

The z/OS jobs REST interface is an application programming interface (API) implemented through industry standard Representational State Transfer (REST) services. This interface allows a client application to perform operations with batch jobs on a z/OS system.

With the z/OS jobs REST interface, an application uses REST services to perform the following operations with batch jobs:

- Obtain the status of a job
- List the jobs for an owner, prefix, or job ID
- List the spool files for a job
- Retrieve the contents of a job spool file
- Submit a job to run on z/OS
- Cancel a job
- Change the job class of a job
- Purge a job from the JES spool.

Using the z/OS jobs REST interface requires one of the following minimum levels of JES on your z/OS system: JES2 V1R13 or JES3 V1R13.

z/OSMF supports the use of Representational State Transfer (REST) APIs, which are public APIs that your application can use to work with system resources and extract system data. As with implementations of REST services on other platforms, the z/OSMF APIs allow for easy-to-use HTTP services that are language- and platform-independent, stateless, scalable, and easily parsed.

Processing overview: The z/OS jobs REST interface services can be invoked by any HTTP client application, running on the z/OS local system or a remote system.

- Your program (the client) initiates an HTTP request to the z/OS jobs REST interface.
- If the interface determines that the request is valid, it performs the requested service.
- After performing the service, the z/OS jobs REST interface creates an HTTP response.
- If the request is successful, this response takes the form of an HTTP 2nn response and, if applicable, a result set that is passed back to your program. Depending on which service was requested, the result set might be returned in a format that requires parsing by your program, for example, a JSON object.
- In other cases, results might be returned in another format, such as plain text or binary data.
- If the request is not successful, the response consists of a non-OK HTTP response code with details of the error provided in the form of a JSON object.

Resource URLs The URLs of the z/OS jobs REST interface have the format:

`https://{host}:{port}/zosmf/restjobs/jobs/{resource}?{parm}`

where "https://{host}:{port}" specifies the target system address and port

"/zosmf/restjobs/jobs" identifies the z/OS jobs REST interface

"{resource}?{parm}" represents the resource, such as a job name and job ID, and optionally one or more parameters, to qualify the request.

HTTP methods The z/OS jobs REST interface provides the following HTTP methods:

GET Retrieves information about jobs running on the z/OS system.

PUT Updates job information on the z/OS system, or sets attributes and performs actions on jobs.

DELETE Removes jobs from the z/OS system.

Supported HTTP versions z/OS jobs REST interface supports requests in either of the following protocols:

HTTP/1.0 or HTTP/1.1

Content types The data sent or returned by the HTTP methods has one of the following content types:

- Application/octet-stream ("Content-Type: application/octet-stream") is used for data sent or returned in an uninterpreted format, such as a job being submitted, or binary data or records obtained from a z/OS job spool file.

- JSON ("Content-Type: application/json") is used for sent data and returned data.

- Plain text ("Content-Type: plain/text").

Error handling For errors that occur during the processing of a request, the z/OS jobs REST interface returns an appropriate HTTP status code to the calling client.

- An error is indicated by a 4nn code or a 5nn code. For example, "HTTP/1.1 400 Bad Request" or "HTTP/1.1 500 Internal Server Error".

- In addition, the z/OS jobs REST interface returns a JSON ErrorReport document with information about the problem.

> You can use this information to diagnose the problem or provide it to IBM Customer Support, if required.

> The JSON ErrorReport document returned for HTTP request failures might also include additional messages and a stack trace.

Error logging An INFO level log message is issued when an HTTP error response is to be sent.

- The log message includes the exception.

Required authorizations Generally, your user ID requires the same authorizations for using the z/OS jobs REST interface services as when you perform these operations through a TSO/E session on the system. For example, submitting a job through the z/OS jobs REST interface requires that your user ID be authorized to run jobs on the system and be able to access any protected resources that the job might require.

• In addition, your user ID requires authorization to the WebSphere SAF profile prefix on the target z/OS system, as follows:

- READ access to <WebSphere-SAF-profile-prefix> in the APPL class.

- READ access to the <WebSphere-SAF-profile-prefix>.izuUsers profile in the EJBROLE class.

NOTE: By default, the WebSphere SAF profile prefix is BBNBASE.

• Besides these authorizations, the following services require that your user ID be authorized to the Common Information Model (CIM) server and permitted to the JES2-JES3 Jobs CIM provider:

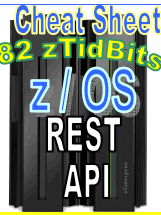
• **z/OS jobs REST interface services**

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CIM provides jobs (CFZSEC and CFZRCUST) to help you configure the CIM server, including security authorizations and file system customization. Where applicable, additional authorization requirements are noted in the descriptions of the individual z/OS jobs REST interface services.

See: zTidbits #53 z/OS Mgt. Facility on CIM

Operation	Method
Cancel a job	PUT
Change the job class	PUT
Purge jobs from JES Spool	DELETE



z/OSMF V1.13 delivers a new API for z/OS itself. A new REST API in z/OSMF can enable any distributed, non-z/OS system to submit batch jobs and access batch job information anytime. This API is enabled on z/OS V1.13, and later.

Contents of the JSON Job document

Property	Description
jobid	Job ID.
jobname	Job name.
subsystem	The primary or secondary JES subsystem. If this value is null, the job was processed by the primary subsystem.
owner	The z/OS user ID associated with the job.
status	Job status. One of the following values:
INPUT	Job is in input processing.
ACTIVE	Job is running.
OUTPUT	Job is on the hardcopy output queue.
	If this value is null, the job status could not be determined.
type	Job type. One of the following values:
JOB	Batch job.
STC	Started task.
TSU	TSO/E user.
class	Job execution class.

Property	Description
retcode	Job completion code. One of the following values:
ABENDUmmmm	Job ended with the user abend code mmmmm.
ABENDxxxx	Job ended with the system abend code xxx.
CANCELED	Job was canceled.
CC mmm	Job ended with the completion code mmm.
CONV	Converter ended abnormally when processing the job.
CONV ERROR	Converter error when processing the job.
JCL ERROR	Job encountered a JCL error.
SEC ERROR	Job failed a security check.
SYS FAIL	System failure.
	If this value is null, the job has not yet completed.
url	Resource URL based on original HTTP request.
files-url	Resource URL for listing the spool files for the job.

PUT method: Submit a job

You can use the PUT method to submit a job to run on z/OS.

The following figure shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs`

The following request submits the job G1JAVA1J to run on z/OS:

PUT /zosmf/restjobs/jobs HTTP/1.1

Content-Type: text/plain

Intrdr-Class: A

Intrdr-Recfm: F

Intrdr-Lrecl: 80

Intrdr-Mode: TEXT

//G1JAVA1J JOB (J),MSGCLASS=H

// EXEC PGM=IEFBR14

PUT method: Cancel a job

You can use the PUT method to cancel a job on z/OS.

The following figure shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs/jobname/jobid`

where jobname/jobid identifies the job to be cancelled.

PUT /zosmf/restjobs/jobs/G1JAVA1B/JOB00023 HTTP/1.1

Content-Length: 23

Content-Type: application/json

{ "request": "cancel" }

Usage considerations Observe the following considerations when using the z/OS jobs REST interface services:

- The z/OS jobs REST interface services run as unauthorized programs on z/OS.
- As with any z/OSMF task, the z/OS jobs REST interface services compete for z/OSMF resources with users of the z/OSMF web browser interface. Thus, concurrent high usage of the z/OS jobs REST interface services can affect response time for users of the z/OSMF web browser interface.
- During periods of concurrent high usage of the z/OS jobs REST interface services, an application can experience connection failures, such as connection refused, connection timed out, or connection reset. In these cases, the application should try the request again. The number of retry attempts needed will depend on how much work is being requested of the server. It might be necessary for your installation to modify the workload and reduce the arrival rate of requests.
- Some browsing environments do not support all of the HTTP methods, such as HTML 4 or XHTML 1, or might block application from accessing response content having non-successful HTTP response status codes (4nn and 5nn). As a workaround, your application can use the following custom HTTP request headers:
- Requested-Method:** GET, PUT, and DELETE requests can be "tunneled" through a POST method using this custom HTTP header.
- Bypass-Status:** If set to true, all response status codes are set to 200, and the custom HTTP response header Actual-Status is included in the returned data. To determine the original status code, your application must check the Actual-Status header.

Example: Returned Job Status

```
HTTP/1.1 200 OK
Date: Thu, 13 Jan 2011 05:39:28 +0000GMT
Content-Type: application/json
Connection: close

{
  "jobid": "JOB00023", "jobname": "G1JAVA1B", "subsystem": null, "owner": "G1JAV1A1",
  "status": "OUTPUT", "type": "JOB", "class": "A", "retcode": "CC 0000",
  "url": "https://host:port/zosmf/restjobs/jobs/G1JAVA1B/JOB00023",
  "files-url": "https://host:port/zosmf/restjobs/jobs/G1JAVA1B/JOB00023/files"
}
```

samples

GET method: List the jobs for an owner, prefix, or job ID

You can use the GET method to list the jobs for an owner, prefix, or job ID.

The following shows the various formats of the URL for this request, depending on the data to be requested.

`https://host:port/zosmf/restjobs/jobs`

`https://host:port/zosmf/restjobs/jobs?owner=owner`

`https://host:port/zosmf/restjobs/jobs?prefix=prefix*`

`https://host:port/zosmf/restjobs/jobs?owner=owner&prefix=prefix*`

`https://host:port/zosmf/restjobs/jobs?jobid=jobid`

`https://host:port/zosmf/restjobs/jobs?max-jobs=nnn`

In the following example, the GET method is used to list the jobs that are owned by ACCT1 and have a prefix beginning with ACCT:

GET /zosmf/restjobs/jobs?owner=ACCT1&prefix=ACCT* HTTP/1.1

GET method: List the spool files for a job

You can use the GET method to list the spool files for a batch job on z/OS.

The following figure shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs/jobname/jobid/files`

The following request lists the spool files for the job ACCT1, job ID JOB00023:

GET /zosmf/restjobs/jobs/G1JAVA1B/JOB00023/files HTTP/1.1

GET method: Retrieve the contents of a job spool file

You can use the GET method to retrieve the contents of a job spool file on z/OS.

The following figure shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs/jobname/jobid/files/nnn/records`

where: jobname/jobid identifies the job name and job ID for which the spool files are to be listed

nnn is the ID for the spool file from which the contents are to be retrieved.

PUT method: Change the class of a job

You can use the PUT method to change the class of a job on z/OS.

The following shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs/jobname/jobid`

where jobname/jobid identifies the job for which the class is to be changed.

Usage considerations The specified job class is not validated on input. To verify the success of this request, your program can issue a GET request for the job status, and check the class value in the returned JSON Job document.

The following request specifies job class A for the job G1JAVA1B, job ID JOB00023, on z/OS:

PUT /zosmf/restjobs/jobs/G1JAVA1B/JOB00023 HTTP/1.1

Content-Length: 16

Content-Type: application/json

{ "class": "A" }

DELETE method: Purge a job from the JES spool

You can use the DELETE method to purge a job from the JES spool.

The following figure shows the format of the URL for this request.

`https://host:port/zosmf/restjobs/jobs/jobname/jobid`

where jobname/jobid identifies the job to be purged from the JES spool.

NOTE: Your user ID must be authorized to cancel the job on the system, which allows the user to delete the job SYSOUT data sets.

```
HTTP/1.1 202 Accepted
Date: Thu, 13 Jan 2011 05:39:28 +0000GMT
Connection: close
```