



# BMC Mainframe: VSAM Essentials Workshop

## COURSE ABSTRACT

### COURSE CODE

- » MGRS-VSEW-2021

### APPLICABLE VERSIONS

- » Not Applicable

### DELIVERY METHOD

- » Instructor-led Training (ILT)

### COURSE DURATION

- » 3 Days

### PREREQUISITES

- » Familiarity with basic z/OS principles and a working knowledge of TSO/ISPF and JCL

### RECOMMENDED TRAININGS

- » NA

## Course Overview

The course is developed and delivered by © RSM Technology.

This hands-on course describes and explains the access method concepts in MVS and the structure and design of VSAM files. It teaches how to create VSAM files using the utility Access Method Services (AMS), both from a functional as well as a performance point of view.

Additionally, it provides the Systems Programmer and Operational Analyst with information on the structure of ICF catalogs and the related VTOC and Index VTOC.

Online exercises provide experience in creating, accessing, and managing VSAM files. Attendees will create and use clusters, alternate indexes, and paths.

## Target Audience

- » Programmers
- » Systems programmers
- » Operators
- » Operations analysts

## Learner Objectives

- » Describe and explain the concepts of the z/OS access methods
- » Analyze the structure of the RRDS, ESDS, KSDS and LDS data sets
- » Use the Access Method Services utility program IDCAMS to define, load, backup, monitor and manipulate VSAM data sets with particular emphasis on the KSDS file type
- » Develop guidelines for optimized allocation of VSAM files for use at their installation
- » Identify performance related issues in the batch and online environments that can be found when using the KSDS file types



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### COURSE ACTIVITIES

- » Classroom Presentations
- » Demonstration


### BMC MAINFRAME INFRASTRUCTURE AND PLATFORMS LEARNING PATH

- » <https://www.bmc.com/education/courses/find-courses.html#filter/%7B%22type%22%3A%22edu-specific-types-159150236%22%7D>

### CERTIFICATION PATHS

- » This course is not part of a BMC Certification Path.

### DISCOUNT OPTIONS

- » Have multiple students? Contact us to discuss hosting a private class for your organization
- » [Contact us for additional information](#) 

## Course Modules

### VSAM Overview

- » MVS and I/O processing
- » The access methods
- » The IOS Drivers
- » The I/O Supervisor (IOS)
- » The Back-End process
- » MVS access methods
- » Queued Sequential Access Method
- » Basic Direct Access Method
- » Basic Partitioned Access Method
- » PDSE processing
- » And now to VSAM
- » VSAM features
- » Entry Sequenced Data Set (ESDS)
- » Key Sequenced Data Set (KSDS)
- » Relative Record Data Set (RRDS)
- » Catalog concepts
- » ICF catalogs and VTOCS
- » ICF catalogs (BCS)
- » VSAM Volume Data Set (VVDS)
- » Cluster Catalog (BCS) entries
- » Alternate indexes and paths
- » VSAM overview - exercises

### VSAM Dataset Structure

- » Control Areas
- » Control Intervals
- » Control Interval structure
- » CI structure of fixed length records
- » CI structure of variable length records
- » Control Area structure
- » Relative Byte Address
- » Spanned records
- » Storage of data on DASD volumes
- » Entry Sequenced
- » Key Sequenced
- » Index component
- » Free space
- » RRDS characteristics
- » KSDS processing example
- » The Control Interval is rewritten
- » Deleting a record
- » Record insertion
- » CI split
- » CA split
- » VSAM dataset structure – exercises

### Using Access Method Services

- » Access Method Services (AMS)
- » AMS command format
- » Example - define an ESDS
- » Modal commands
- » Cancelling IDCAMS steps
- » Using the ELSE and SET commands
- » Comments
- » Error messages
- » Dataset already exists

### Defining VSAM Datasets

- » IDCAMS commands
- » DEFINE command - main parameters
- » Defining a cluster
- » Cluster sub-parameters
- » IDCAMS required parameters
- » Space allocation and reuse
- » SHAREOPTIONS (x region, y system)
- » Control Interval Size
- » More IDCAMS parameters
- » DATA and INDEX sub- parameters
- » Defining an ESDS
- » Defining an RRDS
- » Defining a KSDS

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- » FREESPACE
- » DELETE MASK | NOMASK

### Listing Catalog Information

- » Listing catalog information - LISTCAT
- » Catalog information
- » LISTCAT
- » LISTCAT parameters
- » LISTCAT examples
- » LISTCAT output

### VSAM Dataset Management

- » VSAM data management commands
- » Loading datasets
- » REPRO
- » REPRO parameters
- » Copy ESDS to KSDS
- » Copy partial RRDS to RRDS
- » Copy keyrange from KSDS to KSDS
- » Merge two KSDSs
- » Copy KSDS to tape
- » Printing datasets
- » PRINT parameters
- » PRINT examples
- » PRINT output example – CHARACTER
- » Altering catalog entries
- » Deleting catalog entries
- » DELETE parameters
- » DELETE examples

### Alternate Indexes

- » Why use alternate indexes?
- » Alternate index design
- » Alternate index record
- » Defining a route to the base cluster
- » Update of an alternate index
- » Defining an alternate index
- » Alternate index sub-parameters
- » Alternate index (SMS)
- » AIX record size calculation
- » Building an alternate index
- » Defining a Path
- » Printing a base KSDS
- » Printing via an alternate indexes using PATH

### VSAM Data Integrity

- » Data integrity
- » Disposition processing
- » VSAM SHAREOPTIONS
- » Cross system sharing
- » VSAM back-up options
- » The EXPORT command
- » VSAM recovery options
- » The IMPORT command

### VSAM Performance Considerations

- » What to tune
- » Record design considerations
- » Data CISZ and performance
- » CI% freespace
- » CI FSPC optimization
- » Index CISZ considerations
- » Data CA size considerations
- » CA% freespace
- » Component level performance
- » VSAM buffers
- » Index component buffers
- » Optimum index buffering
- » Data component buffers
- » Optimum data component buffering
- » VSAM buffering techniques
- » VSAM NSR buffer utilization
- » VSAM LSR buffer utilization
- » Batch LSR
- » Is batch LSR the solution?
- » Batch LSR JCL changes
- » Additional BLSR SUBSYS parameters
- » BLSR recommendations
- » BLSR restrictions
- » AIX performance considerations