

# Release Notes

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## Release Notes

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ForgeRock® Identity Platform serves as the basis for our simple and comprehensive Identity and Access Management solution. We help our customers deepen their relationships with their customers, and improve the productivity and connectivity of their employees and partners. For more information about ForgeRock and about the platform, see <https://www.forgerock.com>.

The ForgeRock® Common REST API works across the platform to provide common ways to access web resources and collections of resources.

## What's New

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### What's New in Java Agent 5.9.1

#### *Encoding of extended characters in not-enforced rules*

By default, Java Agent uses UTF-8 to encode extended characters in the resource paths of not-enforced rules.

The following new properties are available to change the character encoding in the resource paths and HTTP query parameters of not-enforced rules:

- [Container Character Encoding](#)
- [Container Parameter Encoding](#)

For more information, see [Not Enforced Rules](#).

### What's New in Java Agent 5.9

#### ▼ [JBoss Installer Allows Profiles in Standalone Mode](#)

In previous releases, the JBoss installer requested a profile only when the deployment mode was `domain`. From this release, the JBoss installer also requests a profile when the deployment mode is `standalone`.

For more information, see [Install JBoss Java Agent](#).

#### ▼ [Profile, Response, and Session Attributes Take Multiple Values](#)

The following properties can now take multiple values:

- [Profile Attribute Map](#)
- [Response Attribute Map](#)
- [Session Attribute Map](#)

In previous releases, these properties could take only one value.

#### ▼ [Responding to AM Unavailability During Runtime](#)

When the agent is not in autonomous mode, the following properties configure how Java Agent responds if AM becomes unavailable at runtime (for example, due to network errors):

- Strategy when AM unavailable
- Recheck availability of AM

#### ▼ Better Management of Agent Session Retirement

A problem was identified when an active agent session was retired, and Profile Attribute Fetch Mode was `NONE`. The first call made on behalf of an unauthenticated user was to retrieve session information. In these circumstances, AM returned an HTTP 200, with a reduced property set.

From this release, the agent monitors session notifications for destruction of its own session. Additionally, the agent assumes that if it has not received an HTTP 200 response to any request from AM for more than one minute, its token might have been subject to idle timeout retirement. In these circumstances, the agent validates its own token before retrieving the session information.

#### ▼ Improved Performance

In previous releases, the agent automatically maintained an internal not-enforced list, populated with all entries in the logout URI map, all entries in the access denied URI map, optionally the favicon.ico, and so on. For every incoming request, the agent searched the list without using the customary not-enforced caches.

The following improvements in this release improve results in ForgeRock's performance testing framework:

- More efficient matching of entries in the list
- Optimized use of regular expressions in the remaining not-enforced code
- Improved canonicalization of incoming URLs

#### ▼ Support for Multi-Byte Characters

Support for multibyte characters has been developed as follows:

- Multibyte users are supported
- Events are correctly audited for multibyte users
- Correct local auditing of events associated with multibyte users, to files specified with multibyte paths
- Correct remote auditing of events associated with multibyte users
- Multibyte agent profile name
- Multibyte agent password
- Multibyte agent realm

- Multibyte webapps
- Multibyte not-enforced rules successfully match resources
- Agent debug log can be specified with a multibyte path
- Agent monitoring directory can be specified with a multibyte path

## Requirements

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*ForgeRock supports customers using the versions specified here. Other versions and alternative environments might work as well. When opening a support ticket for an issue, however, make sure you can also reproduce the problem on a combination covered here.*

## Supported Operating Systems & Web Application Containers

Java Agent requires the WebSocket protocol to communicate with AM. Both the Java container and the network infrastructure must support the WebSocket protocol. For information about WebSocket support, see the documentation for your network infrastructure and Java container.

Operating Systems (OS)	OS Versions	Web Application Containers & Minimum Supported Versions
<ul style="list-style-type: none"> <li>Amazon Linux 2</li> <li>CentOS</li> <li>Oracle Linux</li> <li>Red Hat Enterprise Linux</li> </ul>	<ul style="list-style-type: none"> <li>7</li> <li>8</li> </ul>	<ul style="list-style-type: none"> <li>Apache Tomcat 8.5</li> <li>Apache Tomcat 9.0</li> <li>Eclipse Jetty 9 (9.4.13 or later required for JDK 11)</li> <li>Eclipse Jetty 10</li> <li>IBM WebSphere Application Server 8.5<sup>(1)</sup> (8.5.5.9 or later required for Java 8)</li> <li>IBM WebSphere Application Server 9.0<sup>(1)</sup></li> <li>Oracle WebLogic Server 12c<sup>(1)</sup> (12.2.1.4 or later)</li> <li>Oracle WebLogic Server 14c</li> <li>Red Hat JBoss Enterprise Application Platform 7.2<sup>(2)</sup></li> <li>Red Hat JBoss Enterprise Application Platform 7.3, 7.4</li> <li>WildFly 21<sup>(2)</sup></li> <li>WildFly 22, 23, 24</li> </ul>
<ul style="list-style-type: none"> <li>Ubuntu Linux</li> </ul>	<ul style="list-style-type: none"> <li>18.04 LTS</li> <li>20.04 LTS</li> </ul>	<ul style="list-style-type: none"> <li>Red Hat JBoss Enterprise Application Platform 7.2<sup>(2)</sup></li> <li>Red Hat JBoss Enterprise Application Platform 7.3, 7.4</li> <li>WildFly 21<sup>(2)</sup></li> <li>WildFly 22, 23, 24</li> </ul>
<ul style="list-style-type: none"> <li>Microsoft Windows Server</li> </ul>	<ul style="list-style-type: none"> <li>2012 R2<sup>(2)</sup></li> <li>2016</li> <li>2019</li> </ul>	<ul style="list-style-type: none"> <li>Apache Tomcat 8.5</li> <li>Apache Tomcat 9.0</li> </ul>
<ul style="list-style-type: none"> <li>IBM AIX</li> </ul>	<ul style="list-style-type: none"> <li>7</li> </ul>	<ul style="list-style-type: none"> <li>IBM WebSphere Application Server 8.5<sup>(1)</sup> (8.5.5.9 or later required for Java 8)</li> <li>IBM WebSphere Application Server 9.0<sup>(1)</sup></li> </ul>

<sup>(1)</sup>Does not support JDK 11.

<sup>(2)</sup>Support to be discontinued in a future release.

## AM Requirements

Java Agent 5.9.1 supports AM 6 and later versions.

Java Agent requires the WebSocket protocol to communicate with AM. Both the Java container and the network infrastructure must support the WebSocket protocol. For information about WebSocket support, see the documentation for you network infrastructure and Java container.

If you are upgrading from a Java Agent version before 5, note that Java Agent 5 introduced important changes in the configuration. For example, support for JAAS was dropped, and you must now enable a new property if you are not using the AM console as the login page. For more information about changes introduced in Java Agent 5, refer to the Java Agent 5 Release Notes.

## Java Requirements

Java Agent runs in a Java container, and requires a Java Development Kit. ForgeRock supports customers using the following Java versions. ForgeRock recommends the most recent Java update, with the latest security fixes.

### *Supported Java Development Kit Versions*

Vendor	Version
Oracle Java	8 <sup>(1)</sup> , 11
IBM Java (WebSphere only)	8
OpenJDK	8 <sup>(1)</sup> , 11

<sup>(1)</sup>Support to be discontinued in a future release.

For information about web container requirements for JDK 11, see [Platform Requirements](#).

## Supported Clients

### *Supported clients*

Client Platform	Native Apps <sup>(1)</sup>	Chrome 62+	Edge 25+	Firefox 57+	Safari 11+	Mobile Safari
Windows 8	✓	✓		✓		
Windows 10	✓	✓	✓	✓		

Client Platform	Native Apps <sup>(1)</sup>	Chrome 62+	Edge 25+	Firefox 57+	Safari 11+	Mobile Safari
Mac OS X 10.11 or later	✓	✓		✓	✓	
Ubuntu 14.04 LTS or later	✓	✓		✓		
iOS 9 or later	✓	✓				✓
Android 6 or later	✓	✓				

<sup>(1)</sup>Native Apps is a placeholder to indicate the platform is not limited to browser-based technologies. An example of a native app would be something written to use ForgeRock REST APIs.

## Special requests

If you have a special request regarding support for a combination not listed here, contact ForgeRock at [info@forgerock.com](mailto:info@forgerock.com).

## Incompatible Changes

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### Incompatible Changes in Java Agent 5.9.1

No incompatible changes were introduced in this release.

### Incompatible Changes in Java Agent 5.9

The following changes introduced in this release can impact your migration from Java Agent 5.8:

#### ▼ [Advice Format for Session Upgrade](#)

During session upgrade when both [Enable SSO Token Acceptance](#) and [Enable Custom Login Mode](#) are `true`, the composite advice has the new format: `?authIndexType=composite_advice&authIndexValue=<Advices Value>`.



When either property is `false`, the composite advice is unchanged from the previous format: `?composite_advice=<Advices Value>`

#### ▼ [AM 5.x.x End-of-Service-Life](#)

AM 5.x.x has reached End-of-Service-Life (EOSL), and no is longer supported.

## Deprecation

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Deprecation is defined in [Release Levels and Interface Stability](#).

### Deprecated Functionality in Java Agent 5.9.1

No additional functionality was deprecated in this release.

### Deprecated Functionality in Java Agent 5.9

The following objects are deprecated:

Deprecated In	Object	Description
Java Agent 5.9	<a href="#">Fall-Forward Mode (deprecated)</a>	Replaced by <a href="#">Strategy when AM unavailable</a>
	<a href="#">Autonomous mode</a>	This property was previously labelled <code>Fallback Mode</code> ; it is now labelled <code>Autonomous Mode</code> .
	<a href="#">Agent Filter Mode Map</a>	The agent filter mode <code>ALL</code> is deprecated, and replaced by <code>URL_POLICY</code>

Deprecated In	Object	Description
Java Agent 5.6	<u>Enable Notification of Session Logout</u> (deprecated)	Whole object
	<u>POST Data Preservation Cache TTL in Milliseconds</u> (deprecated)	Whole object
	<u>Port Check Filename</u> (deprecated)	Whole object
	<u>Port Check Protocol Map</u> (deprecated)	Whole object
	<u>Enable Port Checking</u> (deprecated)	Whole object
	<u>Legacy User Agent Redirect URL</u> (deprecated)	Whole object
	<u>Enable Legacy Support Handlers</u> (deprecated)	Whole object
	<u>Legacy User Agent List</u> (deprecated)	Whole object
	<u>Obsolete Notification URL</u> (deprecated)	Whole object

## Removed

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Removed is defined in [Release Levels and Interface Stability](#).

### Removed Functionality in Java Agent 5.9.1

No additional functionality was removed in this release.

### Removed Functionality in Java Agent 5.9

No functionality was removed from this release.

# Fixes

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For information about security issues fixed in this release, see Security Advisories.

## Fixes in Java Agent 5.9.1

The following issues were fixed in this release:

- [AMAGENTS-4667](#): Bug in i18n not-enforced pattern matching
- [AMAGENTS-4655](#): Align functionality with WPA with regards fragment handling cookie enhancement
- [AMAGENTS-4647](#): Split out the extended character not enforced bug fix

## Fixes in Java Agent 5.9

The following issues were fixed in this release:

- [AMAGENTS-4427](#): Agent can't cope with extended characters in the Agent realm
- [AMAGENTS-4424](#): Agent fails to specify OIDC client when extended characters are used in the Agent profile name
- [AMAGENTS-4423](#): Installer fails to write extended character profile name into bootstrap properties
- [AMAGENTS-4409](#): Address Agent session timeout problem when notifications are disabled
- [AMAGENTS-4336](#): Code around the AM agent token expired problem when getting the session info
- [AMAGENTS-4333](#): After upgrading to JEE Agent 5.7.0 (from Agent 3.5), agent behavior changes from catch AgentException to catch all Exception
- [AMAGENTS-4312](#): HTTP\_HEADER fetch mode ignores everything but first value
- [AMAGENTS-4311](#): Redirect loop faced during session upgrade with AcceptSSToken mode enabled.
- [AMAGENTS-4204](#): Fragments feature does not work with transaction policy
- [AMAGENTS-4196](#): When profile attribute is not found agent should continue authorization.
- [AMAGENTS-4177](#): Cookie Fetch attribute mode does extra request
- [AMAGENTS-4113](#): Reintroduce the original service resolver property
- [AMAGENTS-4077](#): Fix Port check regression and make it work in non sso-only mode.

## Security advisories

ForgeRock issues security advisories in collaboration with our customers and the open source community to address any security vulnerabilities transparently and rapidly.

ForgeRock's security advisory policy governs the process on how security issues are submitted, received, and evaluated as well as the timeline for the issuance of security advisories and patches.

For details of all the security advisories across ForgeRock products, see [Security Advisories](#) in the *Knowledge Base library*.

## Limitations

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### Limitations in Java Agent 5.9.1

No additional limitations were introduced in this release.

### Limitations in Java Agent 5.9

The following limitations in this release are inherent to the design, not bugs to be fixed:

#### ▼ [CDSSO Domain List Restrictions for WildFly and JBoss](#)

Cookie support in WildFly and JBoss has been implemented so that only one cookie can be set with a certain name. This prevents setting the same cookie for multiple domains.

Configuring the [JWT Cookie Domain List](#) with more than one cookie domain may result in redirection loops.

To work around this issue, perform the following steps:

1. Go to Realms > **Realm Name** > Applications > Agents > Java > **Agent Name** > SSO.
2. Remove all cookie domains from the [JWT Cookie Domain List](#).
3. Go to Realms > **Realm Name** > Applications > Agents > Java > **Agent Name** > Global.
4. Configure any required entries in the Agent Root URL for CDSSO. The agent sets the cookie domain based on the requested resource.

#### ▼ [CDSSO Domain List Restrictions for Tomcat](#)

Tomcat 8.0.x introduced a new cookie processor, `org.apache.tomcat.util.http.Rfc6265CookieProcessor`, that became the default cookie processor on Tomcat 8.5.x.

Due to the new cookie processor's cookie validation checks, configuring domains with leading dots ( . ) in the JWT Cookie Domain List can result in the following issues:

- Java Agent returning HTTP 403 errors.
- Tomcat server logging messages similar to the following:

```
ERROR: AmFilter: Error while delegating to inbound handler:
CDSSO Result Task Handler, access will be denied
java.lang.IllegalArgumentException: An invalid domain
[.example.com] was specified for this cookie
at
org.apache.tomcat.util.http.Rfc6265CookieProcessor.validateD
omain(Rfc6265CookieProcessor.java:183)
at
org.apache.tomcat.util.http.Rfc6265CookieProcessor.generateH
eader(Rfc6265CookieProcessor.java:125)
at
org.apache.catalina.connector.Response.generateCookieString(
Response.java:989)
at
org.apache.catalina.connector.Response.addCookie(Response.ja
va:937)
at
org.apache.catalina.connector.ResponseFacade.addCookie(Respo
nseFacade.java:386)
at
com.sun.identity.shared.encode.CookieUtils.addCookieToRespon
se(CookieUtils.java:412)
...
```

To work around this issue, perform one of the following actions:

- Configure the legacy cookie processor implementation, `org.apache.tomcat.util.http.LegacyCookieProcessor`, in your Tomcat server. Refer to the documentation for your version of Tomcat for more information.
- Ensure the domains entered in JWT Cookie Domain List start with a number or a letter. For example:

Valid configuration

```
org.forgerock.agents.jwt.cookie.domain.list[0]=example.com
org.forgerock.agents.jwt.cookie.domain.list[1]=123company.co
m
```

Invalid configuration

```
org.forgerock.agents.jwt.cookie.domain.list[0]=.example.com
org.forgerock.agents.jwt.cookie.domain.list[1]=.mycompany.co
m
```

#### ▼ [The agentadmin Command Shows Warning Messages When Using JDK 11](#)

The `agentadmin` command may show warning messages similar to the following when using JDK 11:

```
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by
org.forgerock.openam.sdk.com.google.inject.internal.cglib.core.$
ReflectUtils$1 ...
WARNING: Please consider reporting this to the maintainers of
org.forgerock.openam.sdk.com.google.inject.internal.cglib.core.$
ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further
illegal reflective access operations
WARNING: All illegal access operations will be denied in a
future release
```

You can safely ignore these messages.

## Known Issues

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Known issues are tracked at <https://bugster.forgerock.org/jira/browse/AMAGENTS>.

### Known Issues in Java Agent 5.9.1

No additional issues were opened in this release.

### Known Issues in Java Agent 5.9

The following important issue remained open at the time of this release:

- [AMAGENTS-4528](#): Investigate the use of "host" from the session properties
- [AMAGENTS-4514](#): JPA will set 2x set-cookie header for Profile Attributes
- [AMAGENTS-4181](#): When the last property in bootstrap properties is a list, the property is ignored

- [AMAGENTS-4175](#): One level wildcard does not work when request contains trailing slash for java agents
- [AMAGENTS-3912](#): Avoid displaying a huge stacktrace to the user when the bootstrap properties file cannot be opened

## Documentation

Date	Description
January 2022	Maintenance release of Java Agent 5.9.1 software.
September 2021	<p>Initial release of Java Agent 5.9 software.</p> <p>The following changes have been made to the documentation, in addition to changes for product features:</p> <ul style="list-style-type: none"> <li>• The <a href="#">Installation Guide</a> and <a href="#">Maintenance Guide</a> have been added to this release. Information about installation, auditing, monitoring and notifications, has been removed from the <a href="#">User Guide</a>.</li> <li>• Information in the <a href="#">Properties Reference</a> has been reorganized.</li> <li>• Agent Authenticators are no longer supported, and related information has been removed from the documentation.</li> </ul>

## Appendix A: Release Levels and Interface Stability

This appendix includes ForgeRock definitions for product release levels and interface stability.

### ForgeRock product release levels

ForgeRock defines Major, Minor, Maintenance, and Patch product release levels. The version number reflects release level. The release level tells you what sort of compatibility changes to expect.

### *Release level definitions*

Release Label	Version Numbers	Characteristics
Major	Version: x[.0.0] (trailing 0s are optional)	<ul style="list-style-type: none"><li>• Bring major new features, minor features, and bug fixes.</li><li>• Can include changes even to Stable interfaces.</li><li>• Can remove previously Deprecated functionality, and in rare cases remove Evolving functionality that has not been explicitly Deprecated.</li><li>• Include changes present in previous Minor and Maintenance releases.</li></ul>
Minor	Version: x.y[.0] (trailing 0s are optional)	<ul style="list-style-type: none"><li>• Bring minor features, and bug fixes.</li><li>• Can include backwards-compatible changes to Stable interfaces in the same Major release, and incompatible changes to Evolving interfaces.</li><li>• Can remove previously Deprecated functionality.</li><li>• Include changes present in previous Minor and Maintenance releases.</li></ul>
Maintenance, Patch	Version: x.y.z[.p] The optional <i>p</i> reflects a Patch version.	<ul style="list-style-type: none"><li>• Bring bug fixes</li><li>• Are intended to be fully compatible with previous versions from the same Minor release.</li></ul>

## ForgeRock product stability labels

ForgeRock products support many features, protocols, APIs, GUIs, and command-line interfaces. Some of these are standard and very stable. Others offer new functionality that is continuing to evolve.

ForgeRock acknowledges that you invest in these features and interfaces, and therefore must know when and how ForgeRock expects them to change. For that reason, ForgeRock defines stability labels and uses these definitions in ForgeRock products.

### *ForgeRock stability label definitions*



Stability Label	Definition
Stable	<p>This documented feature or interface is expected to undergo backwards-compatible changes only for major releases.</p> <p>Changes may be announced at least one minor release before they take effect.</p>
Evolving	<p>This documented feature or interface is continuing to evolve and so is expected to change, potentially in backwards-incompatible ways even in a minor release. Changes are documented at the time of product release.</p> <p>While new protocols and APIs are still in the process of standardization, they are Evolving. This applies for example to recent Internet-Draft implementations, and also to newly developed functionality.</p>
Legacy	<p>This feature or interface has been replaced with an improved version, and is no longer receiving development effort from ForgeRock.</p> <p>You should migrate to the newer version, however the existing functionality will remain.</p> <p>Legacy features or interfaces will be marked as <i>Deprecated</i> if they are scheduled to be removed from the product.</p>
Deprecated	<p>This feature or interface is deprecated, and likely to be removed in a future release.</p> <p>For previously stable features or interfaces, the change was likely announced in a previous release.</p> <p>Deprecated features or interfaces will be removed from ForgeRock products.</p>
Removed	<p>This feature or interface was deprecated in a previous release, and has now been removed from the product.</p>

Stability Label	Definition
Technology Preview	<p>Technology previews provide access to new features that are considered as new technology that is not yet supported. Technology preview features may be functionally incomplete, and the function as implemented is subject to change without notice.</p> <p><i>DO NOT DEPLOY A TECHNOLOGY PREVIEW INTO A PRODUCTION ENVIRONMENT.</i></p> <p>Customers are encouraged to test drive the technology preview features in a non-production environment, and are welcome to make comments and suggestions about the features in the associated forums.</p> <p>ForgeRock does not guarantee that a technology preview feature will be present in future releases, the final complete version of the feature is liable to change between preview and the final version. Once a technology preview moves into the completed version, said feature will become part of the ForgeRock platform.</p> <p>Technology previews are provided on an “AS-IS” basis for evaluation purposes only, and ForgeRock accepts no liability or obligations for the use thereof.</p>
Internal/Undocumented	<p>Internal and undocumented features or interfaces can change without notice.</p> <p>If you depend on one of these features or interfaces, contact ForgeRock support or email <a href="mailto:info@forgerock.com">info@forgerock.com</a> to discuss your needs.</p>

## Getting support

ForgeRock provides support services, professional services, training through ForgeRock University, and partner services to assist you in setting up and maintaining your deployments. For a general overview of these services, see <https://www.forgerock.com>.

ForgeRock has staff members around the globe who support our international customers and partners. For details on ForgeRock’s support offering, including support plans and service level agreements (SLAs), visit <https://www.forgerock.com/support>.

ForgeRock publishes comprehensive documentation online:

- The ForgeRock [Knowledge Base](#) offers a large and increasing number of up-to-date, practical articles that help you deploy and manage ForgeRock software.

While many articles are visible to everyone, ForgeRock customers have access to much more, including advanced information for customers using ForgeRock software in a mission-critical capacity.

- ForgeRock product documentation, such as this document, aims to be technically accurate and complete with respect to the software documented. It is visible to everyone and covers all product features and examples of how to use them.

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