z/OS 3.1 IBM Education Assistant

Solution Name: Storage Management REST API: Storage Class, Data ClassSolution Element(s): Storage Management REST API

July 2023

Agenda

- Trademarks
- Objectives
- Overview
- Usage & Invocation
- Interactions & Dependencies
- Upgrade & Coexistence Considerations
- Installation & Configuration
- Summary
- Appendix

Trademarks

- See url http://www.ibm.com/legal/copytrade.shtml for a list of trademarks.
- Additional Trademarks:
  - None.

Objectives

- Zach(Senior storage administrator) and Alice (Entry level storage administrator) can drive REST APIs to retrieve lists of SMS constructs and detailed SMS construct information in a modernized programming language-based solution.

Overview

- Who (Audience)

  z/OSMF Storage Management users

- What (Solution)

  Add REST APIs to

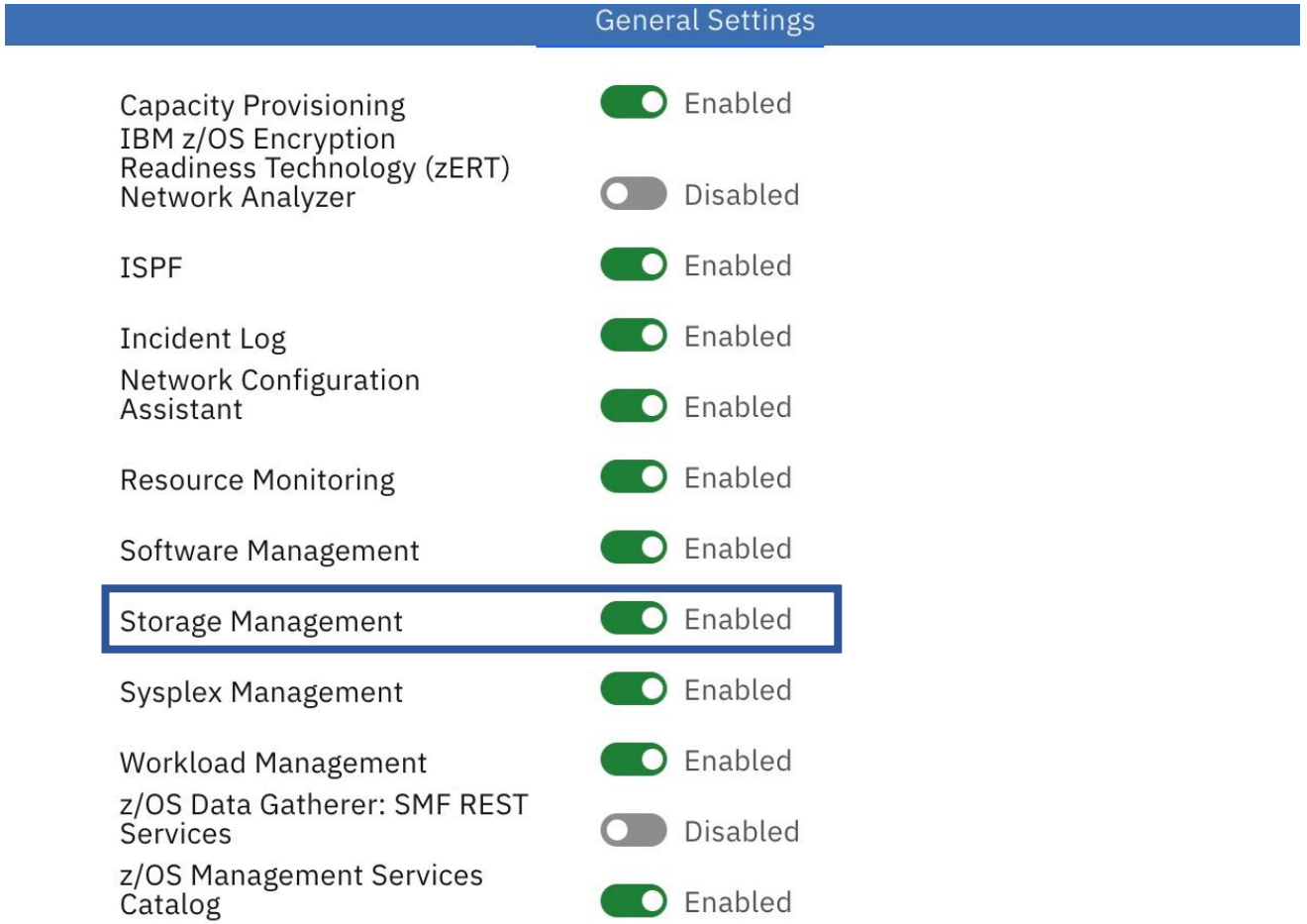
  - Retrieve a list of storage classes
  - Retrieve storage class details
  - Retrieve a list of data classes
  - Retrieve data class details

- Wow (Benefit / Value, Need Addressed)

  z/OSMF Storage Management users who want to view DFSMS configuration information

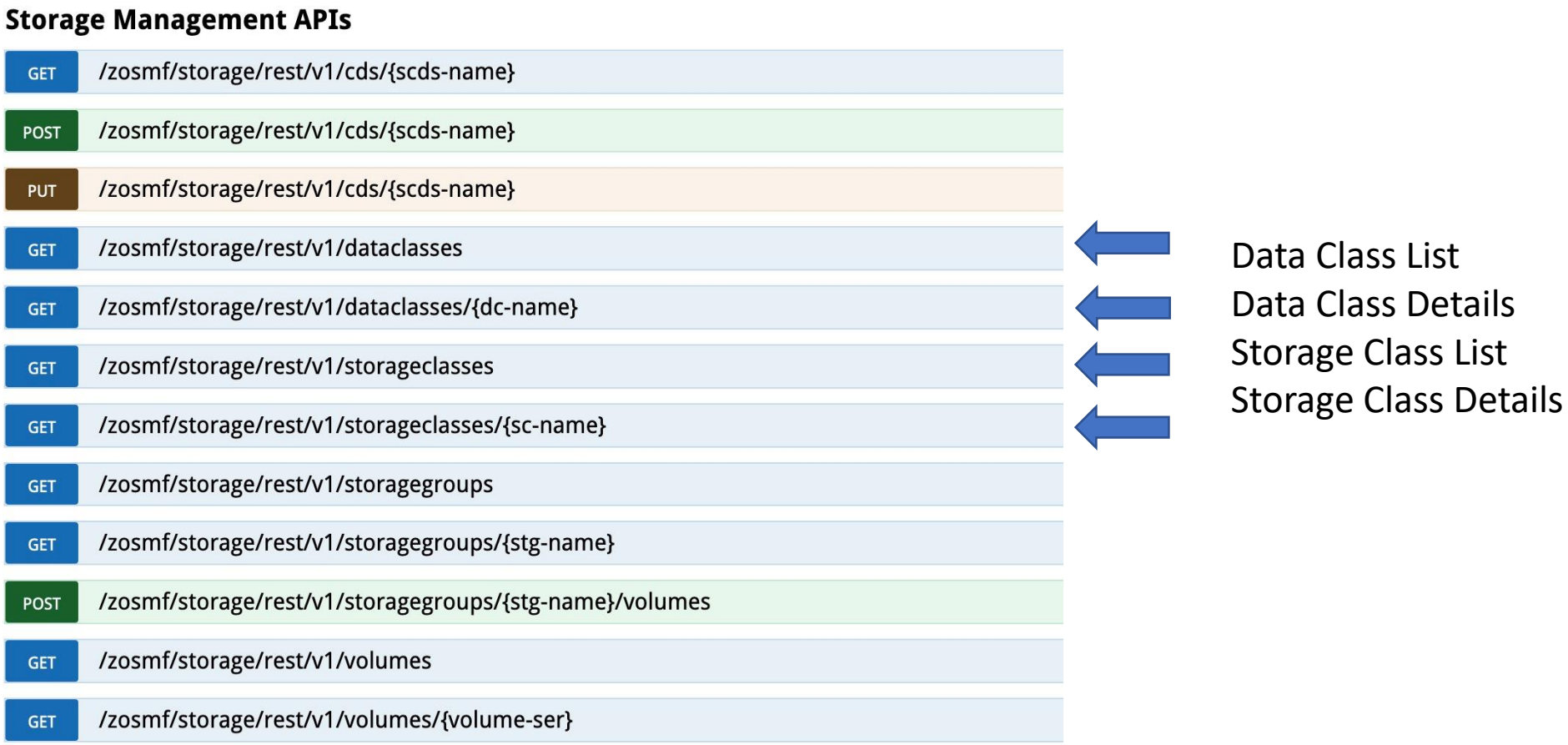
Usage & Invocation – Enable Storage Management Plugin

- In General Settings, enable storage management plugin



Usage & Invocation – Go to Swagger UI

- Open z/OSMF Swagger UI by https://{host}:{port}/zosmf/api/explorer/, go to Storage Management APIs tab. The following four new REST APIs are added in this epic.



Data Class List
Data Class Details
Storage Class List
Storage Class Details

Data Class

Usage & Invocation - REST Service to list data classes

Request			
URI path	/zosmf/storage/rest/<version>/dataclasses?[filter=<filter>]&[offset=<offset>]&[limit=<limit>]&[detail-data=Y/N]		
Method	GET		
Request Parameters			
Field name	Type	Required or optional	Description
filter	String	Optional	Specifies a data class name. The value is not case-sensitive. The value must meet the following criteria: • Contains 1-8 alphanumeric characters • Begins with an alphabetic or national character. National characters are $, #, and @. • The asterisk (*) and per cent (%) wildcards are allowed. – Asterisk matches any number of characters. – Per cent matches one character. – Asterisk and per cent wildcards can be used together. – You can use more than one asterisk and more than one per cent wildcard.
offset	Number	Optional	The offset of queried data classes. From the offset value, we get the data classes. The offset value can be 0 to 2147483647. The offset can't be larger or equal queried data class count. The offset cannot be used with filter in the same time.
limit	Number	Optional	Get the limit number of data classes. The limit can be used with offset. For example, if offset = 1, limit = 2, we will get the second and third data classes. The limit value can be 0 to 2147483647. If limit is 0, that means return all the queried data classes from offset value If the offset + limit is larger than the queried data class count, then only return the number of the queried data classes. If the offset + limit is less than the queried data class count, then only return the limit number data classes from offset.
detail-data	String	Optional	Indicates whether the detailed information is added to data class, if Y, then the detailed information will be added to data class. The default value is N.

Usage & Invocation - REST Service to retrieve a data class definition

Request			
URI path	/zosmf/storage/rest/<version>/dataclasses/<dc-name>?[detail-data=Y/N]		
Method	GET		
Request Parameters			
Field name	Type	Required or optional	Description
dc-name	String	Required	Specifies a data class name. The value must uniquely match only one data class name. The value is not case-sensitive. The value must meet the following criteria: • Contains 1 - 8 alphanumeric characters • Begins with an alphabetic or national character. National characters are $, #, and @. • Wildcards are not allowed.
detail-data	Boolean	Optional	Indicates whether the detailed information is added to data class, if Y, then the detailed information will be added to data class. The default value is N.

Response Content: data class summary

Field name	Description	Data type
dataClassName	1 to 8 alphameric, starting with an alphabetic or national ($, @ or #) character	String
lastUser	USERID of last updater	String
updateDate	Date last updated	String
updateTime	Time last updated	String
recorg	The RECORG field shows how VSAM data sets allocated by a Data Class are organized. possible values: KS . . . VSAM Keyed Sequential Data Set ES . . . VSAM Entry Sequenced Data Set RR . . . VSAM Relative Record Data Set LS . . . VSAM Linear Space Data Set NULL-SAM not VSAM data set The default value will be blank	String
recfm	The RECFM field shows the record format Possible values: NULL Null U Undefined format V Variable format VS variable spanned format VB Variable blocked format VBS Variable blocked spanned format F Fixed format FS Fixed standard format FB Fixed blocked format FBS Fixed format blocked spanned format	String
vsamExtendedAddressing	whether or not extended addressability is provided. Extended addressability provides data sets with addressability of more than 4 gigabytes. possible values: TRUE Provides extended addressability. FALSE Does not provide extended addressability.	Boolean
spaceConstraintRelief	The SPACE CONSTRAINT RELIEF field is to allow retry allocation of data sets based on the REDUCE SPACE UP TO parameter in case of allocation failure. It shows whether SPACE CONSTRAINT RELIEF methods was selected or not during Data Class DEFINE/ALTER. Possible values are : TRUE - Re-allocation methods are to be used by SMS in case of allocation failure. FALSE - No attempt of retry are to be used by SMS in case of allocation failure.	Boolean

Response Content: data class summary (cont1)

Field name	Description	Data type
vsamKeyOffset	This field applies to key-sequenced VSAM data sets. The field shows (in bytes) the distance from the start of the record to the start of the key field. For non-VSAM data sets, KEYOFF is ignored. possible values: 0 to 32760. If not specified, the value will be blank.	String
vsamKeyLength	This field shows, in bytes, the size of each record key in a non-VSAM data set, or the size of each key field in a key-sequenced VSAM data set. possible values: 0 to 255 for non-VSAM data sets 1 to 255 for key-sequenced VSAM data sets If not specified, the value will be blank.	String
primarySpaceAmount	The SPACE PRIMARY value, when multiplied by AVG VALUE, determines the amount of space that this Data Class initially allocates for a data set. Space will be allocated in bytes if AVGREC = U, in kilobytes if AVGREC = K, or in megabytes if AVGREC = M. Thus, if SPACE PRIMARY = 200, AVG VALUE = 1, and AVGREC = K, the initial space allocated will be 200K (200 X 1) possible SPACE PRIMARY values: 0 to 999999 If not specified, the value will be blank.	String
secondarySpaceAmount	The SPACE SECONDARY value, when multiplied by AVG VALUE, determines the additional space that can be allocated for a data set. Space will be allocated in bytes if AVGREC = U, in kilobytes if AVGREC = K, or in megabytes if AVGREC = M. Thus if SPACE SECONDARY = 50, AVG VALUE = 6, and AVGREC = M, the additional space allocated will be 300 (50 X 6) megabytes. possible SPACE SECONDARY values: 0 to 999999 If not specified, the value will be blank.	String
directoryBlocks	This field shows the number of blocks allocated for the directory of a partitioned data set. values: 0 to 999999 If not specified, the value will be blank.	String
avgrec	The AVGREC field shows whether this Data Class allocates space in bytes, kilobytes, or megabytes. Possible values: K Space is allocated in kilobytes. M Space is allocated in megabytes. U Space is allocated in bytes.	String

Response Content: data class summary (cont2)

Field name	Description	Data type
reduceSpaceUpTo	reduce primary or secondary space by 0-99 The REDUCE SPACE UP TO (%) field is to allow retry allocation of data sets based on the value provided in this field in case of allocation failure. It shows the amount in % to be used by SMS for reducing the requested space quantity during data set allocation failure. Possible values are : 0 to 99 - The amount used for reducing the requested space quantity. If not specified, the value will be blank.	String
vsamRecordAccessBias	This field allows the system to acquire and choose the buffering algorithms. Possible values : SYSTEM A value of SYSTEM allows the system to choose the number of buffers and the buffering algorithms for the VSAM data set. USER A value of USER prevents SYSTEM MANAGED BUFFERING and number of buffers and buffering algorithms will be based on user specified (or defaulted) values and current algorithms. DO A value of DO indicates system managed buffering with direct optimization. DW A value of DW indicates system managed buffering weighted for direct processing. SO A value of SO indicates system managed buffering with sequential optimization. SW A value of SW indicates system managed buffering weighted for sequential processing. If not specified, the value will be blank.	String
dynamicVolumeCount	The DYNAMIC VOLUME COUNT field shows the maximum number of volumes that DFSMS can dynamically add to an SMS managed data set. possible values: 1 to 59 If not specified, the value will be blank.	String
avgValue	The AVG VALUE field shows the multiplication factor used in determining allocated space. Primary space equals AVG VALUE times SPACE PRIMARY; secondary space equals AVG VALUE times SPACE SECONDARY. In both cases, space is allocated in bytes if AVGREC = U, in kilobytes if AVGREC = K, or in megabytes if AVGREC = M. Thus, if AVG VALUE = 80, SPACE PRIMARY = 1000, and AVGREC = U, it means that 80,000 bytes of primary space have been allocated. Possible values for AVG VALUE: 0 to 65535 If not specified, the value will be blank.	String

Response Content: data class summary (cont3)

Field name	Description	Data type
spaceOverrideFlag	The OVERRIDE SPACE shows whether or not the data class space attributes will override the space attributes from other sources like JCL. Possible values: TRUE Data class attributes will override others FALSE Data class attributes can be overridden	Boolean
forceSystemDeterminedBlockSize	The SDB shows whether the system will ignore a user-specified block size if no program opens the data set for writing while it still is allocated. This prevents the user from overriding a system-determined block size. Possible values: TRUE If no program opens the data set for writing while the new data set still is allocated, then the system will discard a BLKSIZE value coded by the user. The system will attempt to determine an optimal block size. If a program opens the data set for output while it still is allocated, then the user-specified BLKSIZE will take effect and override a system-determined block size. FALSE If the user specifies a BLKSIZE value, it will take effect and override a system-determined block size. This is the normal way for the system to run.	Boolean
eattr	NO VALUE, NO, OPT The value shows whether the data set can support extended attributes DSCBs. possible values: NO - no extended attribute DSCBs. Only a format 1 DSCB will be created for this data set even if the data set is allocated on a volume that supports extended attribute DSCBs. OPT - extended attribute DSCBs are optional. Format 8 and 9 DSCBs will be created for this data set when allocated on a volume that supports extended attribute DSCBs. Otherwise, a format 1 DSCB will be created. blank - not specified, defaults are used. For non-VSAM data sets the EATTR value used by the system is equivalent to NO. For VSAM data sets the EATTR value used by the system is equivalent to OPT. If not specified, the value will be blank.	String

Response Content: data class summary (cont4)

Field name	Description	Data type
vsamSMBRMode31	BLANK, ALL, BUFF, CB,NONE The value shows where the buffers and control blocks are to reside. Possible values: ALL - buffers and control blocks reside above the line. BUFF - buffers only reside above the line. CB - control blocks reside above the line. NONE - buffers and control blocks reside below the line.	String
recordLength	This field shows (in bytes) the logical record length used when allocating data sets in this data class. The value shown is the length of fixed-length records or the maximum length of variable-length records. possible values: 1 to 32761 or blank for non-VSAM data sets 1 to 32760 or blank for VSAM data sets	String
ciSize	The CISIZE DATA field is for VSAM data sets with a RECORG of ES, KS, LS or RR. This field shows the number of bytes allocated for each control interval in the data portion, not the index portion, of a data set. To allow for overhead processing, the CISIZE value will be at least seven bytes greater than maximum record size. possible values: 1 to 32768	String
ciFreeSpace	The % FREE SPACE CI field shows what percentage of each control interval in a key-sequenced VSAM data set should be set aside as free space. VSAM uses the space to lengthen or insert records, as needed. possible values: 0 to 100	String

Response Content: data class summary (cont5)

Field name	Description	Data type
caFreeSpace	The % FREE SPACE CA field shows what percentage of each control area in a key-sequenced VSAM data set should be set aside as free space. VSAM uses the space to lengthen or insert records, as needed. possible values: 0 to 100 If not specified, the value will be blank.	String
vsamXSystemShareOptions	The SHARE XSYSTEM field shows how a VSAM data set can be shared among systems. Possible values: 3 All users can read and update the data set. VSAM does not protect the data set. 4 All users can read and update the data set. VSAM monitors access of data sets in order to prevent lost, damaged, or altered data. If not specified, the value will be blank.	String
vsamXRegionShareOptions	The SHARE XREGION field shows how a VSAM data set can be shared among regions of one system, or across regions of multiple systems. Possible values: 1 All users can read the data set OR one user can update it. 2 All users can read the data set AND one user can update it. 3 All users can read and update the data set. VSAM does not protect the data set. 4 All users can read and update the data set. VSAM helps prevent lost, damaged, or altered data. If not specified, the value will be blank.	String
additionalVolumeAMT	This field shows the type of allocation amount when a VSAM data set in extended format begins allocation on subsequent new volumes. Possible values: NULL Candidate amount is null PRIMARY Primary allocation amount has been requested. SECONDARY Secondary allocation amount has been requested. If the value has not been specified. The system will use the default value of Primary.	String

Response Content: data class summary (cont6)

Field name	Description	Data type
volumeCount	This field shows the maximum number of volumes that can be used to store your data set. Possible values: 1 to 59 (DASD) 1 to 255 (Tape) If not specified, the value will be blank.	String
dsnType	DSN type can be null, PDS. Library, HFS, EXTENDED PREFERRED, EXTENDED REQUIRED and Large. Possible values: EXTENDED PREFERRED The system allocates data sets in extended format if the necessary system resources are available. Otherwise, it allocates them in non-extended format. EXTENDED REQUIRED The system allocates data sets in extended format if the necessary system resources are available. Otherwise, the allocations fail. LIBRARY The system allocates data sets as PDSEs. PDS The system allocates data sets as PDSs. LARGE The system allocates data sets as large format sequential data sets (>65535 tracks).	String
retpdYear	This field shows the default retention period or expiration date of data sets in this Data Class. Data sets are deleted or archived one day after the retention period or on the expiration date. Each data class can have a retention period or an expiration date (or neither), but not both. Possible values: yyyy/mm/dd Data sets expire in the year (yyyy: 1900-2155), month (mm: 01-12), and day (dd: 01-31) shown. yyyy/00/00 The expiration date has been set to this special value, which is meaningful to other programs. The year yyyy is in the range 1900-2155.	String

Response Content: data class summary (cont7)

Field name	Description	Data type
retpdAbsoluteDayOfYear	RETPD-Absolute day of year 0 to 93000 Data sets expire in the number of days shown.	String
compactionType	NULL, No compaction, Improved data recording capability and compaction	String
mediaType	Media type can be null, MEDIA1 -Cartridge system, MEDIA2 -Enhanced capacity cartridge system tape, MEDIA3-1/2 inch/320 meter particle media (3590), MEDIA4-double length(3590), MEDIA5-3592 module J,3592 Model E05, MEDIA5-3592 module JW,3592 Model E05, MEDIA5-3592 module JV,3592 Model E05, MEDIA5-3592 module JR,3592 Model E05, MEDIA9-3592 model E05 MEDIA10-3592 model E05	String
recordingTechnology	Technology can be null, 18 track, 36 track, 128 track, 256 track, 384 track, EFMT1 recording techology, EFMT2 recording techology, EEFMT2 recording techology EFMT3 recording techology, EEFMT3 recording techology, EFMT4 Recording technology and EEFMT4 Recording technology	String
vsamExtentionReuse	Reaccess data in VSAM cluster on open(default) or Access data as new data set on open This field indicates whether or not users can open the cluster again and again as a new cluster. Possible values: TRUE Indicates that the cluster is reusable FALSE Indicates that the cluster is not reusable	Boolean
initialLoad	Preformat on load recovery mode(default) or do not preformat on load speed mode. This data indicates whether or not the storage allocated to the data component was preformatted before records were inserted during initial load. Possible values: SPEED Indicates that the data component's space was not preformatted RECOVERY Indicates that the data component's space was preformatted	String

Response Content: data class summary (cont8)

Field name	Description	Data type
blockSizeLimit	BLOCK SIZE LIMIT parameter shows the largest value that the system can determine for a data set block size when a program opens a data set for output and no value is available. The system determines a data set block size that is appropriate for the media type when the data set is sequential, the record format is fixed or variable and the logical record length is known. The BLKSZLIM keyword on the DD statement overrides this value. Limit the block size when a system or application that may read the tape does not support large blocks. Large blocks generally are more efficient. The actual block size determined by the system may be less than this value Possible values : 32760 to 2147483648 If not specified, the value will be blank.	String
extentConstraintRemoval	The EXTENT CONSTRAINT REMOVAL indicates whether or not a VSAM data set is allowed to go beyond the 255 extents limit. Possible values: TRUE Remove the 255 extents limit FALSE Keep the limit of 255 extents	Boolean
gsSpaceReduction	The GUARANTEED SPC REDUCT indicates whether space reduction on guaranteed space allocations is permitted or not. Possible values: TRUE - permit space reduction on guaranteed space allocations. FALSE - do not permit space reduction on guaranteed space allocations.	Boolean
bwoType	BWO type requires RWO type specified The BWO attribute shows that backup-while-open (BWO) is allowed for the sphere. Possible values are : TYPECICS - BWO processing for CICS VSAM file control data sets is allowed. TYPEIMS - BWO processing for IMS VSAM data sets is to be used. NO - BWO does not apply to the cluster If not specified, the value will be blank.	String

Response Content: data class summary (cont9)

Field name	Description	Data type
recordSpansCIAbility	Record spans CI ability required record spans CI ability specified This field shows whether the data record is allowed to cross control interval boundaries. Possible values are : SPANNED - Indicates that, the record is contained in more than one control interval. NONSPANNED - Indicates that, the record is contained in one control interval. If not specified, the value will be blank.	String
frlog	The type can be not specified, none specified, log redo, log UNDO, log ALL This field tells the system whether to do the logging for changes to RCC forward recovery log stream. Possible values : ALL A value of ALL tells VSAM to log both forward and backward recovery. NONE A value of NONE makes no logging in effect. REDO A value of REDO tells VSAM to do forward recovery logging. UNDO A value of UNDO tells VSAM to do backward recovery logging. blank Attribute not specified.	String
logStreamID	logStreamID shows the name of the recovery logstream.	String
rlsCFCacheValue	The RLS CF CACHE VALUE field shows that VSAM RLS data with greater than 4K CI's defined to DFSMS CF cache structures can be cached. Possible values : A - ALL Indicates that all of the data is cached for the sphere U - UPDATESONLY Indicates that only updated CI's will be cached D - DIRONLY Indicates that the directory only will be cached	String
rlsAbove2GBBar	The RLS ABOVE THE 2-GB BAR indicates whether or not virtual storage for RLS can be above the 2-Gigabyte bar. Possible values: TRUE Place buffers above the bar in the SMSVSAM address space FALSE Do NOT place any data in storage located above the bar	Boolean

Response Content: data class summary (cont10)

Field name	Description	Data type
caReclaim	Enable(default) or Disable The CA Reclaim indicates whether the DASD space for empty CAs may be reused on z/OS 1.12 or later systems. Possible values: FALSE - Free CAs are not reused TRUE - Free CAs are reused	Boolean
scalingOptionInChar	Possible values for SCALNG: TRUE Scale to optimal performance. FALSE To use the full capacity (no scaling).	Boolean
segmentingOptionInChar	Possible values for SEGMENTN: TRUE Enable segmentation format. FALSE No segmentation.	String
unitForSystemManagedBufferValue	Unit in KB or MB for VSP Value	String
xsystemManagedBuffer	The system managed buffer field shows the amount of virtual storage for SMB Direct Access Bias obtained for buffers when opening the data set. Possible values: 1K to 2048000K 1M to 2048M If not specified, the value will be blank.	String
dataSetKeyLabelName	The DASD DATA SET KEY LABEL indicates the label for the encryption key used by the access methods. Possible values: 1 to 52 characters typically containing alphanumeric, national or special characters with some additional characters also being allowed. If DASD DATA SET KEY LABEL length is more than 52 characters, the first 49 characters followed by '...' are displayed. The rest of DASD DATA SET KEY LABEL is truncated.	String

Response Content: data class detail record

Field name	Description	Data type
dataClassNameLength	Data class name length	Number
description	Description of data class	String
blockedOrBlked	AMS use only, 1 means blocked and 0 means unblocked/null	Number
standardOrSpanned	AMS use only, 1 means standard or spanned,else 0	Number
carriageControl	Carriage control can be 1, 2 and 3 1 means ISO/ANSI 2 means MACHINE 3 means NULL	Number
expirationAttributeSpecified	Whether expirationAttribute is specified. The possible value is true or false	Boolean
retentionAttributeSpecified	Whether retentionAttribute is specified. The possible value is true or false	Boolean
vsamIMBEDSpecified	Whether vsamIMBED is specified. The possible value is true or false	Boolean
vsamReplicateSpecified	Whether vsamReplicate is specified. The possible value is true or false	Boolean
scaleToPerformance	Whether scaleToPerformance is specified. The possible value is true or false	Boolean
imbedIndexOptions	The imbed options. 1 means IBMED and 0 means no	Number
replicateIndexOptions	The replicate options. 1 means replicate and 0 means no	Number
vsamExtentionEx255	The VSAM extent flag. 0 means GT255 extents not allowed(default) and 1 means GT255 extents allowed	Number
perforamanceSegmentation	Whether perforamanceSegmentation is specified. The possible value is true or false	Boolean
overrideJCLSpecified	Whether overrideJCL is specified. The possible value is true or false	Boolean
sphereRecoverability	The possible value: 0 means not specified. 1 means non Recoverable sphere 2 means UNDO 3 means ALL 1. means REDO If not specified, the value will be blank.	String

Response Content: data class detail record (cont)

Field name	Description	Data type
logStreamIDLength	Log Stream ID length	Number
compressionType	The compression type, the possible value: 0 means generic compression 1 means tailored compression	Number
dataSetKeyLabelLength	Data set key label length	Number
keyLabel1Length	Key Label1 Length	Number
keyLabel1Name	Key Label1 Name	String
keyCode1	Key Code 1	String
keyLabel2Length	Key Label2 Length	Number
keyLabel2Name	Key Label2 Name	String
keyCode2	Key Code 2	String

Storage Class

Usage & Invocation - REST Service to list storage classes

Request			
URI path	/zosmf/storage/rest/<version>/storageclasses?[filter=<filter>]&[offset=<offset>]&[limit=<limit>]&[detail-data=Y/N]		
Method	GET		
Request Parameters			
Field name	Type	Required or optional	Description
filter	String	Optional	Specifies a storage class name. The value is not case-sensitive. The value must meet the following criteria: • Contains 1-8 alphanumeric characters • Begins with an alphabetic or national character. National characters are $, #, and @. • The asterisk (*) and per cent (%) wildcards are allowed. – Asterisk matches any number of characters. – Per cent matches one character. – Asterisk and per cent wildcards can be used together. – You can use more than one asterisk and more than one per cent wildcard.
offset	Number	Optional	The offset of queried storage classes. From the offset value, we get the storage classes. The offset value can be 0 to 2147483647. The offset can't be larger or equal queried storage class count. The offset cannot be used with filter in the same time.
limit	Number	Optional	Get the limit number of storage classes. The limit can be used with offset. For example, if offset = 1, limit = 2, we will get the second and third storage classes. The limit value can be 0 to 2147483647. If limit is 0, that means return all the queried storage classes from offset value If the offset + limit is larger than the queried storage class count, then only return the number of the queried storage classes. If the offset + limit is less than the queried storage class count, then only return the limit number storage classes from offset.
detail-data	String	Optional	Indicates whether the detailed information is added to storage class, if Y, then the detailed information will be added to storage class. The default value is N.

Usage & Invocation - REST Service to retrieve a storage class definition

Request			
URI path	/zosmf/storage/rest/<version>/storageclasses/<sc-name>?[detail-data=Y/N]		
Method	GET		
Request Parameters			
Field name	Type	Required or optional	Description
sc-name	String	Required	Specifies a storage class name. The value must uniquely match only one storage class name. The value is not case-sensitive. The value must meet the following criteria: • Contains 1 - 8 alphanumeric characters • Begins with an alphabetic or national character. National characters are $, #, and @. • Wildcards are not allowed.
detail-data	Boolean	Optional	Indicates whether the detailed information is added to storage class, if Y, then the detailed information will be added to storage class. The default value is N.

Response content: Storage Class Summary

Field name	Description	Data type
storageClassName	1 to 8 alphameric, starting with an alphabetic or national ($, @ or #) character	String
lastUser	USERID of last updater	String
updateDate	Date last updated	String
updateTime	Time last updated	String
graranttedSpace	whether users can pre-allocate space for multi-volume data sets. If the field shows TRUE, multi-volume data sets can be pre-allocated with the same or different amounts of space on more than one volume. If the field shows FALSE, the Storage Management Subsystem will not allow pre-allocation of multi-volume data sets. Possible Value: True or false	Boolean
syncDev	Indicates whether the system should return from a BSAM (or WAIT) issued for a WRITE against a PDSE member or a compressed format data set before (unsynchronized) or after (synchronized) the data set has actually been written to a storage device. Possible values: TRUE Indicates synchronized write. FALSE Indicates no synchronization.	Boolean
directMillisecondResponseTime	The value is the number of milliseconds required to read or write a 4-kilobyte block of data. Possible value: 1 to 999 or blank Blank means not specified.	String
sequentialMillisecondResponseTime	The value is the number of milliseconds required to read or write a 4-kilobyte block of data. Three decimal places have been reserved to support future sub-millisecond response times. Possible value:1 to 999 or blank Blank means not specified.	String

Response content: Storage Class Summary (continued)

Field name	Description	Data type
directBias	The direct access bias tells whether the majority of I/O scheduled for the data sets in this storage class is for READ, WRITE, or unknown. Transaction logs usually have a WRITE bias. A rarely updated production PROCLIB would have a READ bias. If no bias has been defined to the storage class, the field will be blank. Possible value R or W or blank	String
seqBias	The sequential access bias for data sets in this storage class. The sequential access bias shows whether the majority of I/O scheduled for the data sets in this storage class is for READ, WRITE or unknown. Transaction logs usually have a WRITE bias. A rarely updated production PROCLIB would have a READ bias. Possible values: R or W or blank	String
availablilityOptions	The value in the AVAILABILITY data column shows whether data set processing will continue after device failures. Possible values: CONTINUOUS Processing of a data set continues if a device failure severs communications with the volume that contains the data set. Data is placed on a dual copy, a RAMAC Array Sub-system, or a RAMAC Array DASD volume. STANDARD Continuous processing is unavailable after device failures. Data is placed on a non-dua copy or RAID volume. Here, non-RAID is preferred to RAID (RAMAC) volume. PREFERRED Data may be placed on devices that support continuous processing. RAID is preferred to non-RAID. NOPREF Data is placed on any volume. There is no preference among volumes. Processing avail-ability depends on the type of the volume in which the data is placed. NOTE: This option does not apply to DUAL-COPY volumes.	String

Response content: Storage Class Summary (cont2)

Field name	Description	Data type
accessibility	whether the data sets in this storage class should be allocated to volumes supported by Concurrent Copy. Possible values: CONTINUOUS The data sets must be allocated to volumes supported by Concurrent Copy. The allocation fails for data sets that cannot be allocated to such volumes. CONT PREFD The data sets should be allocated to volumes supported by Concurrent Copy. If this cannot be done, a data set may be allocated to a volume not supported by Concurrent Copy. STANDARD The data sets should be allocated to volumes not supported by Concurrent Copy. If this cannot be done, a dataset may be allocated to a volume supported by Concurrent Copy. NOPREF The data sets should be allocated to volumes whether the volumes support Concurrent Copy or not.	String
initialAccessResponse	indicate the time required (in seconds) to locate, mount, and prepare media for data transfer. 0 to 9999 If not specified, the value will be blank.	String
stripingSustainedDataRate	The sequential data transfer rate desired for striped data sets in this storage class. The system uses this value to determine the number of stripes it will attempt to allocate for the data sets. Possible values: 0 to 999 If not specified, the value will be blank.	String
cacheSetName	the name of the CF cache set associated with the storage class. Possible values: The CF cache set name that is defined in the CDS for the specified storage class.	String
directCFWeight	The value in this data column indicates the relative importance of data in a storage class when it is accessed directly. Storage classes with higher CF weight values tend to have greater cache resources allocated than storage classes with lower weight values. Possible values: 0 to 11 A numeric value from 1 to 2 characters. If directCFWeightFlag is false, then the value will be blank	String

Response content: Storage Class Summary (cont3)

Field name	Description	Data type
sequentialCFWeight	The value in this data column indicates the relative importance of data in a storage class when it is accessed sequentially. Storage classes with higher CF weight value tend to have more CF cache resources allocated than storage classes with lower weight values. Possible values: 0 to 11 A numeric value from 1 to 2 characters. If sequentialCFWeightFlag is false, the value will be blank	String
multitieredValueValidOnly	This value enables SMS to attempt to allocate using a volume in the first listed storage group prior to allocating in subsequent storage groups. Possible values: TRUE SMS will direct allocations to volumes which are enabled and below threshold in the first storage group listed followed by subsequent storage groups until the allocation is successful. FALSE No sequence order followed.	String
disconnectSphereAtCloseValue	Disconnect Sphere at CLOSE, indicates whether the sphere should be disconnected upon closing the data set or stay connected for a period of time. possible values: TRUE - the sphere will be disconnected upon closing. FALSE - sphere stays connected for a period of time.	Boolean
pavOptionsValue	The Parallel Access Volume Capability field is specified to enable and facilitate volume selection algorithms. Possible values: REQUIRED PAV Capability is required. Only those volumes that support this capability will be eligible. All other volumes will be rejected from consideration. PREFERRED PAV Capability is preferred. Volumes with this capability will be preferred over volumes that do not have this capability. STANDARD Volumes without PAV capability will be preferred over volumes that have this capability. NOPREF Volumes with or without PAV capability will be equally considered for volume selection. This is the default.	String
olsValue	The value in the OAM SUBLEVEL data column indicates the sublevel of an OAM disk or tape hierarchy level to use for object storage. The OAM SUBLEVEL is only applicable when the INITIAL ACCESS RESPONSE SECONDS value is equal to 0, or when the INITIAL ACCESS RESPONSE SECONDS value is greater than 0 and the SUSTAINED DATA RATE value is greater than or equal to 3. Possible values: 1 to 2 If not specified, the value will be blank.	String

Response content: Storage Class Summary (cont4)

Field name	Description	Data type
lockSetName	The value in the CF LOCK SET NAME indicates SET NAME the name of the CF lock set associated with the storage class. Possible values: The CF lock set name that is defined in the CDS for the specified storage class.	String

Response content: Storage Class Detail

Field name	Description	Data type
storageClassNameLength	Storage class name length	Number
description	The description of storage class	String
dataSetSeparation	Data Set Separation False means perform True means bypass separation	Boolean
accVersionParm	0 means Blank 1 means YES 2 means NO	Number
accBackupParm	0 means Blank 1 means YES 2 means NO	Number
cacheSetNameLength	Cache Set Name Length	Number
lockSetNameLength	Lock Set Name Length	Number

HTTP Status Codes

HTTP Status Codes

Status code	Status	Description
200	ok.	The request was processed successfully.
400	Bad request	The request could not be processed because it contains a syntax error or an incorrect parameter.
401	Unauthorized	The request could not be processed because the client is not authorized. This status is returned if the request contained an incorrect user ID or password, or both, or the client did not authenticate to z/OSMF by using a valid WWW-Authenticate header.
403	Forbidden	The server received the request but rejected it.
404	Not found	The requested resource does not exist.
405	Method not allowed	The requested resource is a valid resource, but an incorrect method was used to submit the request.
408	Request timed out	The client did not produce a request within the allowed time. The request can be submitted again.
500	Server error	The server encountered an error when it processed the request. For a more specific indication of the error, check the response for a reason code.
501	Not implemented	The request specifies an HTTP method that is not recognized by the server
503	Service unavailable	The request cannot be completed by the server because of a temporary condition. If the response contains a Retry-After header, check the suggested wait time. Otherwise, the requestor can treat the response as an HTTP 500 response.

Interactions & Dependencies

- Software Dependencies
  - None
- Hardware Dependencies
  - None
- Exploiters
  - z/OSMF Storage Management users

Upgrade & Coexistence Considerations

- None

Installation & Configuration

- The sample job IZUSGSEC in SYS1.SAMPLIB should be run to do the security settings. For more details, please refer to “Configure the Storage Management service” chapter in z/OSMF Configuration Guide.

Summary

- The following four REST APIs in Storage Management have been explained:
  - As a z/OSMF storage management user, I can add new volumes to a SMS storage group
  - As a z/OSMF storage management user, I can validate a SCDS.
  - As a z/OSMF storage management user, I can activate a SCDS.
  - As a z/OSMF storage management user, I can get the activate result if the result is unsure when invoking the POST activate API

Appendix

- Book updates
  - IBM z/OS Management Facility Programming Guide
  - IBM z/OS Management Facility Configuration Guide