Red Hat JBoss Enterprise Application Platform 7.4

Login Module Reference

Lists and descriptions of the login modules available for Red Hat JBoss Enterprise Application Platform.
Lists and descriptions of the login modules available for Red Hat JBoss Enterprise Application Platform.
Abstract

The intent of this document is to provide a reference for the login modules available in Red Hat JBoss Enterprise Application Platform. For more background information on how login modules work in JBoss EAP, see the Security Architecture for JBoss EAP document.
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Procedure

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2. Highlight the section of the document where you want to provide feedback.

3. In the prompt menu that displays near the text you selected, click Add Feedback.
   
   A text box opens in the feedback section on the right side of the page.

4. Enter your feedback in the text box and click Submit.
   
   You have created a documentation issue.

5. To view the issue, click the issue tracker link in the feedback view.
Red Hat is committed to replacing problematic language in our code, documentation, and web properties. We are beginning with these four terms: master, slave, blacklist, and whitelist. Because of the enormity of this endeavor, these changes will be implemented gradually over several upcoming releases. For more details, see our CTO Chris Wright’s message.
PREFACE

IMPORTANT

The Login Modules described in this guide are deprecated due to Elytron being introduced. For instructions on using the elytron subsystem see the Elytron Subsystem section in the How to Configure Server Security Guide.
CHAPTER 1. LOGIN MODULE OVERVIEW

The basics of login modules and their use within security domains are covered in the Security Domains section in the JBoss EAP Security Architecture guide.

1.1. ABOUT THE ORGANIZATION OF THIS DOCUMENT

The login modules covered in this document are organized into the following functional areas:

Login Module Functional Organization

- **Login Modules Without External Identity Store**
  - **Identity Login Module** - Used when a fixed or hard-coded user name is needed.
  - **UsersRoles Login Module** - Loads user names and roles from a local Java properties files.
  - **PropertiesUsers Login Module** - Loads only user names from a local Java properties files.
  - **SimpleUsers Login Module** - Defines user names and passwords directly in the login module configuration.
  - **SecureIdentity Login Module** - Legacy, allows for a static principal and encrypted password to be defined directly in the module configuration.
  - **ConfiguredIdentity Login Module** - Associates a static principal to any authenticated user.
  - **Simple Login Module** - A module for quick security setup for testing.
  - **Disabled Login Module** - A module that always fails authentication.
  - **Anon Login Module** - A module to specify the identity for an unauthenticated user.
  - **RunAs Login Module** - Helper module for adding an additional static role during the authentication phase.
  - **RoleMapping Login Module** - Helper module for adding to or replacing the roles of an authenticated user with one or more roles.
  - **RealmDirect Login Module** - Delegates authentication to a security realm.
  - **RealmUsersRoles Login Module** - Legacy module replaced by RealmDirect.

- **Login Modules With External Identity Store**
  - **Database Login Module** - Uses a database to store users and role mappings.
  - **DatabaseUsers Login Module** - Alias to Database for compatibility.
  - **Ldap Login Module** - Uses an LDAP server to store users and role mappings.
  - **LdapExtended Login Module**
  - **AdvancedLdap Login Module** - Provides additional functionality when authenticating using an LDAP server.
- **AdvancedAdLdap Login Module** - Provides additional functionality used in Microsoft Active Directory.
- **LdapUsers Login Module** - Legacy module replaced by LdapExtended and AdvancedLdap.
- **Kerberos Login Module** - Used with Kerberos authentication.
- **SPNEGO Login Module** - Used with Kerberos authentication.

### Certificate-Based Login Modules

- **Certificate Login Module** - Authenticares users via X509 certificates.
- **CertificateRoles Login Module** - Extends Certificate module with role mapping.
- **DatabaseCertificate Login Module** - Extends Certificate module with role mapping stored in a database.

### Login Modules for Jakarta Enterprise Beans and Remoting

- **Remoting Login Module** - Used in securing remote Jakarta Enterprise Beans invocations.
- **Client Login Module** - Used in local, in-JVM, Jakarta Enterprise Beans calls for establishing client identity.

### Custom Login Modules

This guide also provides reference information for related topics such as authorization modules, password stacking and password hashing.

### 1.2. EXTENSION HIERARCHY

The vast majority of the login modules covered in this document actually extend the configuration options and functionality of other login modules. The structure the login modules use to extend functionality forms a hierarchy:

#### Login Module Extension Hierarchy

- **AbstractServer Login Module**
  - **AbstractPasswordCredential Login Module**
    - **SecureIdentity Login Module**
    - **ConfiguredIdentity Login Module**
  - **Certificate Login Module**
    - **CertificateRoles Login Module**
    - **DatabaseCertificate Login Module**
  - **Common Login Module**
    - **AdvancedLdap Login Module**
      - **AdvancedAdLdap Login Module**
Most of the login modules in the hierarchy are concrete Java classes that are instantiated and used by JBoss EAP, but there are a few abstract classes that cannot be instantiated and used directly. The purpose of these abstract classes are to provide common functionality and to serve purely as a base class for other login modules to extend.

**IMPORTANT**

By default, login modules inherit all behavior and options from login modules they extend, but they may also override that behavior from their parent login module. In some cases, this may lead to certain options that are inherited by a login module from their parent but go unused.
CHAPTER 2. ABSTRACT LOGIN MODULES

The abstract login modules are abstract Java classes that are extended by the other login modules in order to provide common functionality and configuration options. The abstract login modules may never be used directly, but the configuration options are available to any login modules that extend them.

2.1. ABSTRACTSERVER LOGIN MODULE

Short name: AbstractServerLoginModule

Full name: org.jboss.security.auth.spi.AbstractServerLoginModule

The AbstractServer Login Module serves as a base class for many login modules as well as several abstract login modules. It implements the common functionality required for a JAAS server side login module and implements the PicketBox standard Subject usage pattern of storing identities and roles.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>principalClass</td>
<td>A fully qualified classname</td>
<td>org.jboss.security.SimplePrincipal</td>
<td>A Principal implementation class which contains a constructor that takes String argument for the principal name.</td>
</tr>
<tr>
<td>module</td>
<td>String</td>
<td>none</td>
<td>A reference to a jboss-module that can be used to load a custom callback/validator.</td>
</tr>
</tbody>
</table>
2.1.1. Unauthenticated Identity

Not all requests are received in an authenticated format. The `unauthenticatedIdentity` login module configuration assigns a specific identity, `guest` for example, to requests that are made with no associated authentication information. This can be used to allow unprotected servlets to invoke methods on Jakarta Enterprise Beans that do not require a specific role. Such a principal has no associated roles and so can only access either unsecured Jakarta Enterprise Beans or Jakarta Enterprise Beans methods that are associated with the unchecked permission constraint. For example, this configuration option can be used in the UsersRoles and Remoting Login Modules.

2.1.2. Password Stacking

Multiple login modules can be chained together in a stack, with each login module providing both the credentials verification and role assignment during authentication. This works for many use cases, but sometimes credentials verification and role assignment are split across multiple user management stores.

Consider the case where users are managed in a central LDAP server but application-specific roles are stored in the application’s relational database. The password-stacking module option captures this relationship.

To use password stacking, each login module should set the `password-stacking` attribute to...
**useFirstPass**, which is located in the `<module-option>` section. If a previous module configured for password stacking has authenticated the user, all the other stacking modules will consider the user authenticated and only attempt to provide a set of roles for the authorization step.

When password-stacking option is set to **useFirstPass**, this module first looks for a shared user name and password under the property names `javax.security.auth.login.name` and `javax.security.auth.login.password` respectively in the login module shared state map.

If found, these properties are used as the principal name and password. If not found, the principal name and password are set by this login module and stored under the property names `javax.security.auth.login.name` and `javax.security.auth.login.password` respectively.

**NOTE**

When using password stacking, set all modules to be required. This ensures that all modules are considered, and have the chance to contribute roles to the authorization process.

## 2.2. USERNAMEPASSWORD LOGIN MODULE

**Short name:** UsernamePasswordLoginModule

**Full name:** org.jboss.security.auth.spi.UsernamePasswordLoginModule

**Parent:** AbstractServer Login Module

The UsernamePassword Login Module is an abstract login module that imposes an `identity == String username, credentials == String password` view on the login process. It inherits all the fields from Abstract Server login module in addition to the below fields.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ignorePasswordCase</td>
<td>boolean</td>
<td>false</td>
<td>A flag indicating if the password comparison should ignore case.</td>
</tr>
<tr>
<td>digestCallback</td>
<td>A fully qualified classname</td>
<td>none</td>
<td>The class name of the <code>org.jboss.crypto.digest.DigestCallback</code> implementation that includes pre/post digest content like salts for hashing the input password. Only used if <code>hashAlgorithm</code> has been specified and <code>hashUserPassword</code> is set to <code>true</code>.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>storeDigestCallback</td>
<td>A fully qualified classname</td>
<td>none</td>
<td>The class name of the <code>org.jboss.crypto.digest.DigestCallback</code> implementation that includes pre/post digest content like salts for hashing the store/expected password. Only used if <code>hashStorePassword</code> is true and <code>hashAlgorithm</code> has been specified.</td>
</tr>
<tr>
<td>throwValidateError</td>
<td>boolean</td>
<td>false</td>
<td>A flag that indicates whether validation errors should be exposed to clients or not.</td>
</tr>
<tr>
<td>inputValidator</td>
<td>A fully qualified classname</td>
<td>none</td>
<td>The instance of the <code>org.jboss.security.auth.spi.InputValidator</code> implementation used to validate the user name and password supplied by the client.</td>
</tr>
</tbody>
</table>

**NOTE**

The **UsernamePassword** Login Module options, regarding password hashing, are described in the next section.

### 2.2.1. Password Hashing

Most login modules must compare a client-supplied password to a password stored in a user management system. These modules generally work with plain text passwords, but can be configured to support hashed passwords to prevent plain text passwords from being stored on the server side. JBoss EAP supports the ability to configure the hashing algorithm, encoding, and character set as well as when the user password and store password are hashed.

The following are password hashing options that can be configured as part of a login module that has **UsernamePassword** Login Module as a parent:

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>---------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>hashAlgorithm</td>
<td>String</td>
<td>none</td>
<td>Name of the <code>java.security.MessageDigest</code> algorithm to be used to hash the password. There is no default so this option must be specified to enable hashing. Typical values are SHA-256, SHA-1 and MD5. When <code>hashAlgorithm</code> is specified and <code>hashUserPassword</code> is set to true, the clear text password obtained from the CallbackHandler is hashed before it is passed to <code>UsernamePasswordLoginModule.validatePassword</code> as the <code>inputPassword</code> argument.</td>
</tr>
<tr>
<td>hashEncoding</td>
<td>String</td>
<td>base64</td>
<td>The string format for the hashed password, if <code>hashAlgorithm</code> is also set. May specify one of three encoding types: base64, hex or rfc2617.</td>
</tr>
<tr>
<td>hashCharset</td>
<td>String</td>
<td></td>
<td>The name of the charset/encoding to use when converting the password string to a byte array.</td>
</tr>
<tr>
<td>hashUserPassword</td>
<td>boolean</td>
<td>true</td>
<td>A flag indicating if the user entered password should be hashed. The hashed user password is compared against the value in the login module, which is expected to be a hash of the password.</td>
</tr>
<tr>
<td>hashStorePassword</td>
<td>boolean</td>
<td>false</td>
<td>A flag indicating if the store password returned should be hashed. This is used for digest authentication, where the user submits a hash of the user password along with a request-specific tokens from the server to be compared. The hash algorithm, for digest, this would be rfc2617, is utilized to compute a server-side hash, which should match the hashed value sent from the client.</td>
</tr>
<tr>
<td>passwordIsA1Hash</td>
<td>boolean</td>
<td></td>
<td>A flag used by the <code>org.jboss.security.auth.callback.RFC2617Digest</code> when it is configured as the <code>digestCallback</code> or <code>storeDigestCallback</code>. If true, incoming password will not be hashed since it is already hashed.</td>
</tr>
</tbody>
</table>
2.3. ABSTRACTPASSWORDCREDENTIAL LOGIN MODULE

**Short name:** AbstractPasswordCredentialLoginModule

**Full name:** org.picketbox.datasource.security.AbstractPasswordCredentialLoginModule

**Parent:** AbstractServer Login Module

AbstractPasswordCredential Login Module is a base login module that handles PasswordCredentials.

2.4. COMMON LOGIN MODULE

**Short name:** CommonLoginModule

**Full name:** org.jboss.security.negotiation.common.CommonLoginModule

**Parent:** AbstractServer Login Module

Common Login Module is an abstract login module that serves as a base login module for some login modules within JBoss Negotiation.
CHAPTER 3. LOGIN MODULES WITHOUT EXTERNAL IDENTITY STORE

3.1. IDENTITY LOGIN MODULE

**Short name:** Identity

**Full name:** org.jboss.security.auth.spi.IdentityLoginModule

**Parent:** AbstractServer Login Module

Identity login module is a simple login module that associates a hard-coded user name to any subject authenticated against the module. It creates a **SimplePrincipal** instance using the name specified by the principal option. This login module is useful when a fixed identity is required to be provided to a service. This can also be used in development environments for testing the security associated with a given principal and associated roles.

**Table 3.1. Identity Login Module Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>principal</td>
<td>String</td>
<td>guest</td>
<td>The name to use for the principal.</td>
</tr>
<tr>
<td>roles</td>
<td>comma-separated list of Strings</td>
<td>none</td>
<td>A comma-delimited list of roles which will be assigned to the subject.</td>
</tr>
</tbody>
</table>

3.2. USERSROLES LOGIN MODULE

**Short name:** UsersRoles

**Full name:** org.jboss.security.auth.spi.UsersRolesLoginModule

**Parent:** UsernamePassword Login Module

**UsersRoles** login module is a simple login module that supports multiple users and user roles loaded from Java properties files. The primary purpose of this login module is to easily test the security settings of multiple users and roles using properties files deployed with the application.

**Table 3.2. UsersRoles Login Module Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>usersProperties</td>
<td>Path to a file or resource.</td>
<td>users.properties</td>
<td>The file or resource which contains the user-to-password mappings. The format of the file is <code>username=password</code></td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------</td>
<td>---------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>rolesProperties</td>
<td>Path to a file or resource.</td>
<td>roles.properties</td>
<td>The file or resource which contains the user-to-role mappings. The format of the file is <code>username=role1,role2,role3</code></td>
</tr>
<tr>
<td>defaultUsersProperties</td>
<td>String</td>
<td>defaultUsers.properties</td>
<td>The name of the properties resource containing the username-to-password mappings that will be used as the default properties passed to the <code>usersProperties</code> properties.</td>
</tr>
<tr>
<td>defaultRolesProperties</td>
<td>String</td>
<td>defaultRoles.properties</td>
<td>The name of the properties resource containing the username-to-roles mappings that will be used as the default properties passed to the <code>usersProperties</code> properties.</td>
</tr>
<tr>
<td>roleGroupSeparator</td>
<td>String</td>
<td>.</td>
<td>The character used to separate the role group name from the user name, for example <code>jduke.CallerPrincipal =...</code></td>
</tr>
</tbody>
</table>

### 3.3. PROPERTIESUSERS LOGIN MODULE

Short name: PropertiesUsers

Full name: org.jboss.security.auth.spi.PropertiesUsersLoginModule

Parent: UsersRoles Login Module

The **PropertiesUsers** login module that uses a properties file to store user names and passwords for authentication. No authorization, role mapping, is provided. This module is only appropriate for testing.

### 3.4. SIMPLEUSERS LOGIN MODULE

Short name: SimpleUsers
**Full name**: org.jboss.security.auth.spi.SimpleUsersLoginModule

**Parent**: PropertiesUsers Login Module

The **SimpleUsers** login module that stores the user name and clear-text password using module-option. The name and value attributes of the module-option specifies a user name and password. It is included for testing only, and is not appropriate for a production environment.

### 3.5. SECUREIDENTITY LOGIN MODULE

**Short name**: SecureIdentity

**Full name**: org.picketbox.datasource.security.SecureIdentityLoginModule

**Parent**: AbstractPasswordCredential Login Module

The **SecurityIdentity** login module is a module that is provided for legacy purposes. It allows users to encrypt a password and then use the encrypted password with a static principal. If an application uses **SecureIdentity**, consider using a password vault mechanism instead.

**Table 3.3. SecureIdentity Login Module Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>String</td>
<td>none</td>
<td>The user name for authentication.</td>
</tr>
<tr>
<td>password</td>
<td>encrypted String</td>
<td>&quot;&quot;</td>
<td>The password to use for authentication. To encrypt the password, use the module directly at the command line, for example <code>java org.picketbox.datasource.security.SecureIdentityLoginModule password_to_encrypt</code>, and paste the result of this command into the module option’s value field. The default value is an empty String.</td>
</tr>
<tr>
<td>managedConnectionFactory</td>
<td>Jakarta Connectors resource</td>
<td>none</td>
<td>The name of the Jakarta Connectors connection factory for your datasource.</td>
</tr>
</tbody>
</table>

### 3.6. CONFIGUREDIDENTITY LOGIN MODULE

**Short name**: ConfiguredIdentity
**ConfiguredIdentity Login Module**

The `ConfiguredIdentity` login module associates the principal specified in the module options with any subject authenticated against the module. The type of Principal class used is `org.jboss.security.SimplePrincipal`.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>username</td>
<td>String</td>
<td>none</td>
<td>The user name for authentication.</td>
</tr>
<tr>
<td>password</td>
<td>encrypted String</td>
<td>&quot;&quot;</td>
<td>The password to use for authentication, which can be encrypted via the vault mechanism. The default value is an empty String.</td>
</tr>
<tr>
<td>principal</td>
<td>Name of a principal</td>
<td>none</td>
<td>The principal which will be associated with any subject authenticated against the module.</td>
</tr>
</tbody>
</table>

### 3.7. SIMPLE LOGIN MODULE

**Short name:** Simple

**Full name:** `org.jboss.security.auth.spi.SimpleServerLoginModule`

**Parent:** `UsernamePassword Login Module`

The Simple login module is a module for quick setup of security for testing purposes. It implements the following simple algorithm:

- If the password is null, authenticate the user and assign an identity of `guest` and a role of `guest`.
- Otherwise, if the password is equal to the user, assign an identity equal to the `username` and both `user` and `guest` roles.
- Otherwise, authentication fails.

The Simple login module has no options.

### 3.8. DISABLED LOGIN MODULE

**Short name:** Disabled

**Full name:** `org.jboss.security.auth.spi.DisabledLoginModule`

A login module that always fails authentication. It is to be used for a security domain that needs to be...
A login module that always fails authentication. It is to be used for a security domain that needs to be disabled, for instance when we do not want JAAS to fall back to using the other security domain.

Table 3.5. Disabled Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>jboss.security.security_domain</td>
<td>String</td>
<td></td>
<td>Name of security domain to display in error message.</td>
</tr>
</tbody>
</table>

3.9. ANON LOGIN MODULE

Short name: Anon

Full name: org.jboss.security.auth.spi.AnonLoginModule

Parent: UsernamePassword Login Module

A simple login module that allows for the specification of the identity of unauthenticated users via the unauthenticatedIdentity property. This login module has no additional options beyond its inherited options from UsernamePassword Login Module.

3.10. RUNAS LOGIN MODULE

Short name: RunAs

Full name: org.jboss.security.auth.spi.RunAsLoginModule

The RunAs login module is a helper module that pushes a run as role onto the stack for the duration of the login phase of authentication, then pops the run as role from the stack in either the commit or abort phase. The purpose of this login module is to provide a role for other login modules that must access secured resources in order to perform their authentication, for example, a login module that accesses a secured Jakarta Enterprise Beans. The RunAs login module must be configured ahead of the login modules that require a run as role established.

Table 3.6. RunAs Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>roleName</td>
<td>role name</td>
<td>nobody</td>
<td>The name of the role to use as the run as role during the login phase.</td>
</tr>
<tr>
<td>principalName</td>
<td>principal name</td>
<td>nobody</td>
<td>Name of the principal to use as the run as principal during login phase. If not specified a default of nobody is used.</td>
</tr>
</tbody>
</table>
3.11. ROLEMAPPING LOGIN MODULE

**Short name:** RoleMapping

**Full name:** org.jboss.security.auth.spi.RoleMappingLoginModule

**Parent:** AbstractServer Login Module

The **RoleMapping** login module is a login module that supports mapping roles, that are the end result of the authentication process, to one or more declarative roles. For example, if the authentication process has determined that the user John has the roles ldapAdmin and testAdmin, and the declarative role defined in the web.xml or ejb-jar.xml file for access is admin, then this login module maps the admin roles to John. The **RoleMapping** login module must be defined as an optional module to a login module configuration as it alters mapping of the previously mapped roles.

**Table 3.7. RoleMapping Login Module Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rolesProperties</td>
<td>The fully qualified file path and name of a properties file or resource</td>
<td>none</td>
<td>The fully qualified file path and name of a properties file or resource which maps roles to replacement roles. The format is original_role=role1,role2,role3.</td>
</tr>
<tr>
<td>replaceRole</td>
<td>true or false</td>
<td>false</td>
<td>Whether to add to the current roles, or replace the current roles with the mapped roles. Replaces if set to true.</td>
</tr>
</tbody>
</table>

3.12. REALMDIRECT LOGIN MODULE

**Short name:** RealmDirect

**Full name:** org.jboss.as.securityRealmDirectLoginModule

**Parent:** UsernamePassword Login Module

The **RealmDirect** login module allows for the use of an existing security realm to be used in making...
authentication and authorization decisions. When configured, this module will look up identity information using the referenced realm for making authentication decisions and delegate to that security realm for authorization decisions. For example, the pre-configured other security domain that ships with JBoss EAP has a RealmDirect login module. If no realm is referenced in this module, the ApplicationRealm security realm is used by default.

Table 3.8. RealmDirect Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>realm</td>
<td>String</td>
<td>ApplicationRealm</td>
<td>Name of the desired realm.</td>
</tr>
</tbody>
</table>

NOTE

The RealmDirect login module uses realm only for legacy security and not for Elytron.

3.13. REALMUSERSROLES LOGIN MODULE

Short name: RealmUsersRoles

Full name: org.jboss.as.security.RealmUsersRolesLoginModule

Parent: UsersRoles Login Module

A login module which can authenticate users from given realm. Used for remoting calls. Use of RealmDirect is recommended instead of RealmUsersRoles.

Table 3.9. RealmUsersRoles Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>realm</td>
<td>String</td>
<td>ApplicationRealm</td>
<td>Name of the desired realm.</td>
</tr>
<tr>
<td>hashAlgorithm</td>
<td>String</td>
<td>REALM</td>
<td>Static value set by login module for option from inherited UsernamePassword Login Module.</td>
</tr>
<tr>
<td>hashStorePassword</td>
<td>String</td>
<td>false</td>
<td>Static value set by login module for option from inherited UsernamePassword Login Module.</td>
</tr>
</tbody>
</table>

NOTE

The RealmUsersRoles login module uses realm only for legacy security and not for Elytron.
4.1. DATABASE LOGIN MODULE

**Short name**: Database

**Full name**: org.jboss.security.auth.spi.DatabaseServerLoginModule

**Parent**: UsernamePassword Login Module

The Database login module is a JDBC login module that supports authentication and role mapping. This login module is used if user name, password and role information are stored in a relational database. This works by providing a reference to logical tables containing Principals and Roles in the expected format.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dsJndiName</td>
<td>A JNDI resource</td>
<td>java:/DefaultDS</td>
<td>The name of the JNDI resource storing the authentication information.</td>
</tr>
<tr>
<td>principalsQuery</td>
<td>prepared SQL statement</td>
<td>select Password from Principals where PrincipalID=?</td>
<td>The prepared SQL query to obtain the information about the principal.</td>
</tr>
<tr>
<td>rolesQuery</td>
<td>prepared SQL statement</td>
<td>none</td>
<td>The prepared SQL query to obtain the information about the roles. It should be equivalent to query 'select Role, RoleGroup from Roles where PrincipalID=?', where Role is the role name and the RoleGroup column value should always be either Roles with a capital R or CallerPrincipal.</td>
</tr>
<tr>
<td>suspendResume</td>
<td>boolean</td>
<td>true</td>
<td>Whether any existing Jakarta Transactions transaction should be suspended during database operations.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>transactionManagerJndi Name</td>
<td>JNDI Resource</td>
<td>java:/TransactionManager</td>
<td>The JNDI name of the transaction manager used by the login module.</td>
</tr>
</tbody>
</table>

### 4.2. DATABASEUSERS LOGIN MODULE

**Short name:** DatabaseUsers

**Full name:** org.jboss.security.DatabaseUsers

Alias to [Database Login Module](#) for compatibility reasons.

### 4.3. LDAP LOGIN MODULE

**Short name:** Ldap

**Full name:** org.jboss.security.auth.spi.LdapLoginModule

**Parent:** [UsernamePassword Login Module](#)

The **Ldap** login module is a login module implementation that authenticates against an LDAP server. The **security** subsystem connects to the LDAP server using connection information, a `java.naming.security.principal` that has permissions to search both the `baseCtxDN` and `rolesCtxDN` trees for the user and roles, provided using a JNDI initial context. When a user attempts to authenticate, the Ldap login module connects to the LDAP server, and passes the user’s credentials to the LDAP server.

These credentials are formed by concatenating `principalDNPrefix`, the user input, and `principalDNSuffix`. For instance, consider the following scenario.

1. `principalDNPrefix` is set to `uid=`.
2. `principalDNSuffix` is set to `,ou=People,dc=jboss,dc=org`.

If the user input is set to `jduke`, then the search string is `uid=jduke,ou=People,dc=jboss,dc=org`. If the user input is instead `jduke,ou=Employees`, then the search string would be `uid=jduke,ou=Employees,ou=People,dc=jboss,dc=org`.

**IMPORTANT**

Any user input is transformed into a string before the search is performed. Due to this any special characters, such as commas, must be escaped for the search to function successfully.

Upon successful authentication, an **InitialLDAPContext** is created for that user within JBoss EAP, populated with the user’s roles.
<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>principalDNPrefix</td>
<td>String</td>
<td></td>
<td>Prefix added to the user name to form the user DN. You can prompt the user for a user name and build the fully qualified DN by using the principalDNPrefix and principalDNSuffix.</td>
</tr>
<tr>
<td>principalDNSuffix</td>
<td>String</td>
<td></td>
<td>Suffix added to the user name to form the user DN. You can prompt the user for a user name and build the fully qualified DN by using the principalDNPrefix and principalDNSuffix.</td>
</tr>
<tr>
<td>rolesCtxDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The fully qualified DN for the context to search for user roles.</td>
</tr>
<tr>
<td>userRolesCtxDNAttributeName</td>
<td>attribute</td>
<td>none</td>
<td>The attribute in the user object that contains the DN for the context to search for user roles. This differs from rolesCtxDN in that the context to search for a user's roles may be unique for each user.</td>
</tr>
<tr>
<td>roleAttributeID</td>
<td>attribute</td>
<td>roles</td>
<td>Name of the attribute containing the user roles.</td>
</tr>
<tr>
<td>roleAttributeIsDN</td>
<td>true or false</td>
<td>false</td>
<td>Whether or not the roleAttributeID contains the fully qualified DN of a role object. If false, the role name is taken from the value of the roleNameAttributeID attribute of the context name. Certain directory schemas, such as Microsoft Active Directory, require this attribute to be set to true.</td>
</tr>
<tr>
<td>roleNameAttributeID</td>
<td>attribute</td>
<td>name</td>
<td>Name of the attribute within the roleCtxDN context which contains the role name. If the roleAttributeIsDN property is set to true, this property is used to find the role object's name attribute.</td>
</tr>
<tr>
<td>uidAttributeID</td>
<td>attribute</td>
<td>uid</td>
<td>Name of the attribute in the UserRolesAttributeDN that corresponds to the user ID. This is used to locate the user roles.</td>
</tr>
</tbody>
</table>
### Option

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>matchOnUserDN</td>
<td>true or false</td>
<td>false</td>
<td>Whether or not the search for user roles should match on the user’s fully distinguished DN or the user name only. If true, the full user DN is used as the match value. If false, only the user name is used as the match value against the <code>uidAttributeName</code> attribute.</td>
</tr>
<tr>
<td>allowEmptyPasswords</td>
<td>true or false</td>
<td>false</td>
<td>Whether to allow empty passwords. Most LDAP servers treat empty passwords as anonymous login attempts. To reject empty passwords, set this to false.</td>
</tr>
<tr>
<td>searchTimeLimit</td>
<td>integer</td>
<td>10000, or 10 seconds</td>
<td>The timeout in milliseconds for user or role searches.</td>
</tr>
<tr>
<td>searchScope</td>
<td>One of: OBJECT_SCOPE, ONELEVEL_SCOPE, SUBTREE_SCOPE</td>
<td>SUBTREE_SCOPE</td>
<td>The search scope to use.</td>
</tr>
<tr>
<td>jaasSecurityDomain</td>
<td>String</td>
<td>none</td>
<td>The Jakarta Management ObjectName of the <code>JaasSecurityDomain</code> used to decrypt the <code>java.naming.security.credentials</code>. The encrypted form of the password is returned by the <code>decode64(String)</code> method which is called on the object passed in this option.</td>
</tr>
</tbody>
</table>

**NOTE**

For information about additional LDAP context properties related to connecting to an LDAP server and creating an initial context, see LDAP Connectivity Options.

**NOTE**

While this login module does inherit the `ignorePasswordCase` option from its parent, UsernamePassword Login Module, it is not used by this specific login module.

### 4.4. LDAPEXTENDED LOGIN MODULE

**Short name:** LdapExtended
The `LdapExtended` login module searches for the user to bind, as well as the associated roles, for authentication. The roles query recursively follows DNs to navigate a hierarchical role structure. The login module options include whatever options are supported by the chosen LDAP JNDI provider supports.

The authentication happens in two steps:

1. An initial bind to the LDAP server is done using the bindDN and bindCredential options. The `bindDN` is an LDAP user with the ability to search both the `baseCtxDN` and `rolesCtxDN` trees for the user and roles. The user DN to authenticate against is queried using the filter specified by the `baseFilter` attribute.

2. The resulting user DN is authenticated by binding to the LDAP server using the user DN as a principal name and the password obtained by the callback handler as the principal’s credentials.

### Table 4.3. LdapExtended Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>baseCtxDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The fixed DN of the top-level context to begin the user search.</td>
</tr>
<tr>
<td>bindCredential</td>
<td>String, optionally encrypted</td>
<td>none</td>
<td>Used to store the credentials for the DN.</td>
</tr>
<tr>
<td>bindDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The DN used to bind against the LDAP server for the user and roles queries. This DN needs read and search permissions on the <code>baseCtxDN</code> and <code>rolesCtxDN</code> values.</td>
</tr>
<tr>
<td>baseFilter</td>
<td>LDAP filter String</td>
<td>none</td>
<td>A search filter used to locate the context of the user to authenticate. The input <code>username</code> or <code>userDN</code> obtained from the login module callback is substituted into the filter anywhere a <code>{0}</code> expression is used. A common example for the search filter is <code>(uid={0})</code>.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>jaasSecurityDomain</td>
<td>String</td>
<td>none</td>
<td>The Jakarta Management ObjectName of the JaasSecurityDomain used to decrypt the password.</td>
</tr>
<tr>
<td>rolesCtxDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The fixed DN of the context to search for user roles. This is not the DN where the actual roles are, but the DN where the objects containing the user roles are. For example, in a Microsoft Active Directory server, this is the DN where the user account is.</td>
</tr>
<tr>
<td>roleFilter</td>
<td>LDAP filter String</td>
<td>none</td>
<td>A search filter used to locate the roles associated with the authenticated user. The input <strong>username</strong> or <strong>userDN</strong> obtained from the login module callback is substituted into the filter anywhere a <code>{0}</code> expression is used. The authenticated <strong>userDN</strong> is substituted into the filter anywhere a <code>{1}</code> is used. An example search filter that matches on the input username is <code>{member={0}}</code>. An alternative that matches on the authenticated userDN is <code>{member={1}}</code>.</td>
</tr>
<tr>
<td>roleAttributeID</td>
<td>attribute</td>
<td>role</td>
<td>Name of the attribute containing the user roles.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------</td>
<td>---------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>roleAttributeIsDN</td>
<td>true or false</td>
<td>false</td>
<td>Whether or not the roleAttributeID contains the fully qualified DN of a role object. If false, the role name is taken from the value of the roleNameAttributeId attribute of the context name. Certain directory schemas, such as Microsoft Active Directory, require this attribute to be set to true.</td>
</tr>
<tr>
<td>defaultRole</td>
<td>Role name</td>
<td>none</td>
<td>A role included for all authenticated users</td>
</tr>
<tr>
<td>parseRoleNameFromDN</td>
<td>true or false</td>
<td>false</td>
<td>A flag indicating if the DN returned by a query contains the roleNameAttributeID. If set to true, the DN is checked for the roleNameAttributeID. If set to false, the DN is not checked for the roleNameAttributeID. This flag can improve the performance of LDAP queries.</td>
</tr>
<tr>
<td>parseUsername</td>
<td>true or false</td>
<td>false</td>
<td>A flag indicating if the DN is to be parsed for the username. If set to true, the DN is parsed for the user name. If set to false, the DN is not parsed for the user name. This option is used together with usernameBeginString and usernameEndString.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>usernameBeginString</td>
<td>String</td>
<td>none</td>
<td>Defines the String which is to be removed from the start of the DN to reveal the username. This option is used together with usernameEndString and only taken into account if parseUsername is set to true.</td>
</tr>
<tr>
<td>usernameEndString</td>
<td>String</td>
<td>none</td>
<td>Defines the String which is to be removed from the end of the DN to reveal the username. This option is used together with usernameBeginString and only taken into account if parseUsername is set to true.</td>
</tr>
<tr>
<td>roleNameAttributeID</td>
<td>attribute</td>
<td>name</td>
<td>Name of the attribute within the roleCtxDN context which contains the role name. If the roleAttributeIsDN property is set to true, this property is used to find the role object's name attribute.</td>
</tr>
<tr>
<td>distinguishedNameAttribute</td>
<td>attribute</td>
<td>distinguishedName</td>
<td>The name of the attribute in the user entry that contains the DN of the user. This may be necessary if the DN of the user itself contains special characters, backslash for example, that prevent correct user mapping. If the attribute does not exist, the entry's DN is used.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------</td>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>roleRecursion</td>
<td>integer</td>
<td>0</td>
<td>The numbers of levels of recursion the role search will go below a matching context. Disable recursion by setting this to 0.</td>
</tr>
<tr>
<td>searchTimeLimit</td>
<td>integer</td>
<td>10000, or 10 seconds</td>
<td>The timeout in milliseconds for user or role searches.</td>
</tr>
<tr>
<td>searchScope</td>
<td>One of: OBJECT_SCOPE, ONELEVEL_SCOPE, SUBTREE_SCOPE</td>
<td>SUBTREE_SCOPE</td>
<td>The search scope to use.</td>
</tr>
<tr>
<td>allowEmptyPasswords</td>
<td>true or false</td>
<td>false</td>
<td>Whether to allow empty passwords. Most LDAP servers treat empty passwords as anonymous login attempts. To reject empty passwords, set this to false.</td>
</tr>
<tr>
<td>referralUserAttributeIDT oCheck</td>
<td>attribute</td>
<td>none</td>
<td>If you are not using referrals, this option can be ignored. When using referrals, this option denotes the attribute name which contains users defined for a certain role, for example member, if the role object is inside the referral. Users are checked against the content of this attribute name. If this option is not set, the check will always fail, so role objects cannot be stored in a referral tree.</td>
</tr>
</tbody>
</table>

**NOTE**

For information about additional LDAP context properties related to connecting to an LDAP server and creating an initial context, see [LDAP Connectivity Options](#).
NOTE

While this login module does inherit the `ignorePasswordCase` option from its parent, UsernamePassword Login Module, it is not used by this specific login module.

NOTE

In cases when you are using Microsoft Active Directory with a `crossRef` object for creating referrals, you should take into account that LDAP Login Modules use only one value for `baseCtxDN` and only one value for `rolesCtxDN`. For that reason, initial users and roles should be stored in one Microsoft Active Directory domain to accommodate the possibility of using LDAP referrals.

4.5. ADVANCEDLDAP LOGIN MODULE

Short name: AdvancedLdap

Full name: org.jboss.security.negotiation.AdvancedLdapLoginModule

Parent: Common Login Module

The AdvancedLdap login module is a module which provides additional functionality, such as SASL and the use of a JAAS security domain. In cases where users wish to use LDAP with the SPNEGO authentication or skip some of the authentication phases while using an LDAP server, consider using the AdvancedLdap login module chained with the SPNEGO login module or only the AdvancedLdap login module.

AdvancedLdap login module differs from LdapExtended login module in the following ways:

- The top level role is queried only for `roleAttributeID` and not for `roleNameAttributeID`.
- When the `roleAttributeIsDN` module property is set to `false`, the recursive role search is disabled even if the `recurseRoles` module option is set to `true`.

Table 4.4. AdvancedLdap Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bindDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The DN used to bind against the LDAP server for the user and roles queries. This DN needs read and search permissions on the <code>baseCtxDN</code> and <code>rolesCtxDN</code> values.</td>
</tr>
<tr>
<td>bindCredential</td>
<td>String, optionally encrypted</td>
<td>none</td>
<td>Used to store the credentials for the DN.</td>
</tr>
</tbody>
</table>
### Option  
<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>jaasSecurityDomain</td>
<td>String</td>
<td>none</td>
<td>The Jakarta Management ObjectName of the JaasSecurityDomain used to decrypt the password.</td>
</tr>
<tr>
<td>java.naming.provider.url</td>
<td>String</td>
<td>If the value of <strong>java.naming.security.protocol</strong> is <strong>SSL</strong>, ldap://localhost:686, otherwise ldap://localhost:389</td>
<td>The URI of the directory server.</td>
</tr>
<tr>
<td>baseCtxDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The distinguished name to use as the base for searches.</td>
</tr>
<tr>
<td>baseFilter</td>
<td>String representing an LDAP search filter.</td>
<td>none</td>
<td>The filter to use to narrow down search results.</td>
</tr>
<tr>
<td>searchTimeLimit</td>
<td>integer</td>
<td>10000, or 10 seconds</td>
<td>The timeout in milliseconds for user or role searches.</td>
</tr>
<tr>
<td>roleAttributeID</td>
<td>String value representing an LDAP attribute.</td>
<td>none</td>
<td>The LDAP attribute which contains the names of authorization roles.</td>
</tr>
<tr>
<td>roleAttributeIsDN</td>
<td>true or false</td>
<td>false</td>
<td>Whether the role attribute is a Distinguished Name, DN.</td>
</tr>
<tr>
<td>rolesCtxDN</td>
<td>fully qualified DN</td>
<td>none</td>
<td>The fully qualified DN for the context to search for user roles.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td>---------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| roleFilter          | LDAP filter String    | none    | A search filter used to locate the roles associated with the authenticated user. The input user name or userDN obtained from the login module callback is substituted into the filter anywhere a `{0}` expression is used. The authenticated userDN is substituted into the filter anywhere a `{1}` is used. An example search filter that matches on the input user name is `(member={0})`. An alternative that matches on the authenticated userDN is `(member={1})`.
<p>| recurseRoles        | true or false         | false   | Whether to recursively search the <code>roleAttributeID</code> for roles.                                                                                   |
| roleNameAttributeID | String representing an LDAP attribute. | none    | The attribute contained within the <code>roleAttributeID</code> which contains the actual role attribute.                                                    |</p>
<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>referralUserAttributeIDToCheck</td>
<td>attribute</td>
<td>none</td>
<td>If you are not using referrals, this option can be ignored. When using referrals, this option denotes the attribute name which contains users defined for a certain role, for example <code>member</code>, if the role object is inside the referral. Users are checked against the content of this attribute name. If this option is not set, the check will always fail, so role objects cannot be stored in a referral tree.</td>
</tr>
<tr>
<td>searchScope</td>
<td>One of: OBJECT_SCOPE, ONELEVEL_SCOPE, SUBTREE_SCOPE</td>
<td>SUBTREE_SCOPE</td>
<td>The search scope to use.</td>
</tr>
<tr>
<td>allowEmptyPassword</td>
<td>true or false</td>
<td>false</td>
<td>Whether to allow empty passwords. Most LDAP servers treat empty passwords as anonymous login attempts. To reject empty passwords, set this to false.</td>
</tr>
<tr>
<td>bindAuthentication</td>
<td>String</td>
<td>If the system property java.naming.security.authentication is set, it uses that value, otherwise it defaults to simple.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The type of SASL authentication to use for binding to the directory server.</td>
</tr>
</tbody>
</table>

**NOTE**

For information about additional LDAP context properties related to connecting to an LDAP server and creating an initial context, see [LDAP Connectivity Options](#).
NOTE
In cases when you are using Microsoft Active Directory with a crossRef object for creating referrals, you should take into account that LDAP Login Modules use only one value for baseCtxDN and only one value for rolesCtxDN. For that reason, initial users and roles should be stored in one Microsoft Active Directory domain to accommodate the possibility of using LDAP referrals.

4.6. ADVANCEDADLDAP LOGIN MODULE

Short name: AdvancedAdLdap

Full name: org.jboss.security.negotiation.AdvancedADLoginModule

Parent: AdvancedLdap Login Module

The AdvancedAdLdap login module adds extra parameters that are relevant to Microsoft Active Directory but has no additional configurable options beyond the ones available in AdvancedLdap Login Module.

NOTE
For information about additional LDAP context properties related to connecting to an LDAP server and creating an initial context, see LDAP Connectivity Options.

4.7. LDAP CONNECTIVITY OPTIONS

The LDAP connectivity information is provided as configuration options that are passed through to the environment object used to create JNDI initial context. These configuration options can be utilized by the Ldap Login Module, LdapExtended Login Module, AdvancedLdap Login Module, and AdvancedAdLdap Login Module.

The standard LDAP JNDI properties used include the following:

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>java.naming.factory.initial</td>
<td>class name</td>
<td>com.sun.jndi.ldap.LdapCtxFactory</td>
<td>InitialContextFactory implementation class name.</td>
</tr>
<tr>
<td>java.naming.provider.url</td>
<td>ldap:// URL</td>
<td>If the value of</td>
<td>URL for the LDAP server.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>java.naming.security.protocol is SSL</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ldap://localhost:636,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>otherwise</td>
<td></td>
</tr>
<tr>
<td>java.naming.security.authentication</td>
<td>none, simple, or the name of</td>
<td>The default is simple. If the</td>
<td>The security level to use to bind to the LDAP server.</td>
</tr>
<tr>
<td></td>
<td>a SASL mechanism</td>
<td>the property is explicitly</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>undefined, the behavior is determined by the service provider.</td>
<td></td>
</tr>
</tbody>
</table>
User authentication is performed by connecting to the LDAP server, based on the login module configuration options. Connecting to the LDAP server is done by creating an `InitialLdapContext` with an environment composed of the LDAP JNDI properties. The initial context implementation that is actually used depends on the initial context factory method configured. The initial context factory is defined using the `java.naming.factory.initial` property and gets its configuration from environment properties provided, for example `java.naming.provider.url`. This allows for arbitrary properties, as well as related login module options, to be used for custom initial context factories.

### NOTE

Additional default and common options available for creating an initial context available in the `javax.naming.Context` interface javadoc.

## 4.8. LDAPUSERS LOGIN MODULE

**Short name:** LdapUsers

**Full name:** org.jboss.security.auth.spi.LdapUsersLoginModule

**Parent:** UsernamePassword Login Module

The LdapUsers module is superseded by the LdapExtended and AdvancedLdap modules.

## 4.9. KERBEROS LOGIN MODULE

**Short name:** Kerberos
The Kerberos login module performs Kerberos login authentication, using GSSAPI. This login module wraps the JDK supplied module, `com.sun.security.auth.module.Krb5LoginModule` for the Oracle JDK and `com.ibm.security.auth.module.Krb5LoginModule` for the IBM JDK, and provides additional logic for credential delegation and adding a `GSSCredential` to the populated Subject.

This module needs to be paired with another module which handles the authentication and roles mapping.

**IMPORTANT**

The below table lists the options available for `org.jboss.security.negotiation.KerberosLoginModule`, but options from the module supplied by the JDK can also be configured. For more details on each JDK's module options, please consult the Oracle and IBM Javadocs.

Table 4.5. Kerberos Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>delegationCredential</td>
<td><code>IGNORE, REQUIRE, or USE</code></td>
<td><code>IGNORE</code></td>
<td>Defines how this login module handles delegation. <strong>IGNORE</strong> specifies to not use the delegate credential and to perform normal Kerberos authentication. <strong>USE</strong> specifies to use a <code>GSSCredential</code> if available to populate a Subject, otherwise fall back to standard Kerberos authentication if unavailable. <strong>REQUIRE</strong> specifies to use a <code>GSSCredential</code> and fail authentication if one is not available.</td>
</tr>
<tr>
<td>addGSSCredential</td>
<td>boolean</td>
<td><code>false</code></td>
<td>Enables adding a <code>GSSCredential</code> to the private credentials of the populated Subject.</td>
</tr>
<tr>
<td>wrapGSSCredential</td>
<td>boolean</td>
<td><code>false</code></td>
<td>Specifies if any <code>GSSCredential</code> being added to the Subject should be wrapped to prevent disposal. This has no effect if a <code>GSSCredential</code> is not being added to the Subject.</td>
</tr>
</tbody>
</table>
### SPNEGO Login Module

**Short name:** SPNEGO

**Full name:** org.jboss.security.negotiation.spnego.SPNEGOLoginModule

**Parent:** Common Login Module

The SPNEGO login module is an implementation of login module that establishes caller identity and credentials with a KDC. The module implements SPNEGO, Simple and Protected GSSAPI Negotiation mechanism, and is a part of the JBoss Negotiation project. This authentication can be used in the chained configuration with the AdvancedLdap login module to allow cooperation with an LDAP server.

#### Table 4.6. SPNEGO Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>serverSecurityDomain</td>
<td>String</td>
<td>null</td>
<td>Defines the domain that is used to retrieve the identity of the server service through the kerberos login module. This property must be set.</td>
</tr>
<tr>
<td>removeRealmFromPrincipal</td>
<td>boolean</td>
<td>false</td>
<td>Specifies that the Kerberos realm should be removed from the principal before further processing.</td>
</tr>
<tr>
<td>usernamePasswordDomain</td>
<td>String</td>
<td>null</td>
<td>Specifies another security domain within the configuration that should be used as a failover login when Kerberos fails.</td>
</tr>
</tbody>
</table>
CHAPTER 5. CERTIFICATE-BASED LOGIN MODULES

5.1. CERTIFICATE LOGIN MODULE

Short name: Certificate

Full name: org.jboss.security.auth.spi.BaseCertLoginModule

Parent: AbstractServer Login Module

Certificate login module authenticates users based on X509 certificates. A typical use case for this login module is CLIENT-CERT authentication in the web tier. This login module only performs authentication and must be combined with another login module capable of acquiring authorization roles to completely define access to a secured web or Jakarta Enterprise Beans components. Two subclasses of this login module, CertRoles Login Module and DatabaseCert Login Module extend the behavior to obtain the authorization roles from either a properties file or database.

Table 5.1. Certificate Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>securityDomain</td>
<td>String</td>
<td>other</td>
<td>Name of the security domain that has the JSSE configuration for the truststore holding the trusted certificates.</td>
</tr>
<tr>
<td>verifier</td>
<td>class</td>
<td>none</td>
<td>The class name of the org.jboss.security.auth.certs.X509CertificateVerifier to use for verification of the login certificate.</td>
</tr>
</tbody>
</table>

5.2. CERTIFICATEROLES LOGIN MODULE

Short name: CertificateRoles

Full name: org.jboss.security.auth.spi.CertRolesLoginModule

Parent: Certificate Login Module

The CertificateRoles login module adds role mapping capabilities from a properties file using the following options:

Table 5.2. CertificateRoles Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
</table>

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### 5.3. DATABASECERTIFICATE LOGIN MODULE

**Short name:** DatabaseCertificate

**Full name:** org.jboss.security.auth.spi.DatabaseCertLoginModule

**Parent:** Certificate Login Module

The DatabaseCertificate login module adds mapping capabilities from a database table through these additional options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rolesProperties</td>
<td>String</td>
<td>roles.properties</td>
<td>The name of the resource or file containing the roles to assign to each user. The role properties file must be in the format <code>username=role1,role2</code> where the user name is the DN of the certificate, escaping any equals and space characters. The following example is in the correct format: <code>CN=unit-tests-client, OU=RedHat Inc., O=RedHat Inc., ST=North Carolina, C=US</code></td>
</tr>
<tr>
<td>defaultRolesProperties</td>
<td>String</td>
<td>defaultRoles.properties</td>
<td>Name of the resource or file to fall back to if the rolesProperties file cannot be found.</td>
</tr>
<tr>
<td>roleGroupSeparator</td>
<td>A single character.</td>
<td>. (a single period)</td>
<td>Which character to use as the role group separator in the rolesProperties file.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dsJndiName</td>
<td>A JNDI resource</td>
<td>java:/DefaultDS</td>
<td>The name of the JNDI resource storing the authentication information.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>rolesQuery</td>
<td>prepared SQL statement</td>
<td>select</td>
<td>SQL prepared statement to be executed in order to map roles. It should be an equivalent to the query 'select Role, RoleGroup from Roles where PrincipalID=?', where Role is the role name and the RoleGroup column value should always be either Roles with a capital R or CallerPrincipal.</td>
</tr>
<tr>
<td>suspendResume</td>
<td>true or false</td>
<td>true</td>
<td>Whether any existing Jakarta Transactions transaction should be suspended during database operations.</td>
</tr>
<tr>
<td>transactionManagerJndiName</td>
<td>JNDI Resource</td>
<td>java:/TransactionManager</td>
<td>The JNDI name of the transaction manager used by the login module.</td>
</tr>
</tbody>
</table>
6.1. REMOTING LOGIN MODULE

Short name: Remoting

Full name: org.jboss.as.security.remoting.RemotingLoginModule

Parent: AbstractServer Login Module

The Remoting login module allows remote Jakarta Enterprise Beans invocations, coming in over remoting, to perform a SASL-based authentication. This allows the remote user to establish their identity via SASL and have that identity be used for authentication and authorization when making that Jakarta Enterprise Beans invocation.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>useClientCert</td>
<td>boolean</td>
<td>false</td>
<td>If true, the login module will obtain the SSLSession of the connection and substitute the peer’s X509Certificate in place of the password.</td>
</tr>
</tbody>
</table>

6.2. CLIENT LOGIN MODULE

Short name: Client

Full name: org.jboss.security.ClientLoginModule

Client login module is an implementation of login module for use by JBoss EAP clients when establishing caller identity and credentials. This creates a new SecurityContext, assigns it a principal and a credential and sets the SecurityContext to the ThreadLocal security context. Client login module is the only supported mechanism for a client to establish the current thread’s caller. Both standalone client applications, and server environments, acting as JBoss EAP Jakarta Enterprise Beans clients where the security environment has not been configured to use the JBoss EAP security subsystem transparently, must use Client login module.
WARNING

This login module does not perform any authentication. It merely copies the login information provided to it into the server Jakarta Enterprise Beans invocation layer for subsequent authentication on the server. Within JBoss EAP, this is only supported for the purpose of switching a user’s identity for in-JVM calls. This is NOT supported for remote clients to establish an identity.

Table 6.2. Client Login Module Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>multi-threaded</td>
<td>true or false</td>
<td>true</td>
<td>Set to true if each thread has its own principal and credential storage. Set to false to indicate that all threads in the VM share the same identity and credential.</td>
</tr>
<tr>
<td>password-stacking</td>
<td><strong>useFirstPass</strong> or false</td>
<td>false</td>
<td>Set to <strong>useFirstPass</strong> to indicate that this login module should look for information stored in the <strong>LoginContext</strong> to use as the identity. This option can be used when stacking other login modules with this one.</td>
</tr>
<tr>
<td>restore-login-identity</td>
<td>true or false</td>
<td>false</td>
<td>Set to true if the identity and credential seen at the start of the <strong>login()</strong> method should be restored after the <strong>logout()</strong> method is invoked.</td>
</tr>
</tbody>
</table>
CHAPTER 7. ABOUT PICKETLINK LOGIN MODULES

A PicketLink login module is typically configured as part of the security setup to use a Security Token Service (STS) or browser-based SSO with SAML for authenticating users. The STS may be collocated on the same container as the login module or be accessed remotely through web service calls or another technology. PicketLink STS login modules support non-PicketLink STS implementations through standard WS-Trust calls. For more details on the concepts behind Security Token Services as well as browser-based SSO with SAML, please see the JBoss EAP Security Architecture guide.

7.1. STSISSUINGLOGINMODULE

**Full name:** org.picketlink.identity.federation.core.wstrust.auth.STSIssuingLoginModule

The STSIssuingLoginModule uses a user name and password to authenticate the user against an STS by retrieving a token. The authentication happens as follows:

- Calls the configured STS and requests for a security token. Upon successfully receiving the RequestedSecurityToken, it marks the authentication as successful.

- A call to the STS typically requires authentication. This login module uses credentials from one of the following sources:
  
  - Its properties file, if the useOptionsCredentials module option is set to true.
  
  - Previous login module credentials if the password-stacking module option is set to useFirstPass.
  
  - From the configured CallbackHandler by supplying a Name and Password Callback.

- Upon successful authentication, the security token is stored in the login module’s shared map with org.picketlink.identity.federation.core.wstrust.lm.stsToken key.

**NOTE**

This login module has no direct configurable attributes, but you may use module options to pass in configuration options.

**Example STSIssuingLoginModule**

```xml
<security-domain name="saml-issue-token">
  <authentication>
    <login-module code="org.picketlink.identity.federation.core.wstrust.auth.STSIssuingLoginModule" flag="required">
      <module-option name="configFile">./picketlink-sts-client.properties</module-option>
      <module-option name="endpointURI">http://security_saml/endpoint</module-option>
    </login-module>
  </authentication>
  <mapping>
    <mapping-module code="org.picketlink.identity.federation.bindings.jboss.auth.mapping.STSPrincipalMappingProvider" type="principal"/>
    <mapping-module code="org.picketlink.identity.federation.bindings.jboss.auth.mapping.STSGroupMappingProvider"/>
  </mapping>
</security-domain>
```
In the above example, the specified Principal mapping provider and the RoleGroup mapping provider results in an authenticated Subject being populated that enables coarse-grained and role-based authorization. After authentication, the Security Token is available and may be used to invoke other services by Single Sign-On.

7.2. STSVALIDATINGLOGINMODULE

Full name: org.picketlink.identity.federation.core.wstrust.auth.STSValidatingLoginModule

The STSValidatingLoginModule uses a TokenCallback to retrieve a security token from STS.

The authentication happens as follows:

- Calls the configured STS and validates an available security token.
- A call to STS typically requires authentication. This Login Module uses credentials from one of the following sources:
  - Its properties file, if the useOptionsCredentials module option is set to true.
  - Previous login module credentials if the password-stacking module option is set to useFirstPass.
  - From the configured CallbackHandler by supplying a Name and Password Callback.
- Upon successful authentication, the security token is stored in the login module’s shared map with org.picketlink.identity.federation.core.wstrust.lm.stsToken key.

NOTE

This login module has no direct configurable attributes, but you may use module options to pass in configuration options.

Example STSValidatingLoginModule

```xml
<security-domain name="saml-validate-token">
  <authentication>
    <login-module
      code="org.picketlink.identity.federation.core.wstrust.auth.STSValidatingLoginModule"
      flag="required">
      <module-option name="configFile">./picketlink-sts-client.properties</module-option>
      <module-option name="endpointURI">http://security_saml/endpoint</module-option>
    </login-module>
  </authentication>
  <mapping>
    <mapping-module
      code="org.picketlink.identity.federation.bindings.jboss.auth.mapping.STSPrincipalMappingProvider"
      type="principal"/>
    <mapping-module
      code="org.picketlink.identity.federation.bindings.jboss.auth.mapping.STSGroupMappingProvider"
      type="group"/>
  </mapping>
</security-domain>
```
The above example shows how to enable validation for an issued token, either directly by contacting the STS or through a token-issuing login module, to be used to authenticate against multiple applications and services. Providing a Principal mapping provider and a RoleGroup mapping provider results in an authenticated Subject being populated that enables coarse-grained and role-based authorization. After authentication, the Security Token is available and can be used to invoke other services by Single Sign-On.

7.3. SAML2STSLOGINMODULE

Full name: org.picketlink.identity.federation.bindings.jboss.auth.SAML2STSLoginModule

The authentication happens as follows:

- This Login Module supplies an ObjectCallback to the configured CallbackHandler and expects a SamlCredential object back. The Assertion is validated against the configured STS.

- Upon successful authentication, the SamlCredential is inspected for a NameIDType.

- If a user ID and SAML token are shared, this Login Module bypasses validation when stacked on top of another Login Module that is successfully authenticated.

Example SAML2STSLoginModule

```xml
<security-domain name="saml-sts" cache-type="default">
  <authentication>
    <login-module code="org.picketlink.identity.federation.bindings.jboss.auth.SAML2STSLoginModule" flag="required" module="org.picketlink">
      <module-option name="configFile" value="${jboss.server.config.dir}/sts-config.properties"/>
      <module-option name="password-stacking" value="useFirstPass"/>
    </login-module>
  </authentication>
</security-domain>
```

NOTE

This login module has no direct configurable attributes, but you may use module options to pass in configuration options.

7.4. SAML2LOGINMODULE

Full name: org.picketlink.identity.federation.bindings.jboss.auth.SAML2LoginModule

The authentication happens as follows:

- This login module is used in conjunction with other components for SAML authentication and performs no authentication itself.

- The SAML authenticator, which is installed by the PicketLink Service Provider Undertow ServletExtension
(org.picketlink.identity.federation.bindings.wildfly.sp.SPServletExtension), uses this login module to authenticate users based on a SAML assertion previously issued by an identity provider.

- If the user does not have a SAML assertion for the service provider, the user is redirected to the identity provider to obtain a SAML assertion.

- This login module is used to pass the user ID and roles to the security framework to be populated in the JAAS subject.

Example SAML2LoginModule

```xml
<security-domain name="sp" cache-type="default">
  <authentication>
    <login-module code="org.picketlink.identity.federation.bindings.jboss.auth.SAML2LoginModule" flag="required"/>
  </authentication>
</security-domain>
```

NOTE

This login module has no direct configurable attributes.
**WARNING**

The **SAML2LoginModule** is intended for use with applications using PicketLink with SAML and should not be used without the PicketLink Service Provider Undertow ServletExtension (org.picketlink.identity.federation.bindings.wildfly.sp.SPServletExtension). Doing so presents a possible security risk since the **SAML2LoginModule** or **SAML2CommonLoginModule** will always accept the default password of **EMPTY_STR**. For example, this can also occur if the PicketLink Service Provider Undertow ServletExtension is not installed in the SP application. The PicketLink Service Provider Undertow ServletExtension is installed automatically when configuring the SP application for JBoss EAP. This can also occur if the **SAML2LoginModule** is stacked with other login modules:

```xml
<security-domain name="sp" cache-type="default">
  <authentication>
    <login-module
      code="org.picketlink.identity.federation.bindings.jboss.auth.SAML2LoginModule"
      flag="optional">
      <module-option name="password-stacking" value="useFirstPass"/>
    </login-module>
    <login-module code="UsersRoles" flag="required">
      <module-option name="usersProperties" value="users.properties"/>
      <module-option name="rolesProperties" value="roles.properties"/>
      <module-option name="password-stacking" value="useFirstPass"/>
    </login-module>
  </authentication>
</security-domain>
```

### 7.5. REGEXUSERNAMELOGINMODULE

**Full name:** org.picketlink.identity.federation.bindings.jboss.auth.RegExUserNameLoginModule

This login module can be used after any Certificate Login Module to extract a username, UID or other field from the principal name so that roles can be obtained from LDAP. The module has an option named **regex** which specifies the regular expression to be applied to the principal name, the result of which is passed on to the subsequent login module.

#### Example RegExUserNameLoginModule

```xml
<login-module
  code="org.picketlink.identity.federation.bindings.jboss.auth.RegExUserNameLoginModule"
  flag="required">
  <module-option name="password-stacking" value="useFirstPass"/>
  <module-option name="regex" value="UID=(.*?),"/>
</login-module>
```

For example, an input principal name of **UID=007, EMAILADDRESS=something@something, CN=James Bond, O=SpyAgency** would result in the output **007** using the above login module.
For more information on regular expressions, see the `java.util.regex.Pattern` class documentation.
CHAPTER 8. CUSTOM LOGIN MODULES

In cases where the login modules bundled with the JBoss EAP security framework do not meet the needs of the security environment, a custom login module implementation may be written. The org.jboss.security.AuthenticationManager requires a particular usage pattern of the Subject principals set. A full understanding of the JAAS Subject class’s information storage features and the expected usage of these features are required to write a login module that works with the org.jboss.security.AuthenticationManager. Custom login modules must be implementations of javax.security.auth.spi>LoginModule. Refer to the API documentation for more information about creating a custom authentication module.
CHAPTER 9. AUTHORIZATION MODULES

The following modules provide authorization services:

<table>
<thead>
<tr>
<th>Code</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>DenyAll</td>
<td>org.jboss.security.authorization.modules.AllDenyAuthorizationModule</td>
</tr>
<tr>
<td>PermitAll</td>
<td>org.jboss.security.authorization.modules.AllPermitAuthorizationModule</td>
</tr>
<tr>
<td>Delegating</td>
<td>org.jboss.security.authorization.modules.DelegatingAuthorizationModule</td>
</tr>
<tr>
<td>Web</td>
<td>org.jboss.security.authorization.modules.web.WebAuthorizationModule</td>
</tr>
<tr>
<td>JACC</td>
<td>org.jboss.security.authorization.modules.JACCAuthorizationModule</td>
</tr>
<tr>
<td>XACML</td>
<td>org.jboss.security.authorization.modules.XACMLAuthorizationModule</td>
</tr>
</tbody>
</table>

AbstractAuthorizationModule

This is the base authorization module which has to be overridden and provides a facility for delegating to other authorization modules. This base authorization module also provides a delegateMap property to the overriding class, which allows for delegation modules to be declared for specific components. This enables more specialized classes to handle the authorization for each layer, for example web, ejb, etc, since the information used to authorize a user may vary between the resources being accessed. For instance, an authorization module may be based on permissions, yet have different permission types for the web and ejb resources. By default, the authorization module would be forced to deal with all possible resource and permission types, but configuring the delegateMap option allows the module to delegate to specific classes for different resource types. The delegateMap option takes a comma-separated list of modules, each of which is prefixed by the component it relates to, for example <module-option name="delegateMap">web=xxx.yyy.MyWebDelegate,ejb=xxx.yyy.MyEJBDelegate</module-option>.

IMPORTANT

When configuring the delegateMap option, every delegate must implement the authorize(Resource) method and have it call the invokeDelegate(Resource) method in same way the provided authorization modules do. Failure to do so will result in the delegate not getting called.

AllDenyAuthorizationModule

This is a simple authorization module that always denies an authorization request. No configuration options are available.

AllPermitAuthorizationModule
This is a simple authorization module that always permits an authorization request. No configuration options are available.

DelegatingAuthorizationModule
This is the default authorization module that delegates decision making to the configured delegates. This module also supports the delegateMap option.

WebAuthorizationModule
This is the default web authorization module with the default Tomcat authorization logic, permit all.

JACCAuthorizationModule
This module enforces Jakarta Authorization semantics using two delegates, WebJACCPolicyModuleDelegate for web container authorization requests and EJBJACCPolicyModuleDelegate for Jakarta Enterprise Beans container requests. This module also supports the delegateMap option.

XACMLAuthorizationModule
This module enforces XACML authorization using two delegates for web and Jakarta Enterprise Beans containers, WebXACMLPolicyModuleDelegate and EJBXACMLPolicyModuleDelegate. It creates a PDP object based on registered policies and evaluates web or Jakarta Enterprise Beans requests against it. This module also supports the delegateMap option.
CHAPTER 10. SECURITY MAPPING MODULES

The following security mapping modules are provided in JBoss EAP.

<table>
<thead>
<tr>
<th>Class</th>
<th>Code</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>org.jboss.security.mapping.providers.role.PropertiesRolesMappingProvider</td>
<td>PropertiesRoles</td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.role.SimpleRolesMappingProvider</td>
<td>SimpleRoles</td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.DeploymentRolesMappingProvider</td>
<td>DeploymentRoles</td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.role.DatabaseRolesMappingProvider</td>
<td>DatabaseRoles</td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.role.LdapRolesMappingProvider</td>
<td>LdapRoles</td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.attribute.LdapAttributeMappingProvider</td>
<td>LdapAttributes</td>
<td>attribute</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.DeploymentRoleToRolesMappingProvider</td>
<td></td>
<td>role</td>
</tr>
<tr>
<td>org.jboss.security.mapping.providers.attribute.DefaultAttributeMappingProvider</td>
<td></td>
<td>attribute</td>
</tr>
</tbody>
</table>

**NOTE**

The mapping module functionality is only invoked for role type mapping modules. To invoke other mapping module types, the mapping functionality needs to be invoked in the application or in a custom login module.

10.1. PROPERTIESROLESMAPPINGPROVIDER

**Code:** PropertiesRoles

**Class:** org.jboss.security.mapping.providers.role.PropertiesRolesMappingProvider

**Type:** role
A MappingProvider that reads roles from a properties file in the following format: 

`username=role1,role2,…`

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rolesProperties</td>
<td>String</td>
<td>roles.properties</td>
<td>Properties formatted file name. Expansion of JBoss EAP variables can be used in form of <code>${jboss.variable}</code>.</td>
</tr>
</tbody>
</table>

10.2. SIMPLEROLESMAPPINGPROVIDER

**Code:** SimpleRoles

**Class:** `org.jboss.security.mapping.providers.role.SimpleRolesMappingProvider`

**Type:** role

A simple MappingProvider that reads roles from the options map. The option attribute name is the name of principal to assign roles to and the attribute value is the comma-separated role names to assign to the principal.

**Example**

```xml
<module-option name="JavaDuke" value="JBossAdmin,Admin"/>
<module-option name="joe" value="Users"/>
```

10.3. DEPLOYMENTROLESMAPPINGPROVIDER

**Code:** DeploymentRoles

**Class:** `org.jboss.security.mapping.providers.DeploymentRolesMappingProvider`

**Type:** role

A Role Mapping Module that takes into consideration a principal to roles mapping that can be done in `jboss-web.xml` and `jboss-app.xml` deployment descriptors.

**Example**

```xml
<jboss-web>
  ...
  <security-role>
    <role-name>Support</role-name>
    <principal-name>Mark</principal-name>
    <principal-name>Tom</principal-name>
  </security-role>
  ...
</jboss-web>
```

10.4. DATABASEROLESMAPPINGPROVIDER

**Code:** DatabaseRoles
Class: org.jboss.security.mapping.providers.role.DatabaseRolesMappingProvider

Type: role

A **MappingProvider** that reads roles from a database.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>dsJndiName</td>
<td>String</td>
<td></td>
<td>JNDI name of data source used to map roles to the user.</td>
</tr>
<tr>
<td>rolesQuery</td>
<td>String</td>
<td></td>
<td>This option should be a prepared statement equivalent to <code>select RoleName from Roles where User=?</code>. <code>?</code> is substituted with current principal name.</td>
</tr>
<tr>
<td>suspendResume</td>
<td>boolean</td>
<td>true</td>
<td>If <code>true</code>, will suspend and later resume transaction associated with current thread while performing search for roles.</td>
</tr>
<tr>
<td>transactionManagerJndiName</td>
<td>String</td>
<td>java:/TransactionManager</td>
<td>JNDI name of transaction manager.</td>
</tr>
</tbody>
</table>

10.5. LDAPROLESMappingProvider

Code: LdapRoles

Class: org.jboss.security.mapping.providers.role.LdapRolesMappingProvider

Type: role

A mapping provider that assigns roles to a user using an LDAP server to search for the roles.

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bindDN</td>
<td>String</td>
<td></td>
<td>The DN used to bind against the LDAP server for the user and roles queries. This DN needs read and search permissions on the baseCtxDN and rolesCtxDN values.</td>
</tr>
<tr>
<td>bindCredential</td>
<td>String</td>
<td></td>
<td>The password for the bindDN. This can be encrypted via the vault mechanism.</td>
</tr>
<tr>
<td>rolesCtxDN</td>
<td>String</td>
<td></td>
<td>The fixed DN of the context to search for user roles. This is not the DN where the actual roles are, but the DN where the objects containing the user roles are. For example, in a Microsoft Active Directory server, this is the DN where the user account is.</td>
</tr>
<tr>
<td>Option</td>
<td>Type</td>
<td>Default</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------</td>
<td>---------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>roleAttributeID</td>
<td>String</td>
<td>role</td>
<td>The LDAP attribute which contains the names of authorization roles.</td>
</tr>
<tr>
<td>roleAttributeIsDN</td>
<td>boolean</td>
<td>false</td>
<td>Whether or not the roleAttributeID contains the fully qualified DN of a role object. If false, the role name is taken from the value of the roleNameAttributeId attribute of the context name. Certain directory schemas, such as Microsoft Active Directory, require this attribute to be set to true.</td>
</tr>
<tr>
<td>roleNameAttributeID</td>
<td>String</td>
<td>name</td>
<td>Name of the attribute within the roleCtxDN context which contains the role name. If the roleAttributeIsDN property is set to true, this property is used to find the role object’s name attribute.</td>
</tr>
<tr>
<td>parseRoleNameFromDN</td>
<td>boolean</td>
<td>false</td>
<td>A flag indicating if the DN returned by a query contains the roleNameAttributeID. If set to true, the DN is checked for the roleNameAttributeID. If set to false, the DN is not checked for the roleNameAttributeID. This flag can improve the performance of LDAP queries.</td>
</tr>
<tr>
<td>roleFilter</td>
<td>String</td>
<td></td>
<td>A search filter used to locate the roles associated with the authenticated user. The input username or userDN obtained from the login module callback is substituted into the filter anywhere a {0} expression is used. An example search filter that matches on the input username is (member={0}).</td>
</tr>
<tr>
<td>roleRecursion</td>
<td>number</td>
<td>0</td>
<td>The numbers of levels of recursion the role search will go below a matching context. Disable recursion by setting this to 0.</td>
</tr>
<tr>
<td>searchTimeLimit</td>
<td>number</td>
<td>10000</td>
<td>The timeout in milliseconds for the user/role searches.</td>
</tr>
</tbody>
</table>
**Type**: attribute

Maps attributes from LDAP to the subject. The options include whatever options your LDAP JNDI provider supports.

### Examples of Standard Property Names

```java
Context.INITIAL_CONTEXT_FACTORY = "java.naming.factory.initial"
Context.SECURITY_PROTOCOL = "java.naming.security.protocol"
Context.PROVIDER_URL = "java.naming.provider.url"
Context.SECURITY_AUTHENTICATION = "java.naming.security.authentication"
```

<table>
<thead>
<tr>
<th>Option</th>
<th>Type</th>
<th>Default</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bindDN</td>
<td>String</td>
<td></td>
<td>The DN used to bind against the LDAP server for the user and roles queries. This DN needs read and search permissions on the <code>baseCtxDN</code> and <code>rolesCtxDN</code> values.</td>
</tr>
<tr>
<td>bindCredential</td>
<td>String</td>
<td></td>
<td>The password for the bindDN. This can be encrypted if the <code>jaasSecurityDomain</code> is specified.</td>
</tr>
<tr>
<td>baseCtxDN</td>
<td>String</td>
<td></td>
<td>The fixed DN of the context to start the user search from.</td>
</tr>
<tr>
<td>baseFilter</td>
<td>String</td>
<td></td>
<td>A search filter used to locate the context of the user to authenticate. The input <code>username</code> or <code>userDN</code> as obtained from the login module callback is substituted into the filter anywhere a <code>{0}</code> expression is used. This substitution behavior comes from the standard <code>DirContext.search(Name, String, Object[], SearchControls cons)</code> method. A common example search filter is <code>(uid={0})</code>.</td>
</tr>
<tr>
<td>searchTimeLimit</td>
<td>number</td>
<td>10000</td>
<td>The timeout in milliseconds for the user/role searches.</td>
</tr>
<tr>
<td>attributeList</td>
<td>String</td>
<td></td>
<td>A comma-separated list of attributes for the user. For example, <code>mail,cn,sn,employeeType,employeeNumber</code>.</td>
</tr>
</tbody>
</table>
The JaasSecurityDomain to use to decrypt the java.naming.security.credentials. The encrypted form of the password is that returned by the JaasSecurityDomain#decode64(String) method. The org.jboss.security.plugins.PBEUtils can also be used to generate the encrypted form.

### 10.7. DEPLOYMENTROLETOROLESMAPPINGPROVIDER

**Class:** org.jboss.security.mapping.providers.DeploymentRoleToRolesMappingProvider

**Type:** role

A Role to Roles Mapping Module that takes into consideration a role to roles mapping. This can be defined in the deployment descriptors jboss-web.xml and jboss-app.xml. In this case, all the principal-name elements denote the roles that will replace the given role in role-name.

**Example**

```xml
<jboss-web>
  ...
  <security-role>
    <role-name>Employee</role-name>
    <principal-name>Support</principal-name>
    <principal-name>Sales</principal-name>
  </security-role>
  ...
</jboss-web>
```

In the above example, each principal having the role Employee will have this role replaced with Support and Sales. If it is desired for the principal to retain the Employee role as well as gain the Support and Sales roles, `<principal-name>Employee</principal-name>` should be added.

**NOTE**

This mapping provider does not have a code associated with it so the full class name must be in the code field when configuring.

### 10.8. DEFAULTATTRIBUTE_MAPPINGPROVIDER

**Class:** org.jboss.security.mapping.providers.attribute.DefaultAttributeMappingProvider

**Type:** attribute

Checks module and locates principal name from mapping context to create attribute email address from module option named principalName + .email and maps it to the given principal.
Example

```xml
<module-option name="admin.email" value="jduke@redhat.com"/>
```

In the above example, the attribute email with a value `jduke@redhat.com` is added for the principal admin.

**NOTE**

This mapping provider does not have a code associated with it so the full class name must be in the code field when configuring.

Revised on 2021-09-10 11:53:50 UTC