

# Driving Software Updates with APIs

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*Appreciation to Kurt Quackenbush, z/OSMF Development, for material contributions.*

# Agenda

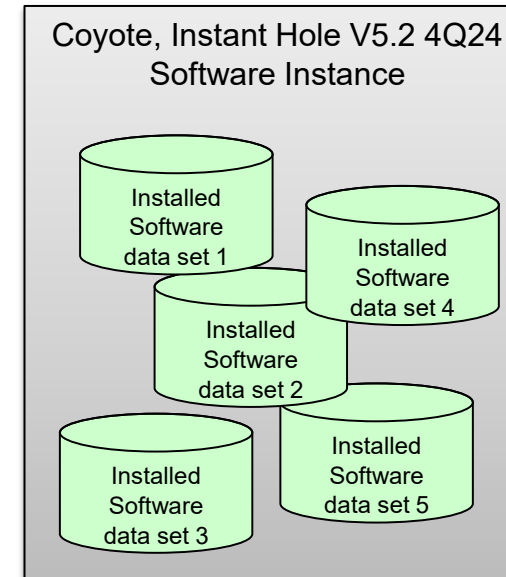
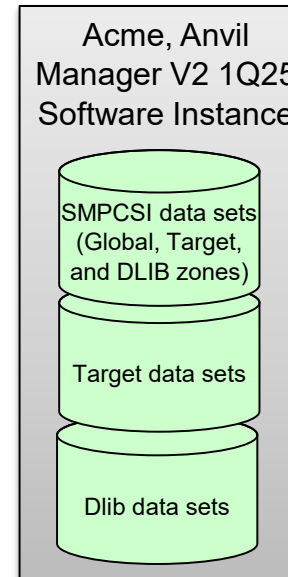
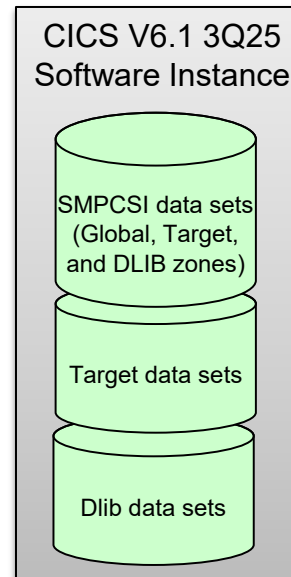
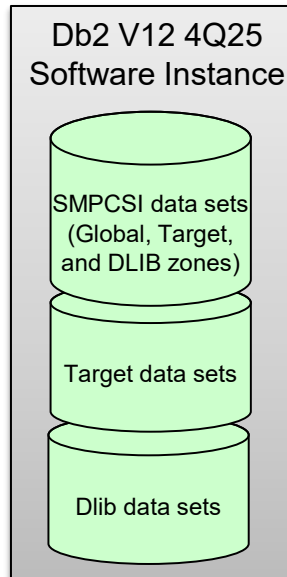
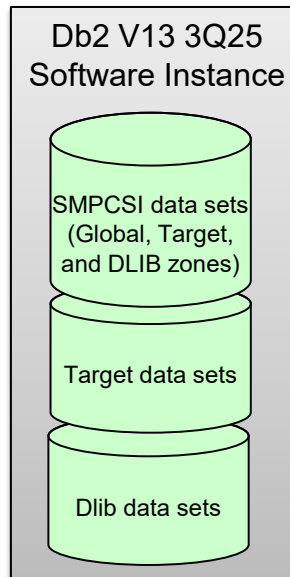
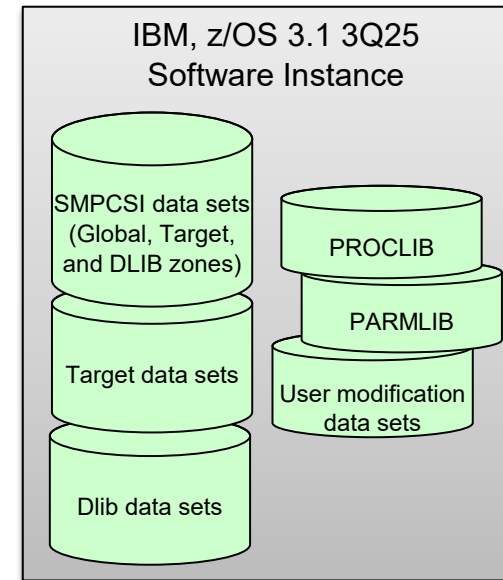
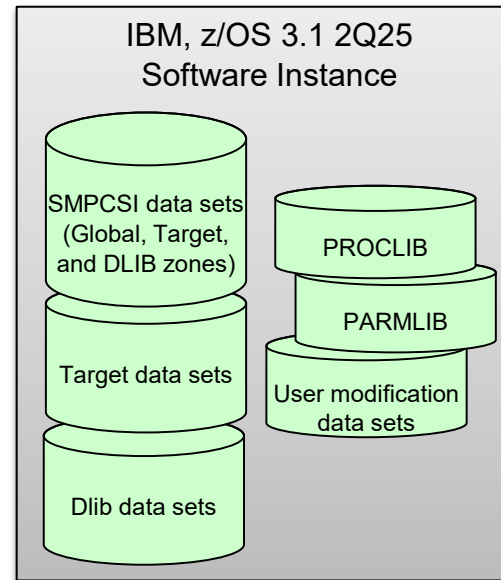
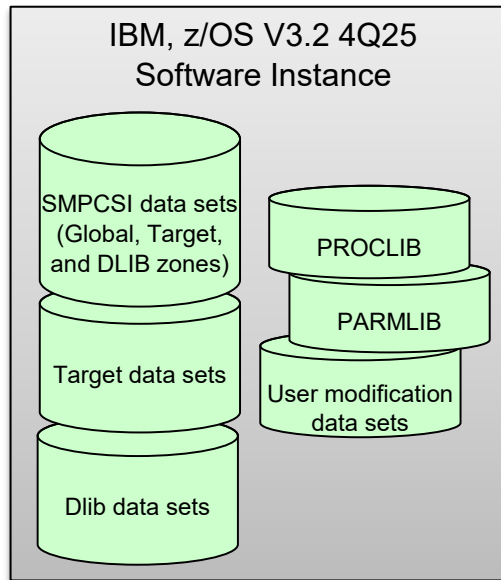
- What is a Software Instance?
- Quick recap of the Software Update User Interface flow:
  - Install updates by name
  - Install updates by source ID
  - Install updates by fix categories
- **Programming Interfaces (REST APIs)**
  - APAR **PH62240** for z/OS 3.1 (Oct 2025)
  - **Software Update REST API**
  - **Ansible roles and sample playbooks**

# What is Software Update?



- Software Update is a z/OSMF application to simplify installing SMP/E managed software updates (aka PTFs).
  - Target users are early tenure z/OS system administrators and system programmers.
  - Codifies best practices for installing software updates.
- Installed software is known to z/OSMF as a **software instance**.
- The Software Update application installs software updates on a software instance.
- Enhanced user experience!
  - PTF **UI96759** for z/OS 3.1, (May 15, 2024)
- REST API support!
  - APAR **PH62240** for z/OS 3.1 (Oct 2025)

# What is a Software Instance?



# How to define a Software Instance

1. Define a software instance for ***existing installed software***.

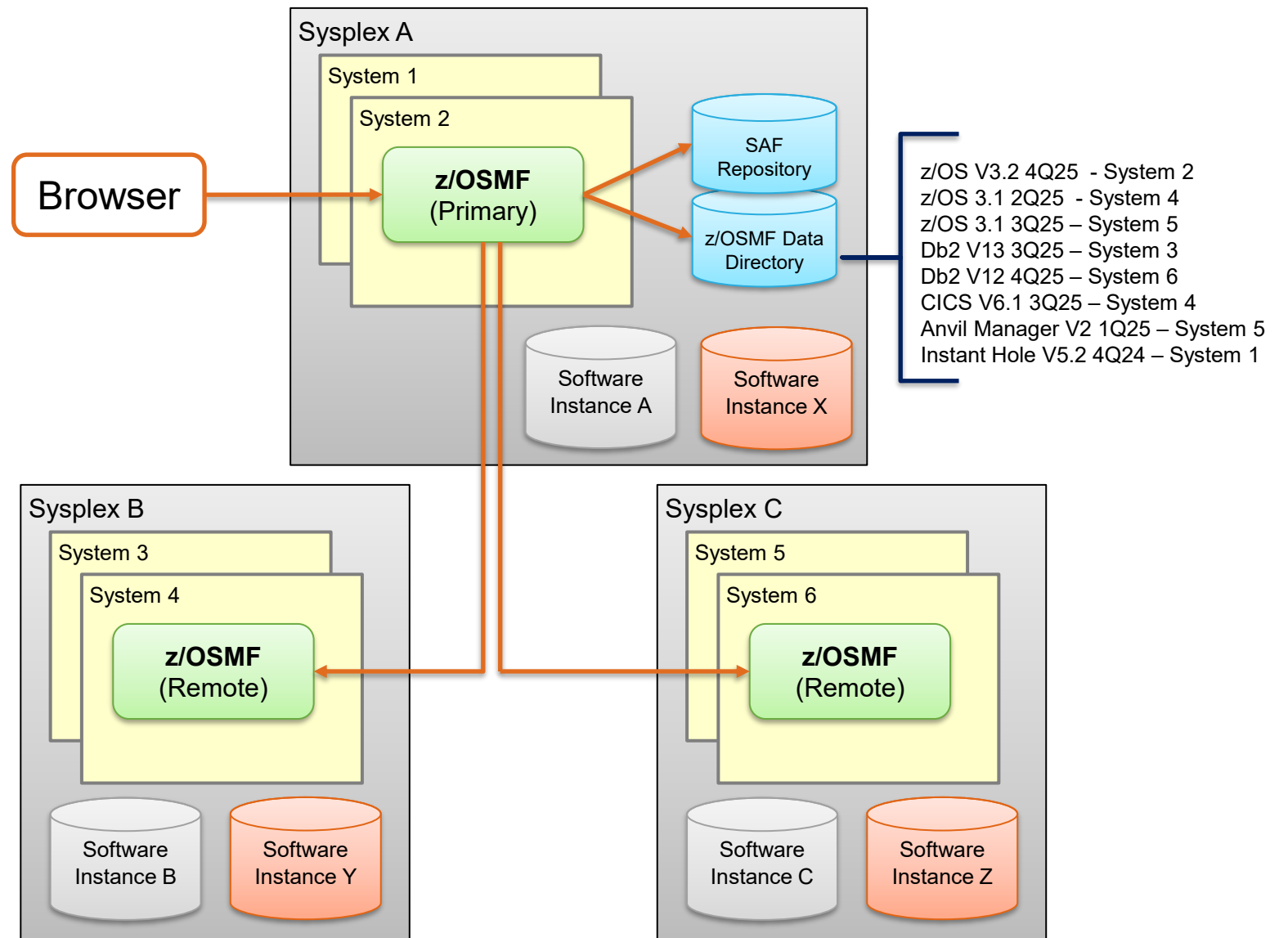
OR

2. Install ***new software*** with a Portable Software Instance from a software provider using the Software Management Deployment action.

# z/OSMF Software Management Topology

The **primary** z/OSMF server communicates with the **remote** z/OSMF servers.

The primary z/OSMF server can manage software instances in all sysplexes.





# Software Update (APPLY PTFs)



zosmft6



# Software Update

A software update is a generic term for a PTF.

There are 3 actions for installing software updates:

## Install By Name

- Install individual software updates.
- z/OSMF displays the installable software updates and you select which updates to install.
- If you know the name (ID) for updates you want to install, perhaps to correct a specific problem, then use this action.
- Formerly called the “**Install Corrective Updates**” action.

## Install By Source ID

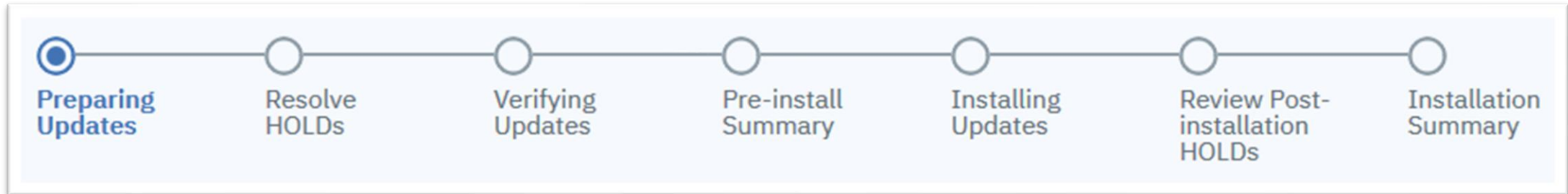
- Install groups of software updates by selecting source IDs.
- Source IDs identify groups of updates and may indicate whether updates are recommended by the vendor and when, from where or how updates were acquired, or other update categories.
- z/OSMF displays source IDs assigned to installable updates and you select source IDs to install the associated updates.
- Use this action to install vendor-recommended updates.
- Formerly called the “**Install Recommended Updates**” action.

## Install by Fix Category

- Install groups of software updates by selecting fix categories.
- Fix categories identify updates which support new hardware, software, or functions.
- z/OSMF displays fix categories for installable updates and you select categories to install the associated updates.
- Use this action to install updates supporting new server devices or software releases.
- Formerly called the “**Install Functional Updates**” action.

Updated with  
PTF **UI96759**  
(May 2024)  
for z/OS 3.1!

# Software Update Process Steps



After identifying which updates to install, Software Update guides you through the following steps:

Step	Action
Preparing updates	z/OSMF performs APPLY CHECK to identify HOLDs to review and ensure no missing requisites
Resolve HOLDs	User reviews and resolves each HOLD, either bypass the HOLD or exclude the update
Verifying updates	z/OSMF performs APPLY CHECK to validate the HOLD resolution choices
Pre-installation summary	User reviews the list of updates that will be installed.
Installing updates	z/OSMF performs APPLY
Review post-installation HOLDs	User reviews any HOLDs that need action after the APPLY

# **A note on acquisition of updates**

# Acquisition of Updates

- Software Update does **not** acquire updates or HOLDDATA.
  - Customer requirement is recognized: <https://ibm-z-hardware-and-operating-systems.ideas.ibm.com/ideas/ZOS-I-1931>
- Updates must be received into the global zone and SMPPTS.
- The **BEST PRACTICE** is to use **SMP/E RECEIVE ORDER**
  - Use a Job scheduler to automate acquisition on a regular cadence
- The SMP/E RECEIVE ORDER command works with a vendor's server to
  - Build custom packages of PTFs
  - Download PTFs to your z/OS
  - Receive PTFs into the global zone and SMPPTS
- IBM and several leading z/OS software vendors support SMP/E RECEIVE ORDER to acquire PTFs and HOLDDATA for their software products.
- **New news! 16 October 2025, RECEIVE ORDER will include SMP/E Security/Integrity assigns (for SECINT) and Enhanced Holddata, \*if\* you are permitted to the IBM Z Security Portal.**

# Automate SMP/E RECEIVE ORDER

- RECEIVE ORDER setup and configuration:  
<https://www.ibm.com/docs/en/zos/3.1.0?topic=guide-preparing-use-internet-service-retrieval>
- Automate with Unix cron!
  - If the cron daemon is not already setup:  
<https://www.ibm.com/docs/en/zos/3.1.0?topic=daemons-customizing-cron-daemon>
  - Create a crontabs file:  
`/var/spool/cron/crontabs/KURTQ`

In the file, use the UNIX submit command:

```
# At 3:36 AM every day, submit the SMP/E RECEIVE ORDER job
36 3 * * * /bin/submit '// 'KURTQ.JCL.CNTL(SMPCRON) ' "
```

# Automate SMP/E RECEIVE ORDER...

Specify  
**CONTENT(ALL)**  
to get all  
applicable PTFs  
and current  
HOLDDATA.

```
//SMPCRON JOB ...
/*
//SMP EXEC PGM=GIMSMP
//SMPCSI DD DSN=MVSBUILD.ZOS31.CSI,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SMPOUT DD SYSOUT=*
//SMPHRPT DD SYSOUT=*
//IBMSVR DD *
<ORDERSERVER
  url="https://eccgw01.boulder.ibm.com/services/projects/ecc/ws"
  keyring="NEILS/SMPOOnly"
  certificate="SMPE Cert CustNum 4606985">
</ORDERSERVER>
/*
//CLNT DD *
<CLIENT
  javahome="/usr/lpp/java/J21.0_64/"
  javadepthoptions="-Dcom.ibm.smp.debug=severe"
  downloadmethod="https"
  downloadkeyring="*AUTH*/*"
  signaturekeyring="IBM.package.signature.keyring" >
</CLIENT>
/*
//SMPCNTL DD *
  SET BDY(GLOBAL) .
  RECEIVE ORDER(ORDERSERVER(IBMSPVR)
  CLIENT(CLNT)
  CONTENT(ALL) ) .
/*
```

# Programming Interfaces (REST APIs)

# Programming Interfaces

- Many z/OSMF applications provide program interfaces to work with their resources and actions.
- Implemented as **Representational State Transfer (REST) APIs**.
- Invoked by an **HTTP** client program running on the local z/OS, a remote z/OS, or on another platform.
- Software Management provides the following REST APIs:
  - Software Instance List, Add, Read, Modify, Delete, List data sets, Export, Load products/features/FMIDs, Report Missing Critical Updates, Report Missing FIXCAT Updates, Update Search.
  - Portable Software Instance List, Add, Read, Delete.
  - Deployment Add, Delete.
  - Get z/OS System UUID
  - Query an SMP/E CSI
  - **Software Update Start, Read, Resume, Cancel**
- See the z/OSMF Programming Guide for more information  
<https://www.ibm.com/docs/en/zos/3.1.0?topic=services-software-management>

New with  
PTF **U196759**  
(May 2024)  
for z/OS 3.1!

APAR **PH62240** for  
z/OS 3.1. (Sept  
2025)

# z/OSMF APIs

## z/OSMF Programming Guide

<https://www.ibm.com/docs/en/zos/3.2.0?topic=services-software-management>

The screenshot shows the IBM z/OSMF documentation page for "Software management services". The page includes a navigation sidebar on the left with a table of contents, a main content area with a table of operations, and a "Required authorizations" section at the bottom.

**z/OSMF** | Documentation | Search in z/OS - IBM z/OS Management Facility Programming Guide

Change version: 3.2.0

Show full table of contents

Filter on titles

- Security Configuration Assistant services
- Software management services**
  - List the software instances defined to z/OSMF
  - Retrieve the properties of a software instance
  - List the data sets included in a software instance
  - Add a new software instance
  - Export a defined software instance
  - Modify the properties of a software instance
  - Load the products, features, and FMIDs for a software instance
  - Delete a software instance
  - Deleting the Temporary Catalog Aliases
  - List the portable software instances defined to z/OSMF
  - Deploy a software instance
  - Delete a Deployment
  - Retrieve the properties of a portable software instance
  - Add a new portable software instance
  - Delete a portable software instance
  - Missing Critical Updates
  - Missing FIXCAT Updates
  - Software Update Search
  - Retrieve the z/OS system UUID
  - Query an SMP/E CSI
  - Start a Software Update process
  - Retrieve the status of a Software Update process
  - Resume a Software Update process
  - Cancel a Software Update process
  - Copy the output for a Software Update process
- Storage management services
- Sysplex management services
- Topology services
- TSO/E address space services
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- RMF metering services
- Parmlib Management Services
- z/OS Compliance REST Interface
- z/OS console services
- z/OS system variable services
- z/OS data set and file REST interface
- z/OS jobs REST interface
- z/OS Management Services Catalog services
- z/OSMF information retrieval service
- z/OSMF settings services
- z/OSMF authentication services
- z/OSMF workflow services
- Creating workflow definitions for z/OS
- Creating your own z/OSMF plug-ins
- Preparing software to exploit cloud provisioning
- Enabling tracing for the z/OS jobs REST interface
- Creating product information files for the Software Management task

All products / z/OS / 3.2.0 /

## Software management services

Last Updated: 2025-09-29

The software management REST interface is an application programming interface (API) implemented through industry standard Representational State Transfer (REST) services. This interface allows a client application to interact with the z/OSMF Software Management task.

Table 1 lists the operations that the software management services provide.

**Table 1. Operations provided through the software management services.**

Operation	HTTP method and URI path
List the software instances defined to z/OSMF	GET /zosmf/swmgmt/swi
Retrieve the properties of a software instance	GET /zosmf/swmgmt/swi/<system-nickname>/<swi-name>
List the data sets included in a software instance	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/datasets
Add a new software instance	POST /zosmf/swmgmt/swi
Export a defined software instance	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/export
Modify the properties of a software instance	PUT /zosmf/swmgmt/swi/<system-nickname>/<swi-name>
Load the products, features, and FMIDs for a software instance	PUT /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/products
Delete a software instance	DELETE /zosmf/swmgmt/swi/<system-nickname>/<swi-name>
Deleting the Temporary Catalog Aliases	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/deltempcatalog
List the portable software instances defined to z/OSMF	GET /zosmf/swmgmt/pswi
Deploy a software instance	POST /zosmf/swmgmt/dep
Delete a Deployment	DELETE /zosmf/swmgmt/dep/<dep-name>
Retrieve the properties of a portable software instance	GET /zosmf/swmgmt/pswi/<system-nickname>/<pswi-name>
Add a new portable software instance	POST /zosmf/swmgmt/pswi
Delete a portable software instance	DELETE /zosmf/swmgmt/pswi/<system-nickname>/<pswi-name>
Retrieve the z/OS system UUID	POST /zosmf/swmgmt/system/uuid/<system-nickname>
Query an SMP/E CSI	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/csiquery
Start a Software Update process	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/swupdate
Retrieve the status of a Software Update process	GET /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/swupdate
Resume a Software Update process	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/swupdate/resume
Cancel a Software Update process	POST /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/swupdate/cancel
Copy the output for a Software Update process	PUT /zosmf/swmgmt/swi/<system-nickname>/<swi-name>/swupdate/dir=<directory>

### Required authorizations

To submit requests through the software management services, the user ID initiating the request requires the same authorizations as when performing an analogous operation using the z/OSMF Software Management task. For information about access controls for the Software Management task, see [Creating access controls for the Software Management task in IBM z/OS® Management Facility Configuration Guide](#).

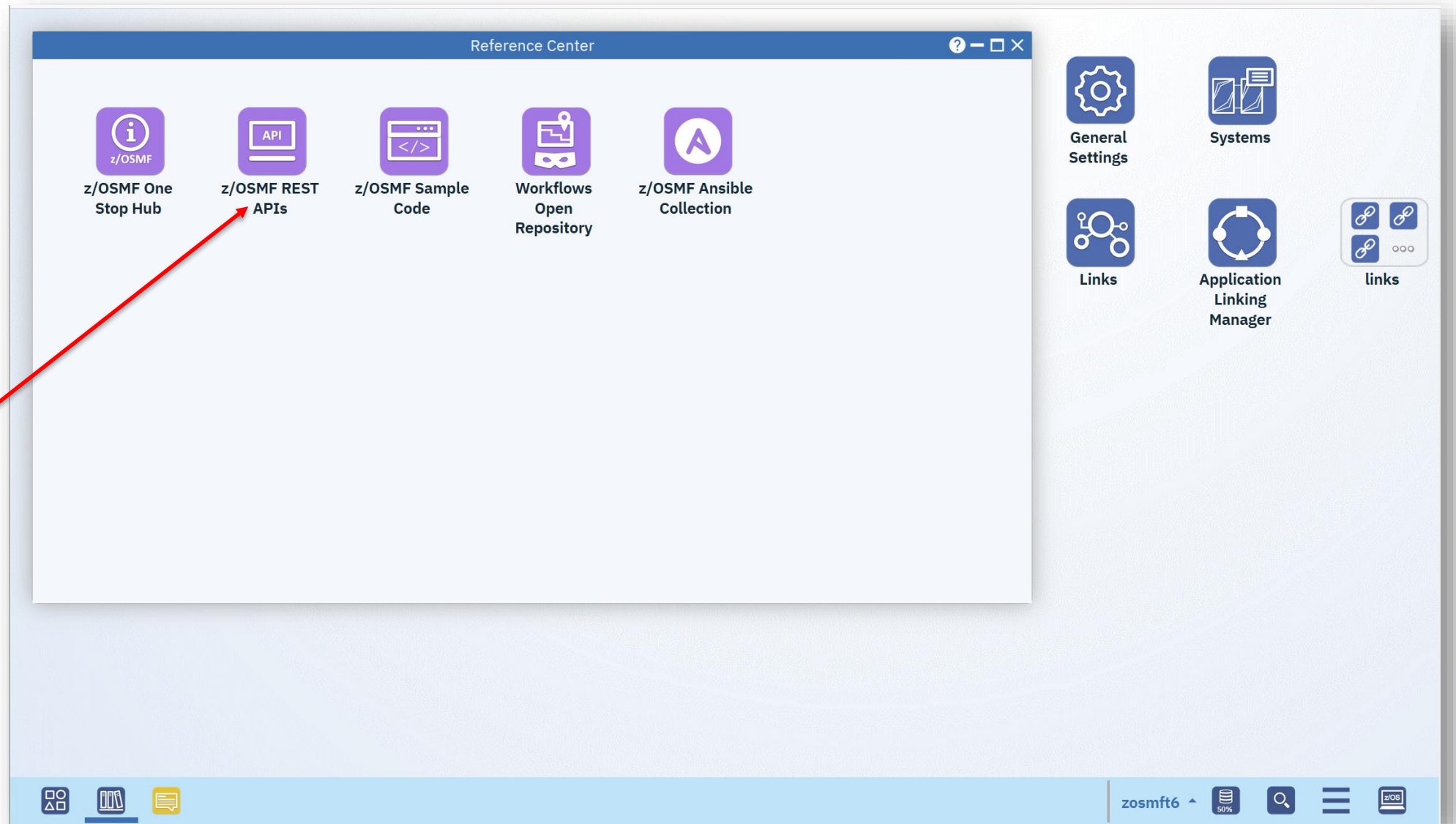
# z/OSMF APIs

Open the  
“**Reference Center**”  
folder.



# z/OSMF APIs...

Click the  
“z/OSMF REST  
APIs” icon.

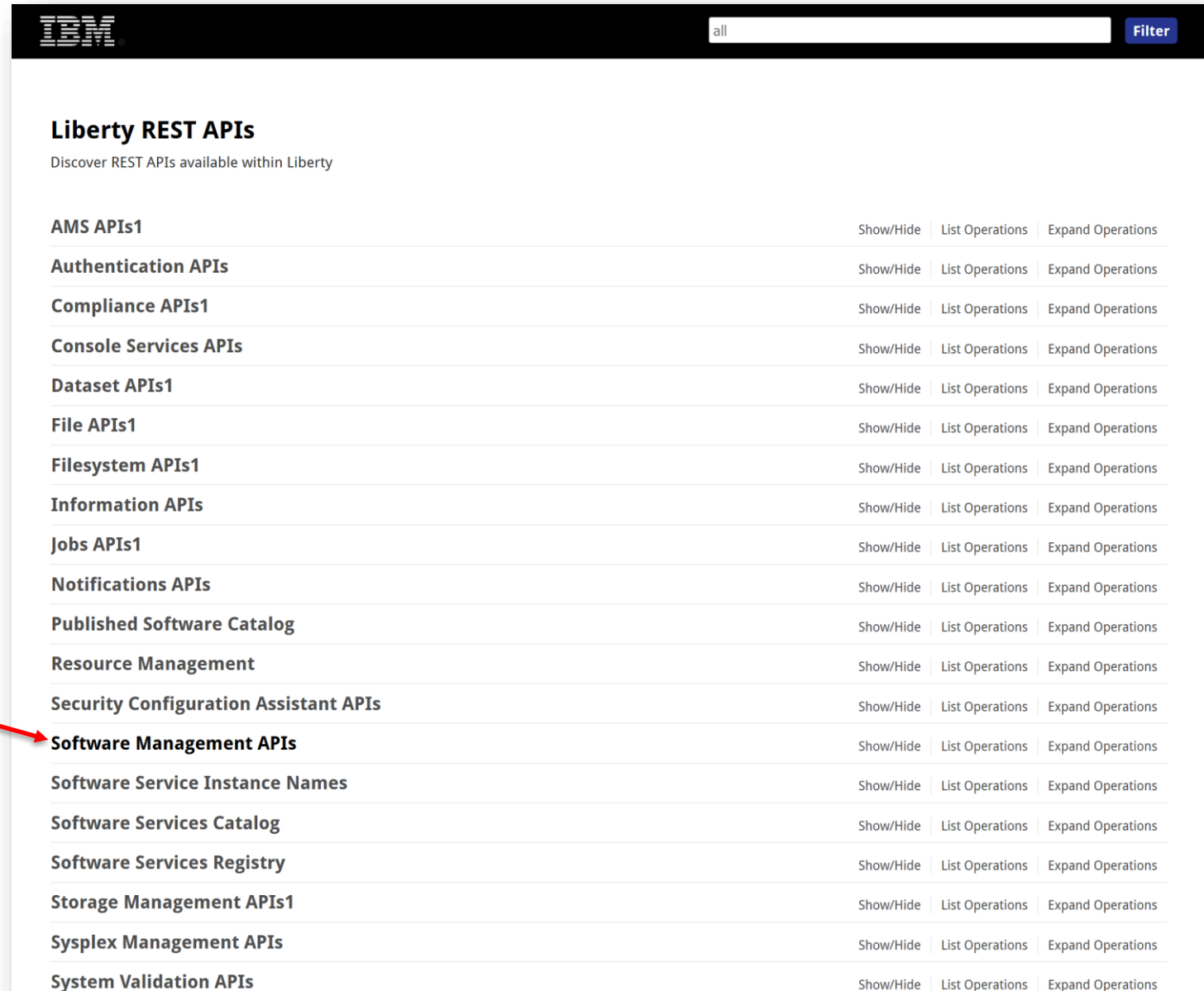


# z/OSMF APIs...

Using OpenAPI Specification (aka “Swagger”) the z/OSMF application REST APIs are listed.

Provides both documentation and an interface to experiment with REST APIs.

Click “**Software Management APIs**”



Liberty REST APIs			
Discover REST APIs available within Liberty			
AMS APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Authentication APIs	Show/Hide	List Operations	Expand Operations
Compliance APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Console Services APIs	Show/Hide	List Operations	Expand Operations
Dataset APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
File APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Filesystem APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Information APIs	Show/Hide	List Operations	Expand Operations
Jobs APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Notifications APIs	Show/Hide	List Operations	Expand Operations
Published Software Catalog	Show/Hide	List Operations	Expand Operations
Resource Management	Show/Hide	List Operations	Expand Operations
Security Configuration Assistant APIs	Show/Hide	List Operations	Expand Operations
<b>Software Management APIs</b>	Show/Hide	List Operations	Expand Operations
Software Service Instance Names	Show/Hide	List Operations	Expand Operations
Software Services Catalog	Show/Hide	List Operations	Expand Operations
Software Services Registry	Show/Hide	List Operations	Expand Operations
Storage Management APIs <sup>1</sup>	Show/Hide	List Operations	Expand Operations
Sysplex Management APIs	Show/Hide	List Operations	Expand Operations
System Validation APIs	Show/Hide	List Operations	Expand Operations

# z/OSMF APIs...

Click “Start a software update for a software instance”



POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/deltempcatalogias	Delete the temporary catalog aliases for a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/export	Export a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/missingcriticalupdates	Determine missing critical software updates for a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/missingfixcatupdates	Determine missing fixcat software updates for a software instance
PUT	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/products	Load the products, features, and FMIDs for a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/softwareupdatesearch	Search a software instance for software updates
GET	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate	Retrieve the status of a software update process on a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate	Start a software update for a software instance
GET	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/all	Retrieve the status of all software update processes on a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/cancel	Cancel a software update for a software instance
POST	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate/resume	Resume a software update for a software instance
PUT	/zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate?dir={directory}	Copy software update output for a software instance
POST	/zosmf/swmgmt/swupdate/cancel/{processid}	Cancel a software update for a software instance
POST	/zosmf/swmgmt/swupdate/resume/{processid}	Resume a software update for a software instance
GET	/zosmf/swmgmt/swupdate/{processid}	Retrieve the status of a software update process
PUT	/zosmf/swmgmt/swupdate/{processid}?dir={directory}	Copy software update output
POST	/zosmf/swmgmt/system/uuid	Retrieve the z/OS host system UUID
POST	/zosmf/swmgmt/system/uuid/{system-nickname}	Retrieve the z/OS system UUID

# Software Update APIs

- 1. Start** a software update process. Identify the following:
  - Software instance and target zone to be updated
  - Software updates to be installed
  - HOLDS to be automatically resolved
  - Process steps on which to suspend
- 2. Read** the status of a software update process
- 3. Resume** a suspended software update process. Identify the following:
  - HOLDS to be resolved
  - Process steps on which to suspend
- 4. Cancel** a software update process
- 5. Copy** the output for a completed software update process

A process started by the API is accessible by the application (UI), and vice versa

# Software Update process steps

- Like the Software Update application, a process started by the API has several steps.
- A process may run from start to completion without interruption, or it may suspend and can be resumed.
- A started software update process progresses through the following steps:

Step	Action
Preparing updates	Based on the Start input (selected updates, source IDs, or fix categories), perform APPLY CHECK to identify updates to be installed and HOLDS that must be resolved.
Resolve HOLDS	<ul style="list-style-type: none"><li>• Are there any HOLDS to resolve? If yes, <b>automatically resolve HOLDS</b> based on the input to Start. If any HOLDS remain unresolved then <b>Suspend</b> the process.</li><li>• If the input to Start requested suspend, then <b>Suspend</b> the process to allow the HOLDS to be reviewed.</li></ul>
Verifying updates	Perform APPLY CHECK to validate the HOLD resolutions (BYPASS or EXCLUDE).
Pre-installation summary	If the input to Start or Resume requested suspend, then <b>Suspend</b> the process to allow the list of updates that will be installed to be reviewed.
Installing updates	Perform APPLY.
Complete	The update process is complete.

# Start a Software Update

Enter:

- z/OSMF host system name
- Software instance name
- Software update request
  - Target zone
  - Source IDs
  - Resolve Holds
  - SMP/E userid

Click "Try it out!"

POST /zosmf/swmgmt/swi/{system-nickname}/{swi-name}/swupdate Start a software update for a software instance

**Implementation Notes**  
The Start Software Update REST API allows you to install specified software updates on a software instance and zone.

**Response Class (Status 202)**  
Success. The process ID is returned.

Model Example Value

```
{
  "processid": "processid"
}
```

Response Content Type: application/json

Parameter	Value	Description	Parameter Type	Data Type
system-nickname	pev171	Nickname of the z/OSMF host system that has access to the volumes and data sets where the software instance resides. The (system-nickname) and (swi-name) uniquely identify a software instance. To obtain information about the specified system, you can use the z/OSMF topology services. For more details, see Topology services.	path	string
swi-name	zOS31	Indicates the specific software instance to be processed. The (swi-name) and (system-nickname) uniquely identifies a software instance.	path	string
body	<pre>{   "targetzone": "TGT",   "sourceids": ["RSU2412"],   "resolve-holds": [     {"type": "SYSTEM", "reason": "IPL"},     {"type": "SYSTEM", "reason": "RESTART"}   ],   "notes": "Install RSU PTFs" }</pre>	The request content is required, but some properties are optional. For example, if the software instance does not reside in the same sysplex as the primary z/OSMF instance, you might be required to authenticate with the secondary z/OSMF instance that is running in the sysplex where the software instance resides. In addition, if the primary z/OSMF instance must navigate an HTTP proxy server to connect with the secondary z/OSMF instance, you might also be required to authenticate with that HTTP proxy server. Therefore, you may need to specify the remote z/OSMF userid, password, and proxy userid and password.	body	Model Example Value

Parameter content type: application/json

Model Example Value

```
{
  "targetzone": "zone-name",
  "updates": [
    "update-name"
  ],
  "sourceids": [
    "sourceID"
  ],
  "fixcats": [
    "fixcategory"
  ],
}
```

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
400	The request contained incorrect parameters.		
403	The submitter of the request did not authenticate to z/OSMF or the server rejected the request.		
404	The target of the request was not found.		
409	The request could not be completed because there is a conflict with the current state of the resource.		
500	The server encountered an error that prevented it from completing the request.		
503	The server is currently unavailable to process the request.		

Try it out! [Hide Response](#)

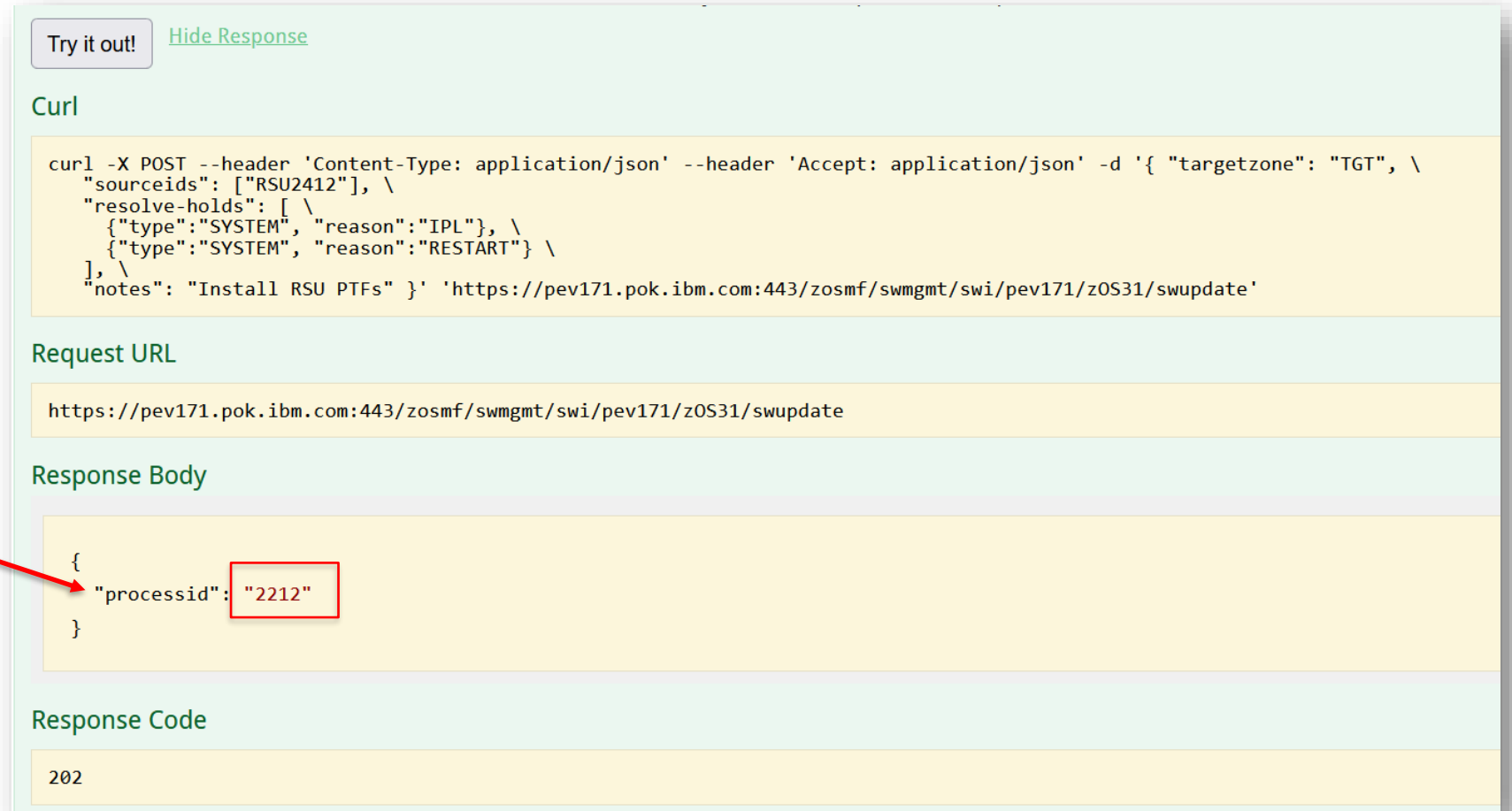
# Start a Software Update...

- The REST API calls the z/OSMF server to start the update process.
- Identify the software instance to update.
- In the request content specify the following:
  - Target zone to update
  - Software update selection criteria, one of:
    - Update names
    - Source IDs
    - Fix Categories
  - Optional, HOLDs to automatically resolve
    - HOLD type (SYSTEM, ERROR, USER)
    - HOLD reason (IPL, RESTART, DOC, ACTION, ENH, ...)
    - Held SYSMOD
    - For example, automatically resolve all SYSTEM HOLDs for IPL
  - Optional, suspend step:
    - Resolve-Holds
    - Pre-Installation-Summary

# Start a Software Update...

The HTTP request is sent to the server.

The update process is started and runs asynchronously, so the response returns the **process ID** for the update process, to get the results later.



The screenshot displays an API client interface with the following sections:

- Try it out!** [Hide Response](#)
- Curl**

```
curl -X POST --header 'Content-Type: application/json' --header 'Accept: application/json' -d '{ "targetzone": "TGT", \
"sourceids": ["RSU2412"], \
"resolve-holds": [ \
{"type": "SYSTEM", "reason": "IPL"}, \
{"type": "SYSTEM", "reason": "RESTART"} \
], \
"notes": "Install RSU PTFs" }' 'https://pev171.pok.ibm.com:443/zosmf/swmgmt/swi/pev171/zOS31/swupdate'
```
- Request URL**

```
https://pev171.pok.ibm.com:443/zosmf/swmgmt/swi/pev171/zOS31/swupdate
```
- Response Body**

```
{
  "processid": "2212"
}
```

A red arrow points from the text "process ID" in the left column to the value "2212" in the response body, which is enclosed in a red box.
- Response Code**

```
202
```

# Get (retrieve) the status for a Software Update process

Retrieve the status of the software update process.

Enter the process ID returned from the Start.

GET /zosmf/swmgmt/swupdate/{processid} Retrieve the status of a software update process

**Implementation Notes**  
The Retrieve the status of a Software Update REST API allows you to track the progress of a software update process.

**Response Class (Status 200)**  
Success. JSON document returned containing information about the software update process.

Model Example Value

```
{
  "name": "swi-name",
  "system": "system-nickname",
  "uuid": "swi-uuid",
  "update-processes": [
    {
      "targetzone": "target-zone",
      "selection": {
        "updates": [
          "update-name"
        ]
      }
    }
  ]
}
```

Response Content Type application/json

Parameter	Value	Description	Parameter Type	Data Type
processid	2212	Indicates the status for the software update process with the specified process id should be returned.	path	string

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
404	The target of the request was not found.		

Try it out! [Hide Response](#)

# Get (retrieve) the status for a Software Update process...

The Response Body contains the status for the update process, in json format.

- This process is suspended at the RESOLVE\_HOLDS step.
- A DOC HOLD is an unresolved.
- An IPL HOLD is automatically resolved.

Try it out! [Hide Response](#)

**Curl**

```
curl -X GET --header 'Accept: application/json' 'https://pev171.pok.ibm.com:443/zosmf/swmgmt/swupdate/2212'
```

**Request URL**

```
https://pev171.pok.ibm.com:443/zosmf/swmgmt/swupdate/2212
```

**Response Body**

```
{
  "started": "2025-02-21T21:04:33Z",
  "lastmodified": "2025-02-21T21:05:03Z",
  "status": "SUSPENDED",
  "step": "RESOLVE_HOLDS",
  "holds": [
    {
      "fmid": "HSWUPD1",
      "holdStatus": "Unresolved",
      "name": "UA00009",
      "holdReason": "DOC",
      "holdType": "SYSTEM",
      "holdClass": null
    },
    {
      "fmid": "HSWUPD1",
      "holdStatus": "Resolved",
      "name": "UA00011",
      "holdReason": "IPL",
      "holdType": "SYSTEM",
      "holdClass": null
    }
  ]
}
```

**Response Code**

```
200
```

## Resolved and Unresolved HOLDS

- The Retrieve API response indicates the resolved and unresolved HOLDS for the updates being installed.
- The response does not contain the HOLDDATA (the text).
- To get the HOLDDATA for review, use the **Query CSI REST API** to get the desired HOLDDATA from the global zone.

# Get the DOC HOLD (Query the CSI)

Use the Query CSI REST API to get the HOLD entry.

Enter:

- z/OSMF host system
- Software instance name
- Query:
  - Global zone
  - HOLDDATA entry
  - Return the HOLDDATA subentry
  - Filter to get only the HOLD DOC

Click **“Try it out!”**

POST /zosmf/swmgmt/swi/{system-nickname}/{swi-name}/csiquery Query the SMP/E CSI data set included in a software instance

**Implementation Notes**  
The SMP/E CSI Query service allows you to query entries defined in SMP/E CSI data sets associated with software instances. Refer to <https://www.ibm.com/docs/en/zos/3.1.0?topic=reference-smpe-csi-application-programming-interface> for more information.

**Response Class (Status 202)**  
Success. The status url is returned.

**Model Example Value**

```
{
  "statusurl": "https://sys123.yourco.com/zosmf/swmgmt/statusmonitor/csiquery/1602082447854"
}
```

**Response Content Type**

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
system-nickname	<input type="text" value="pev171"/>	Nickname of the z/OSMF host system that has access to the volumes and data sets where the software instance resides.	path	string
swi-name	<input type="text" value="mvsbuild"/>	Name of the software instance.	path	string
body	<pre>{   "zones": ["GLOBAL"],   "entries": ["HOLDDATA"],   "subentries": ["HOLDDATA"],   "filter": "ENAME='UA00009' &amp;HOLDREASON='DOC'" }</pre>	Request body. Include the JSON object in the request only if you are required to authenticate with a secondary z/OSMF instance or an HTTP proxy server. Otherwise, omit the JSON object.	body	Model Example Value

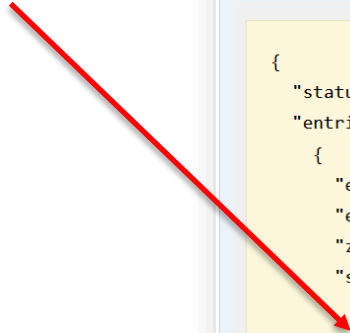
**Parameter content type:**

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
400	The request contained incorrect parameters.		
403	The submitter of the request did not authenticate to z/OSMF or the server rejected the request.		
404	The target of the request was not found.		
409	The request could not be completed because there is a conflict with the current state of the resource.		
500	The server encountered an error that prevented it from completing the request.		
503	The server is currently unavailable to process the request.		

# Get the DOC HOLD (Query the CSI)...

The response contains the requested HOLDDATA entry.



Try it out! [Hide Response](#)

**Curl**

```
curl -X GET --header 'Accept: application/json' 'https://pev171.pok.ibm.com:443/zosmf/swmgmt/statusmonitor/csiquery/1740161929171'
```

**Request URL**

```
https://pev171.pok.ibm.com:443/zosmf/swmgmt/statusmonitor/csiquery/1740161929171
```

**Response Body**

```
{
  "status": "complete",
  "entries": [
    {
      "entryname": "UA00009",
      "entrytype": "HOLDDATA",
      "zonename": "GLOBAL",
      "subentries": [
        {
          "HOLDDATA": [
            "++HOLD(UA00009) SYSTEM FMID(HSWUPD1) REASON(DOC)",
            " COMMENT(",
            " *****",
            " * Function Affected:                (OAS7432) **",
            " *   OPENSSE FOR ZOS                    **",
            " *****",
            " * Description:                        **",
            " *   Documentation updates              **",
            " *****",
            " * Time--"
          ]
        }
      ]
    }
  ]
}
```

**Response Code**

```
200
```

# Resume a suspended Software Update process

Enter:

- Process ID
- Resolve HOLDS, including DOC to resolve all of the HOLDS

**POST** /zosmf/swmgt/swupdate/resume/{processid} Resume a software update for a software instance

**Implementation Notes**  
The Resume Software Update REST API allows you to resume a software update process on a software instance that has been suspended, such as for resolving HOLDS.

**Response Class (Status 202)**  
Success. The process ID is returned.

**Model Example Value**

```
{
  "processid": "processid"
}
```

**Response Content Type** application/json

**Parameters**

Parameter	Value	Description	Parameter Type	Data Type
processid	2212	Indicates the software update process with the specified process id should be resumed.	path	string

**body**

```
{
  "resolve-holds": [
    {
      "type": "SYSTEM",
      "reason": "IPL"
    },
    {
      "type": "SYSTEM",
      "reason": "RESTART"
    },
    {
      "type": "SYSTEM",
      "reason": "DOC"
    }
  ]
}
```

**Parameter content type:** application/json

The request content is not required, and all properties are optional. For example, if the software instance does not reside in the same sysplex as the primary z/OSMF instance, you might be required to authenticate with the secondary z/OSMF instance that is running in the sysplex where the software instance resides. In addition, if the primary z/OSMF instance must navigate an HTTP proxy server to connect with the secondary z/OSMF instance, you might also be required to authenticate with that HTTP proxy server. Therefore, you may need to specify the remote z/OSMF userid, password, and proxy userid and password.

**Model Example Value**

```
{
  "suspend-steps": [
    {
      "step-name"
    }
  ],
  "exclude-updates": [
    {
      "exclude-update-name"
    }
  ],
  "resolve-holds": [
    {
      "type": "hold-type",
      "reason": "hold-reason"
    }
  ]
}
```

**Response Messages**

HTTP Status Code	Reason	Response Model	Headers
400	The request contained incorrect parameters.		
403	The submitter of the request did not authenticate to z/OSMF or the server rejected the request.		
404	The target of the request was not found.		
409	The request could not be completed because there is a conflict with the current state of the resource.		
500	The server encountered an error that prevented it from completing the request.		
503	The server is currently unavailable to process the request.		

[Try it out!](#)

# Get the status for a Software Update process

The Response Body contains the status for the update process, in json format.

- This process is Completed.
- A DOC and IPL HOLDs are resolved.
- Three updates were installed.

Try it out! [Hide Response](#)

Curl

```
curl -X GET --header 'Accept: application/json' 'https://pev171.pok.ibm.com:443/zosmf/swmgmt/swupdate/2212'
```

Request URL

```
https://pev171.pok.ibm.com:443/zosmf/swmgmt/swupdate/2212
```

Response Body

```
"started": "2025-02-21T21:04:33Z",
"completed": "2025-02-21T21:26:51Z",
"status": "COMPLETED",
"step": "COMPLETE",
"holds": [
  {
    "fmid": "HSWUPD1",
    "holdStatus": "Resolved",
    "name": "UA00009",
    "holdReason": "DOC",
    "holdType": "SYSTEM",
    "holdClass": null
  },
  {
    "fmid": "HSWUPD1",
    "holdStatus": "Resolved",
    "name": "UA00011",
    "holdReason": "IPL",
    "holdType": "SYSTEM",
    "holdClass": null
  }
]
```

Response Code

```
200
```

```
"updates": [
  {
    "fmid": "HSWUPD1",
    "selectStatus": "APPLIED",
    "name": "UA00009"
  },
  {
    "fmid": "HSWUPD1",
    "selectStatus": "APPLIED",
    "name": "UA00010"
  },
  {
    "fmid": "HSWUPD1",
    "selectStatus": "APPLIED",
    "name": "UA00011"
  }
]
```

# **z/OSMF Software Management Ansible Content**

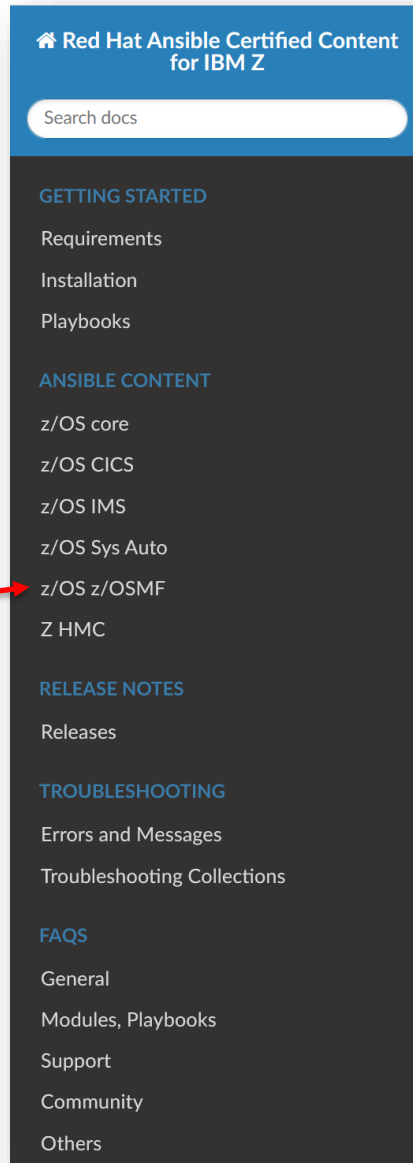
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z/OSMF provides a collection of artifacts that enable Ansible to automate z/OSMF actions.

Click **“Collections”**, then  
Click **“z/OS z/OSMF”**, then  
**“Roles”**

[https://console.redhat.com/ansible/automation-hub/repo/published/ibm/ibm\\_zo\\_smf/](https://console.redhat.com/ansible/automation-hub/repo/published/ibm/ibm_zo_smf/)



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You can install and use collections through Automation Hub, Ansible Galaxy and by building the collections from source available on GitHub.

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### Ansible Content

- z/OS core
- z/OS CICS
- z/OS IMS
- z/OS Sys Auto
- z/OS z/OSMF
- Z HMC

# Ansible Galaxy z/OSMF Collection

New Software Update Roles  
(and existing Software Management Roles which are very nice!)

Namespaces > ibm > ibm\_zosmf > Content

**IBM** **ibm.ibm\_zosmf**

Version 1.6.0 updated 5 hours ago (latest) Last updated 5 hours ago 5 41,089 Downloads

Install Documentation **Contents** Import log Dependencies [Docs site](#) [Issue tracker](#) [Repo](#)

Q swu X

Showing: All (6) Module (0) Module\_utils (0) Role (6)

Name	Type	Description
<a href="#">zmf_swupdate_cancel</a>	role	Ansible role to cancel a software update process.
<a href="#">zmf_swupdate_copy</a>	role	Ansible role to copy the output of a software update process.
<a href="#">zmf_swupdate_resume</a>	role	Ansible role to drive the Resume Software Update REST API for a software instance.
<a href="#">zmf_swupdate_retrieve</a>	role	Ansible role to retrieve the status of a software update process.
<a href="#">zmf_swupdate_retrieve_all</a>	role	Ansible role to retrieve the status of all software update processes.
<a href="#">zmf_swupdate_start</a>	role	Ansible role to drive the Start Software Update REST API for a software instance.

# Software Management Ansible Roles

1. Query a CSI data set
  - Drives the Query a CSI data set REST API
2. Identify Missing Critical Updates
  - Drives the Missing Critical Updates REST API
  - Identifies missing HIPER, PE fixing, and SECINT fixes, like SMP/E REPORT ERRSYSMODS
3. Identify Missing Fixcat Updates
  - Drives the Missing Fixcat Updates REST API
  - Identifies missing fixes associated with fix categories, like SMP/E REPORT MISSINGFIX
4. Software Update Search
  - Drives the Software Update Search REST API
  - Queries the CSI for a software instance for specified SYSMODs
5. Retrieve z/OS System UUID
  - Drives the Get System UUID REST API
  - Queries z/OS for the UUID of software instance that represents the installed software for the IPL'd z/OS.
6. **Start, Retrieve, Resume, Cancel, Copy Software Update process**

# z/OSMF Ansible Collection...

The purpose and input variables are described for each role.

Each role can be used in an automation playbook to perform a desired task.

Sample Software Management playbook in the git repo.

[https://github.com/IBM/ibm\\_zosmf/tree/main/tests/CICD/playbooks](https://github.com/IBM/ibm_zosmf/tree/main/tests/CICD/playbooks)

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- z/OS IMS
- z/OS Sys Auto

z/OS z/OSMF

Modules

Roles

- zmf\_cpm\_create\_software\_instance  
– Role creates a z/OS software instance
- zmf\_cpm\_get\_software\_instance  
– Role get specific z/OS software instance
- zmf\_cpm\_list\_software\_templates  
– Role lists all published z/OS software templates
- zmf\_cpm\_manage\_software\_instance  
– Role manages a provisioned z/OS software instance
- zmf\_cpm\_provision\_software\_service  
– Role provisions a z/OS software service
- zmf\_cpm\_remove\_software\_instance  
– Role removes a z/OS software

Docs » IBM z/OSMF » Roles » zmf\_swmgmt\_csi\_query – Query a SMP/E CSI data set

## zmf\_swmgmt\_csi\_query – Query a SMP/E CSI data set

- [Synopsis](#)
- [Variables](#)
- [Examples](#)
- [Notes](#)

### Synopsis

- The IBM z/OSMF collection provides an Ansible role, referred to as `zmf_swmgmt_csi_query`, to query a SMP/E global zone CSI data set directly or to query the CSI associated with a software instance.

### Variables

#### zmf\_host

Hostname of the z/OSMF server, specified in the inventory file or as an argument on the playbook command.

**required:** True  
**type:** str

#### zmf\_port

Port number of the z/OSMF server. If z/OSMF is not using the default port, you need to specify a value for this parameter in the inventory file or as an argument on the playbook command.

**required:** False  
**type:** str  
**default:** 443

# My Ansible Testing...

```
#####
8 # THIS PLAYBOOK IS INTENDED TO START A SOFTWARE UPDATE PROCESS, RESOLVE ALL OF THE #
9 # SYSTEM HOLDS, AND COMPLETE THE PROCESS WITHOUT SUSPENDING AT ANY STEP. #
10 #####
11
12 #####
13 # PLAY #1: Start a Software Update on a Software Instance. #
14 #####
15 - name: Start a Software Update on a Software Instance
16   hosts: "{{ nodes | default([]) }}"
17   gather_facts: false
18   tasks:
19     # Resolve all SYSTEM holds by default.
20     - name: Setting resolve-holds JSON
21       ansible.builtin.set_fact:
22         resolve_holds: '[{"type": "SYSTEM"}]'
23
24     # Do not suspend at any step.
25     - name: Setting suspend-steps JSON
26       ansible.builtin.set_fact:
27         suspend_steps: '[]'
28
29     - name: Start Software Update
30       ansible.builtin.include_role:
31         name: ibm.ibm_zosmf.zmf_swupdate_start
32
33 #####
34 # PLAY #2: Retrieve the Status of the Software Update. #
35 #####
36 - name: Retrieve the Status of the Software Update
37   hosts: "{{ nodes | default([]) }}"
38   gather_facts: false
39   tasks:
40     - name: Retrieve Software Update Status
41       ansible.builtin.include_role:
42         name: ibm.ibm_zosmf.zmf_swupdate_retrieve
43
44 #####
45 # PLAY #3: Copy the Software Update output to a directory. #
46 #####
47 - name: Copy the output from the Software Update
48   hosts: "{{ nodes | default([]) }}"
49   gather_facts: false
50   tasks:
51     - name: Copy Software Update
52       ansible.builtin.include_role:
53         name: ibm.ibm_zosmf.zmf_swupdate_copy
54       when: >
55         ((swupdate_retrieve_response.json['update-processes'][0]['status'] is defined) and
56          ((swupdate_retrieve_response.json['update-processes'][0]['status'] == 'COMPLETED') or
57           (swupdate_retrieve_response.json['update-processes'][0]['status'] == 'CANCELED') or
58           (swupdate_retrieve_response.json['update-processes'][0]['status'] == 'CANCELED WITH ERROR')))
```

```
1 # Copyright (c) IBM Corporation 2025
2
3 - name: Sample of identifying missing critical software updates for a software instance
4   hosts: "{{ nodes | default([]) }}"
5   gather_facts: false
6   collections:
7     - ibm.ibm_zosmf
8   tasks:
9     - name: Get Missing Critical Updates
10       include_role:
11         name: zmf_swmgmt_identify_missing_critical_updates
```

## In Summary

- Software Update simplifies installing SMP/E managed software updates (PTFs).
- Target users are early tenure z/OS system administrators and system programmers.
- Codifies best practices for installing software updates.
- With PTF UI96759 for z/OS 3.1:
  - Install by Name action
  - Install by Source-ID action
  - Run as SMP/E userid setting
- **Recent PTF UO04784 (APAR PH62240) on 3.1**, Software Update REST API to enable automated update install
  - And associated Ansible content and samples!
- For more information:  
<https://www.ibm.com/support/z-content-solutions/software-update-zosmf/>

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