

## IBM z/OS Data Set Mobility Facility

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### Highlights

- Immediately migrate data sets across storage from different vendors
  - Ensure access to data with no disruption to applications
  - Encrypt data and perform key rotation to comply with audit requirements
  - Automatically consolidate and migrate data, reducing risk and interruptions
  - Perform data set migration from small-capacity to large-capacity volumes
  - Seamlessly migrate data to refresh storage technology
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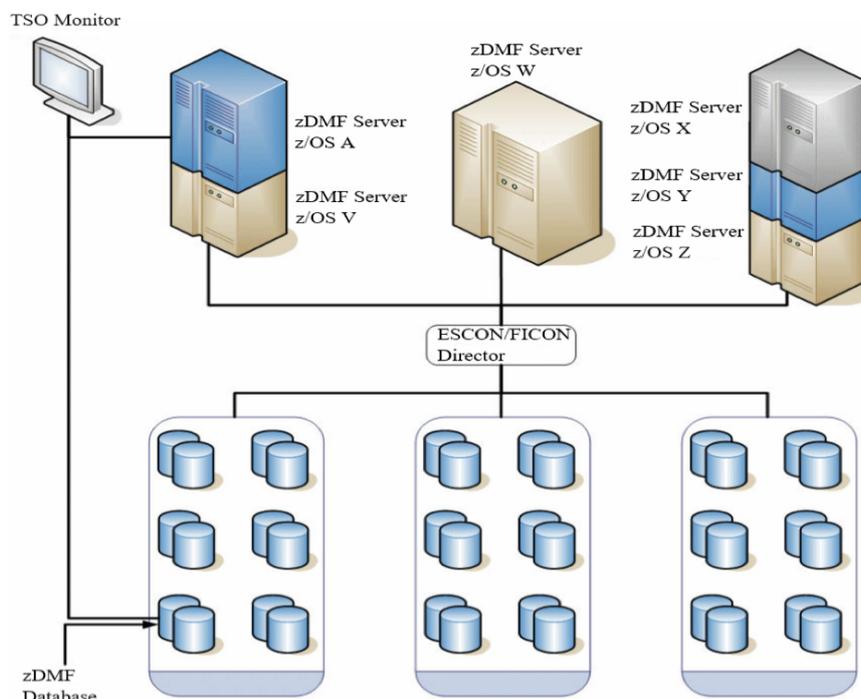
Migrate or encrypt critical allocated mainframe data sets with little or no disruption.

Many IT organizations want to take advantage of the large-capacity volumes on today's more cost-effective, high-performance storage subsystems, but are faced with complex and disruptive data migrations that negatively impact their business applications. Because data conversion onto large volumes is time-consuming and can involve long application outages, IT specialists across organizations recognize the need for tools that can help them move data with greater flexibility, efficiency and reliability at a lower cost while also enabling greater responsiveness to a dynamic marketplace. IBM z/OS Data Set Mobility Facility (zDMF) delivers a nondisruptive data migration solution that can help reduce your overall storage costs—regardless of vendor or disk capacity. The IBM host-based software is designed to move critical, allocated mainframe data sets almost immediately, helping ensure applications remain online and available. With data-set grouping and migration control through an online Interactive System Productivity Facility (ISPF) interface, zDMF provides an alternative to time-consuming, manual data-set migrations.

zDMF is also a key component of your pervasive encryption strategy. Security and risk management officers face increasingly complex decisions regarding the protection of stored data, due to a dramatic growth in data breaches. Internal and external auditors are applying increasing pressure for best-practice data protection levels, such as access controls and encryption. IBM z/OS Data Set Mobility Facility (zDMF) provides a simple, minimally disruptive way to encrypt extended format data sets.

The foundation of zDMF is its ability to migrate data at the data set level, and deliver continuous, transparent access to all applications and data with little or no disruption. During the migration process, data sets can be converted from non-extended to extended format (a requirement for encrypting data sets), and also encrypted. Once a data set has been encrypted, zDMF can be used as part of an ongoing regimen to perform key rotation, complying with audit requirements to regularly change security keys.

## How IBM z/OS Data Set Mobility Facility (zDMF) Works



### IBM z/OS Data Set Mobility Facility

#### zDMF server

The zDMF server is the primary component of the zDMF product framework. The zDMF server is a started task that must run on each system that has access to the data that will be migrated.

## zDMF database

The zDMF database is the file used to store and share information about zDMF data migration activity. The zDMF Database is used by the zDMF server to store and communicate migration information across all participating systems.

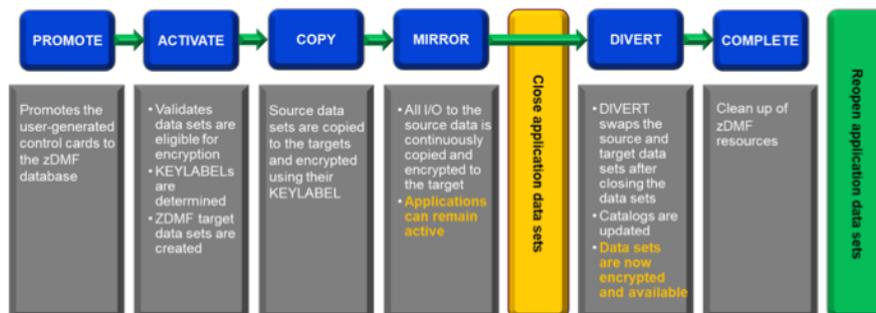
## zDMF I/O monitor

The zDMF I/O monitor is a sub-component of the zDMF server. The zDMF I/O monitor is responsible for the following functions:

- Monitors all I/O activity to source data sets (extents).
- When in mirroring phase, mirrors all write I/O activity to the target data sets to ensure that they are always synchronized.
- When in diversion phase, re-directs (diverts) all I/O activity, including reads and writes, to the target data set until completion has been achieved.
- Prevents all non-zDMF ("Interloper") I/O to the target data sets until completion of the DIVERT command.

## zDMF TSO monitor

The zDMF TSO monitor is the primary interface to the zDMF product.



## **IBM z/OS Data Set Mobility Facility Features**

### **Data set level encryption**

Encrypt data sets during migration with little or no application downtime

### **Convert static non-extended to extended format**

Convert non-extended format data sets to extended format during migration

### **Key rotation**

Perform key rotation of encrypted data sets

### **Reduced application downtime for data set moves**

When application downtime is required to complete the move, the downtime is measured in seconds rather than hours, compared to the downtime required when using traditional tools such as DFSMSdss, FDR, et. al.

### **Early completion of unallocated data sets**

Unallocated data sets bypass zDMF mirror phase and are migrated immediately upon completion of copy

### **Volume consolidation**

Move data sets from multiple small volumes to a single larger volume; helps with UCB limits

### **Multi-volume data set consolidation**

Convert multi-volume data set to single volume data set

### **Data set extent consolidation**

Move a data set with many extents to data set with fewer extents or single extent; reduce volume fragmentation

## Move non-Extended Address Volumes (EAV) to EAV

Move track-managed data sets to cylinder-managed space based on extended address space allocation rules

## Facilitate storage tiering

Move data sets to different storage types – solid state, enterprise, nearline

## Move non-System Managed Storage (SMS) data set to SMS data set

Honors SMS ACS rules for data set placement based on the source data set name and attributes

## Move SMS data set to non-SMS

Honors non-SMS ACS rules for data set placement

## Other Benefits

- zDMF can convert data sets to use DFSMS data set level encryption by applying a KEYLABEL to data sets while they are being migrated. This support is available only when all zDMF servers are running on z/OS v2.3 and above. GZDSAMP library member GZDENCY contains a quick start example of using zDMF for data set encryption.
- zDMF offers full target and source flexibility. All 3390 Count Key Data/Extended (CKD/E) capable control units in the data center can participate in a migration
- zDMF allows for full system sharing throughout the data center.
- zDMF guarantees full access to the data at any point during a migration operation.
- zDMF installs dynamically; no IPL is required.
- zDMF works with pairs of data sets, including the original “source” data set and the new “target” data set.
- zDMF uses both asynchronous and synchronous techniques to copy data from source locations to target locations, thus minimizing performance overhead.
- zDMF data migration is invisible to applications. Applications continue to access and update the source data set as normal. zDMF ensures that all updates are mirrored to the target data set. Eventually, under user direction, zDMF can divert all I/O activity to the target data set and simultaneously modify all metadata to reflect the new location of the data set.

- zDMF supports multiple system data-sharing environments.
- zDMF guarantees physical data integrity with ongoing internal heartbeat monitoring, error detection, and recovery capability.

## Software Requirements

Supports all IBM Multiple Virtual Storage (MVS) software-based operating systems that are currently supported by IBM (for example, IBM z/OS v1.10 software and above).

IBM Transparent Data Migration Facility (TDMF) for z/OS is recommended for use in conjunction with zDMF to allow both data-set and volume-level migrations, providing an efficient and cost-effective migration approach.

## Hardware requirements

Supports all storage attached to IBM Z servers formatted with IBM z/OS technology, including 3390 volumes supporting count key data/extended (CKD/E) format and EAV capabilities.

## Why IBM?

Storage for IBM Z provides a comprehensive portfolio of enterprise storage solutions designed to match the mission-critical capabilities of IBM Z, adding next-level performance, security, and resilience for mission critical workloads across hybrid multicloud deployments.

## For more information

Please visit:

[www.ibm.biz/zDMFinfo](http://www.ibm.biz/zDMFinfo)

[www.ibm.biz/zDMFAnnounce](http://www.ibm.biz/zDMFAnnounce)

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