

Keystone Login Developer Guide

Version 2.12

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OVERVIEW

This document details the Keystone Login APIs and exposed data models.

Keystone Login provides log in and log out functionality on Commonwealth of Pennsylvania agency websites. Keystone Login APIs provide an interface for connecting with the Keystone Login authentication, authorization, and account management systems. User account management functionality is also provided using Keystone Login APIs.

Keystone Login consists of several APIs categorized based on usability. All APIs are REST based and can be consumed from any programming environment including .NET systems.

This document also demonstrates how to use Swagger UI to browse and execute API calls with sample data. Lastly, it explains how to implement reCAPTCHA to protect the Keystone Login portal from automated registrations and bots.

HOW TO CONNECT TO KEYSTONE LOGIN API

Keystone Login APIs are REST based services which are available for connection through HTTP URLs.

All applications using Keystone Login APIs must first be registered with WebSAAL and the Keystone Login system.

Commonwealth agencies should contact the Office of Administration (OA)/Office of Information Technology/Enterprise Solutions Office using a ServiceNow ticket to register the agency and application with the Keystone Login system. OA developers will assist with agency and application registration. Upon completion, OA developers will provide a unique application code and required parameter values for connection to the Keystone Login APIs.

Once Commonwealth agencies and applications are registered with Keystone Login and WebSAAL, the Keystone Login APIs can be consumed by any of the following methods:

1. Connect to the Keystone Login APIs directly using HTTP URLs.
2. Connect to externally available Keystone Login APIs directly using HTTP URLs. The APIs are available externally for use by applications that are not on the internal COPA network. Typically, cloud-based solutions would use these external APIs.
3. Use the Client Class Library. There are two versions of the library, the 3.5 and 4.7.1 .NET Framework.

REDIRECTION TO KEYSTONE LOGIN FOR LOG IN

Keystone Login allows Commonwealth agency applications to use a single sign-on cookie. The cookie will redirect users to the Keystone Login portal. After logging in, the cookie returns users to the Commonwealth agency application.

The Commonwealth agency application will verify the session by reading the cookie and calling the Keystone Login APIs. If successful, the application can trust the user is authenticated and grant access.

The single sign-on cookie contains a session ID and user ID in an encrypted format. The information is read as the user navigates to each new application. Once authenticated, users are not required to re-enter an ID and password when navigating between Keystone Login supported applications.

The cookie name will appear as "KeystoneLogin" in the browser. It will also contain the following fields:

- SessionID
 - This is the unique identifier of the session the user started in Keystone Login. It is used to verify the session of the user with API calls.
- UserID
 - This is the unique identifier of the user in Keystone Login. It is stored as a GUID and is referred to as IdentityPortalUserGUID.
- AccountLastModified
 - The date and time the account was last modified.
- SessionTime
 - The start of the session time.

The cookie should only be used during the initial log in process. Once the cookie is validated and user information is gathered from the call to the Keystone Login APIs, Commonwealth agencies should store the information in their own session tracking mechanism for future use.

Keystone Login will track login activities from applications using the redirect method. Each application should have an AppCode (application code provided by the Keystone Login Admin team). The AppCode should be appended to the agency URL used for redirection as follows:

BETA:<https://keystonelogin.beta.pa.gov/Account/Login?redirect=https://myagencyapp.beta.pa.gov&appCode=AgencyAppCode>

PROD:<https://keystonelogin.pa.gov/Account/Login?redirect=https://myagencyapp.pa.gov&appCode=AgencyAppCode>

After a successful login, the Keystone Login APIs will redirect back to the <http://myagencyapp.pa.gov> application.

Commonwealth agencies may also log a social user (e.g. Google) by redirecting to a URL such as the following:

<https://keystonelogin.beta.pa.gov/Account/Login?provider=google&redirect=https://myagencyapp.pa.gov>

Other social providers will be added in the future.

For the Keystone Login cookie to be read, the URL domain must match the Commonwealth agency application domain. The web browser will not allow cross domain cookies for security purposes.

In the example above, the Commonwealth agency website ends in the 'pa.gov' domain. If the redirect URL does not match, a redirection error will be displayed following a successful log in to the Keystone Login portal.

The Commonwealth agency application reads the cookie and extracts the session ID. The following calls to the Keystone Login APIs will verify the session and obtain the user account details:

REDIRECTION TO KEYSTONE LOGIN FOR REGISTRATION

Keystone Login will redirect new users from Commonwealth agency applications to the portal for registration. After a successful registration, users will return to the Commonwealth agency application. This method can be performed by calling the following URLs:

BETA:<https://keystonelogin.beta.pa.gov/Account/Register?redirect=https://agencyapp.beta.pa.gov>

PROD:<https://keystonelogin.pa.gov/Account/Register?redirect=https://agencyapp.pa.gov>

REDIRECTION TO KEYSTONE LOGIN FOR MIGRATION

Keystone Login allows Commonwealth agency applications to redirect to the portal to migrate USER domain accounts from PALogin and the USER domain to Keystone Login and the SRPROD domain. After a successful account migration, users will return to the Commonwealth agency application.

The AppCode should be appended to the Commonwealth agency URL used for redirection as follows:

BETA:<https://keystonelogin.beta.pa.gov/Migration?redirect=https://myagencyapp.beta.pa.gov&appCode=AgencyAppCode>

PROD: <https://keystonelogin.pa.gov/Migration?redirect=https://myagencyapp.pa.gov&appCode=AgencyAppCode>

After a successful migration, Keystone Login will return users to the <http://myagencyapp.pa.gov> application.

For the Keystone Login cookie to be read, the URL domain must match the Commonwealth agency application domain. The web browser will not allow cross domain cookies for security purposes.

In the example above, the agency website ends in the 'pa.gov' domain. If the redirect URL does not match, a redirection error will be displayed following a successful log in to the Keystone Login portal.

PALOGIN TO KEYSTONE LOGIN API MAPPINGS

The chart below maps the previous PALogin/Login.NET APIs with the Keystone Login equivalent. The URL path to the Keystone Login APIs are provided as well as the Client Class Library necessary for the call.

<u>PALogin</u>	<u>Keystone Login</u>
Login	API: /api/v1/session/login Client: SessionClient.Login(string userName, string password)
Logout	API: /api/v1/session/logout Client: SessionClient.Logout(int SessionID, string Username)
GetSessionInfo	API: /api/v1/session/getsessioninfo Client: SessionClient.GetSessionInfo(int SessionID)
RetrieveUserQuestion	API: /api/v1/app/user/securityquestions Client: SecurityQuestionClient.GetSecurityQuestions(GUID IdentityPortalUserGUID) Note: UserData will have all fields loaded by Keystone Login, including Q/A
GenerateNewPassword	API: /api/v1/app/user/resetpassword Client: UserClient.ResetPassword(GUID IdentityPortalUserGUID, string authorizedUser)
CheckLogin	API: /api/v1/session/checklogin Client: SessionClient.CheckLogin(int SessionID, GUID IdentityPortalUserGUID)

CreateAccount	API: /api/v1/app/user/adduser Client: UserClient.AddUser(AddUser userData)
GetAttributeDefinitions	N/A - UserData will have all fields loaded by Keystone Login
GetAttributesOnFile	N/A - UserData will have all fields loaded by Keystone Login
GetUserProfile	API: /api/v1/app/user/data Client: UserClient.UserData(GUID IdentityPortalUserGUID, string authorizedUser)
UpdateAccount	API: /api/v1/app/user/updateuser Client: UserClient.UpdateUser(UpdateUser userData, string authorizedUser)

CLIENT CLASS LIBRARY

Client Class Library (DLL) provides a means to consume Keystone Login APIs for Commonwealth agencies using .NET based systems. Client DLL has the code to connect to the Keystone Login APIs. It can be used by ASP.NET websites or .NET systems. Commonwealth agency developers must provide the end point URL and API keys of the web API in the configuration file.

SWAGGER UI

Keystone Login APIs can be browsed through Swagger UI. Swagger UI provides a means to view all APIs offered. It also provides a means to execute the operations using sample data.

Swagger UI specifies the format in which sample data can be entered to execute the API operations. The following are methods to navigate Swagger UI to view/run all APIs.

Use of Swagger UI is not a requirement. Swagger UI can only be used for testing purposes.

LOG API

This method provides functionality to log any caught exceptions and user events that can be viewed and searched in the administration website for later analysis.

Log API – UserLog Operation

This method enables logging of a user event (e.g. user registered, user logged in).

Web API Operation URL – {base_url}/api/v1/UserLogs

Request – ServiceRequestUserLog

Response – ServiceResponseBase

The following fields can be logged:

1. ServiceRequestUserLog.UserLog.LogDateTime
2. ServiceRequestUserLog.UserLog.Message
3. ServiceRequestUserLog.UserLog.UserName
4. ServiceRequestUserLog.UserLog.UserEmail
5. ServiceRequestUserLog.UserLog.DomainName
6. ServiceRequestUserLog.UserLog.IdentityPortalUserGUID
7. ServiceRequestUserLog.UserLog.ApplicationCode
8. ServiceRequestUserLog.UserLog.ApplicationName
9. ServiceRequestUserLog.UserLog.AgencyName
10. ServiceRequestUserLog.UserLog.UserEventType
11. ServiceRequestUserLog.UserLog.UserLogId - Set this field to zero to insert a new user log event.

For more information on these fields, refer to the data section of this document.

Exceptions – Known exceptions/errors will be provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

Log API – ExceptionLog Operation

This method inserts exception log into the system.

Web API Operation URL – {base_url}/api/v1/app/exceptionlog

Request – ServiceRequestExceptionLog

Response – ServiceResponseBase

The following fields can be logged:

1. ServiceRequestExceptionLog.ExceptionLog.MethodName
2. ServiceRequestExceptionLog.ExceptionLog.FilePath
3. ServiceRequestExceptionLog.ExceptionLog.LineNumber

4. ServiceRequestExceptionLog.ExceptionLog.StackTrace
5. ServiceRequestExceptionLog.ExceptionLog.EventType
6. ServiceRequestExceptionLog.ExceptionLog.LogDateTime
7. ServiceRequestExceptionLog.ExceptionLog.Message
8. ServiceRequestExceptionLog.ExceptionLog.UserName
9. ServiceRequestExceptionLog.ExceptionLog.UserEmail
10. ServiceRequestExceptionLog.ExceptionLog.DomainName
11. ServiceRequestExceptionLog.ExceptionLog.IdentityPortalUserGUID
12. ServiceRequestExceptionLog.ExceptionLog.ApplicationCode
13. ServiceRequestExceptionLog.ExceptionLog.ApplicationName
14. ServiceRequestExceptionLog.ExceptionLog.AgencyName

Exceptions – Known exceptions/errors will be provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

MIGRATION API

This method provides functionality to migrate users from older versions of Login.NET to the current version of Keystone Login.

Migration API – AddMapping Operation

This method is used to map legacy keys to existing Keystone Login accounts.

Web API Operation URL – {base_url}/ api/v1/migration/addmapping

Request – ServiceRequestIdentityPortalUserMapping

Response – ServiceResponseBase

The following fields are required to map the previous user accounts:

Fields	Description
ServiceRequestIdentityPortalUserMapping.IdentityPortalUserMapping.GUID	User identifier GUID of existing Keystone Login user account
ServiceRequestIdentityPortalUserMapping.IdentityPortalUserMapping.LookupCode	Lookup code of previous user account
ServiceRequestIdentityPortalUserMapping.IdentityPortalUserMapping.AppCode	Application code for legacy key (can be null)

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Received Null mapping object	UserMapping object is null
Error occurred causing AddMapping to fail	System was unable to create new mapping

Migration API – GetMapping Operation

This method provides functionality to migrate users from PALogin to Keystone Login.

Migration API – AddMapping Operation

This method is used to map legacy identifiers using the UserIdentifierLookup field to existing Keystone Login accounts.

Web API Operation URL – {base_url}/ api/v1/migration/addmapping

Request – ServiceRequestUserMapping

Response – ServiceResponseUserMapping

The following fields are required:

Fields	Description
--------	-------------

IdentityPortalUserGUID	User identifier GUID of existing Keystone Login user account
UserIdentifierLookup	A unique identifier that was used in the previous system to map to the user in Keystone Login (e.g. username, user ID, primary key, etc.)
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in `ServiceResponseUserMapping.DetailedMessages`.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Values null or empty	One or more of the parameters are null or empty
Application AppCode does not exist	The AppCode user does not exist in Keystone Login
Received Null mapping object	UserMapping object is null
A mapping already exists for the provided UserIdentifierLookup and Application AppCode combination	The association already exists with the UserIdentifierLookup and AppCode used
Error occurred causing AddMapping to fail	System was unable to create new mapping

Migration API – MapPALoginToKeystone Operation

This method maps a user in Keystone Login to a PALogin user.

Web API Operation URL – {base_url}/ api/v1/migration/mappalogintokeystone
Request – `ServiceRequestMapPALoginToKeystone`
Response – `ServiceResponsePALoginResult`

Following fields are required:

Fields	Description
KeystoneLoginGUID	User to map account
PALoginUserName	PALogin Username
PALoginPassword	Password of PALogin user

Exceptions – Known exceptions/errors are provided in `ServiceResponseUserMapping.DetailedMessages`.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Values null or empty.	One or more of the parameters are null or empty
Method authorization failed.	Method is not authorized
User already mapped	System found an existing Keystone Login already mapped
PALogin Error	Code and description included in the response

PALogin Errors – Error codes from underlying service.

Response Code	Description
0	The operation was successful
-1	Not Authorized to make call
-2	Unknown Error
5	Bad User ID
6	Bad Password

Migration API – CreateUserAndMapping Operation

This method creates a new user in Keystone Login and associates the user to a Commonwealth agency application with the UserIdentifierLookup and AppCode.

Web API Operation URL – {base_url}/ api/v1/migration/migrateuser

Request – ServiceRequestMappingCreateUser

Response – ServiceResponseUserMapping

The following fields are required:

Fields	Description
MappingCreateUserData.PALoginUserID	Existing PALogin User ID that will be used to pull existing user data from PALogin
MappingCreateUserData.NewUserName	New username of the Keystone Login account
MappingCreateUserData.NewPassword	New password of the Keystone Login Account
MappingCreateUserData.ConfirmNewPassword	Confirmation of new password of the Keystone Login account
MappingCreateUserData.DateOfBirth	Date of Birth of the Keystone Login account
MappingCreateUserData.SecurityQuestion1	First security question of the Keystone Login account
MappingCreateUserData.SecurityQuestion2	Second security question of the Keystone Login account
MappingCreateUserData.SecurityQuestion3	Third security question of the Keystone Login account
MappingCreateUserData.SecurityQuestionAnswer1	First security question answer of the Keystone Login account
MappingCreateUserData.SecurityQuestionAnswer2	Second security question answer of the Keystone Login account
MappingCreateUserData.SecurityQuestionAnswer3	Third security question answer of the Keystone Login account
UserIdentifierLookup	A unique identifier that was used in the previous system to map to the user in Keystone Login (e.g. username, user ID, primary key, etc.)
AppCode	Keystone Login application code (Must not be null)

Migration API – GetMapping Operation

This method returns an existing mapping between a UserIdentifierLookup and a user in the Keystone Login system.

Web API Operation URL – {base_url}/ api/v1/migration/getmapping

Request – ServiceRequestGetMapping

Response – ServiceResponseUserMapping

The following fields are required:

Fields	Description
UserIdentifierLookup	A unique identifier that was used in the previous system to map to the user in Keystone Login (e.g. username, user ID, primary key, etc.)
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponseUserMapping.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Values null or empty	One or more of the parameters are null or empty
Method authorization failed	Method is not authorized
Mapping not found	System was unable to find new mapping

Migration API – GetMappings Operation

This method returns all the mappings of users from the Commonwealth agency applications based on the AppCode.

Web API Operation URL – {base_url}/ api/v1/migration/getmappings

Request – ServiceRequestBase

Response – ServiceResponseUserMapping

The following fields are required:

Fields	Description
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponseUserMapping.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
AppCode is null or empty	The AppCode parameter is either null or empty
Method authorization failed	Method is not authorized
User Mappings not found	System was unable to find any mappings

Migration API – VerifyPALogin Operation

This method verifies the username and password of the user in PAMLogin and returns the UserID field from PAMLogin.

Web API Operation URL – {base_url}/ api/v1/migration/login

Request – ServiceRequestLogin

Response – ServiceResponseVerifyPAMLogin

The following fields are required:

Fields	Description
Username	Username of the user PAMLogin account
Password	Password of the user PAMLogin account
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponseVerifyPAMLogin.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method is not authorized
PAMLogin Username/Password is incorrect	The username and/or the password is incorrect when attempting to verify against PAMLogin

Migration API – CheckMigration Operation

This method returns the Keystone Login user GUID of a migrated user or null if the user was not migrated.

Web API Operation URL – {base_url}/ api/v1/migration/checkmigration

Request – ServiceRequestCheckPAMLoginMigration

Response – ServiceResponseCheckPAMLoginMigration

Use one of the following arguments and the AppCode:

Fields	Description
UserID	PAMLogin user UserID
UserGUID	PAMLogin user GUID
Username	PAMLogin user username
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponseUserMapping.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception.
The request object is null	One or more of the parameters are null or empty

Method authorization failed	WebSAAL authorization missing
An exception occurred in the CheckMigration method.	Invalid argument provided

Migration API – GetUserDataFromPALogin Operation

This method returns the PALogin user ID using the PALogin GUID.

Web API Operation URL – {base_url}/api/v1/migration/getuserdatafrompalogin

Request – ServiceRequestPALoginUser

Response – ServiceResponsePALoginUser

Use the following arguments:

Fields	Description
UserGUID	PALogin user GUID
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponsePALoginUser.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
The request object is null	One or more of the parameters are null or empty
Method authorization failed	WebSAAL authorization missing
An exception occurred in the GetUserDataFromPALogin method	Invalid argument provided

Code Snippet:

```
MigrationClient client = new
MigrationClient("https://keystonelogin.service.beta.pa.gov/Service/", WebSAAL ID, WebSAAL
Password, AppCode, true);

var response = client.GetPALoginUserID(new GUID("PALoginGUID"));
```

Migration API – GetPALoginUserID

Description: Returns the PALogin ID associated with the provided PALogin User GUID.

Web API Operation URL – {base_url}/ api/v1/migration/getuserdatafrompalogin

Request – ServiceRequestPALoginUser

Response – ServiceResponsePALoginUser

The following fields are required:

Fields	Description
UserGUID	PALogin User GUID

AppCode	Keystone Login application code (Must not be null)
---------	--

Exceptions – Known exceptions/errors are provided in ServiceResponsePALoginUser.DetailedMessages.

Error Message	Description
An exception occurred in the GetUserIDFromPALogin service method	Any unexpected exception
AppCode is null or empty	The AppCode parameter is either null or empty
WebSAAL authorization failed	Method is not authorized
User ID was not found in PALogin	System was unable the provided GUID in PALogin

Migration API – MigrationByPALoginID Operation

Description: Allows a PALogin account to be migrated to Keystone Login by using the PALogin ID.

Web API Operation URL – {base_url}/ api/v1/migration/migrationbypaloginid

Request – ServiceRequestMigrationByPALoginID

Response – ServiceResponsePALoginUser

The following fields are required:

Fields	Description
userID	PALogin User ID
AppCode	Keystone Login application code (Must not be null)

Exceptions – Known exceptions/errors are provided in ServiceResponsePALoginUser.DetailedMessages.

Error Message	Description
An exception occurred in the MigrationByPALoginID method	Any unexpected exception
AppCode is null or empty	The AppCode parameter is either null or empty
WebSAAL authoriztion failed	Method is not authorized
PALogin User already migrated in Keystone Login	User already migrated to Keystone Login
PALogin username is null for UserID	ID provided does not have a valid username
User not migrated - Username in use in SRPROD	Username is already in use by another account in Keystone Login
User not migrated - Email in use in SRPROD	Email is already in use by another account in Keystone Login
User not migrated - Unable to get the user profile from PALogin	Getting the PALogin user profile failed for the provided user
The request object is null	No PALogin or Invalid ID provided

PASSWORD API

This method provides functionality to check password related operations.

Password API – GetPasswordStrength Operation

This method provides functionality to check password strength according to the Keystone Login password policy.

Web API Operation URL – {base_url}/ api/v1/password/strength

Request – userPwd, AppCode, username, userFirst, userLast

Response – PasswordCheckResult

The following fields are required to check password strength:

Fields	Description
userPwd	Password entered by user
AppCode	Application code of the application
userName	Username of the user
userFirst	First name of the user
userLast	Last name of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method is not authorized

SECURITYQUESTION API

This method provides functionality to retrieve a list of security questions (GetQuestionList Operation) and specific security questions (GetSecurityQuestion Operation).

SecurityQuestion API – GetQuestionList Operation

This operation provides a list of security questions.

Web API Operation URL – {base_url}/api/v1/admin/getquestionlist

Response – ServiceResponseSecurityQuestionList

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

SecurityQuestion API – GetSecurityQuestion Operation

This operation provides a list of security questions.

Web API Operation URL – {base_url}/api/v1/admin/getquestion/{questionId}

Request - questionID

Response – ServiceResponseSecurityQuestion

The following field is required to get security question:

Fields	Description
QuestionID	Question ID of required security question

Exceptions – Known exceptions/errors are provided in ServiceResponseSecurityQuestion.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

SecurityQuestion API – SecurityQuestions Operation

This method returns a list of security questions associated with the user account. Keystone Login unique identifier GUID is required to specify the user account.

Web API Operation URL – {base_url}/api/v1/app/user/securityquestions

Request – ServiceRequestGetUserSecurityQuestions.

Response – ServiceResponseGetUserSecurityQuestions

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

SecurityQuestion API – RBMFASecurityQuestions Operation

This operation returns two of the three RBMFA security questions associated with the user account. Keystone Login unique identifier GUID is required to specify the user account.

Web API Operation URL – {base_url}/api/v1/app/user/rbmfasecurityquestions

Request – ServiceRequestGetUserSecurityQuestions.

Response – ServiceResponseGetRBMFASecurityQuestions

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Fields	Description
IdentityPortalUserGUID.	GUID representing user to receive Security Questions

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

Exceptions – Known exceptions will be provided in ServiceResponseRBMFABoolean.DetailedMessages.

Exception Message	Description
User not found	User was not found in the database
RBMFA Error	See RBMFA codes

RBMFA Errors – Error codes from underlying service.

Response Code	Reason Code	Description
0	0	The operation was successful

SecurityQuestion API – TransferRBMFASecurityQuestions Operation

This method copies the user security questions and answers to the RBMFA database.

Web API Operation URL –

{base_url}/api/v1/app/user/transferrbmfasecurityquestions

Request – ServiceRequestRBMFASecurityQuestions.

Response – ServiceResponseRBMFABoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Fields	Description
KeystoneLoginGUID	GUID representing user to copy security questions
SecurityQuestions	List of RBMFASecurityQuestions

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception.

Exceptions – Known exceptions will be provided in ServiceResponseRBMFABoolean.DetailedMessages.

Exception Message	Description
User not found	User was not found in the database
Security Questions not unique	Security questions must be unique
Security Answers not unique	Security answers must be unique
RBMFA Error	See RBMFA codes

RBMFA Errors – Error codes from underlying service.

Response Code	Reason Code	Description
0	0	The operation was successful
1102	0	The user was not found
1050	6000	Duplicate questions are not supported
1050	6001	Duplicate answers are not supported

SecurityQuestion API – CheckSecurityQuestions Operation

This method checks security questions and answers for the given user account. Keystone Login unique identifier GUID is required to specify the user account.

Web API Operation URL – {base_url}/api/v1/app/user/securityquestions

Request – ServiceRequestCheckSecurityQuestionAnswer

Response – ServiceResponseCheckSecurityQuestionAnswer

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

SecurityQuestion API – VerifyRBMFASecurityQuestions Operation

This method checks security questions and answers for the given user account. Keystone Login unique identifier GUID is required to specify the user account.

Web API Operation URL –

{base_url}/api/v1/app/user/verifyrbmfasecurityquestions

Request – ServiceRequestRBMFASecurityQuestions

Response – ServiceResponseRBMFABoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Fields	Description
KeystoneLoginGUID.	GUID representing user to receive OTP
OTP	Onetime Passcode provided by user

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

Exceptions – Known exceptions will be provided in ServiceResponseRBMFABoolean.DetailedMessages.

Exception Message	Description
User not found	User was not found in the database
RBMFA Error	See RBMFA codes

RBMFA Errors – Error codes from underlying service.

Response Code	Reason Code	Description
0	0	The operation was successful
5700	0	The number of Question and Answer authentication attempts exceeded the allowed limit
5702	0	The challenge has expired
5707	0	The provided answers are not correct

SESSION API

This method provides functionality for user log in and log out. It also verifies whether a user is logged in. It can be used to obtain session information and reset the number of login attempts.

Session API – Login Operation

This method authenticates user credentials and authorizes user login. This method also begins a session for the user.

Web API Operation URL – {base_url}/api/v1/session/login

Request - ServiceRequestLogin

Response – ServiceResponseSession

Following fields are required to login.

Fields	Description
ServiceRequestLogin.Username	Username of user attempting to log in
ServiceRequestLogin.Password	Password of user attempting to log in

Exceptions – Known exceptions/errors are provided in ServiceResponseSession.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful

Session API – Login Operation

This method authenticates SMSESSION and authorizes user login. This method also begins a session for the user.

Web API Operation URL – {base_url}/api/v1/session/login

Request - ServiceRequestLoginSMSession

Response – ServiceResponseSession

Following fields are required to login.

Fields	Description
SMSession	SMSession provided by siteminder

Exceptions – Known exceptions/errors are provided in ServiceResponseSession.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful

Session API – CheckLogin Operation

This method checks whether a user ID and session ID are still valid and if the user is still in session.

Web API Operation URL – {base_url}/api/v1/session/checklogin

Request - ServiceRequestSessionUser

Response – ServiceResponseBase

The following fields are required to check login:

Fields	Description
ServiceRequestSessionUser.SessionId	Session ID of the user
ServiceRequestSessionUser.IdentityPortalUserGUID	Keystone Login unique identifier GUID of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Given session ID or given username is not valid
User is not logged in	User does not have current login session active with the system. It could be because user did not login or user login session has expired

Session API – GetSessionInfo Operation

This method returns session information for a given session ID if the session is current and user is logged in.

Web API Operation URL – {base_url}/api/v1/session/getsessioninfo

Request - ServiceRequestSession

Response – ServiceResponseSession

The following fields are required to check login:

Fields	Description
ServiceRequestSessionUser.SessionId	Session ID of the user
ServiceRequestSessionUser.IdentityPortalUserGUID	Keystone Login unique identifier GUID of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful

Incorrect username and/or password	Given session ID or given username is not valid
User is not logged in	User does not have current login session active with the system. It could be because user did not login or user login session has expired

Session API – Logout Operation

This method clears a user session and logs user out of the system.

Web API Operation URL – {base_url}/api/v1/session/logout

Request - ServiceRequestSession

Response – ServiceResponseBase

The following fields are required:

Fields	Description
ServiceRequestSession.SessionID	Session ID of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
INVALID_SESSION_ID	Given session ID is not valid

Session API – ResetLoginAttempts Operation

This method resets the number of failed login attempts.

Web API Operation URL – {base_url}/api/v1/session/resetloginattempts

Request - ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseBoolean

The following fields are required:

Fields	Description
ServiceRequestIdentityPortalUserGUID.IdentityPortalUserGUID	Keystone Login unique identifier GUID of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Given unique identifier GUID is not correct

Session API – VerifySMSession

This method checks the validity of a session.

Web API Operation URL – {base_url}/api/v1/session/verifysmsession

Request - ServiceRequestVerifySMSession

Response - ServiceResponseBoolean

The following fields are required:

Fields	Description
ServiceRequestSession.SessionID	Session ID of the user

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
INVALID_SESSION_ID	Given session ID is not valid

USER API

This method provides functionalities related to user account information retrieval and management.

User API – AddKeystoneToSocial Operation

This method removes a social account and associates it to Keystone Login.

Web API Operation URL – {base_url}/api/v1/app/user/addkestonetosocial

Request – ServiceRequestAddKeystoneToSocial

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseAddUser.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – AddSocialToKeystone Operation

This method associates a social account to Keystone Login.

Web API Operation URL – {base_url}/api/v1/app/user/addsocialtokeystone

Request – ServiceRequestAddSocialToKeystone

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseAddUser.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – AddSocialUser Operation

This method adds a social user to the system. A new account is created with the provided information.

Web API Operation URL – {base_url}/api/v1/app/user/adduser

Request – ServiceRequestUserData

Response – ServiceResponseAddUser

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in `ServiceResponseAddUser.DetailedMessages`.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – AddUser Operation

This method adds a user to the system. A new account is created with the provided information.

Web API Operation URL – `{base_url}/api/v1/app/user/adduser`

Request – `ServiceRequestUserData`

Response – `ServiceResponseAddUser`

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in `ServiceResponseAddUser.DetailedMessages`.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – AnswerExperianQuestions Operation

This method invokes the Experian web service with provided answers. If correct, the user is verified by Experian. Calling this API may generate a chargeback to the agency.

Web API Operation URL – `{base_url}/api/v1/app/user/answerexperianquestions`

Request – `ServiceRequestExperianAnswer`

Response – `ServiceResponseBoolean`

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in `ServiceResponseAddUser.DetailedMessages`.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – ChangePassword Operation

This method changes the password of a given user account. The user account is identified by the Keystone Login unique identifier GUID.

Web API Operation URL – {base_url}/api/v1/app/user/changepassword

Request – ServiceRequestChangePassword

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – ConvertSocialToKeystone Operation

This method converts a social account to Keystone Login. It can also associate a social account to Keystone Login.

Web API Operation URL – {base_url}/api/v1/app/user/convertsocialtokeystone

Request – ServiceRequestConvertSocialToKeystone

Response – ServiceResponseAddUser

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseAddUser.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – DeleteUser Operation

This method deletes a user from SRPROD and the Keystone Login database.

Web API Operation URL – {base_url}/api/v1/app/user/deleteuser

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseAddUser.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Incorrect username and/or password	Request object is empty

User API – DisableMFA Operation

This method disables MFA for a user.

Web API Operation URL – {base_url}/api/v1/app/user/disablerbmfa

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – EmailInUse Operation

This method determines if an email is in use in SRPROD

Web API Operation URL – {base_url}/api/v1/app/user/disablerbmfa

Request – ServiceRequestEmailInUse

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – EnableRBMFA Operation

This method enables RBMFA for a user. Security questions must be valid. They are then transferred to the RBMFA database. The user must also be LOA2 verified.

Web API Operation URL – {base_url}/api/v1/app/user/enablerbmfa

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – ForgotUserName Operation

This method searches username by the associated email address in the system. If an email address is found, a notification is sent.

Web API Operation URL – {base_url}/api/v1/user/forgotusername

Request – ServiceRequestForgotUsername

Response – ServiceResponseAccount

The following field is required to recover the username of the user account:

Fields	Description
ServiceRequestAccount. ServiceRequestForgotUsername.EmailAddresses	Email address of the user for which username is required

Exceptions – Known exceptions will be provided in ServiceResponseAccount.DetailedMessages.

Exception Message	Description
Email Address was not provided	If email address is blank or white space in ServiceRequestAccount.AccountItem.EmailAddress
There was an issue processing your request, please try again	Any unexpected exception

Logging – This operation logs the following messages as user events:

Log Message	Description
ForgotUsername - User account found.	If system was able to find a user account for given email address
ForgotUsername - User account not found.	If system was not able to find a user account for given email address

User API – GenerateOTP Operation

This method requests a one-time passcode from the RBMFA service for the GUID specified.

Web API Operation URL – {base_url}/api/v1/user/generateotp

Request – ServiceRequestGenerateOTP

Response – ServiceResponseRBMFABoolean

The following field is required to recover a username:

Fields	Description
KeystoneLoginGUID.	GUID representing user to receive OTP
NewEmailAddress	Email Address to use instead of one found using KeystoneLoginGUID
NewMobilePhoneNumber	Not supported

Exceptions – Known exceptions will be provided in ServiceResponseAccount.DetailedMessages.

Exception Message	Description
User not found	User was not found in the database
RBMFA Error	See RBMFA codes

RBMFA Errors – Error codes from underlying service.

Response Code	Reason Code	Description
0	0	The operation was successful

User API – GetDomains Operation

This method queries domains available in the system and returns a list of domains. This is a HTTP Get operation.

Web API Operation URL – {base_url}/api/v1/app/user/domains

Request – None.

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – GetPasswordResetOptions Operation

This method gets password reset options (security questions, email or mobile phone) associated with a given user account.

Web API Operation URL – {base_url}/ api/v1/app/user/getpasswordresetoptions

Request – ServiceRequestResetPasswordOptions

Response – ServiceResponseResetPasswordOptions

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – GetUserAccountAudit Operation

This method gets different events associated with a given user account.

Web API Operation URL – {base_url}/ api/v1/app/user/getuseraccountaudit

Request – ServiceRequestUserAccountAudit

Response – ServiceResponseUserAccountAudit

Refer to data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – PennDOTVerify Operation

This method allows users to verify their identity against PennDOT.

Web API Operation URL – {base_url}/api/v1/app/user/penndotverify

Request – ServiceRequestPennDOTVerification

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – RemoveSocialLogin Operation

This method disassociates a social login from Keystone Login.

Web API Operation URL – {base_url}/api/v1/app/user/removesociallogin

Request – ServiceRequestPennDOTVerification

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – RemoveUserVerification Operation

This method removes verification from an account in SRPROD.

Web API Operation URL – {base_url}/api/v1/app/user/removeuserverification

Request – ServiceRequestUnVerifyCitizen

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – ResetNewPassword Operation

This method allows users to set a new password (e.g. user specified password to the specified user account). The system assigns a user specified password to the user account and notifies the user there is an associated email address. Keystone Login

unique identifier GUID is required to specify the user account for which password need to be reset.

Web API Operation URL – {base_url}/api/v1/app/user/resetnewpassword

Request – ServiceRequestResetNewPassword

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – ResetPassword Operation

This method allows users to reset a password for the specified user account. Keystone Login unique identifier GUID is required to specify the user account for which password need to be reset.

Web API Operation URL – {base_url}/api/v1/app/user/resetpassword

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – RetrieveExperianQuestions Operation

This method retrieves Experian questions for a user. Calling this API may generate a chargeback to the agency that invokes it.

Web API Operation URL – {base_url}/api/v1/app/user/retrieveexperianquestions

Request – ServiceRequestExperianQuestion

Response – ServiceResponseExperianQuestionList

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – RetrieveSocialLogins Operation

This method retrieves social logins associated with Keystone Login.

Web API Operation URL – {base_url}/api/v1/app/user/retrievesociallogins

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseSocialLogin

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – UnlockAccount Operation

This method unlocks the user account in the system. Keystone Login unique identifier GUID is required to unlock the associated account.

Web API Operation URL – {base_url}/api/v1/app/user/changepassword

Request – IdentityPortalUserGUID

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseUserSearchResults.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – UpdateUser Operation

This method adds a user to the system. A new account is created with the information provided.

Web API Operation URL – {base_url}/api/v1/app/user/updateuser

Request – ServiceRequestUpdateUser

Response – ServiceResponseBase

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseBase.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Incorrect username and/or password	Request object is empty

User API – UserData Operation

This method obtains account information from Keystone Login with the unique identifier GUID for the user.

Web API Operation URL – {base_url}/api/v1/app/user/data

Request – ServiceRequestIdentityPortalUserGUID

Response – ServiceResponseUserProfile

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseUserProfile.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – UserNameInUse Operation

This method determines if a username is in use in the SRPROD domain.

Web API Operation URL – {base_url}/api/v1/app/user/usernameinuse

Request – ServiceRequestUserNameInUse

Response – ServiceResponseBoolean

Refer to the data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseUserProfile.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception

User API – UserSearch Operation

This method searches the user database by user search criteria. At least one criterion is required in order to obtain search results.

Web API Operation URL – {base_url}/api/v1/app/user/search

Request - ServiceRequestSearchUsers

Response – ServiceResponseUserSearchResults

Refer to data section for more details about request and response object.

Exceptions – Known exceptions/errors are provided in ServiceResponseUserSearchResults.DetailedMessages.

Error Message	Description
There was an issue processing your request, please try again	Any unexpected exception
Method authorization failed	Method authorization was not successful
Invalid request (empty)	Request object is empty

User API – VerifyOTP Operation

This method verifies a one-time passcode from the RBMFA service for the GUID specified.

Web API Operation URL – {base_url}/api/v1/user/generateotp

Request – ServiceRequestVerifyOTP

Response – ServiceResponseRBMFABoolean

The following field is required to recover the username for an account:

Fields	Description
KeystoneLoginGUID.	GUID representing user to receive OTP
OTP	Onetime Passcode provided by user

Exceptions – Known exceptions will be provided in ServiceResponseRBMFABoolean.DetailedMessages.

Exception Message	Description
User not found	User was not found in the database
RBMFA Error	See RBMFA codes

RBMFA Errors – Error codes from underlying service.

Response Code	Reason Code	Description
0	0	The operation was successful
5704	0	One-Time Passcode has expired
5705	0	One-Time Passcode is not active

User API – GenerateKeystoneLoginOTP Operation

This method generates and emails a one-time passcode for the GUID specified.

Web API Operation URL – {base_url}/api/v1/user/generatekeystoneloginotp

Request – ServiceRequestGenerateKeystoneLoginOTP

Response – ServiceResponseOTPBoolean

The following field is required:

Fields	Description
KeystoneLoginGUID	GUID representing user to receive OTP
Email	Email the onetime passcode will be sent to
PhoneNumber	Phone number the onetime passcode will be texted to (Option not available at this time)
OTPType	Should be one of the following (The list will be updated in the future): <ul style="list-style-type: none"> - Email_ForgotPassword - Email_Registration - Email_Update - Email

Exceptions – Known exceptions will be provided in ServiceResponseOTPBoolean.DetailedMessages.

Exception Message	Description
OTP Type not specified!	OTP Type not specified in the request
An Error happened when generating the OTP!	Other OTP error

User API – VerifyKeystoneLoginOTP Operation

This method verifies a one-time passcode for the GUID specified.

Web API Operation URL – {base_url}/api/v1/user/verifykeystoneloginotp

Request – ServiceRequestVerifyKeystoneLoginOTP

Response – ServiceResponseOTPBoolean

The following field is required to recover the username for an account:

Fields	Description
KeystoneLoginGUID	GUID representing user to receive OTP
OTPCode	Onetime Passcode provided by user
Disabled	Boolean flag to disable the OTP when set to true (used when user reaches verification trial limit set by app)

Exceptions – Known exceptions will be provided in ServiceResponseOTPBoolean.DetailedMessages.

Exception Message	Description
OTP Type not specified!	OTP Type not specified in the request
An Error happened when generating the OTP!	Other OTP error

REQUEST DATA MODELS

ServiceRequestAccount

- AccountItem - UserProfileData
- AppCode - String

ServiceRequestAddKeystoneToSocial

- KeystoneLoginUserName - String
- KeystoneLoginPassword - String
- SocialKeystoneLoginGUID - GUID

ServiceRequestAddSecurityQuestions

- KeystoneLoginGUID - GUID
- SecurityQuestions - IList<RBMFASecurityQuestions>

ServiceRequestAddSocialToKeystone

- SocialLogin - SocialLogin

ServiceRequestAddUser

- UserData - AddUser
- AppCode - String

ServiceRequestBase

- AppCode - String

ServiceRequestChangePassword

- ChangePasswordItem - ChangePassword
- IdentityPortalUserGUID - String
- AppCode - String

ServiceRequestCheckPALoginMigration

- UserID - Integer
- UserGUID - GUID?
- UserName - String
- AppCode - String

ServiceRequestCheckSecurityQuestionAnswer

- IdentityPortalUserGUID - String
- QuestionNumber - Integer
- Answer - String
- AppCode - String

ServiceRequestConvertSocialToKeystone

- SocialKeystoneLoginGUID - GUID
- MigrateSocialLogins - Boolean
- UserData - AddUser

ServiceRequestEmailInUse

- EmailAddress - String
- CurrentEmailAddress - String

ServiceRequestExceptionLog

- Log - ExceptionLog
- AppCode - String

ServiceRequestExperianAnswer

- KeystoneLoginGUID - GUID
- SessionId - String
- Answers - IList<int>

ServiceRequestExperianQuestion

- FirstName - String
- LastName - String
- SSN - String
- AddressLine1 - String
- AddressLine2 - String
- City - String
- State - String
- ZipCode - String

ServiceRequestForgotUsername

- Email - String
- Domain - String

ServiceRequestIdentityPortalUserGUID

- IdentityPortalUserGUID - String
- AuthorizedUser - String
- AppCode - String

ServiceRequestGetUserData

- IdentityPortalUserGUID - GUID
- AuthorizedUser - String

ServiceRequestGetUserSecurityQuestions

- UserName - String
- AppCode - String

ServiceRequestIdentityPortalUserMapping

- IdentityPortalUserMapping
- AppCode - String

ServiceRequestLogin

- Username - String
- Password - String
- AppCode - String

ServiceRequestLogList

- UserName – String
- EmailAddress – String
- StartDate – String
- EndDate – String
- ApplicationId – Integer
- Skip – Integer
- Take – Integer
- AppCode – String

ServiceRequestMappingCreateUser

- LoginNetUserId – Integer
- UserName – String
- Domain – String
- NewUserName – String
- NewEmail – String

ServiceRequestOTP

- KeystoneLoginGUID – GUID
- NewEmailAddress – String
- NewMobilePhoneNumber – String

ServiceRequestMapPALoginToKeystone

- KeystoneLoginGUID – GUID
- PALoginUserName – String
- PALoginPassword – String

ServiceRequestMigrationByPALoginID

- UserID – Integer
- AppCode – String

ServiceRequestPALoginUser

- UserGUID – GUID?
- AppCode – String

ServiceRequestPennDOTVerification

- FirstName – String
- LastName – String
- DateOfBirth – DateTime
- DriverLicenseNumber – String

ServiceRequestRBMFASecurityQuestions

- KeystoneLoginGUID – GUID
- SecurityQuestions – IList<RBMFASecurityQuestion>

ServiceRequestRemoveSocialLogin

- KeystoneLoginGUID – GUID
- SocialProviderId – Integer

ServiceRequestResetNewPassword

- IdentityPortalUserGUID – String
- NewPassword – String
- AuthorizedUser – String
- AppCode – String

ServiceRequestResetPasswordOptions

- Username – String
- AppCode – String

ServiceRequestSearchUsers

- SearchFields - UserSearchFields
- AuthorizedUser – String
- AppCode – String

ServiceRequestSecurityQuestion

- QuestionItem - SecurityQuestion
 - ID – Integer
 - Question – String
- AuthorizedUser – String
- AppCode – String

ServiceRequestSession

- SessionID – Integer
- AppCode – String

ServiceRequestSessionUser

- SessionID – Integer
- IdentityPortalUserGUID – String
- AppCode – String

ServiceRequestUnVerifyUser

- IdentityPortalUserGUID – GUID

ServiceRequestUpdateUser

- UpdateUserData - UpdateUser
- ValidatePassword – String
- AuthorizedUser – String
- AppCod – String

ServiceRequestUserAccountAudit

- Username – String
- Email – String
- StartDate – String
- EndDate – String
- AppCode – String

ServiceRequestUserData

- UserProfile - UserProfileData
- AppCode - String

ServiceRequestUserLog

- Log - UserLog
- AppCode - String

ServiceRequestGetMapping

- Key - Integer
- LookupCode - String
- MappingAppCode - String

ServiceRequestUserNameInUse

- UserName - String
- CurrentUserName - String

ServiceRequestVerifyOTP

- KeystoneLoginGUID - GUID
- OTP - String

ServiceRequestGenerateKeystoneLoginOTP

- KeystoneLoginGUID - GUID
- Email - String
- PhoneNumber - String
- OTPType - String
- Username - String

ServiceRequestVerifyKeystoneLoginOTP

- KeystoneLoginGUID - GUID
- OTP - String
- Disabled - Boolean

RESPONSE DATA MODELS

ServiceResponseAccount

- AccountItem – UserProfile
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseAddUser

- IdentityPortalUserGUID – String
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseBase

- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseBoolean

- BooleanValue – Boolean
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseCheckPALoginMigration

- BooleanValue – Boolean
- IdentityPortalUserGUID – GUID?
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseCheckSecurityQuestionAnswer

- IsCorrect – Boolean
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseDomainsList

- DomainList – List<String>
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseExceptionLogs

- Logs – List<ExceptionLog>
- TotalRecords – Integer
- TotalPages – Integer
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseExperianQuestionList

- SessionId – String
- Questions – List<ExperianQuestion>

ServiceResponseGetRBMFASecurityQuestions

- SecurityQuestions – IList<RBMFASecurityQuestion>
- ErrorValue – RBMFAError

ServiceResponseGetUserSecurityQuestions

- SecurityQuestionOne – String
- SecurityQuestionTwo – String
- SecurityQuestionThree – String
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseIdentityPortalUserMapping

- Mapping – IdentityPortalUserMapping
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseMappingKey

- Key – Integer
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseMigrationByPALoginID

- IdentityPortalUserGUID – GUID
- PALoginID – Integer
- Email – String
- TemporaryPassword – String
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponsePALoginResult

- PALoginResult – PALoginResult

ServiceResponsePALoginUser

- UserID – Integer
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponsePasswordStrength

- StrengthResult – PasswordCheckResult
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseRBMFABoolean

- BooleanValue – Boolean?
- ErrorValue – RBMFAError

DetailedMessages – List<String>

ServiceResponseResetPasswordOptions

- AllowSecurityQuestionReset – Boolean
- AllowEmailReset – Boolean
- AllowPhoneReset – Boolean
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseSession

- SessionInfo – IdentityPortalSession
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseSocialLogin

- SocialLogins – IList<SocialLogin>

ServiceResponseUserAccountAudit

- UserLogs – List<UserLog>
- ExceptionLogs – List<ExceptionLog>
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseUserLogs

- Logs – List<UserLog>
- TotalRecords – Integer
- TotalPages – Integer
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseUserProfile

- UserProfile – UserProfileData
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseUserSearchResults

- SearchFields – UserSearchFields
- Users – List<UserProfileData>
- ErrorMessage – String
- ResponseCode – ServiceResponseCode
- DetailedMessages – List<String>

ServiceResponseIdentityPortalUserMapping

- IdentityPortalUserMapping

ServiceResponseOTPBoolean

- BooleanValue – bool?
- ErrorValue – String

DATA MODELS

AddUser

- UserName – String
- FirstName- String
- LastName – String
- Email – String
- Password – String
- ConfirmPassword – String
- MobilePhoneNumber – String
- DateOfBirth – DateTime
- Question1 – String
- Answer1 – String
- Question2 – String
- Answer2 – String
- Question3 – String
- Answer3 – String

ChangePassword

- OldPassword – String
- NewPassword – String
- NewPasswordConfirmed – String

ExceptionLog

- ExceptionLogId – Integer
- MethodName – String
- FilePath – String
- LineNumber – Integer
- StackTrace – String
- EventType – EventType
- LogDateTime – DateTime
- Message – String
- UserName – String
- UserEmail – String
- Domain – String
- IdentityPortalUserGUID – String
- ApplicationCode – String
- ApplicationName – String
- AgencyName – String

IdentityPortalUserMapping

- ID – Integer
- GUID – String
- LookupCode – String
- AppCode – String
- Key – Integer

IdentityPortalSession

- ID – Integer
- IdentityPortalUserGUID – GUID
- StartTime – DateTime
- EndTime – DateTime
- SiteMinderSessionToken – String

PALoginResult

- ResponseCode – Integer
- Message – String

PALoginUser

- UserID – Integer
- UserGUID – GUID
- UserName – String
- Email – String
- LastUpdateDT - DateTime

PasswordCheckResult

- Strength – PasswordStrength
- CorrectLength – Boolean
- ContainNumber – Boolean
- ContainUpperCase – Boolean
- ContainLowerCase – Boolean
- ContainSpecialCharacter – Boolean
- DoesNotContainUserName – Boolean
- DoesNotContainFirstName – Boolean
- DoesNotContainLastName - Boolean

PasswordStrength

- Invalid
- Weak
- Medium
- Strong

SecurityQuestion

- ID – Integer
- Question – String

ServiceResponseCode

ServiceReponseCode notifies whether the API operation was successful. Based on various outcome, system provides code. If operation succeeded then Response Code OK is provided otherwise, it gives one of the available response codes.

The available response codes and details are provided below:

- OK – API operation completed successfully.

- OTHER_ERROR – Unexpected error, more details are given in DetailsMessage list.
- USERNAME_USED – Provided username is already used.
- EMAIL_ADDRESS_USED – Provided email address is already used
- USERNAME_AND_EMAIL_USED – Provided username and email are already used.
- INVALID_EMAIL_ADDRESS – Provided email is invalid.
- INVALID_USERNAME – Provided username is invalid.
- INCORRECT_PASSWORD – Password is not correct for specified user account.
- SESSION_NOT_DELETED – Session was not deleted.
- INVALID_SESSION_ID – Session is not valid.
- INVALID_EMAIL – Email address is not valid.
- INVALID_USER_ID – User id is not valid.
- INVALID_ANSWER – Security question answer is not valid.
- USER_NOT_LOGGED_IN – User is not logged in currently.
- PASSWORD_USED – Password is already used.
- UPDATES_NOT_ALLOWED – Updates are not allowed.
- INVALID_VALUE – Invalid valued for corresponding property.
- SEND_EMAIL_FAILED - Email was not sent.
- RESET_PASSWORD_FAILED – Password was not reset.
- NUMBER_OF_TRYES_EXCEEDED – Number of login attempts have exceeded allowed attempts.
- INVALID_PHONE – Phone number is invalid.
- ACCOUNT_LOCKED – Specified user account is locked.
- ACCOUNT_DISABLED – Specified user account is disabled.
- USERNAME_NOT_FOUND – Username was not found in the system.
- RESET_PASSWORD_FAILED_NO_CONTACT
- RESET_PASSWORD_FAILED_PASSWORD_POLICY
- RESET_PASSWORD_FAILED_PREVIOUS_PASSWORD
- IDENTITY_MANAGER_ERROR – Error occurred in the identity manager service
- RBMFA_ERROR – Error occurred in the RBMFA Service
- PALOGIN_ERROR – Error occurred in the PALogin Service
- MIGRATION_MAPPING_ERROR – Error occurred while migrating a user

OK = 0

```
, OTHER_ERROR = -1
, USERNAME_USED = 1
, EMAIL_ADDRESS_USED = 2
, USERNAME_AND_EMAIL_USED = 3
, INVALID_EMAIL_ADDRESS = 4
, INVALID_USERNAME = 5
, INCORRECT_PASSWORD = 6
, SESSION_NOT_DELETED = 7
, INVALID_SESSION_ID = 8
, INVALID_EMAIL = 9
, INVALID_USER_ID = 10
```

, INVALID_ANSWER = 11
, USER_NOT_LOGGED_IN = 12
, PASSWORD_USED = 13
, UPDATES_NOT_ALLOWED = 14
, INVALID_VALUE = 15
, INVALID_AD_INFO = 16
, SEND_EMAIL_FAILED = 17
, RESET_PASSWORD_FAILED = 18
, NUMBER_OF_TRYS_EXCEEDED = 19
, INVALID_SITE = 20
, INVALID_PHONE = 21
, INVALID_FAX = 22
, ACCOUNT_LOCKED = 23
, ACCOUNT_DISABLED = 24
, USERNAME_NOT_FOUND = 25
, RESET_PASSWORD_FAILED_NO_CONTACT = 26
, RESET_PASSWORD_FAILED_PASSWORD_POLICY = 27
, RESET_PASSWORD_FAILED_PREVIOUS_PASSWORD = 28
, IDENTITY_MANAGER_ERROR = 29
, RBMFA_ERROR = 30
, PALOGIN_ERROR = 31
, MIGRATION_MAPPING_ERROR = 32
, EXPERIAN_VERIFICATION_ERROR = 33
, USER_ALREADY_MIGRATED = 34
, OTP_ERROR = 35

UserEventType

- Unknown
- Login
- Logout
- Registered
- UpdatedAccount
- ResetPassword
- ChangePassword
- ForgotUserName

UserLog

- UserLogId – Integer
- UserEventType – UserEventType

UserProfileData

- ID - Integer
- IdentityPortalUserGUID – GUID
- ActiveDirectoryGUID – GUID
- UserName – String
- Domain – String

- FirstName – String
- LastName – String
- Email – String
- Password – String
- ConfirmPassword – String
- MobilePhoneNumber – String
- DateOfBirth – DateTime
- SecurityQuestionOne – String
- SecurityQuestionAnswerOne – String
- SecurityQuestionTwo – String
- SecurityQuestionAnswerTwo – String
- SecurityQuestionThree – String
- SecurityQuestionAnswerThree – String
- IsKeystoneAccount – Boolean
- IsMFAEnabled – Boolean
- VerificaitonLevel – Integer (0 none, 1 Experian, 10 PennDOT)
- VerificationProvider – String (unverified or blank, Experian, PennDOT)
- VerificationDateTime – DateTime
- FailedLoginAttempts – Integer
- LastUpdate – DateTime
- LastLogin – DateTime
- LastLoginDateOnly – DateTime
- AccountIsDisabled – Boolean
- IsAccountLockedOut – Boolean
- UpdatesAllowed – Boolean
- GoogleGUID – String
- PALoginUser – PALoginUser

UpdateUser

- IdentityPortalUserGUID – GUID
- Email – String
- UserName – String
- FirstName – String
- LastName – String
- MobilePhoneNumber – String
- DateOfBirth – DateTime?
- Question1 – String
- Question2 – String
- Question3 – String
- Answer1 – String
- Answer2 – String
- Answer3 – String
- ValidatePassword – bool
- PasswordToValidate – string

UserSearchFields

- EmailAddress – String
- UserName – String
- SearchExactUsername – Boolean

- FirstName – String
- LastName – String
- Phone – String
- DomainID – Integer
- Domain – String

RECAPTCHA

To protect against bots, spam users, and automated registrations, Google reCAPTCHA has been deployed throughout the Keystone Login portal. Google reCAPTCHA v3 is the version used in the Keystone Login portal.

Google reCAPTCHA considers the entire engagement with the Keystone Login portal and evaluates a broad range of cues to distinguish bots from humans. It uses machine learning and artificial intelligence to derive a human vs. bot likelihood and allows the implementer to define the thresholds for rejection/acceptance.

Please visit the following link for more information:

<https://www.google.com/recaptcha/intro/index.html>

To implement Google reCAPTCHA in a .NET website, please visit Google's Developer's Guide:

<https://developers.google.com/recaptcha/intro>