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Oracle Knowledge iAuthenticator API Integration Guide

Integrating Oracle Knowledge Applications with Enterprise Security

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PREFACE

About This Guide

This guide describes how to use the Oracle Knowledge iAuthenticator API (iAuthenticator) to integrate Oracle Knowledge applications with existing enterprise security. This guide is intended for application developers who implement the iAuthenticator API and protocol in pluggable modules, and for systems administrators who configure the use of the modules.

In This Guide

This guide is divided into the following sections:

“Introduction to iAuthenticator”	Describes how to use the iAuthenticator API to develop custom authentication solutions that meet various business requirements.
“Using iAuthenticator”	Describes how to use iAuthenticator API for external authentication and lists the major interfaces and their methods and classes.
“Implementing iAuthenticator”	Explains how to implement iAuthenticator to one or more installations across physical or virtual machines.
“Error Conditions”	Lists the error conditions that you may encounter during the implementation of a custom authenticator.
“iAuthentication Sample”	Demonstrates an example of iAuthenticator that validates whether or not a user ID and password match the corresponding values in the database.
“API Reference”	Lists the full package names of classes mentioned in this guide.

Examples of Product Screens and Text

The product screens, screen text, and file contents depicted in the documentation are examples. We attempt to convey the product's appearance and functionality as accurately as possible; however, the actual product contents and displays may differ from the published examples.

Operating System Variations in Examples and Procedures

We generally use Linux screen displays and naming conventions in our examples and procedures. We include other operating system-specific procedures or steps as noted in section headings, or within topics, as appropriate.

We present command syntax, program output, and screen displays:

- in Linux format first

- in other Unix-specific variants only when necessary for proper operation or to clarify functional differences
- in Windows format only when necessary for clarity

References to Web Content

For your convenience, this guide refers to Uniform Resource Locators (URLs) for resources published on the World Wide Web, when appropriate. We attempt to provide accurate information; however, these resources are controlled by their respective owners and are therefore subject to change at any time.

CHAPTER 1

Introduction to iAuthenticator

The Oracle Knowledge iAuthenticator API (iAuthenticator) enables integration of Oracle Knowledge applications with existing enterprise security realms. You use the iAuthenticator API to separate user authentication processes from the Oracle Knowledge applications, and customize user authentication processes without changing the Oracle Knowledge application code.

You can use the iAuthenticator API to develop custom authentication solutions to meet various business requirements. For example, you can use iAuthenticator to implement authentication for employees using one security system, and authentication for customers using a separate system.

You implement the API to bridge two security models: your organization's and the Information Manager security model. Your organization makes the decisions for user role access. For example, the information repository configuration defines user roles and privileges, so that you could create agent roles with privileges that customer roles do not have.

With Information Manager, you can implement user authentication in two ways:

- Oracle Knowledge standard authentication
- Oracle Knowledge iAuthenticator API (iAuthenticator)

The standard authentication interface is configured by default as described in *Oracle Knowledge Information Manager Administration Guide*. It also integrates with external Lightweight Directory Access Protocol (LDAP) and Single Sign-On (SSO) systems as described in the “LDAP Authentication” and “SSO Authentication” sections, respectively.

Standard Authentication

Oracle Knowledge has a built-in security realm that is stored in the Information Manager database. This realm uses the Oracle Knowledge standard authentication interface, and is entirely internal to Oracle Knowledge. You implement standard authentication by defining and authorizing application users by using the Management Console in the Information Manager repository. Oracle Knowledge authorizes users when they log in based only on the internally stored user information. Oracle Knowledge is not integrated with any external security systems.

LDAP Authentication

You can configure the standard authentication interface to integrate Oracle Knowledge with an existing LDAP security realm. Information Manager has built-in LDAP authentication that you can configure to integrate with an external realm that is stored in an LDAP server and can be configured to map users to roles and views. LDAP Authentication is available for all Oracle Knowledge applications. The configuration is available through the Information Manager Management Console application.

When you configure built-in LDAP integration, the external (customer-supplied) LDAP directory stores the user authentication information, including the list of authorized views and roles assigned to each user. You configure the list of available roles and views within Information Manager.

When you use LDAP authentication, you perform all user-management tasks within the external LDAP system, not within Information Manager. Oracle Knowledge's built-in LDAP authentication requires that you store all user information within a single LDAP branch. You can store roles and views in a separate branch of the LDAP hierarchy, but, you must store all instances of each type of security object in a single branch. Information Manager authorizes users based on the security roles that the LDAP system assigns them.

For more information on configuring LDAP, see the “LDAP Configuration” section of the *Oracle Knowledge Information Manager Administrator’s Guide*.

SSO Authentication

To configure the standard authentication interface to integrate with an SSO provider, you configure the provider to work with an LDAP directory so that when the SSO provider authenticates each user, basic information, such as the userid, is stored in the HTTP Header. The information stored in the HTTP header validates the user against the LDAP directory, similar to the LDAP authentication process.

“Using iAuthenticator”, in this guide, describes how to implement iAuthenticator with external security systems.

CHAPTER 2

Using iAuthenticator

This section describes how to use the iAuthenticator API for external authentication and lists the major interfaces and their methods and classes. It also includes a simple example of an implementation.

Connecting Internal and External User Management Systems

The first time a user successfully signs in to iAuthenticator, the Information Manager creates a local copy of each user, and the external system stores the master copy of each user. The local copy ties an internal user management system with the iAuthenticator's external management system. The local copy is not the true user record. The true user record is stored in your organization's user management system.

You can modify the local profile copy by using the Management Console, which you can use to update fields that are not available in the Oracle Knowledge iAuthenticator module. These include such fields as locale, avatar, and subscription options. On each subsequent user login, iAuthenticator overwrites the fields that it manages, which typically include first name, last name, e-mail address, and roles. You can use this capability to store and control sensitive user data in an external realm without requiring you to secure the entire Information Manager database in the same external realm.

Every time a user logs in, the external user management system updates and overwrites the local copy, which is subordinate to the external management system.

Coordinating the Authentication Process

The InquiraAuthenticator module coordinates the entire custom authentication process. The InquiraAuthenticator is the module that delegates to a custom iAuthenticator in the Information Manager IMTagLibrary and ClientLibrary applications by calling the custom authenticator to bridge authentication models.

This module calls the `iAuthenticator.authenticate` method. It is not part of the externally visible API.

If the custom authentication is successful, the InquiraAuthenticator sets the following fields for the local copy user in Information Manager.

Field	**Description**
loginID	Login set on the `RoleBasedUser` returned by the authenticate method.
repository	Known at runtime.
active flag	Field is always set to `true`.
emailAddress	E-mail as set on the `RoleBasedUser` returned by the authenticate method.
admin flag	Field is set to `true` if the user has one or more Information Manager Management Console roles.
firstname	The user’s first name as set on the `RoleBasedUser` returned by the authenticate method.

lastname	The user's last name as set on the `RoleBasedUser` returned by the authenticate method.
password	• If the `REMOTE_AUTHENTICATION_STORE_PASSWORD_LOCALLY` configuration parameter is set to *TRUE*, the supplied password is stored locally in the Information Manager database. • If the `REMOTE_AUTHENTICATION_STORE_PASSWORD_LOCALLY` configuration parameter is set to *FALSE* (the default), and the user being authenticated does not currently have a password stored in the Information Manager database, the InquiraAuthenticator will generate a random password for the user set to a random string (GUID) and store it in the Information Manager Database. • If the `ALLOW_PASSWORD_EDITING` configuration parameter is set to *TRUE*, the user's password can be set when creating a new user, and changed for existing users in the Information Manager Management Console. • If `ALLOW_PASSWORD_EDITING is` set to `FALSE`, the user's password will not be set when creating a new user, and existing users' passwords cannot be changed in the Information Manager Management Console.)
locale	Defaults to the repository's default locale. It is only set on the initial user creation.
reportingUserGroup	Can be set from external LDAP realm. The roles2PermissionsMap also contains All UserGroups in repository.
roles	User roles as set on the `RoleBasedUser` returned by the authenticate method.
views	User views as set on the `RoleBasedUser` returned by the authenticate method.

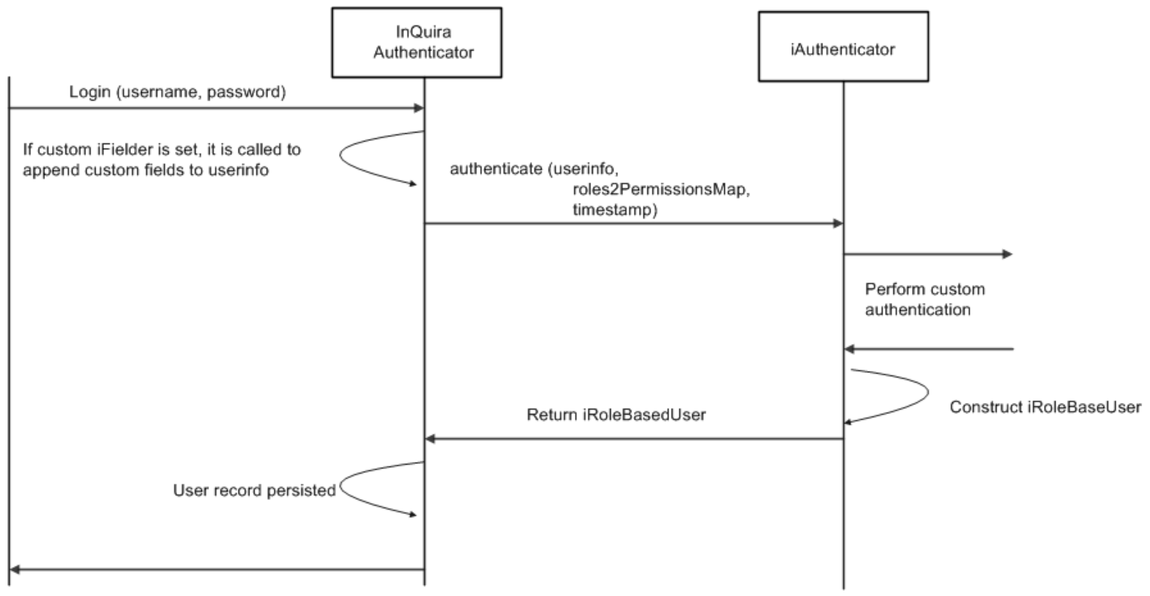
Note: InquiraAuthenticator uses no other fields from `RoleBasedUser`.

The InquiraAuthenticator stores the user's values in the Information Manager database. If the user does not exist in the database, the data in the fields is added; if the user exists, the fields are updated.

The Information Manager database is only updated when the user's values are returned from the authenticate method or are updated manually through the Information Manager Management Console. However, if the user data is modified using the Information Manager Management Console, the values in fields mentioned are overwritten the next time the user logs in.

Implementation Overview

The iAuthenticator framework includes an API and an implementation process. Developers implement the iAuthenticator API and the implementation protocol in pluggable modules, and system administrators can then configure these modules for use within an application. The following use case diagram shows the interaction of components for a typical login.


InQuira Authenticator
iAuthenticator
Login (username, password)
If custom iFielder is set, it is called to append custom fields to userinfo
authenticate (userinfo, roles2PermissionsMap, timestamp)
Perform custom authentication
Construct iRoleBaseUser
Return iRoleBasedUser
User record persisted

a The user name and password are passed to the InQuiraAuthenticator module.

b The InQuiraAuthenticator delegates the user login information and passes it to the iAuthenticator.

c iAuthenticator performs the custom authentication and constructs the iRolebasedUser interface.

d iAuthenticator returns iRolebasedUser to the InQuiraAuthenticator.

e The user record is added using a persist tool.

Because you must call it to authenticate the user, the most important method is `authenticate(FieldValue[] userInfo, Map roles2PermissionsMap, long timestamp)`. The return value is the iUser mentioned above. However, Information Manager expects the value to be the subclass `iRoleBasedUser` because Information Manager and Intelligent Search share the same authentication interface. Refer to *Oracle Knowledge Intelligent Search Application Development Guide* for information on iAuthenticator as it relates to the standalone Intelligent Search product and creating a basic custom authenticator built on the iAuthenticator interface.

`iRoleBasedUser` must contain all Roles and Views assigned to the user. During the authenticate method, if an exception condition occurs that cannot be corrected satisfactorily, you must throw an InquiraAuthenticationException with a description of the problem so that it can be logged properly to the Information Manager runtime log at the `$INQUIRA_ROOT/instances/<company>/Inquira-InfoManager-infomanager.log`.

```
public interface IAuthenticator {


   public IUser authenticate(FieldValue[] userInfo,
                             Map roles2PermissionsMap,
                             longtime timestamp ) throws InquiraAuthenticationException;
}
```

Method	Description
FieldValue[] userInfo	The FieldValue is a name-value pair. This array contains the name-value pairs being used to authenticate the user. It also implements the iFieldNames interface. This interface defines all requisite as well as common field names. For example, this array always contains: • username FieldValue (`name = IFieldNames.FIELD_USER_ID,)` • password FieldValue (`name = IFieldNames.FIELD_PASSWORD`), and • domain/repository FieldValue (`name = IFieldNames.FIELD_DOMAIN).` This array can hold other FieldValues obtained from the request header or the application as well as from a custom iFieldBuilder. These are extra parameters that you may need to pass to your own implementation to perform authentication.
Map roles2PermissionsMap	Contains all the role, view, and usergroup reference keys in the repository. The iAuthenticator API passes this map into an implemented authenticate method, allowing implementers a reference in case they need to map from an external system to Information Manager's internal role, view, or usergroup. Implementers of the Oracle Knowledge iAuthenticator APIs authenticate method must instantiate and return an IRoleBasedUser as part of the API. If that user contains Information Manager roles, view, or reportingUsergroup, they must be a subset of what is in this map. The content of this map is configured in Information Manager. To distinguish these keys from each other in this multi-purpose map: • All role reference keys are prefixed with R. • All view reference keys are prefixed with V. • All usergroup reference keys are prefixed with G.
longtime timestamp	The time when the authenticate call is requested. This allows you to make authentication decisions based on time, or to track the time. In addition, many API calls require `longtime timestamp`, for example, when instantiating a RoleBasedUser to return.

Perform any steps you need to authenticate the user and return an iRoleBasedUser. Typically, a custom authenticator communicates with one or more external realms to authenticate the user and then copies or maps views and roles to the user using the iRoleBasedUser. A null return value results in the user being denied access to the system.

The InquiraAuthenticator takes the returned user information and adds or updates the values in the Information Manager database.

iAuthenticator Interfaces and Components

The iUser and iRoleBasedUser interfaces define an interface hierarchy that provides the minimum amount of information a user needs to have in the Oracle Knowledge system for authentication and authorization purposes. This information typically includes the user name, user ID, e-mail address, and so on.

iUser Interface Methods

The following table lists iUser interface methods and whether or not Information Manager iAuthenticator uses them.

Method	Description	Used by Information Manager iAuthenticator?
getUserId	Returns the user's ID, for example, `jdoe`.	Yes
getDisplayName	Returns the user's full name, for example, `John Doe`.	Yes
getEmailAddress	Returns the user's e-mail address.	Yes
getLoginId	Returns the combination of the domain and user ID.	Yes
setAttribute(UserAttribute id, String value)	Sets the value for the given UserAttribute. **Note:** The UserAttribute class provided by Oracle Knowledge pre-defines only three user attributes: FIRST_NAME, MIDDLE_INITIAL, and LAST_NAME. The InquiraAuthenticator uses these three attributes when constructing the local copy user.	Yes
getAttribute(UserAttribute id)	Returns the value for the given UserAttribute. **Note:** The InquiraAuthenticator uses the FIRST_NAME, MIDDLE_INITIAL, and LAST_NAME pre-defined user attributes when constructing the local copy user.	Yes
getSubject	Returns a new Subject object with the user's Principal added as the only known Principal.	No
getPrincipal	Returns the user's Principal.	No
getDomain	Returns the user's domain.	No
getTimestamp	Returns the time this user was created or logged-in.	No
isAnonymousUser	Checks whether the given user object represents the anonymous user.	No
hasPasswordExpired	Returns whether the user's password has expired.	No
getDaysTillPasswordExpires	Gets the number of days until the user's password expires.	No
setDaysTillPasswordExpires (int daysTillPasswordExpires)	Sets the number of days until the user's password expires.	No
hasAccess(Permission perm)	Returns whether the user has access rights to the given permission.	No
getSecurityPermissions	Returns the set of all security permissions this user can access.	No
getSecurityKeys	Returns the set of keys for all security permissions this user can access.	No
dump	Dumps the state of the user object to stdout for debugging.	No

iRoleBasedUser Interface Method

The iRoleBasedUser interface consists of a Subject (for example, the user), the Subject's credentials (for example, the roles and views), and the Subject's principals (for example, the UserID). This interface extends the iUser interface. The following table describes the method for iRoleBasedUser.

Method for iRoleBasedUser	Description	Used by Informatiion Manager iAuthenticator?
getActiveRoles	Returns the user's active roles as stored on the remote system.	Yes

RoleBasedUser Subclass

An instance of iRoleBasedUser must be the return value of the `iAuthenticator.authenticate()` method described in the following example. If you need to support custom fields, you can implement the iRoleBasedUser interface, subclass RoleBasedUser or use RoleBasedUser directly.

Use the following method and parameters to construct a RoleBasedUser:

```
public class RoleBasedUser extends AbstractUser implements IRoleBasedUser,
IAASLogConstants {


    public RoleBasedUser(String userId,
                         String domain,
                         String displayName,
                         Principal principal,
                         Set roles,
                         Permissions permissions,
                         long timestamp);
}
```

Method	Description
String userId	The subject's User Name. It must be unique in the Information Manager repository**.**
String domain	The domain of the user. It is also called the repository reference key.
String displayName	The name of the user, formatted as *firstname lastname.*
Principal principal	Although the Information Manager implementation of Oracle Knowledge Authenticator does not use this field, it is required to instantiate a RoleBasedUser object which is the expected return type of the authenticate method. To satisfy this requirement, you can use the SimplePrincipal object provided by Oracle Knowledge as shown in the sample code in “iAuthentication Sample”.
Set roles	A Set<String> that contains all Roles and Views for a user. Any values you assign must match those found in iAuthenticator roles2PermissionsMap. Implementers can add the reportingUserGroup field to this set. If more than one, the first one is used. The reportingUserGroup must be one of the UserGroups in roles2PermissionMap prefixed with `G`. This set must contain at least one valid role and view for the user.
Permissions permission	Although this value is not used in Information Managed-based implementations, it cannot be a null value. To satisfy this requirement, create a Permission Set and add Oracle Knowledge's StandardPermission object to it. **Note:** Oracle Knowledge StandardPermission is a concrete implementation of the Java abstract BasicPermission class.
Long timestamp	The user value passed into iAuthenticator constructor.

iFieldBuilder for Oracle CRM OnDemand

The `iAuthenticator.authenticate` method parameter `userInfo` array always contains the username, password, and domain FieldValues.

iFieldBuilder is a mechanism to pass additional attributes to the remote authenticator. The iFieldBuilder array contains any request header or other application-specific values that you decide how to use. If you want to add additional custom FieldValues to the userInfo, you must implement an iFieldBuilder. The InquiraAuthenticator uses the configured iFieldBuilder by calling the `buildFieldValue` method. You can add any FieldValues. The parameters for this interface method are:

```
public interface IFieldBuilder {

    public void buildFieldValue(Map<String, String> requestHeaderMap,
                                HttpServletRequest httpRequest);

}
```

Map<String, String> requestHeaderMap:	Map of available request headers, including any fields available from the HTTP header, such as *User-Agent, Accept, Referrer,* or custom fields. For more information, enter this URL into a browser: http://www.w3.org/Protocols/rfc2616/rfc2616-sec14.html.
HttpServletRequest request:	HttpServletRequest object created automatically by the Java Servlet API when a request comes in to a web application written in Java. The HttpServletRequest object encapsulates all data needed to respond to the request.

CHAPTER 3

Implementing iAuthenticator

An implementation of iAuthenticator consists of one or more installations across physical or virtual machines.

Each installation is designated by `$INQUIRA_ROOT` and may have:

- One Information Manager instance hosting one or more Information Manager-based applications, such as Management Console (InfoManager), Information Manager Tag Library Custom Applications, Information Manager Web Services Custom Applications, Client Library Custom Applications and InfoCenter)
- One Search Scheduler (Indexer) instance
- One or more Search Runtime instances
- One or more Search Workclient instances
- One or more Search Query Coordinator instances
- One or more Search QueryWorker instances

Configuring Information Manager

After you create a custom iAuthenticator, you must configure each Information Manager Instance in the implementation to use the custom iAuthenticator.

Important! You must perform this procedure for each instance of Information Manager.

1 Copy the jar files that contain your custom iAuthenticator (and IFieldBuilder if applicable) classes to each of the following locations:

- Deployed Information Manager Management Console

  `$INQUIRA_ROOT/instances/<company>/appserverim/webapps/InfoManager/WEB-INF/lib/`

- Deployed Information Manager Web Services

  `$INQUIRA_ROOT/instances/<company>/appserverim/webapps/imws/WEB-INF/lib/`

- Deployed Information Manager Tag Library based Applications

  `$INQUIRA_ROOT/instances/<company>/appserverim/webapps/<CONTEXT>/WEB-INF/lib/`

2 Configure Information Manager to use the custom iAuthenticator (and iFieldBuilder if applicable):

a Log in to the Management Console and switch to your repository (if you logged into the SYSTEM repository).

b Navigate to **Tools, System Configure**, and then **Expert Mode**.

c Set the REMOTE_AUTHENTICATION_ENABLED configuration parameter to **`true`**.

d Set the REMOTE_AUTHENTICATION_CLASS configuration parameter to your fully qualified custom authenticator class, for example *com.company.package.CustomAuthenticator*.

e If you are using custom iFieldBuilder, set the REMOTE_FIELD_BUILDER_CLASS configuration parameter to your fully qualified custom iFieldBuilder class.

If the Management Console Application is not implemented on a particular Information Manager instance, you can manually modify the parameters in this procedure by editing the repository configuration file located at:

```
$IM_HOME/config/[REPOSITORY]/config.properties
```

The following example shows how to manually modify the parameters:

```
REMOTE_AUTHENTICATION_STORE_PASSWORD_LOCALLY=10;false
REMOTE_AUTHENTICATION_CLASS=10;oracle.km.test.authenticator.OKTestAuthenticator
```

CHAPTER 4

Error Conditions

During the implementation of a custom authenticator, you may encounter one or more of the following errors.

Error Condition Solutions

Note: Each condition logs a detailed error message to the Information Manager runtime log.

Error Conditions	Possible Solutions
ClassNotFoundException exception	Verify that the custom iAuthenticator is in the Information Manager-based application's class path.
The custom iAuthenticator is not used during authentication	Verify that REMOTE_AUTHENTICATION_ENABLED is set to `true` in config.properties.
InstantiationException or ClassNotFoundException thrown	Verify that REMOTE_AUTHENTICATION_CLASS is set to the full and correct path to the custom iAuthenticator.
The custom iFieldValues is not being added to FieldValues array of iAuthenticator.authenticate method call	Verify that the REMOTE_FIELD_BUILDER_CLASS is set to the full and correct path of the custom IFieldBuilder that is being used.
ClassCastException thrown	Verify that your custom authenticator returns an instance of iRoleBasedUser.
“Authentication denied" is logged to the InfoManager runtime log at the following location: `$INQUIRA_ROOT/instances/<company>/Inquira-InfoManager-infomanager.log`	Verify that the user who is being authenticated is authorized to log in and that the passed-in username and password match the username and password stored in the remote system.
An IllegalStateException is thrown and the message *More than one User was found* is logged to the InfoManager runtime log at this location: `$INQUIRA_ROOT/instances/<company>/Inquira-InfoManager-infomanager.log`	Verify that your Information Manager database does not contain duplicate usernames.
The user is not authenticated and the following message *No valid roles and/or valid views* is logged to the InfoManager runtime log at this location: `$INQUIRA_ROOT/instances/<company>/Inquira-InfoManager-infomanager.log`	Verify that the user who is being authenticated has valid roles and views in the remote system.

CHAPTER 5

iAuthentication Sample

This section shows a simple example of iAuthenticator that validates whether or not a user ID and password match the values in the database. After the user validation, iAuthenticator assigns a set of roles and views to the user.

Implementation Sample Code

Note: The following code is an example of an implementation. An actual implementation requires contact with an external realm to authenticate and create the RoleBasedUser.

```
public class CEGTestAuthenticator implements IAuthenticator, IFieldNames {"

    private static final Logger logger =
    Logger.getLogger(CEGTestAuthenticator.class.getName());


    /* {@inhereitDoc} */
    IUser authenticate(FieldValue[] userInfo, Map roles2PermissionsMap, long timestamp)
                                                throws InquiraAuthenticationException {
        IUser        user = null;
        String     userId = null;
        String   password = null;
              String repository = null;


        logger.info("CEGTestAuthenticator.authenticate() called...");

        //loop thru the userInfo values to get username, password, and domain
        for (int i=0 ; i<userInfo.length ; i++) {
            FieldValue fieldValue = userInfo[i];
            if(userId==null && fieldValue.getName().equals(FIELD_USER_ID)) {
                userId = fieldValue.getValue();
            }
            if(password==null && fieldValue.getName().equals(FIELD_PASSWORD)) {
                password = fieldValue.getValue();
            }
            if(repository==null && fieldValue.getName().equals(FIELD_DOMAIN)) {
                repository = fieldValue.getValue();
            }
        }


        //userid and password must exist
        if(userId!=null && password!=null) {
            if(repository!=null && repository.equals(getDomain())) {


                //only allow jdoe to authenticate the text, "Users roles, views, and
                reportingUserGroup should exist in roles2PermissionsMap (sans prefix)."
                if(userId.equals("jdoe") && password.equals("password")) {
                    HashSet<String> roles = new HashSet<String>();
                    roles.add("R_DEFAULT_ADMINISTRATION_ROLE");
                    roles.add("V_TEST");
                    roles.add("G_AN_REPORTING_USERGROUP");
                    Permissions permissions = new Permissions( );
                    permissions.add(new StandardPermission("none"));

                    try {
                    user = new RoleBasedUser(userId,
                                             repository,
                                             "John Doe",
                                             new SimplePrincipal(userId),
                                             roles,
                                             permissions,
                                             timestamp,
                                             null);

                  } catch(InquiraSecurityException ise) {
                    throw new InquiraAuthenticationException(ise);
                  }

                  ((RoleBasedUser)user).setEmailAddress("jdoe@inquira.com");
              }
            }
            else {
                new InquiraAuthenticationException("Invalid authentication domain");
            }
        }
        else {
            throw new InquiraAuthenticationException("Username and password required to
            authenticate");
        }

        return user;
    }

    /** {@inheritDoc} */
    public Field[] getAuthenticationFields() throws InquiraAuthenticationException {
        //this authenticator requires a username, password, and repository to authenticate.
        return new Field[] {new InputField(FIELD_USER_ID),
                            new InputField(FIELD_PASSWORD, true),
                            new InputField(FIELD_DOMAIN)};
    }

    /** {@inheritDoc} */
    public String getDomain() {
        return "TESTREPOSITORY";
    }
}
```

CHAPTER 6

API Reference

The following is a list of the full package names of classes mentioned in this guide.

Package Names of Classes

- com.inquira.infra.IRoleBasedUser
- com.inquira.infra.IUser
- com.inquira.infra.security.AbstractUser
- com.inquira.infra.security.Field
- com.inquira.infra.security.FieldValue
- com.inquira.infra.security.InputField
- com.inquira.infra.security.InquiraAuthenticationException
- com.inquira.infra.security.IAuthenticator
- com.inquira.infra.security.IFieldNames
- com.inquira.infra.security.StandardPermission
- com.inquira.infra.security.impl.RoleBasedUser
- com.inquira.services.ldapservices.IFieldBuilder
- com.inquira.util.security.SimplePrincipal
- java.security.Permissions
- java.security.BasicPermission
- java.security.Principal
- javax.security.auth.Subject

Public API Classes and Methods

API classes and methods are available as HTML files. In a default installation, the files are placed in the `InfoManager/docs/iAuthentication` directory.

Tip: You can drill down on each Java package by first opening the `index.html` file.