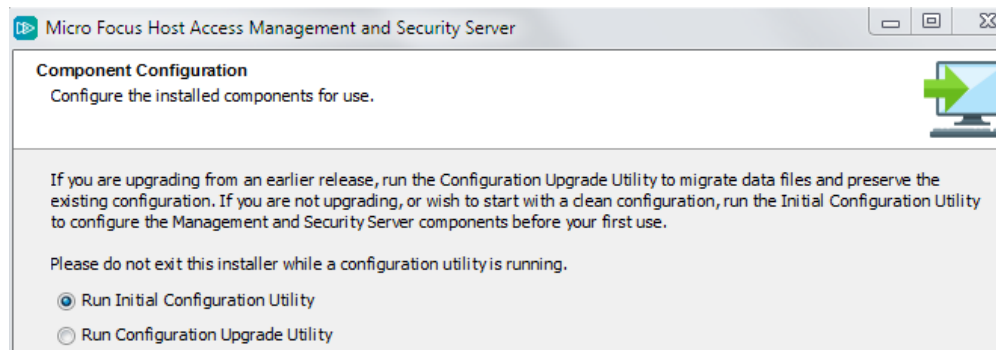
A. Install Management and Security Server on the same machine.

This scenario is for a new installation of both Reflection for the Web and Management and Security Server on the same machine. When the automated installer does not detect an installation of Management and Security Server on the machine where you are installing Reflection for the Web, this prompt displays:



- 1 Select **Install MSS**.
- 2 Click **Next** to start the installation of Management and Security Server (MSS).

When prompted, run the **Initial Configuration Utility** to configure Management and Security Server.



- 3 Proceed through the **Initial Configuration Utility** until **Done**.
- 4 When prompted, you have the option to **Start the services** that were installed.
- 5 When the MSS Installation is Complete, the installed components are listed. Click **Finish** and return to the Reflection for the Web installer.
- 6 Next, the Reflection for the Web application will be installed into Management and Security Server. The default [Windows] location is
`C:\Program Files\Micro Focus\MSS\server\web\webapps\rweb-client`
- 7 If prompted, restart the MSS server.
- 8 When the Reflection for the Web installation is Complete, click **Finish**.

Next steps

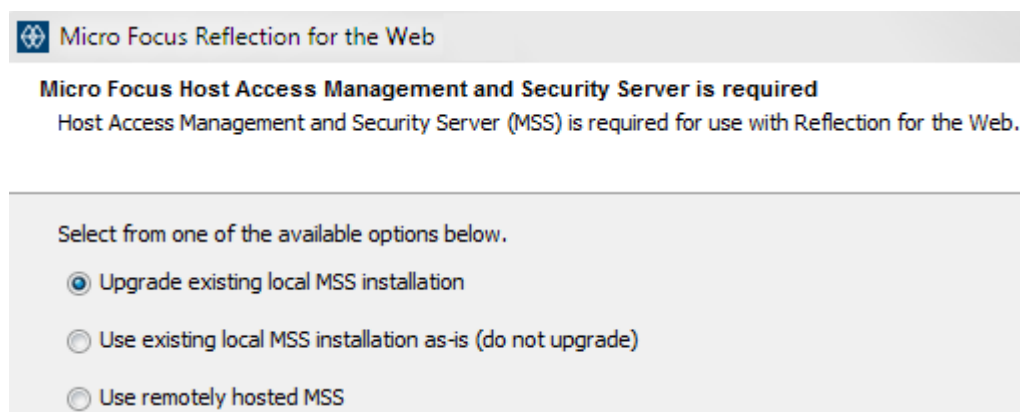
At this point, Reflection for the Web is installed. You can begin using the Administrative Console to create and configure sessions.

Refer to the [Management and Security Server Installation Guide](#) to

- Manage Sessions
- Assign Access
- Set up Metering
- Set up Security Proxy
- Set up Terminal ID Manager
- Set up Management and Security Server Add-Ons

B. Use an existing installation of Management and Security Server on the *same* machine.

When the automated installer detects an installation of Management and Security Server, you are prompted as follows:



NOTE: If the existing version of Management and Security Server is *earlier than 12.6*, select the option to **Upgrade existing local MSS installation**.

Continue with the automated installer.

- 1 Select **Use existing local MSS installation**. Click **Next**.
The upgraded version of Management and Security Server will be installed first. Follow the prompts to install Host Access Management and Security Server.
- 2 When the MSS installation is complete, click **Finish** to proceed with the Reflection for the Web installation. (The MSS dialog closes.)
- 3 Click **Next** to install Reflection for the Web. The default [Windows] location is
`C:\Program Files\Micro Focus\MSS\server\web\webapps\rweb-client`
- 4 If prompted, restart the MSS server.
- 5 When the Reflection for the Web installation is complete, click **Finish**.

Next steps

At this point, Reflection for the Web 13.0 and Management and Security Server 12.6.<n> are installed. You can begin using the [Administrative Console](#) to create and configure sessions.

Refer to the [Management and Security Server Installation Guide](#) to perform these tasks.

Manage Sessions

Assign Access

Set up Metering

Set up the Security Proxy

Set up Terminal ID Manager

Install and set up Management and Security Server Add-Ons

C. Use an existing installation of Management and Security Server on a *different* machine.

If you select the option to [Use remotely hosted MSS](#) with a new installation of Reflection for the Web, be aware of these requirements:

- ◆ The version of Management and Security Server must be **12.6** or higher. An earlier version must be upgraded.
- ◆ **CAUTION:** If you use MSS to manage multiple Micro Focus products that run on remote servers, be sure to check the MSS version requirements for *all* of those products, before upgrading MSS. MSS must be version-compatible with all of the client products being managed.
- ◆ When Reflection for the Web and Management and Security Server (MSS) are installed on separate machines, or when using `rweb.war` in a separate servlet runner, we recommend that all web applications are accessed through the machine running Reflection for the Web.

For example: `https://rwebhost/mss`

When ready, proceed with [Step 1](#).

NOTE: If you are upgrading from version 12.2

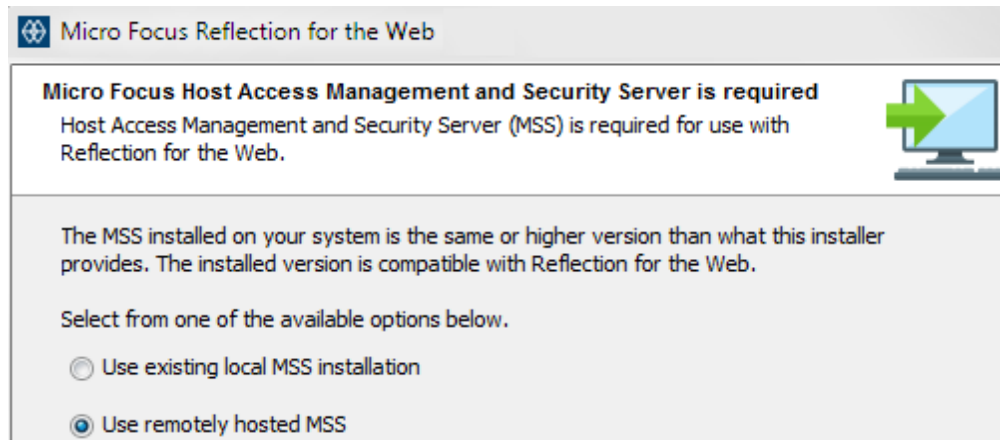
If you are upgrading from Reflection for the Web 12.2 and want to switch to a multi-server solution (where Management and Security Server and Reflection for the Web are on separate servers), proceed as follows:

- 1 On the machine where Reflection for the Web 12.2 is installed, upgrade to Management and Security Server 12.6:
 - 1a Run the MSS installer, found in the `mss` directory where you downloaded your product.
 - 1b For assistance, see the [Host Access Management and Security Server Installation Guide](#).
- 2 Continue with [Step 1](#) to install Reflection for the Web on a different machine.

Step 1. Install Reflection for the Web on a different machine.

On a different machine, install Reflection for the Web 13.0 as a stand-alone product, using the automated installer. The automated installer installs a default web application container and performs some basic configuration.

- 1 Run the automated installer for your Reflection for the Web edition.
- 2 When prompted, select **Use remotely hosted MSS**.



Click **Next**, and enter the location where Management and Security Server is installed.

- 3 The Reflection for the Web automated installer installs:
 - ◆ a JRE
 - ◆ Server-side components, including a web proxy for handling `/mss` URLs, a redirector for handling `/rweb` URLs, and the `rweb` emulator client
- 4 Secure the connection between Reflection for the Web and Management and Security Server. Enter your settings:
 - ◆ Host or DNS name, or IP address.
 - ◆ Port. The default is 443.
 - ◆ Management Servlet context.
 - ◆ Protocol. The default is HTTPS.
- 5 When the Reflection for the Web installation is complete, click **Finish**.
- 6 Continue with [Step 2](#) to install the activation file.

Step 2. Install the Reflection for the Web activation file.

The Reflection for the Web activation file is required for Management and Security Server to interact with Reflection for the Web on a different machine.

To install the activation file:

- 1 Open Management and Security Server > **Administrative Console** > **Configure Settings** > **Product Activation**.
- 2 Click **Activate New** and Browse* to the location where you downloaded the Reflection for the Web automated installer. The activation file has this format:

```
activation.rweb_<product>_edition-13.0.jaw
```

3 Click the file and it is automatically uploaded to Management and Security Server.

4 Then refresh or restart your browser.

The **Product Activation** panel lists your Reflection for the Web edition and version.

* Or, download the activation file from the site where you downloaded Reflection for the Web, and then Browse to that location.

Next steps

At this point, Reflection for the Web is installed. You can begin using the **Administrative Console** to create and configure sessions.

Refer to the [Management and Security Server Administrator Guide](#) to perform these tasks.

Manage Sessions

Assign Access

Configure Settings

4 Manual Installation

Although automated installation is recommended, you can manually install Reflection for the Web on a machine that uses a different servlet runner than the one used by MSS.

In this section:

- ♦ [Prerequisites and System Requirements](#)
- ♦ [Manual Installation Procedures](#)
- ♦ [Installation Variations](#)

Prerequisites and System Requirements

- ♦ For a manual installation, Reflection for the Web must be installed either on a different host or in a different servlet runner than Management and Security Server.
- ♦ Host Access Management and Security Server 12.6 or higher must be installed and accessible from Reflection for the Web's servlet runner.
- ♦ A JRE version 1.8 or higher must be installed.

The JRE includes the server JVM.

NOTE: If your system requires a JRE other than the default, you can use this manual installation on z/OS, Mac, HP-UX, and other Linux systems.

Manual Installation Procedures

To manually install and configure Reflection for the Web, you need to extract, edit, and deploy the component war files, and then activate the product.

- ♦ [Step 1. Download and extract the product file.](#)
- ♦ [Step 2. Edit and deploy the component war files.](#)
- ♦ [Step 3. Install the Reflection for the Web activation file.](#)
- ♦ [Step 4. Copy other activation files to the correct locations.](#)
- ♦ [Step 5. Optional: Install add-on products.](#)

Step 1. Download and extract the product file.

- 1 From the product Download site, download the file for your Reflection for the Web edition and your platform.

For example: `rwebenterprise-<version>-prod-war.zip`

- 2 Extract the `.zip` file.

- 3 In the `install-manual/components` directory, locate these `.war` files:

- ♦ `adminconsole.war`

- ◆ mss.war
 - ◆ rweb.war
 - ◆ rweb-client.war
- 4 Continue with [Step 2. Edit and deploy the component war files.](#)

Step 2. Edit and deploy the component war files.

To configure the Reflection for the Web web application, you must edit the `web.xml` file to replace the `<placeholder>` values in the `mss.war` and `rweb.war` files. Then, each war file needs to be deployed.

NOTE: When Reflection for the Web and Management and Security Server (MSS) are installed on separate machines, or when using the Reflection for the Web war in a separate servlet runner, we recommend that all web applications are accessed through the machine or application running Reflection for the Web. For example: `https://rwebhost/mss`

Edit the trust-store placeholders and deploy each of the `.war` files:

- ◆ [A. Edit and deploy adminconsole.war](#)
- ◆ [B. Edit and deploy mss.war](#)
- ◆ [C. Edit and deploy rweb.war](#)
- ◆ [D. Deploy rweb-client.war](#)

A. Edit and deploy adminconsole.war

The `adminconsole.war` file is a web proxy that is required for Reflection for the Web to interact with the MSS Administrative Console.

- 1 Extract `adminconsole.war`.
 - 2 Open `WEB-INF`, and then open `web.xml` in a text editor.
 - 3 Locate and replace the three trust-store `[placeholder]` entries:
 - ◆ `trust-store-file`
 - ◆ `trust-store-type`
 - ◆ `trust-store-password`
- Save.
- 4 Deploy `adminconsole.war` to your servlet runner.

B. Edit and deploy mss.war

The `mss.war` file is the MSS web proxy, which is required for Reflection for the Web to interact with Management and Security Server.

- 1 Extract `mss.war`.
- 2 Open `WEB-INF`, and then open `web.xml` in a text editor.
- 3 Locate the three trust-store `[placeholder]` entries. The trust-store entries are required to put a certificate into the trust store.
 - ◆ `trust-store-file`

- ◆ trust-store-type
 - ◆ trust-store-password
- 4 Replace each trust-store [placeholder] value with the value for your configuration.
 - 5 Locate the [mss-url] placeholder and replace it with the URL of the MSS server.
For example: `https://msshost/mss`
Save.
 - 6 Deploy `mss.war` to your servlet runner.

C. Edit and deploy `rweb.war`

The `rweb.war` file redirects client requests from the `/rweb` URL path, used in Reflection for the Web and MSS versions prior to 12.2, to the current `/mss` URL path.

Edit the trust-store placeholders in the `rweb.war` file:

- 1 Extract `rweb.war`.
- 2 Open `WEB-INF`, and then open `web.xml` in a text editor.
- 3 Locate and replace the three trust-store [placeholder] entries:
 - ◆ trust-store-file
 - ◆ trust-store-type
 - ◆ trust-store-password
 Save.
- 4 Deploy `rweb.war` to your servlet runner.

D. Deploy `rweb-client.war`

- 1 Copy `rweb-client.war` to this MSS webapps folder:
`<MSS install directory>\server\web\webapps`
The servlet runner will expand the `.war` file and an `rweb-client` context will be created.
- 2 Start (or restart) the MSS Server.
- 3 Continue with [Step 3. Install the Reflection for the Web activation file.](#)

Step 3. Install the Reflection for the Web activation file.

The Reflection for the Web activation file is required for Management and Security Server to interact with Reflection for the Web on a different machine.

To install the activation file:

- 1 Open Management and Security Server > **Administrative Console** > **Configure Settings - Product Activation**.
- 2 Click **Activate New** and Browse to the location where you downloaded the Reflection for the Web automated installer (or from the *site* where you downloaded Reflection for the Web).
The activation file has this format:
`activation.rweb_<product>_edition-13.0.jaw`
- 3 Click the file and it is automatically uploaded to Management and Security Server.

4 Then refresh or restart your browser.

The **Product Activation** panel lists your Reflection for the Web edition and version.

5 Continue with [Step 4. Copy other activation files to the correct locations.](#)

Step 4. Copy other activation files to the correct locations.

If you use these MSS components, copy the activation file for each into the following directories.

- ♦ **Security Proxy:** `MSS\securityproxy\lib\modules`
- ♦ **Terminal ID Manager:** `MSS\server\web\webapps\tidm\WEB-INF\lib\modules`

Continue with [Step 5. Optional: Install add-on products.](#)

Step 5. Optional: Install add-on products.

If you purchased any add-on products, such as **Automated Sign-On for Mainframe**, you need to install the activation files.

To install each activation file into the `rweb-client.war` file:

- 1 Download the activation file for the add-on product, which has this format:
`activation.<product_name>.jaw`
- 2 Copy the activation file into `\rweb-client\ex\modules`.
- 3 Restart the web application.

Installation Variations

- ♦ [Installing with no JRE](#)
- ♦ [Note: Individual Components](#)

Installing with no JRE

If you prefer to use your existing JRE, or if you are installing Reflection for the Web on Solaris, use the “nojre” installation package. The JRE must be Java 1.8 or higher.

- 1 To use any of the `-unix-nojre-` installation packages, confirm that a Java Runtime Environment appropriate for your platform is already installed.

For example, to install Reflection for the Web on a z/Linux machine, download the JRE from this location: <http://www.ibm.com/developerworks/java/jdk/linux/download.html>

- 2 Expand the package you want to use, such as

`rwebenterprise-prod-unix-nojre-manual.tar.gz`

Note: Individual Components

The Metering Server, Terminal ID Manager, and Security Proxy are part of Management and Security Server and are installed by the MSS automated installer.

Manual installation is **no longer** an option for individual components.

5 Using the Reflection for the Web Launcher

Beginning with Reflection for the Web version 13.0, **Reflection for the Web Launcher** is a private client-side application that installs an OpenJDK 8 JRE with Web Start (JNLP) to launch Reflection for the Web sessions.

OpenJDK eliminates the need for Oracle's JRE and the Java browser plug-in. And, Reflection for the Web Launcher can be used with any browser. For highlights of Oracle's policy changes, see [Reflection for the Web Launcher: a Web Start \(JNLP\) solution](#).

To ease your transition away from Oracle's Java, we provide three deployment options.

When you select the **Hybrid** or **Launcher** option, users who have Reflection for the Web Launcher installed on their workstations can launch their familiar Reflection for the Web links list and their terminal sessions using the Reflection for the Web Launcher. Neither the Oracle Java plug-in nor the Netscape PlugIn APG (NPAPI) is required.

The following sections describe the administrator options and the expected user experience.

- ♦ [Deployment Options](#)
- ♦ [Distributing the Launcher Installer](#)

Deployment Options

Three deployment options are available to match your environment's readiness to transition away from Oracle's JRE and the Java plug-in. You'll likely move from **Standard** to **Hybrid** to **Launcher**.

The Reflection for the Web Launcher deployment option is set in the **MSS Administrative Console** ([Configure Settings - General Settings](#)). Choose the one that fits your deployment phase.

No matter which deployment option is selected, each user can still see their list of Reflection for the Web sessions (links list) and can launch the ones they want to work on. The sessions are the same. The difference is *how* the links list and sessions are launched.

Be sure to note the expected user experience for the each deployment option and different browsers.

- ♦ [Standard: Java plug-in only](#)
- ♦ [Hybrid: Java plug-in or Reflection for the Web Launcher, as available](#)
- ♦ [Launcher: Reflection for the Web Launcher only](#)
- ♦ [Browser-specific behaviors](#)

Standard: Java plug-in only

The **Standard** option provides the same behavior as in previous versions, where Reflection for the Web relies on the Java browser plug-in and its legacy JNLP behavior.

Select the **Standard** option until you are ready to move away from Oracle's JRE or the Java plug-in.

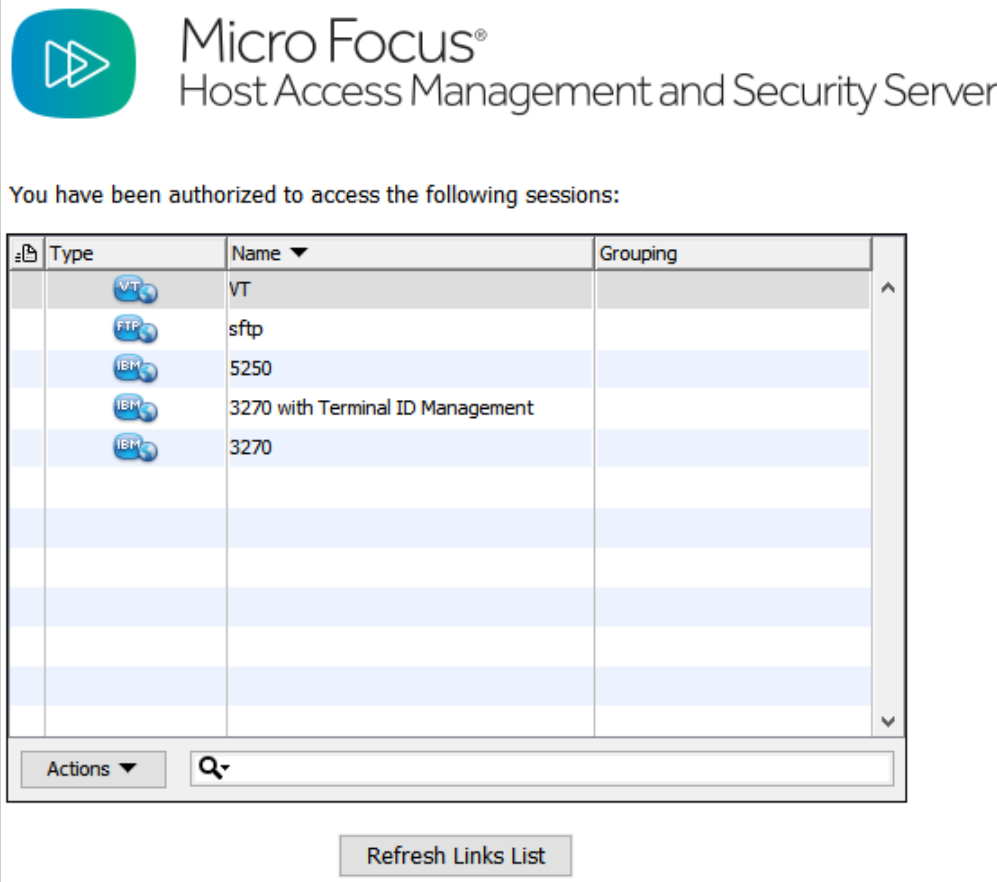
Standard User Experience

Standard behavior = no change in how sessions are launched.

The **Standard** deployment requires either Oracle's JRE or the Java plug-in to be enabled in the user's browser. This experience is familiar to the user.

- ♦ The Java plug-in launches Reflection for the Web links list in an Internet Explorer 11 browser.
- ♦ The links list and sessions may be embedded in the browser or appear in a separate frame/window.

The browser dependency keeps the browser open after the session is launched.



The screenshot displays the Micro Focus Host Access Management and Security Server interface. At the top left is the Micro Focus logo, a green circle with a white play button icon. To its right, the text reads "Micro Focus® Host Access Management and Security Server". Below this, a message states: "You have been authorized to access the following sessions:". Underneath is a table with four columns: "Type", "Name", and "Grouping". The "Type" column contains icons for VT, FTP, and IBM. The "Name" column lists "VT", "sftp", "5250", "3270 with Terminal ID Management", and "3270". Below the table is a search bar with a magnifying glass icon and the text "Q". To the left of the search bar is a dropdown menu labeled "Actions". At the bottom center of the interface is a button labeled "Refresh Links List".

Type	Name	Grouping
VT	VT	
FTP	sftp	
IBM	5250	
IBM	3270 with Terminal ID Management	
IBM	3270	

Hybrid: Java plug-in or Reflection for the Web Launcher, as available

Select the **Hybrid** option for a phased rollout. As you transition away from the Java browser plug-in and/or Oracle's JRE, you can roll out **Reflection for the Web Launcher** to subsets of users.

Hybrid User Experience

Hybrid behavior = mix of Standard and Launcher behaviors.

The **Hybrid** option supports both the Java plug-in and the Reflection for the Web Launcher. The user's setup determines how the Reflection for the Web sessions are launched, and what the user experiences.

The Hybrid "Standard" experience:

- ◆ When the user has the **Java browser plug-in** enabled (in Internet Explorer 11), sessions are launched as they were in previous versions of Reflection for the Web.
- ◆ The user sees the embedded links list, where they can click a session to launch in a separate window (legacy behavior).

The browser dependency keeps the browser open after the session is launched.

The Hybrid "Launcher" experience:

- ◆ Be sure to note the [Browser-specific behaviors](#). The user experience varies according to the browser being used.
- ◆ The user also sees the new **Display Links List** button, which requires Web Start (JNLP).

Note: The default *Display Links List* button can be renamed.

If this user has **Reflection for the Web Launcher** installed on the workstation, they could launch their links list and their terminal sessions by clicking **Display Links List**.

- ◆ If the Administrator enabled individual downloads, users will see a link to **Download and Install the Reflection for the Web Launcher**, `RWebLauncher.msi`.
- ◆ A user who has the **Reflection for the Web Launcher** installed on their workstation — and does *not* have the Java plug-in — sees only the **Display Links List** button. Sessions are launched using Web Start (JNLP) instead of the Java browser plug-in.
- ◆ When clicked, the **Display Links List** launches the familiar links list. When a session is clicked, or if a direct URL is provided, the session opens in a separate window.
- ◆ After a Reflection for the Web session is launched via the **Reflection for the Web Launcher**, the browser can be closed (no dependency).

Micro Focus®
Host Access Management and Security Server

If Reflection for the Web does not launch automatically, then click [Display Links List](#)

Or, you can Download and Install the **Reflection for the Web Launcher** [Download](#)

You have been authorized to access the following sessions:

Type	Name ▲	Grouping
IBM	3270	
IBM	3270 with Terminal ID Management	
IBM	5250	
FTP	sftp	
VT	VT	

Actions ▼

[Refresh Links List](#)

Launcher: Reflection for the Web Launcher only

Select the **Launcher** option when you are ready to completely transition off of the Java plug-in and/or Oracle's JRE.

The **Launcher** option exclusively uses the Reflection for the Web Launcher, which uses Web Start (JNLP) to launch sessions. The Launcher does not need either the Java plug-in or Oracle's JRE. In fact, the Oracle Java browser plug-in can no longer be used to launch the links list or terminal sessions when the **Launcher** deployment option is enabled.

When the **Launcher** option is selected in MSS, authenticated users may see a link to download the `RWebLauncher.msi`, the **Reflection for the Web Launcher Installer**. The link displays when the administrator checks the setting to show the link. (See [Distributing the Launcher Installer.](#))

Launcher User Experience

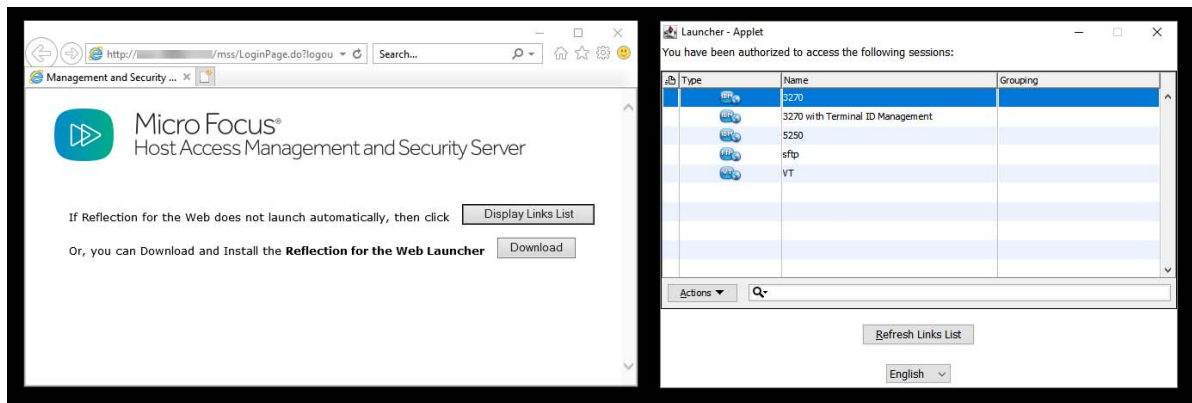
Launcher behavior = only Reflection for the Web Launcher

The **Launcher** option works independently of Oracle's JRE and the Java plug-in when the **Reflection for the Web Launcher** is installed on every workstation.

Here's what the user can expect.

- ◆ Be sure to note the [Browser-specific behaviors](#). The user experience varies according to the browser being used.
- ◆ When a user authenticates into MSS in the standard user location (`http://<server:port>/mss`), the links list appears in a framed window (launched via Web Start JNLP). The user can then launch any of their sessions.
- ◆ Alternatively, if a user clicks a session URL (a shortcut), the links list appears in a framed window (launched via Web Start JNLP), and the terminal session opens in a framed window.
- ◆ *If JavaScript is not enabled in the user's browser*, the user can click **Display Links List** to open the links list and their sessions in separate windows.

The Reflection for the Web Launcher enables the browser to be closed after the framed window appears.



Related topics

- ◆ [Browser-specific behaviors](#)
- ◆ [Distributing the Launcher Installer](#)

Browser-specific behaviors

When using Reflection for the Web Launcher with either the **Hybrid** or **Launcher** deployment option, the user experience differs depending on which browser is used. Specifically:

- ◆ **Internet Explorer 11** or **Microsoft Edge**: Automatically starts Reflection for the Web without additional user intervention.
- ◆ **Google Chrome**: Downloads the `MFjnlp` file by default. The user must open it the first time:
 1. In the status bar at the bottom of the browser, right-click (or click the arrow next to) `MFjnlp.mfjnlp`.
 2. Click **Always open files of this type**.

As a result, subsequent downloads of the MFjnlp file **will automatically start Reflection for the Web** without additional user intervention.

3. For the first instance, open (double-click) the MFjnlp file to start Reflection for the Web.
- ♦ **Mozilla Firefox:** Downloads the MFjnlp file by default. The user must open it the first time:
 1. In the dialog for **Opening MFjnlp.mfjnlp**, check **Do this automatically for files like this from now on**.

As a result, subsequent downloads of the MFjnlp file **will automatically start Reflection for the Web** without additional user intervention. (The dialog will not appear.)

2. For the first instance, open (double-click) the MFjnlp file to start Reflection for the Web.

Distributing the Launcher Installer

To use the Reflection for the Web Launcher, available with either the **Hybrid** or **Launcher** option, the **Reflection for the Web Launcher Installer** must be installed on client workstations.

On the MSS server, the Reflection for the Web Launcher is installed here:

```
MSS\server\web\webapps\rweb-client\ex\RWebLauncher.msi
```

The **Reflection for the Web Launcher Installer** is packaged as RWebLauncher.msi, which can be distributed either by using a software system, such as Microsoft Group Policies, or by enabling individual downloads.

Choose your distribution method.

- ♦ [Use a software deployment system](#)
- ♦ [Enable individual downloads](#)
- ♦ [About JRE security updates](#)

Use a software deployment system

Deploy the Reflection for the Web Launcher Installer .msi file using the system of your choice, such as Microsoft Group Policies.

Enable individual downloads

You can enable Individuals with sufficient Windows permissions to download the Reflection for the Web Installer Launcher .msi file .

To enable individual downloads

- 1 Open **Configure Settings - General Settings** in the MSS **Administrative Console**.
- 2 With either the **Hybrid** or **Launcher** option selected, check the box to “Show the link to download...”

Reflection for the Web Launcher

Deployment Options [?](#)

- Standard
- Hybrid
- Launcher

Show link to download the Windows-based installer for the Reflection for the Web Launcher [?](#)

When the box is checked, the user sees a link to manually download the Reflection for the Web Launcher Installer .msi file (RWebLauncher.msi).

This one-time option sets up the workstation with the Reflection for the Web Launcher. After the Reflection for the Web Launcher is installed, the user can ignore the download link.

About JRE security updates

JRE security updates will be provided via an updated .msi file in Reflection for the Web product updates.

When product updates are available, the Reflection for the Web automated installer updates the Reflection for the Web Launcher file on the MSS server: `MSS\server\web\webapps\rweb-client\ex\RWebLauncher.msi`.

IMPORTANT: Make sure the end-user workstations run the updated .msi file.

Related topics

- ◆ [Deployment Options](#)

6 Upgrading to version 13.0

As a best practice, we recommend that you upgrade both **Reflection for the Web** and **Management and Security Server** at the same time to be sure the versions are compatible.

The Reflection for the Web automated installer provides the option to upgrade both products seamlessly.

To prepare for your upgrade, refer to the appropriate section:

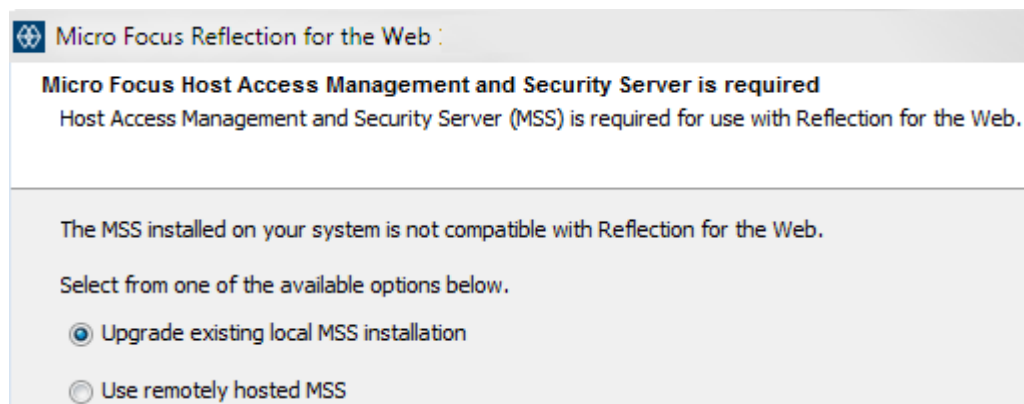
- ◆ [Upgrading from Reflection for the Web 12.1 or higher](#)
- ◆ [Upgrading from earlier versions](#)
- ◆ [Update the Activation Files for Components and Add-On Products](#)
- ◆ [Use of JSP templates to customize pages or sessions](#)
- ◆ [Upgrading custom static sessions](#)

Upgrading from Reflection for the Web 12.1 or higher

To upgrade to Reflection for the Web to 13.0 from version 12.3, 12.2, or Reflection for the Web 2014 R2 (version 12.1):

- 1 Run the Reflection for the Web 13.0 automated installer.

The installer detects the existing Management and Security Server installation and provides the option to upgrade.



- 2 When selected, the Reflection for the Web installer launches the Management and Security Server installer, which upgrades Management and Security Server to version 12.6.
- 3 When the Management and Security Server installation is Complete, you are returned to the Reflection for the Web installer to complete the installation of Reflection for the Web
- 4 Remember to [update the activation files for the components and add-on products](#).

Upgrading from earlier versions

Upgrading from Reflection for the Web 2014 R1 (version 12.0) or earlier requires a multi-step upgrade:

- 1 First, you must upgrade to Reflection for the Web 12.2, which includes Management and Security Server 12.2. For assistance, see Knowledge Base article [7022345](#).

NOTE: As of version 12.2, several Management and Security Server components were renamed:

- ◆ Management Server is called **Administrative Server**.
- ◆ ReflectionData folder is called **MSSData**.
- ◆ ID Manager is called **Terminal ID Manager**.

The default installation path on Windows is C:\Program Files\Micro Focus\MSS.

- 2 Then, proceed with [Upgrading from Reflection for the Web 12.1 or higher](#).
- 3 Remember to [update the activation files for components and add-on products](#).

For assistance, contact [Support](#).

Update the Activation Files for Components and Add-On Products

After installing Reflection for the Web, you need to update specific activation files to ensure continued operation of your installed components and add-on products. Management and Security Server checks for version compatibility and may block operation until the activation files are updated.

The Reflection for the Web components and the Management and Security Server add-on products include:

- ◆ Security Proxy
- ◆ Terminal ID Manager
- ◆ Automated Sign-On for Mainframe Add-On
- ◆ Micro Focus Advanced Authentication Add-On

To upgrade:

- 1 From your download location, download the current activation files for your components and add-on products.
- 2 Place the activation files in the same directory as the Reflection for the Web installer.
- 3 Run the Reflection for the Web installer.

The activation files will be propagated to the expected locations for both Reflection for the Web and Management and Security Server.

NOTE: When the activation files are in the installer directory, you do not need to use the Administrative Console to install the activation file, as described when installing the product.

Use of JSP templates to customize pages or sessions

If you used JSP templates to customize your login page or links list page, or to customize Reflection for the Web embedded sessions, you may need to make some modifications.

Changes to the applet tag are needed to accommodate the changes to the Reflection for the Web and Management and Security Server installation locations.

For more information about syntax changes, see the `templates.txt` file. Sample templates are available in `templates/samples`.

Other references:

[Reflection for the Web Reference Guide](#)

Knowledge Base article 7022339: [Using Templates in Reflection for the Web](#)

Knowledge Base article 7022214: [Programming with Reflection for the Web](#)

Upgrading custom static sessions

Custom static session pages are not automatically updated with Reflection for the Web 13.0.

For assistance with upgrading static sessions, contact [Support](#).

7 Uninstalling Reflection for the Web

To uninstall:

- ♦ **On Windows**

Use Control Panel > **Programs and Features** to uninstall Micro Focus Reflection for the Web.

If MSS is on the same machine, you have the option to uninstall it as well.

- ♦ **On Linux or UNIX systems**

Run the uninstaller found in the Reflection for the Web installation directory.

If Management and Security Server (MSS) is on the same machine, the Reflection for the Web uninstaller is found in this directory: `mss/server/web/webapps/rweb-client`.

You also have the option to uninstall MSS.

Terms

Java Cryptography Extension (JCE) . The Java Cryptography Extension (JCE) provides a framework and implementations for encryption, key generation and key agreement, and Message Authentication Code (MAC) algorithms.

Java Runtime Environment (JRE). The JRE is a subset of the JDK for end-users. It includes a Java Virtual Machine and a Java interpreter and provides a unified interface to Java programs, regardless of the underlying operating system.

Java Server Pages (JSP) . A Java technology that helps software developers serve dynamically generated web pages based on HTML, XML, or other document types.

Java Software Development Kit (JDK). The JDK (previously called the **Java SDK**) is the software development environment for writing Java applets or applications; it is a superset of the Java Runtime Environment and the Java Virtual Machine.

Java Virtual Machine (JVM or VM). The JVM is the part of Java that interprets Java bytecode. Because the JVM is part of the JDK, it has the same version number. When a browser supports a specific version of the JDK, this includes the JVM.

JNLP. The Java Network Launch Protocol (JNLP) enables an application to be launched on a client desktop by using resources that are hosted on a remote web server. A properly configured browser passes JNLP files to a Java Runtime Environment (JRE), which in turn downloads the application onto the user's machine and starts executing it.

OpenJDK. Open Java Development Kit is a free and open-source implementation of the Java Platform, Standard Edition (Java SE). OpenJDK produces a number of components: the virtual machine (HotSpot), the Java Class Library and the Java compiler (javac), and does *not* include the web-browser plug-in or Web Start.

Reflection for the Web Launcher. A client-side application that uses a JNLP implementation, along with Management and Security Server (MSS), to launch the Reflection for the Web links list and the emulator sessions. The Reflection for the Web Launcher does not need Oracle's JRE or the Java browser plug-in.

Reflection for the Web Launcher deployment options. The Launcher can be deployed in the mode suitable for the current environment:

- ♦ **Standard**. The legacy deployment that requires Oracle's JRE and/or the Java browser plug-in.
- ♦ **Hybrid**. The transition phase to enable subsets of users to use the Reflection for the Web Launcher while others use the legacy deployment that requires Oracle's JRE or the Java plug-in.
- ♦ **Launcher**. Uses an OpenJDK implementation to launch Reflection for the Web. Oracle's JRE and the Java browser plug-in are no longer required.

Reflection for the Web Launcher Installer. The Windows `.msi` file package that installs the Reflection for the Web Launcher.

Web Start (JNLP). Software that enables a user to download and run Java applets or applications from a web server. The Reflection for the Web Launcher installs an OpenJDK JRE with Web Start (JNLP) to launch Reflection for the Web sessions. See also [JNLP](#).

8 Technical References

Technical References supplement the product Help with overviews and detailed articles.

- ◆ [Reflection for the Web Launcher: a Web Start \(JNLP\) solution](#)
- ◆ [Reflection for the Web Overview](#)

Reflection for the Web Launcher: a Web Start (JNLP) solution

The **Reflection for the Web Launcher** is the client-side application that uses Web Start (JNLP) to launch Reflection for the Web sessions. This OpenJDK implementation *eliminates the need* for Oracle's JRE and the Java browser plug-in on end-user workstations.

For the administrator, however, the Java plug-in is required to create and manage Reflection for the Web sessions in MSS.

- ◆ [Why the change?](#)
- ◆ [Our solution: Reflection for the Web Launcher](#)

Why the change?

The **Reflection for the Web Launcher** was developed to provide a means of using JNLP without relying on Oracle's JRE or Java plug-in to launch Reflection for the Web and your emulator sessions.

Since Oracle will no longer provide a free Java (JRE) with Long Term Support for businesses, and may remove the Java browser plug-in at any time, we are providing the Reflection for the Web Launcher as a solution and cost-savings option.

Highlights of Oracle's policy changes:

- ◆ [End of Public Updates of Java SE 8](#)
- ◆ [Oracle to stop providing a free Java \(JDK\) with Long Term Support \(LTS\)](#)

End of Public Updates of Java SE 8

<https://www.oracle.com/technetwork/java/java-se-support-roadmap.html>

Java SE 8 is going through the End of Public Updates process for legacy releases. Oracle will continue to provide free public updates and auto updates of Java SE 8, until at least the end of December 2020 for Personal Users, and January 2019 for Commercial Users. Personal Users continue to get free Java SE 8 updates from Oracle at java.com (or via auto update). Commercial Users continue to get free updates to Java SE 8 from OTN for free under the BCL license.

Starting with the April 2019 scheduled quarterly critical patch update, Oracle Customers can access updates to Java SE 8 for commercial use from Oracle through My Oracle Support and via corporate auto update where applicable (Visit My.Oracle Support Note 1439822.1 - All Java SE Downloads on MOS – Requires Support Login).

Oracle to stop providing a free Java (JDK) with Long Term Support (LTS)

<https://react-etc.net/entry/oracle-to-stop-providing-a-free-java-jdk-with-long-term-support-lts>

Releases of the Long Term Support (LTS) version, known as Oracle JDK, will no longer be free. That is, companies looking to stay on a specific version for more than six months would need to get updates from a commercial operator or apply patches from free OpenJDK versions manually.

<https://www.aspera.com/en/blog/oracle-will-charge-for-java-starting-in-2019/>

While extended support will not be available for free, the two versions (Oracle JDK, OpenJDK) are not expected to branch, and older versions of OpenJDK can be kept up-to-date with patches. Oracle will not make them available for free. There would be no proprietary features.

Our solution: Reflection for the Web Launcher

The Reflection for the Web Launcher is a private client-side application that installs an OpenJDK JRE with Web Start (JNLP) to launch Reflection for the Web sessions. OpenJDK eliminates the need for Oracle's JRE and the Java browser plug-in. And, Reflection for the Web Launcher can be used with any browser.

In response to Oracle's announcement, we offer three deployment options to accommodate your organization's transition away from Oracle's Java and the Java plug-in.

As you move from **Standard** to **Hybrid** to the **Launcher** option, your system will exclusively use the **Reflection for the Web Launcher**, and will no longer require Oracle's JRE or the Java browser plug-in. The Reflection for the Web Launcher Installer is packaged as a Windows `.msi` file.

See [Using the Reflection for the Web Launcher](#) for details about the **Deployment Options** and the expected user experience.

*Note: **JRE security updates** are provided in Reflection for the Web product updates.*

Reflection for the Web Overview

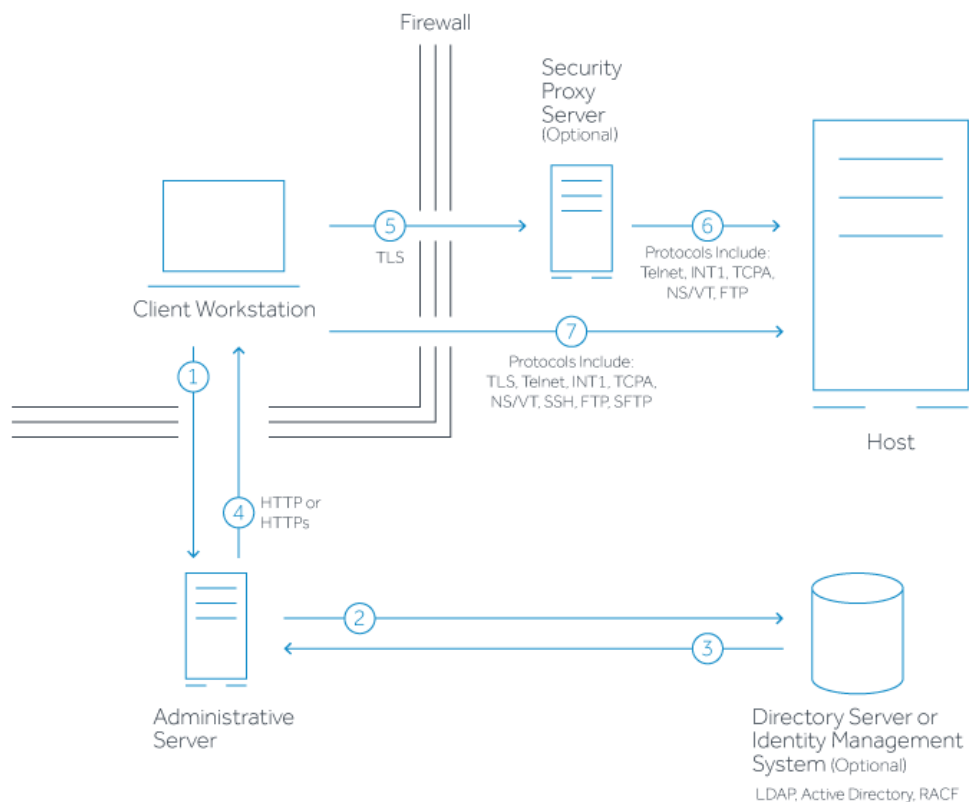
Reflection for the Web provides Java-based applets to deploy web-based terminal emulation sessions to your users. Reflection for the Web's terminal sessions are centrally managed and secured using Management and Security Server's Administrative Server.

Using Reflection for the Web and Management and Security Server, you can configure secure web-based terminal emulations sessions that connect to host applications located inside or outside the firewall.

Briefly, here's how it works:

- 1 An administrator installs Reflection for the Web on a server and either installs or uses an existing installation of Management and Security Server.
- 2 The administrator uses the Administrative Console (in Management and Security Server) to create, configure, and secure terminal emulation sessions. Optional security settings can be configured on a per-session basis.
- 3 The Reflection for the Web launcher is downloaded to the user's workstation.
- 4 A user clicks a link to start a terminal session.
- 5 The user connects to and communicates with the host system using the downloaded emulation applet.

The diagram below depicts the interaction between Reflection for the Web, Management and Security Server (the Administrative Server), and the optional Security Proxy Server to provide enhanced security.



1. Reflection for the Web user connects to the Administrative Server.
2. User authenticates to a directory server (LDAP/Active Directory) or other identity management system – optional.
3. Directory server provides user and group identity - optional.
4. The Administrative Server sends the emulation session to the authenticated client.

5. When the optional Security Proxy Server is configured for use by a session, emulation applet makes a TLS connection to Security Proxy Server and sends it a signed token.
6. When present, the Security Proxy Server validates session token and establishes a connection to the host:port it specifies.
7. When no Security Proxy Server is present or a session is not configured to use it, an authenticated user connects directly to the host.

Administrative Server

Management and Security Server's *Administrative Server* includes the **Administrative Console** and terminal emulation files, which are installed together on a web server.

After you install (or point to an existing) Management and Security Server, you can open the Administrative Console, which is a self-contained web application. Use the Administrative Console to manage and configure web-based terminal sessions. With Reflection for the Web, Java-based applets deploy terminal emulation sessions to your users.

Optional Components

Your Reflection for the Web license entitles you to these optional components in Management and Security Server:

- ♦ **Metering Server** monitors the use of terminal sessions.
- ♦ **Security Proxy Server** * acts as a proxy for terminal sessions, routing encrypted network traffic to and from user workstations.
- ♦ **Terminal ID Manager** * spools terminal IDs, tracks ID usage, and manages inactivity timeout values for specific users.

* Your Reflection for the Web license (except the Limited Edition) includes the **Security Proxy** and **Terminal ID Manager**, which are Add-On Products to Management and Security Server.

For information about installing, configuring, and using these components, see the [Management and Security Server Installation Guide](#).

Related topics

- ♦ [Preparing to Install](#)
- ♦ [Using the Automated Installer](#)