Reflection for the Web
Installation Guide

version 12.3 SP1

Legal Notice

Contents

Reflection for the Web 12.3 SP1 Installation Guide 5

1 What's New in version 12.3 SP1 7

Installation Changes . . . 7
Administrative Console . . . 7
Reference Guide . . . 8
About Upgrading . . . 8
Reflection for the Web and Management and Security Server . . . 8
Upgrading from Reflection for the Web 2014 R1 (12.0) or earlier . . . 8
If you are Evaluating . . . 9

2 Introduction 11

Reflection for the Web Overview . . . 11

3 Preparing to Install 15

Prerequisites . . . 15
System Requirements . . . 16
Server Requirements . . . 16
Terminal Session Requirements . . . 16
Management and Security Server Requirements . . . 18

4 Using the Automated Installer 19

Installing Reflection for the Web 12.3 SP1 . . . 19
A. Install Management and Security Server 12.4 SP1 on the *same* machine . . . 20
Next steps . . . 21
B. Use an existing installation of Management and Security Server 12.4 SP1 on the *same* machine . . . 21
Continue with the automated installer . . . 21
Next steps . . . 22
C. Use an existing installation of Management and Security Server 12.4 SP1 on a *different* machine . . . 22
NOTE: If you are upgrading from version 12.2 . . . 22
Step 1. Install Reflection for the Web 12.3 SP1 on a different machine . . . 23
Step 2. Install the Reflection for the Web activation file . . . 23
Next steps . . . 24

5 Manual Installation 25

Prerequisites and System Requirements . . . 25
Manual Installation Procedures . . . 25
Step 1. Download and extract the product file . . . 26
Step 2. Edit and deploy the component war files . . . 26
Step 3. Install the Reflection for the Web activation file . . . 27
Step 4. Copy other activation files to the correct locations . . . 27
Step 5. Optional: Install add-on products . . . 28
Installation Variations . . . 28
Installing with no JRE . . . 28
Installing Individual Components . . . 28

6 Upgrading to version 12.3 SP1 **29**

Upgrading from Reflection for the Web 12.1 or higher 29
Upgrading from earlier versions 30
Update the Activation Files for Components and Add-On Products 30
Use of JSP templates to customize pages or sessions 31
Upgrading Custom Static Sessions 31
To upgrade static sessions: 31
Installing the rweb-client web application context 32

7 Uninstalling version 12.3 SP1 **33**

Terms **35**

Reflection for the Web 12.3 SP1 Installation Guide

Reflection for the Web is a separate web application that requires Host Access Management and Security Server to configure and manage secure web-based sessions to a variety of hosts.

Reflection for the Web 12.3 SP1 requires Management and Security Server version 12.4 SP1 (12.4.10) or higher to provide compatible versions of the updated cryptomodules.

See What's New in version 12.3 SP1.

1 What's New in version 12.3 SP1

Reflection for the Web version 12.3 SP1 requires Host Access Management and Security Server version 12.4 SP1 (12.4.10), which introduces the **Administrative Console** interface to configure and manage sessions.

Your Reflection for the Web 12.3 SP1 license entitles you to:

- Host Access Management and Security Server
- Security Proxy (*except in the Limited Edition*)
- Terminal ID Manager

***What's New* at a glance:**

- Installation Changes
- Administrative Console
- Reference Guide
- About Upgrading
- If you are Evaluating

Installation Changes

Reflection for the Web version 12.3 SP1 is installed independently of Management and Security Server. Consider these installation options.

- **Automated installation.** The automated installer provides the option to install both Reflection for the Web and Management and Security Server.

  Or, you can use an existing installation of Management and Security Server, provided it is upgraded to 12.4 SP1 (12.4.10).
- **Manual installation.** Reflection for the Web can be installed using a `.war` file.

  NOTE: When manually upgrading Management and Security Server, you must install the `rweb-client.war` file separately. See Installing the rweb-client web application context.

For information about installing or using Management and Security Server, refer to the product documentation.

Administrative Console

Management and Security Server 12.4 SP1 (12.4.10), which is required with Reflection for the Web 12.3 SP1, introduces the **Administrative Console**, which replaces the Administrative WebStation as the management interface

If you are upgrading, you will notice these navigation changes when creating, managing, and securing sessions.

- **Manage Sessions** replaces *Session Manager*

- **Manage Packages** replaces *Package Manager*
- **Assign Access** replaces *Access Mapper*
- **Configure Settings** replaces *Settings* and *Security Setup*
- **Run Reports** replaces *Reports*

Reference Guide

The Reflection for the Web Reference Guide includes the Advanced topics that were previously in the Administrative WebStation. The guide is a separate document available from the documentation site.

The Reference Guide includes:

- API and Scripting
- Using ECL
- Applet Attributes and Parameters
- HTML Samples
- Host-initiated RCL Support

About Upgrading

The upgrade process varies depending on the version you are upgrading from. Details are in the Upgrading section.

Reflection for the Web and Management and Security Server

Host Access Management and Security Server provides the interface for managing and securing Reflection for the Web sessions. Because of updated cryptomodules, an upgrade to Reflection for the Web 12.3 SP1 requires Management and Security Server version 12.4 SP1 (12.4.10) or higher.

During installation, the Reflection for the Web automated installer looks for an installation of Management and Security Server. If Management and Security Server is not found or is not compatible, you are prompted to install or upgrade Management and Security Server.

NOTE: Management and Security Server 12.4 SP1 introduces a new user interface for the Administrative Server called the **Administrative Console**. The navigation labels were updated along with the UI changes.

Upgrading from Reflection for the Web 2014 R1 (12.0) or earlier

If you are upgrading from Reflection for the Web 2014 R1 (12.0) or an earlier version, you must first upgrade to Reflection for the Web 12.2, and then upgrade to version 12.3 SP1.

NOTE: Management and Security Server was rebranded in version 12.2, and several components and paths were renamed. For instance:

- *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`.

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 Technical Note 2818: Evaluating Reflection for the Web.

Please contact Micro Focus or your authorized reseller to obtain the full-use version of the software.

2 Introduction

Reflection for the Web version 12.3 SP1 is a web application that requires Management and Security Server to create, secure, and manage terminal sessions.

NOTE: Reflection for the Web 12.3 SP1 requires Management and Security Server version 12.4 SP1 (12.4.10) or higher because the updated cryptomodules require compatible versions.

The Reflection for the Web automated installer looks for a compatible installation of Management and Security Server. If detected, you can use the existing one. If not, then you can install Management and Security Server as part of the Reflection for the Web installation.

Reflection for the Web Overview

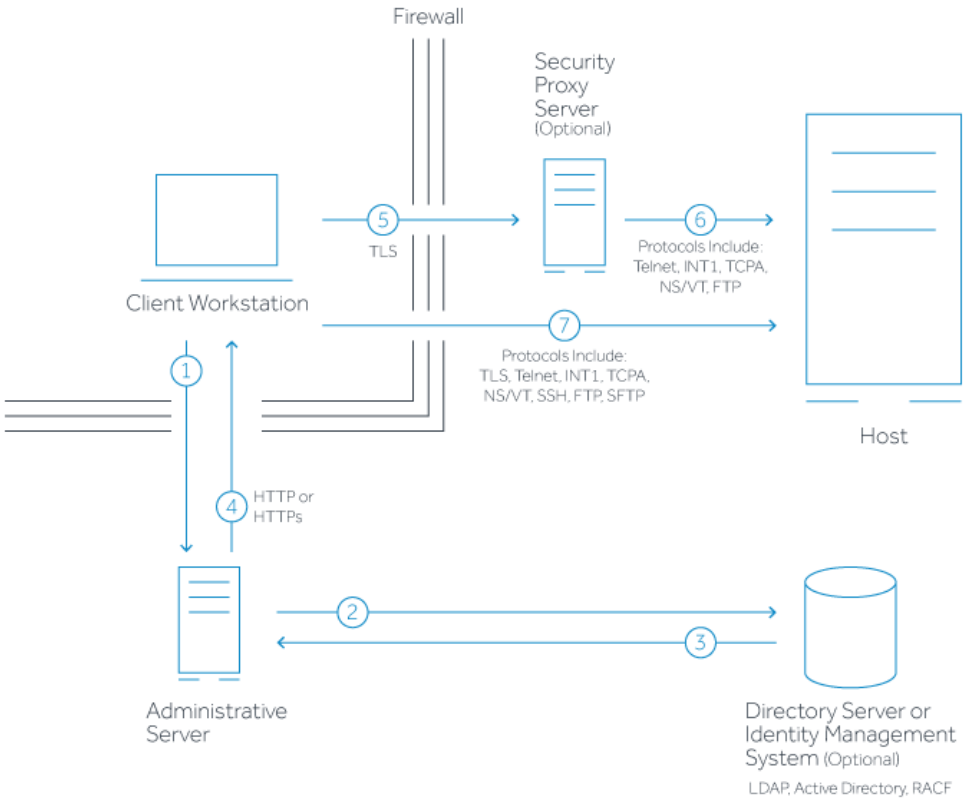
Reflection for the Web provides Java-based applets to deploy web-based terminal emulation sessions to your users. Reflection for the Web's terminal sessions are centrally managed and secured using Management and Security Server's Administrative Server.

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. (The Security Proxy is *not* included with the Reflection for the Web Limited Edition.)
- **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.

3 Preparing to Install

Reflection for the Web is a web application that requires Management and Security Server.

NOTE: Reflection for the Web **12.3 SP1** requires Management and Security Server version **12.4 SP1 (12.4.10)** or higher because the updated cryptomodules require compatible versions.

During installation, the Reflection for the Web automated installer looks for an installation of Management and Security Server on your machine, and presents several options:

- Install Management and Security Server on the same machine where Reflection for the Web will be installed.
- Use the existing 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.

In this section:

- Prerequisites
- System Requirements

Prerequisites

Before installing Reflection for the Web 12.3 SP1, be sure that:

- Your version of Management and Security Server is 12.4 SP1 (12.4.10) or higher.

  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 12.4 SP1 (12.4.10).
- Any Reflection for the Web or Management and Security Server component currently running is shut down.

  If an earlier version was installed with an automated installer, the 12.3 SP1 automated installer will close the components for you.
- The necessary account permissions to install components on the target server are available.

  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 (`cacerts`). The default location in Windows is:

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

  Note: If you are upgrading, the Windows location remains

  ```
  C:\Program Files\Attachmate\ReflectionServer\jre\lib\security
  ```

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

System Requirements

Reflection for the Web components can be installed on a single server or on separate servers. Check the requirements for each component:

- Server Requirements
- Terminal Session Requirements
- Management and Security Server Requirements

Server Requirements

- **Server-class operating system**

  For production, a server-class system is required.
  For initial testing or evaluation, a workstation could be used.
- **Server or Application Server running JRE 8 or later**

  JRE 1.8_u144 is installed by the automated installer.

Terminal Session Requirements

The client requirements depend on the version of Java being used.

- Browser requirements
- Java 9 support
- Unlimited Strength Jurisdiction Policy Files

Browser requirements

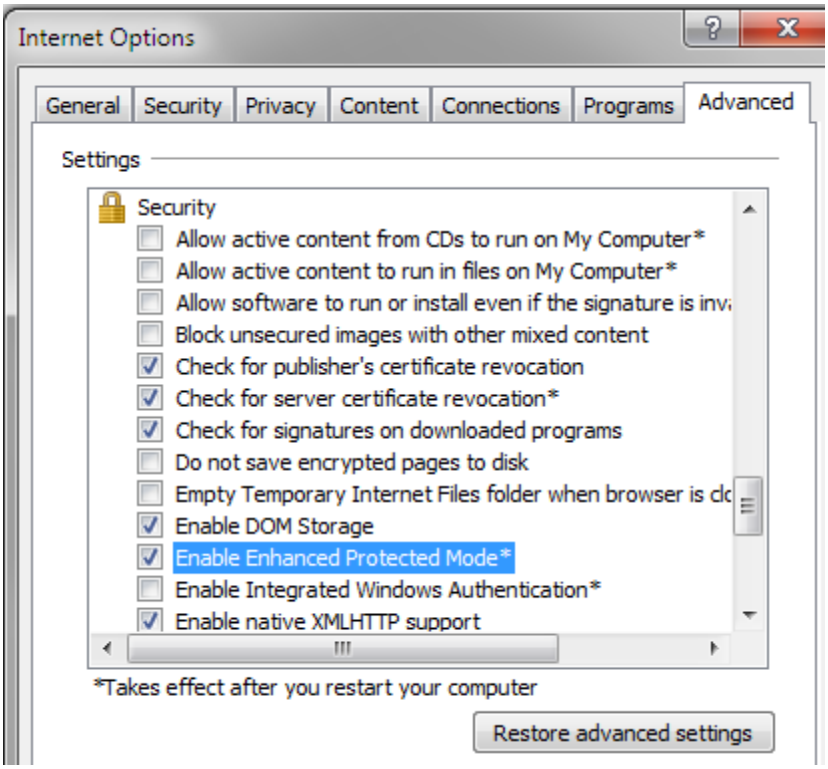
Reflection for the Web requires a web browser using JRE 8 or later that can run trusted applets.

- With Java 8, Internet Explorer 11 and Mozilla Firefox ESR 32-bit are supported.
- With Java 9, only Internet Explorer 11 64-bit is supported with Reflection for the Web.

Java 9 support

Java 9 support requires these modifications.

- Java 9 can be used with Internet Explorer 11 64-bit when this setting is configured:
  1. In **Internet Explorer 11**, open **Internet Options** to the **Security** tab.
  2. Check **Enabled Protected Mode (requires restarting Internet Explorer)**
  3. Click **the Advanced** tab.
  4. Scroll to the Security section, and check **Enable Enhanced Protected Mode***.

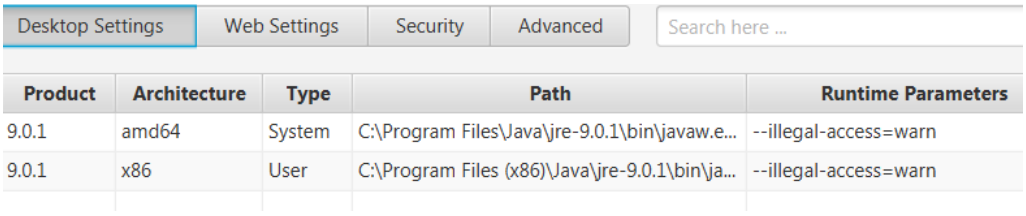


5. Click **Apply** and **Ok**. Close Internet Explorer.
6. Restart your computer for the changes to take effect.

- To make TLS connections with Java 9, 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`



  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 a JRE.

NOTE: Oracle introduced a new Security policy in **Java 1.8_u151**. To enable unlimited cryptography, refer to the Oracle release notes.

In **Java 9**, the policy files are unlimited by default. No further configuration is needed. However, to use the TLS protocol, a workaround is necessary.

To apply the JCE Unlimited Strength Jurisdiction Policy Files

For Java 8 versions *prior to update 151*, apply the JCE policy files as follows:

1. Download the Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files from Oracle or IBM. Be sure to download the correct policy file updates for your version of Java:

   Java 8: http://www.oracle.com/technetwork/java/javase/downloads/jce8-download-2133166.html

   IBM: https://www14.software.ibm.com/webapp/iwm/web/preLogin.do?source=jcesdk
2. Uncompress and extract the downloaded file. The download includes a `Readme.txt` and two `.jar` files with the same names as the existing policy files.
3. Locate the two existing policy files:

   `local_policy.jar`

   `US_export_policy.jar`

   On UNIX, look in `<java-home>/lib/security/`

   On Windows, look in `C:\Program Files\Java\jre<version>\lib\security\`
4. Replace the existing policy files with the unlimited strength policy files you extracted.

NOTE: The JCE Unlimited Strength Jurisdiction Policy Files must be applied *each time* you upgrade your JRE.

Management and Security Server Requirements

The requirements for Management and Security Server 12.4 SP1 (12.4.10) are specified in the Management and Security Server Installation Guide..

4 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, Solaris SPARC64, and Windows.

In this section:

- Installing Reflection for the Web 12.3 SP1
- A. Install Management and Security Server 12.4 SP1 on the *same machine.*
- B. Use an existing installation of Management and Security Server 12.4 SP1 on the *same machine.*
- C. Use an existing installation of Management and Security Server 12.4 SP1 on a *different machine.*

Installing Reflection for the Web 12.3 SP1

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

1 Run the automated installer for your Reflection for the Web 12.3 SP1 edition and platform.

For example:

```
rwebenterprise-12.3.5<nn>-prod-wx64.exe
rwebairlines-12.3.5<nn>-prod-linuxx64.sh
```

NOTE: 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.

---

2 Click **Next** to install Reflection for the Web.

3 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 12.3 SP1 on the *same* machine where Reflection for the Web will be installed.

B. Use an existing installation of Management and Security Server 12.3 SP1 on the *same* machine where Reflection for the Web will be installed.

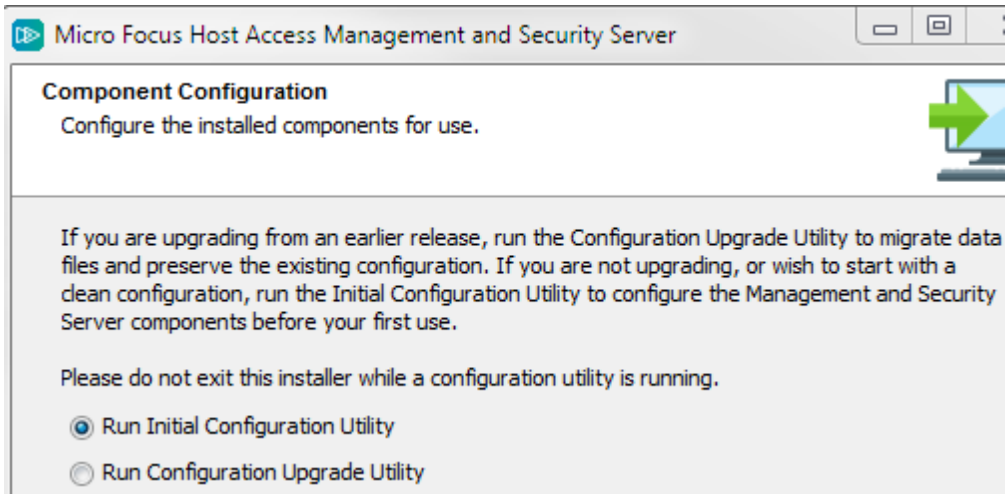
C. Use an existing installation of Management and Security Server on a *different* machine.

A. Install Management and Security Server 12.4 SP1 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 12.3 SP1 installation is Complete, click **Finish**.

Next steps

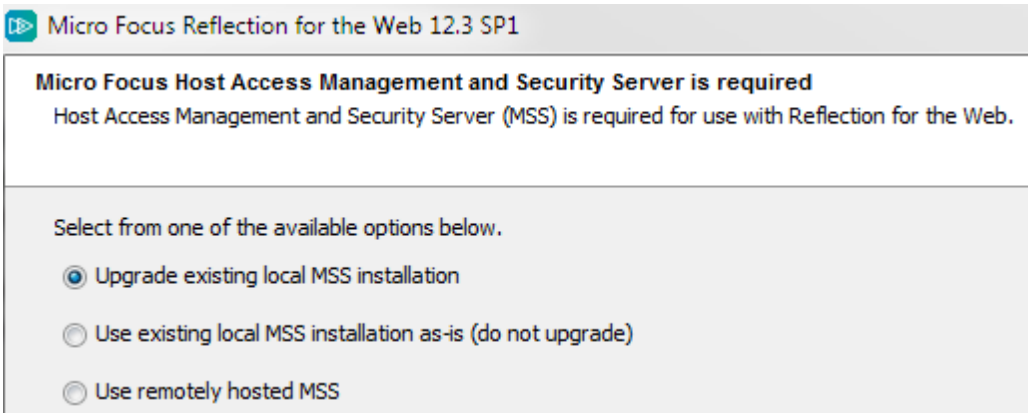
At this point, Reflection for the Web 12.3 SP1 is installed. You can begin using the Administrative Console to create and configure sessions.

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 12.4 SP1 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 12.4 SP1 (12.4.10)*, 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 12.3 SP1. 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 12.3 SP1 installation is complete, click **Finish**.

Next steps

At this point, Reflection for the Web 12.3 SP1 and Management and Security Server 1.2 SP1 are 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 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 12.4 SP1 on a *different* machine.

If you select the option to **Use remotely hosted MSS** with a new installation of Reflection for the Web 12.3 SP1, be aware of these requirements:

- The version of Management and Security Server must be **12.4 SP1** (12.4.10). 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 the 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

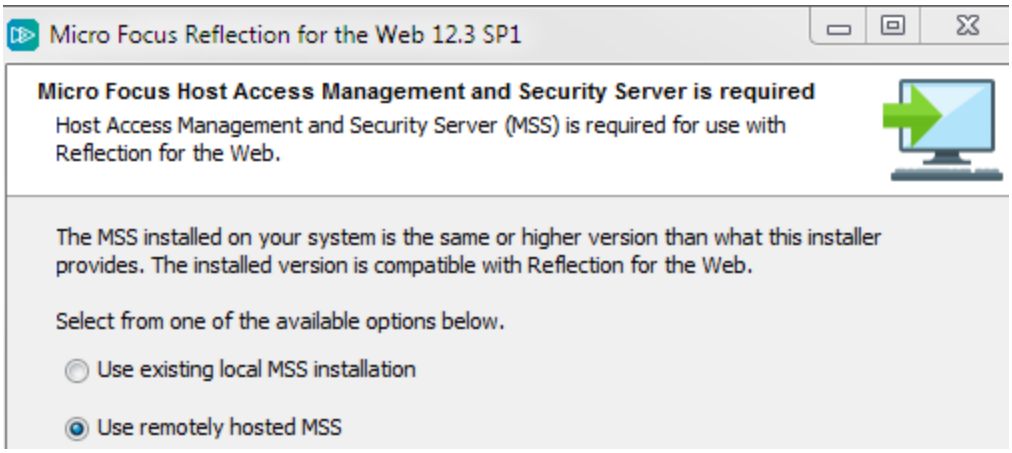
If you are upgrading from Reflection for the Web 12.2 and want to switch to a multi-server solution (where Management and Security Server and Reflection for the Web are on separate servers), proceed as follows:

1. On the machine where Reflection for the Web 12.2 is installed, upgrade to Management and Security Server 12.4 SP1:
   - **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 12.3 SP1 on a different machine.

Step 1. Install Reflection for the Web 12.3 SP1 on a different machine.

On a different machine, install Reflection for the Web 12.3 SP1 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 12.4 SP1 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-12.3.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 12.3 SP1 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

5 Manual Installation

Although automated installation is recommended, you can manually install Management and Security Server. A `war` file is available for Reflection for the Web.

Use a manual installation when any of the following is true:

- You want to use a servlet runner other than the one automatically installed with the product.
- You are installing on a platform for which an automated installer is not supported.
- You cannot run the automated installer for any other reason.

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 on either a different host or in a different servlet runner than Management and Security Server.
- Host Access Management and Security Server 12.4 SP1 (12.4.10) must be installed and accessible from Reflection for the Web's servlet runner.
- A JRE version 8 or higher must be installed.

  If you do not already have one, download the latest JRE from the Oracle web site. You should download a version of the JRE that includes the server JVM. The JRE that is provided with the JDK 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-12.3.5<nn>-prod-war.zip`
2. Extract the .zip file.
3. In the install_manual/components directory, locate three `war` files:
   - 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`

- A. Edit and deploy `mss.war`.
- B. Edit and deploy `rweb.war`.
- C. Deploy `rweb-client.war`.

A. 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`
6. Deploy `mss.war` to your servlet runner.

B. Edit and deploy `rweb.war`.

The `rweb.war` file redirects client requests from the `/rweb` URL path, used in Reflection for the Web and Management and Security Server 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`
4. Deploy `rweb.war` to your servlet runner.

C. 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. The activation file has this format:

   `activation.rweb_<product>_edition-12.3.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.

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

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

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

- **Security Proxy:** `MSS\securityproxy\lib\modules`

- **Terminal ID Manager:** `MSS\server\web\webapps\tidm\WEB-INF\lib\modules`
- **Metering:** `MSS\server\web\webapps\meter\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 its activation file.

To install the activation 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 the `rweb-client.war` file at this location: `ex\modules`
3. Restart the web application.

Installation Variations

- Installing with no JRE
- Installing Individual Components

Installing with no JRE

If you prefer to use your existing JRE, install a “nojre” package. The JRE must be Java 8 or higher.

1. To use any of these `-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`

Installing Individual Components

The following components are part of Management and Security Server. To install a component manually, see the Host Access Management and Security Server Installation Guide.

Administrative Server
Metering Server
Terminal ID Manager
Security Proxy

6 Upgrading to version 12.3 SP1

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
- Installing the rweb-client web application context

Upgrading from Reflection for the Web 12.1 or higher

To upgrade Reflection for the Web to 12.3 SP1 from version 12.3, 12.2, or Reflection for the Web 2014 R2 (version 12.1):

1. Run the Reflection for the Web 12.3 SP1 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 12.4 SP1 (12.4.10).
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 12.3 SP1.
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 Technical Note 2875.

   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 12.2.
3. Remember to update the activation files for components and add-on products.

For assistance, contact Technical 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
Technical Note 2386: Using Templates in Reflection for the Web
Technical Note 2580: Programming with Reflection for the Web

Upgrading Custom Static Sessions

When terminal sessions are created or modified using the Administrative Console > **Manage Sessions**, the protected sessions are upgraded during the upgrade procedures when using an automated installer or during startup (when the default web server is started) after a manual installation.

Because Reflection for the Web and Management and Security Server are separate products (beginning in version 12.3), the custom static session pages may need to be manually updated to load the Reflection for the Web applet from its new installation location. This update may require modifying applet attributes and parameters such as `codebase`, `archive`, and `cache_archive`.

If any of these conditions exist, follow the steps to upgrade static sessions.

- The sessions were not saved using **Manage Sessions**.
- The HTML
- your session was manually modified.
- You want to upgrade the static sessions for any reason.

NOTE: If you have keyboard map files that are not contained within a configuration file, then you must upgrade these files before you upgrade the sessions.

To upgrade static sessions:

1. Open a Command Prompt, and change directories to find the location below. For Windows, the location is:

   `[installation path]\apache-tomcat\webapps\rweb\WEB-INF\lib`

2. On the same command line, on one continuous line, enter the appropriate syntax (displayed below) to upgrade your specified configuration files:
   - Language. On the command line, include the language you want to use: German (de), English (en), or French (fr).
   - Name of relative or absolute directory or file that contains the configuration files. (You must be able to access this file or directory from the machine where you are upgrading.)

- Enter this command as one continuous line:

  ```
  java -classpath RWebServlet.jar com.wrq.util.upgrade.ConfigUpgrade -locale
  <de|en|fr> <file name|directory>
  ```

Example. To upgrade the configuration files in the session directory for use with the English version, follow these steps.

1. In the Command Prompt, change directories to arrive at this location in Windows:

   ```
   C:\Program Files\Micro Focus\MSS\server\web\webapps\rweb-client\WEB-INF\lib
   ```

2. Enter the following command on a single line:

   ```
   java -classpath RWebServlet.jar com.wrq.util.upgrade.ConfigUpgrade -locale en
   "C:\Program Files\Micro Focus\MSS\apache-tomcat\webapps\rweb\session"
   ```

Installing the rweb-client web application context

When you manually upgrade Management and Security Server to version 12.4 SP1 (12.4.10), you must install the `rweb-client.war` file to complete the upgrade.

To install `rweb-client.war`:

1. In your Reflection for the Web download location, open the `install_manual\components` directory.
2. Locate and 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.
3. Start (or restart) the MSS Server.

7 Uninstalling version 12.3 SP1

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 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.