Oracle® MICROS Labor Management
Scheduler RESTful API and Supporting Interfaces
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Contents

Preface

The Scheduler RESTful API is a Web service interface that allows Labor Management users to add and edit a schedule using a third party labor application, upload the schedule to Labor Management and then enforce the schedule at the point of clock in/out at the POS.

This document specifies the Scheduler RESTful API Web Service interface, its supporting Jobs interfaces, and all available calls.

Audience

This document is intended for developers and programmers creating and configuring third-party applications to interface with Labor Management.

Customer Support

To contact Oracle Customer Support, access the Support Portal at the following URL:

https://iccp.custhelp.com/

When contacting Customer Support, please provide the following:

Product version and program/module name

Functional and technical description of the problem (include business impact)

Detailed step-by-step instructions to re-create

Exact error message received and any associated log files

Screen shots of each step you take

Documentation

Product documentation is available on the Oracle Help Center at
https://docs.oracle.com/en/industries/food-beverage/

Revision History

Date	Description of Change
October 2017	Initial publication.
March 2018	Changed the `upload` response template to include the `failedSchedules` response, and added sample responses.
September 2018	• Updated REST HTTP header and security information. • Added information of REST API versioning.
October 2018	Added Authentication and Authorization section.
May 2019	Added supported Enterprise Back Office version information.

| October 2021 | Updated URL Param section. |
| August 2023 | Updated guide title. |

1 Scheduler Web Service

Authorization and Authentication

When calling a web service, you pass the following parameters in the HTTP header:

Parameter	Value
Accept	`Application/json`
Username	`CORE_ORGANIZATION.externalAppUserName`
Password	`CORE_ORGANIZATION.externalAppPassword`

Starting with Enterprise Back Office 9.0 patch 17 and higher and 9.1 patch 4 and higher, if you are developing new REST APIs that follow Oracle REST standards, use an API token and password in the HTTP request header to authenticate client requests.

Create API Users explains how to create an API user to get the user name token and password.

The following table describes the header parameters for the new APIs:

Parameter	Value
`username`	API user token associated with the API user.
`password`	Password associated with the API user.
`Content-Type`	`application/json`

Create API Users

Authentication tokens for the API calls are generated when you create and save an API user. When an API call is made, the API uses the token along with a password that are included in the connection string to authenticate and authorize users making the calls. This combination of token and password also validates which locations the user is authorized to update.

1. In the portal, select **Admin**, select **Portal**, select **Users**, and then select **Users.**
2. Click **Add.**
3. Select **API User** and enter details for all mandatory fields.

Field Name	Description
Logon Name	The username that the user should use to log in to the portal.
Password	The password that the user should use to log in to the portal.
Display Name	The name that should show appear in the portal when the user is logged in.
Organization Level	The user's organization levels.
Email Address	The user's email address.

Active	Enabled by default. Disable this option if you want to deactivate the user.

4. Click **Save.**
5. If you want to view a list of all API users, select **Show API Users** and click **Find All** in the User Administration overview page.

REST API Versioning

The new implementation of the Labor Management REST APIs follows Oracle REST standards. REST API calls include the API version in the root URL. Root URLs are formatted as follows:

```
https://www.hostname.com/rest/services/{version}/{api}
```

The path to the resource appears after the root URL. The version is highlighted in the following example API call:

```
https://www.hostname.com/rest/services/v1/locations/{locationRef}
/employees
```

When the next version of the API is released, you can reference the new version in the call as follows:

```
https://www.hostname.com/rest/services/v2/locations/{locationRef}
/employees
```

Get All API Versions

Use the GET method with the following URL to retrieve all versions of an API:

```
https://www.hostname.com/rest/services/
```

Sample Response

The following example shows the information returned in the JSON response:

```json
{
  "count": 2,
  "items": [{
    "version": "v1",
    "lifecycle": "deprecated",
    "isLatest": false,
    "successor": "v2",
    "terminationDate": "2017-12-31",
    "links": [
      {"rel": "canonical",
       "href": "HTTPS://machine-name/rest/services/v1"},
      {"rel": "successor-version",
       "href": "HTTPS://machine-name/rest/services/v2"}
    ]
  },
  {
    "version": "v2",
    "lifecycle": "active",
    "isLatest": true,
    "predecessor": "v1",
    "links": [
      {"rel": "canonical",
       "href": "HTTPS://machine-name/rest/services/v2"},
      {"rel": "predecessor-version",
       "href": "HTTPS://machine-name/rest/services/v1"}
    ]
  }],
  "links":[
    {"rel": "canonical",
     "href": "HTTPS://machine-name/rest/services"},
    {"rel": "current",
     "href": "HTTPS://machine-name/rest/services/v2"}
  ]
}
```

Get Specific API Version

Use the GET method with the following URL to retrieve information for a specific API version:

```
https://www.hostname.com/rest/services/{version}
```

URL Parameters

The following table describes the URL parameters for retrieving a specific version of an API:

Table 1 – Retrieving Specific API Version: URL Parameters

Parameter	Value
version	Version of the API.

Sample Request

```
https://www.hostname.com/rest/services/v1
```

Sample Response

The following example shows the information returned in the JSON response:

```
{
  "version": "v1",
  "lifecycle": "deprecated",
  "isLatest": false,
  "successor": "v2",
  "terminationDate": "2017-12-31",
  "links": [
    {"rel": "canonical",
     "href": "HTTPS://machine-name/rest/services/v1"},
    {"rel": "successor-version",
     "href": "HTTPS://machine-name/rest/services/v2"}
  ]
}
```

2 Web Service Calls

The Oracle MICROS Labor Management Scheduler API lets you:

- Import a schedule from a third-party application.
- Create and edit Job Definitions.
- Retrieve information pertaining to a specific Job Definition or for all Job Definitions for an organization.

The following table describes the calls:

Table 2 - Labor Management Schedule API Web Service Calls Reference

Name	Description
upload	Upload and import a schedule to Labor Management.
addJob	Create a Job Definition.
editJob	Edit an existing Job Definition.
getJob	Retrieve a specific Job Definition.
getJobs	Retrieve all Job Definitions for an organization.

When making a web service call, make sure there is a value in the **Email Address** field for the Schedule Profile, and enable **Disable Labor Cost Calculation (Scheduler API)**. The e-mail address is used to send notifications if there is a problem in uploading a schedule.

The user can specify multiple e-mail addresses with a semi-colon. For example: user1@test.com;user2@test.com;user3@test.com.

upload

This is used to upload the schedule to Labor Management.

URL Param

http://*server name*/rest/services/schedule/upload

New URL with API versioning (supported in 9.0 patch 17 and higher and 9.1 patch 4 and higher):

http://*server name*/rest/services/v1/schedules/upload

REST API Versioning provides more information on API versions.

Sample Request

```
upload ({"locationRef":"<val>", "sched":[{
          "payrollId":"<val>", "startDate":"<val>",
          "startHour":"<val>", "startInterval":"<val>",
          "endDate":"<val>", "endHour":"<val>",
          "endInterval":"<val>",
          "jobRef":"<val>"
```

```
            },
            {
                ...,
                ...
            }
        ]
    })
```

Sample Response

```
{"response":{ "code":"<val>",
             "desc":"<val>",
             "failedSchedules":{
                 "locationRef":"<val>",
                 "failures":[
                     {
                         "schedule":"<val>",
                         "errorMsg":"<val>"
                     },
                     {
                         ..,
                         ..
                     }
                 ]
             }
        }
    }
```

The failedSchedules response is only populated when returning error code 1.

The response includes the following parameters and values. Labor Management cannot import a schedule if any of the following parameters are missing:

Table 3 - upload Parameter Reference

Parameter Name	Description
locationRef	The Location Reference as defined in the column ORGLOCATIONREF. It can be found at **Admin**	**Portal**	**Organizational Structure**	**Locations**	**Location Reference**
payrollId	The Employees Eternal Payroll ID as defined in column EXTERNALPAYROLLID. It can be found at **Human Resources**	**Employee**	**General**	**Payroll ID**
startDate	The Shift Start Date as defined in column SCHEDULEDATE. The date field should be in the MM/dd/yyyy format, such as 01/26/2015.

startHour	The Shift Start Hour as defined in column `STARTFP`, consisting of `StartHour + StartInterval`.
startInterval	The Shift Start Interval as defined in column `STARTFP`, consisting of `StartHour + StartInterval`.
endDate	The Shift End Date, expected to be the same value as StartDate. There is no equivalent column in the database. The date field should be in the `MM/dd/yyyy` format , such as 01/26/2015.
endHour	The Shift End Hour as defined in column `ENDFP`, consisting of `EndHour + EndInterval`.
endInterval	The Shift End Interval as defined in column `ENDFP`, consisting of `EndHour + EndInterval`.
jobRef	The Job Code assigned to the Employee record as defined in column `ENT_JOB_CODE.EXTJOBCODEREF`.

Success Response

0. Success – Complete Schedule upload

Error Response

1. Partial Success - Some schedules failed validation.
2. Server Error
3. Invalid Credentials
4. Malformed Data – Empty schedule, invalid date/hour/interval.
5. Configuration Error – No schedule profile or no organization found.

Sample Responses

Successful Upload

```
{
    "response": {
        "code": 0,
        "desc": "Complete Success. All schedules were saved."
    }
}
```

Upload Containing Invalid Data

```
{
    "response": {
        "code": 1,
        "desc": "Partial Success. Some schedules were not
            saved.",
        "failedSchedules": {
            "locationRef": "BAL",
            "failures": [
```

```
                               {
                                      "schedule": "[payrollId: 1abc –
                                         startDate: 02/15/2018 –
                                         startHour: 8 – startInterval: 15
                                         – endDate: 02/15/2018 – endHour:
                                         16 – endInterval: 30 – jobRef:
                                         JOB123]",
                                      "errorMsg": "Employee not found. "
                               },
                               {
                                      "schedule": "[payrollId: 2abc –
                                         startDate: 02/11/2018 –
                                         startHour: 8 – startInterval: 15
                                         – endDate: 02/15/2018 – endHour:
                                         16 – endInterval: 30 – jobRef:
                                         JOB123]",
                                      "errorMsg": "Invalid schedule
                                         date/time duration. Job not
                                         found."
                               },
                               {
                                      ...,
                                      ...
                               }
                         ]
                  }
            }
      }
```

addJob

This is used to add (create) a Job Definition to Labor Management. When creating a new Job Definition, the following elements are required:

- `Job`
- `JobCatPosRef`
- `LabCatPosRef`
- `RvcPosRef`
- `Type`
- `EffectiveFrom`

URL Param

http://*server name*/rest/services/job/addJob

New URL with API versioning (supported in 9.0 patch 17 and higher and 9.1 patch 4 and higher):

http://*server name*/rest/services/v1/jobs/addJob

REST API Versioning provides more information on API versions.

Sample Request

```
addJob({"job":{
      "name":"<val>", "jobcatposref":"<val>",
      "labcatposref":"<val>", "rvcposref":"<val>",
      "type":"<val>", "effectivefrom":"<val>",
      "clockinprivilege":"<val>",
      "declaredirecttipsonclockout":"<val>",
      "declareindirecttipsonclockout":"<val>",
      "allowearlylateclockout":"<val>", "printtips":"<val>",
      "tipped":"<val>", "jobRef":"<val>", "defaultrate":"<val>",
      "extjobcodeid":"<val>", "override":[{
            "locationRef":"<val>",
            "effectivefrom":"<val>",
            "defaultrate":"<val>"
                  }
            ]
}})
```

Sample Response

```
{"response":{ "code":"<val>",
      "desc":"<val>"
      }
}
```

The response includes the following parameters and values.

Parameter Name	Description
name	The Job Name defined in **Human Resources** | **Admin** | **Job Definitions** | **Job Name**.
jobcatposref	The Job Category defined in **Human Resources** | **Admin** | **Job Definitions** | **General** | **Job Category**. This is sent to the web service as JOBCATPOSREF and can be found in the JOB_CATEGORY table.
labcatposref	The Labor Category defined in **Human Resources** | **Admin** | **Job Definitions** | **General** | **Location Category**. This is sent to the web service as LABORCATPOSREF and can be found in the LABOR_CATEGORY table.
rvcposref	The Revenue Center in which the job is effective, as defined in **Human Resources** | **Admin** | **Job Definitions** | **General** | **Revenue Center**. This is sent to the web service as REVENUECENTERPOSREF and can be found in the REVENUE_CENTER table.
type	The Job Type, such as Hourly or Salaried, as defined in **Human Resources** | **Admin** | **Job Definitions** | **Type** | **Job Type**.

effectivefrom	The date the job is Effective From as defined in **Human Resources	Admin	Job Definitions	Type	Effective From**.
clockinprivilege	The privilege that an Employee must have in order to clock-in for this position, as defined in **Human Resources	Admin	Job Definitions	General	Clock In Privilege**.
declaredirecttips onclockout	Whether or not the job requires a declaration of direct tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare direct tips on clock out**.
declareindirecttips onclockout	Whether or not the job requires a declaration of indirect tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare indirect tips on clock out**.
allowearlylateclockout	Whether or not employees working this job can clock out early or late, even when their Employee class is not privileged to do so. The configuration is defined in **Human Resources	Admin	Job Definitions	General	Allow early or late clock out**.
printtips	Whether or not to print a tips declared chit when an Employee working this job clocks out, as defined in **Human Resources	Admin	Job Definitions	General	Print tips declared on clock out**.
tipped	Whether or not the job is subject to calculating the tip credit, as defined in **Human Resources	Admin	Job Definitions	General	Subject to Tipped Credit**.
Jobref	The Job Code assigned to the Employee record.
defaultrate	The normal starting pay for this position, as defined in **Human Resources	Admin	Job Definitions	Type: Hourly	Default Pay Rate**. This configuration is only required for hourly employees.
locationRef	The Reference ID associated with the Location or Level, as defined in **Admin	Portal	Organizational Structure	Locations	Location Reference**.
extjobcodeid	The external job reference for the newly added job. This is stored in the `ENT_JOB_CODE.extJobCodeRef` column.

Success Response

0. Success

Error Response

2. Server Error
3. Invalid Credentials
4. Malformed Data
5. Configuration Error

editJob

This is used to edit a Job Definition in Labor Management.

URL Param

http://*server name*/rest/services/job/editJob

New URL with API versioning (supported in 9.0 patch 17 and higher and 9.1 patch 4 and higher):

http://*server name*/rest/services/schedule/v1/jobs/editJob

REST API Versioning provides more information on API versions.

Sample Request

```
editJob (String oldJobRef, {"job":{
            "name":"<val>", "jobcatposref":"<val>",
            "labcatposref":"<val>", "rvcposref":"<val>",
            "effectivefrom":"<val>", "clockinprivilege":"<val>",
            "declaredirecttipsonclockout":"<val>",
            "declareindirecttipsonclockout":"<val>",
            "allowearlylateclockout":"<val>",
            "printtips":"<val>", "tipped":"<val>",
            "jobRef":"<val>", "defaultrate":"<val>",
            "extjobcodeid":"<val>", "override":[{
                    "locationRef":"<val>",
                    "effectivefrom":"<val>",
                    "defaultrate":"< val>"
                        }
                    ]
            }})
```

Sample Response

```
{"response":{ "code":"<val>",
        "desc":"<val>"
        }
}
```

The response includes the following parameters and values.

Parameter Name	Description
name	The Job Name defined in **Human Resources	Admin	Job Definitions	Job Name**.
jobcatposref	The Job Category defined in **Human Resources	Admin	Job Definitions	General	Job Category**.
labcatposref	The Labor Category defined in **Human Resources	Admin	Job Definitions	General	Location Category**.
rvcposref	The Revenue Center in which the job is effective, as defined in **Human Resources	Admin	Job Definitions	General	Revenue Center**.
type	The Job Type, such as Hourly or Salaried, as defined in **Human Resources	Admin	Job Definitions	Type	Job Type**.
effectivefrom	The date the job is Effective From as defined in **Human Resources	Admin	Job Definitions	Type	Effective From**.
clockinprivilege	The privilege that an Employee must have in order to clock-in for this position, as defined in **Human Resources	Admin	Job Definitions	General	Clock In Privilege**.
declaredirecttips onclockout	Whether or not the job requires a declaration of direct tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare direct tips on clock out**.
declareindirecttips onclockout	Whether or not the job requires a declaration of indirect tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare indirect tips on clock out**.
allowearlylateclockout	Whether or not employees working this job can clock out early or late, even when their Employee class is not privileged to do so. The configuration is defined in **Human Resources	Admin	Job Definitions	General	Allow early or late clock out**.
printtips	Whether or not to print a tips declared chit when an Employee working this job clocks out, as defined in **Human Resources	Admin	Job Definitions	General	Print tips declared on clock out**.

tipped	Whether or not the job is subject to calculating the tip credit, as defined in **Human Resources	Admin	Job Definitions	General	Subject to Tipped Credit**.
Jobref	The Job Code assigned to the Employee record.
defaultrate	The normal starting pay for this position, as defined in **Human Resources	Admin	Job Definitions	Type: Hourly	Default Pay Rate**. This configuration is only required for hourly employees.
locationRef	The Reference ID associated with the Location or Level, as defined in **Admin	Portal	Organizational Structure	Locations	Location Reference**.
extjobcodeid	The external job reference for the newly added job. This is stored in the `ENT_JOB_CODE.extJobCodeRef` column.

Success Response

    0.   Success

Error Response

    2.   Server Error
    3.   Invalid Credentials
    4.   Malformed Data
    5.   Configuration Error

getJob

This is used to retrieve a single Job Definition from Labor Management.

URL Param

http://*server name*/rest/services/job/getjob

New URL with API versioning (supported in 9.0 patch 17 and higher and 9.1 patch 4 and higher):

http://*server name*/rest/services/v1/jobs/getJob

REST API Versioning provides more information on API versions.

Sample Request

getJob `(String oldJobRef)`

The API returns the following response:-

```
{"job":{
        "name":"<val>", "jobcatposref":"<val>",
        "labcatposref":"<val>", "rvcposref":"<val>",
        "type":"<val>", "effectivefrom":"<val>",
        "clockinprivilege":"<val>",
        "declaredirecttipsonclockout":"<val>",
        "declareindirecttipsonclockout":"<val>",
        "allowearlylateclockout":"<val>",
        "printtips":"<val>", "tipped":"<val>",
        "jobRef":"<val>", "defaultrate":"<val>",
        "extjobcodeid":"<val>", "override":[{
                "locationRef":"<val>",
                "effectiveFrom":"< val>",
                "defaultrate":"<val>"
                     }
                ]
        },
        "response":{
                "code":"<val>",
                "desc":"<val>"
        }
    }
```

The response includes the following parameters and values.

Parameter Name	Description
name	The Job Name defined in **Human Resources	Admin	Job Definitions	Job Name**.
jobcatposref	The Job Category defined in **Human Resources	Admin	Job Definitions	General	Job Category**.
labcatposref	The Labor Category defined in **Human Resources	Admin	Job Definitions	General	Location Category**.
rvcposref	The Revenue Center in which the job is effective, as defined in **Human Resources	Admin	Job Definitions	General	Revenue Center**.
type	The Job Type, such as Hourly or Salaried, as defined in **Human Resources	Admin	Job Definitions	Type	Job Type**.
effectivefrom	The date the job is Effective From as defined in **Human Resources	Admin	Job Definitions	Type	Effective From**.

clockinprivilege	The privilege that an Employee must have in order to clock-in for this position, as defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Clock In Privilege**.
declaredirecttips onclockout	Whether or not the job requires a declaration of direct tips on clock out, as defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Declare direct tips on clock out**.
declareindirecttips onclockout	Whether or not the job requires a declaration of indirect tips on clock out, as defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Declare indirect tips on clock out**.
allowearlylateclockout	Whether or not employees working this job can clock out early or late, even when their Employee class is not privileged to do so. The configuration is defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Allow early or late clock out**.
printtips	Whether or not to print a tips declared chit when an Employee working this job clocks out, as defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Print tips declared on clock out**.
tipped	Whether or not the job is subject to calculating the tip credit, as defined in **Human Resources**	**Admin**	**Job Definitions**	**General**	**Subject to Tipped Credit**.
Jobref	The Job Code assigned to the Employee record.
defaultrate	The normal starting pay for this position, as defined in **Human Resources**	**Admin**	**Job Definitions**	**Type: Hourly**	**Default Pay Rate**. This configuration is only required for hourly employees.
locationRef	The Reference ID associated with the Location or Level, as defined in **Admin**	**Portal**	**Organizational Structure**	**Locations**	**Location Reference**.
extjobcodeid	The external job reference for the newly added job. This is stored in the `ENT_JOB_CODE.extJobCodeRef` column.

Success Response

0. Success

Error Response

2. Server Error
3. Invalid Credentials
4. Malformed Data
5. Configuration Error

getJobs

This is used to retrieve all the Job Definitions of the Organization from Labor Management.

URL Param

http://*server name*/rest/services/job/getJobs

New URL with API versioning (supported in 9.0 patch 17 and higher and 9.1 patch 4 and higher):

http://*server name*/rest/services/v1/jobs/getJobs

REST API Versioning provides more information on API versions.

Sample Request

getJobs ()

Sample Response

```
{"jobs":[{
       "name":"<val>", "jobcatposref":"<val>",
       "labcatposref":"<val>", "rvcposref":"<val>",
       "type":"<val>", "effectiveFrom":"<val>",
       "clockinprivilege":"<val>",
       "declaredirecttipsonclockout":"<val>",
       "declareindirecttipsonclockout":"<val>",
       "allowearlylateclockout":"<val>",
       "printtips":"<val>", "tipped":"<val>",
       "jobRef":"<val>", "defaultrate":"<val>",
       "extjobcodeid":"<val>", "override":[{
               "locationRef":"<val>",
               "effectiveFrom":"< val>",
               "defaultrate":"<val>"
                           }
                   ]
           },
           {
                   …
                   …
           }
           ],
       "response":{
```

```
            "code":"<val>",
            "desc":"<val>"
            }
    }
```

The response includes the following parameters and values.

Parameter Name	Description
name	The Job Name defined in **Human Resources	Admin	Job Definitions	Job Name**.
jobcatposref	The Job Category defined in **Human Resources	Admin	Job Definitions	General	Job Category**.
labcatposref	The Labor Category defined in **Human Resources	Admin	Job Definitions	General	Location Category**.
rvcposref	The Revenue Center in which the job is effective, as defined in **Human Resources	Admin	Job Definitions	General	Revenue Center**.
type	The Job Type, such as Hourly or Salaried, as defined in **Human Resources	Admin	Job Definitions	Type	Job Type**.
effectivefrom	The date the job is Effective From as defined in **Human Resources	Admin	Job Definitions	Type	Effective From**.
clockinprivilege	The privilege that an Employee must have in order to clock-in for this position, as defined in **Human Resources	Admin	Job Definitions	General	Clock In Privilege**.
declaredirecttips onclockout	Whether or not the job requires a declaration of direct tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare direct tips on clock out**.
declareindirecttips onclockout	Whether or not the job requires a declaration of indirect tips on clock out, as defined in **Human Resources	Admin	Job Definitions	General	Declare indirect tips on clock out**.
allowearlylateclockout	Whether or not employees working this job can clock out early or late, even when their Employee class is not privileged to do so. The configuration is defined in **Human Resources	Admin	Job Definitions	General	Allow early or late clock out**.

printtips	Whether or not to print a tips declared chit when an Employee working this job clocks out, as defined in **Human Resources	Admin	Job Definitions	General	Print tips declared on clock out**.
tipped	Whether or not the job is subject to calculating the tip credit, as defined in **Human Resources	Admin	Job Definitions	General	Subject to Tipped Credit**.
Jobref	The Job Code assigned to the Employee record.
defaultrate	The normal starting pay for this position, as defined in **Human Resources	Admin	Job Definitions	Type: Hourly	Default Pay Rate**. This configuration is only required for hourly employees.
locationRef	The Reference ID associated with the Location or Level, as defined in **Admin	Portal	Organizational Structure	Locations	Location Reference**.
extjobcodeid	The external job reference for the newly added job. This is stored in the `ENT_JOB_CODE.extJobCodeRef` column.

Success Response

0. Success

Error Response

2. Server Error
3. Invalid Credentials
4. Malformed Data
5. Configuration Error