

MODEL9 BACKUP AND RECOVERY FOR z/OS

RUN ON zIIP ■ USE ANY DISTRIBUTED STORAGE OR CLOUD
IMPROVE RECOVERY ■ CUT COSTS

Model9 Backup and Recovery for z/OS performs backup, restore, archive (migrate) and automatic recall for all z/OS data sets and volume types, including z/OS UNIX file-level backup and restore, space management and stand-alone restore.

Our patented technology connects the mainframe directly over TCP/IP to any network-attached storage of your choice and allows you to supplement or completely eliminate the need for virtual tape libraries and physical tapes. With Model9, you can take advantage of any device from low cost commodity plain SCSI disks to highly scalable, geographically dispersed, flexible and cost-effective object storage, on-premise or in the cloud. All popular storage platforms are supported, including NAS and SAN.

Model9 consolidates the functionality of multiple backup and tape management products into a single solution that dramatically reduces costs and provides either added capabilities such as write once protected copies, or a complete replacement of existing backup and tape management software. It can coexist side-by-side legacy backup and tape management products for simplified migration.

Model9 supports the following data management functions:

- Incremental data set backup and restore
- Full volume dump and restore
- Data set archive (migrate) with automatic or manual recall
- SMS compatibility
- SAF-based authentication and authorization
- z/OS UNIX file-level backup and restore
- Space management functions
- Quick search for data set backup version and archives
- Graphical reports
- End-to-end encryption
- Compression
- JCL and TSO/E commands for all functions

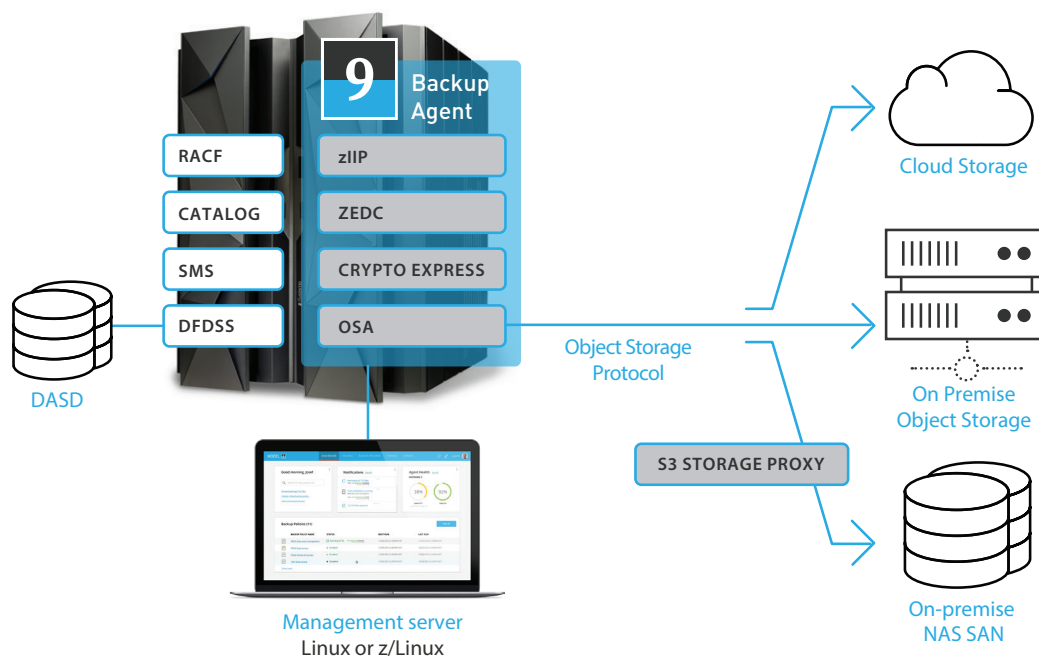
BENEFITS

- **Replace costly tape hardware (VTS, VTL etc.)**
With any open storage system or cloud storage
- **Cut costs by 50% or more**
by reducing MSU consumption, consolidate software licenses and use cheaper storage
- **Improve RPO and RTO**
with additional recovery points and malware protected backup copies
- **Gain unlimited flexibility in storage options**
by using any accessible storage, on-premise or in the cloud
- **No vendor lock-in**
Data is stored in DFDSS dump format and can be recovered with standard mainframe tools
- **Secured**
Data is protected with mainframe-controlled end-to-end encryption, and subject to mainframe security software
- **Easy to install, easy to use**
1 hour installation time, intuitive web-based user interface

Model9 architecture comprises of a Backup Agent on z/OS and a Management Server on Linux or z/Linux as shown in the diagram below.

The Backup Agent is a zIIP-eligible Java application running on z/OS. It uses z/OS data management functions and standards, such as using DFDSS as the underlying data mover, updating system catalogs, full compliance with SMS policy and relying on RACF (SAF) authorization controls. The Backup Agent utilizes zEDC and CryptoExpress cards for compression and encryption when available and can leverage zIIP engines when cards are not available.

The Management Server provides management, audit and reporting capabilities and can drive site recovery in case your mainframe is down. It communicates with the agents running in z/OS over secured TCP/IP connection. The Management Server can run on Linux or z/Linux and provides APIs to easily integrate with monitoring and DevOps tools.



COMMON USE CASES

Cloud archive and backup

Store archives and backups directly in any network-attached storage, including object storage, NAS and SAN, on-premise or in the cloud. To maximize your benefit of cloud economics, cloud storage tiers (such as Amazon Glacier and Microsoft Azure cold storage) are supported.

The cloud is directly accessible from your mainframe, no additional hardware, disk or tape emulation layers is required.

All leading cloud providers are supported including Amazon S3 and Glacier, Microsoft Azure, Google Cloud Storage and more.



Cyber-threat protection and business resumption

Model9 provides an industry-first solution for mainframe cyber threat protection and business resumption, enabling z/OS customers to create highly secured, off-platform backup copies and quickly recover in case of an attack – all at minimal cost.

Backup software replacement

Consolidate legacy backup (such as IBM DFHSM, CA-Disk, FDR/ABR), tape management (IBM RMM, CA-1, CA-TLMS, BMC Control-M/Tape), encryption and reporting software products into a single modern solution.

Virtual tape reduction / elimination

Model9 performs standard mainframe data management functions while utilizing network-attached distributed storage systems and the cloud instead of virtual tape hardware. Storing data set backup copies, archives and full volume dumps on distributed storage, can substantially reduce the amount of data currently managed by your VTL.

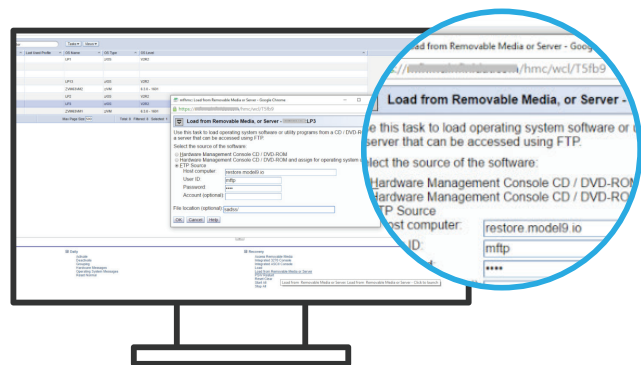
Data retrieval for recovery, restore, manual and automatic recall are supported directly from distributed storage. Moreover, a bare-metal recovery option is included to allow full recovery in DR situations without relying on the existing mainframe operating system.

Improve RPO

When using storage snapshot technologies (such as Flashcopy) to create a consistent recovery point, Model9 allows you reuse the snapshot target capacity for additional snapshots by moving the snapshot to cheaper storage right away. This enables you to take more snapshots daily without allocating additional DASD storage. The backup copy can be used to restore a single data set, a full volume or the complete snapshot.

Disaster Recovery

The Management Server and the target storage may be located at a remote site and can function as an in-house vault backup for disaster recovery situations. In bare-metal recovery situations, a stand-alone restore program is IPLed, over the network, directly from the server (using the HMC “Load from removable media or server” action). The stand-alone restore program is used to restore volumes and data sets without requiring the agent to be running in z/OS.



Using the HMC to IPL a restore program from the backup server

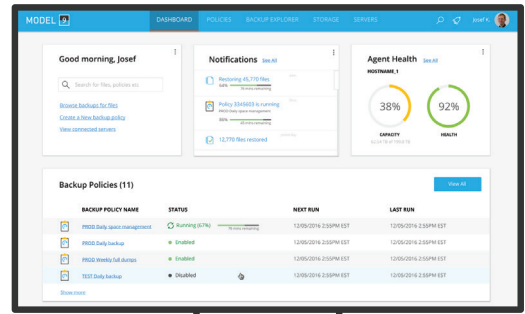
z/OS Unix (USS) file-level backup and restore

Model9 supports file-level backup and restore for Unix System Services files on z/OS. This unique capability saves backup space and shortens backup window for Unix files by incrementally backing up only files that have changed, in contrast to frequently backing up the complete entire HFS or zFS data set. During restore, only the specified Unix files are restored directly to the USS file system, without having to restore the full HFS/ zFS data set first.

USER INTERFACE

Users connect to Model9's web-based UI to perform daily activities. Administrators can use the UI to define and monitor the data protection policies and SLAs. Other users can use the UI to search and restore their data as needed. The dashboard was designed to help you ensure your data is protected at a glance. The UI includes Google-like search functionality to quickly find and restore data sets. The UI also provides detailed reports and analytics to help you understand data usage and prepare in time for growth.

Users log-in with their existing mainframe credentials. Authorization for all user actions is checked against the existing mainframe security software (such as RACF, CA-TSS or CA-ACF2).



Dashboard provides a quick overview of backup operations

SYSTEM REQUIREMENTS

Management Server

Linux

Minimum recommended hardware:

- 2 x dual-core CPUs
- 4 GB memory
- 10 GbE network adapter

Supported operating systems (may run as a virtual machine):

- Ubuntu Server
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server

Linux on z

Minimum recommended hardware:

- 2 IFLs
- 4 GB memory

S3 Proxy Software product supplied with Management Server to connect non-S3 storage to mainframe

z/OS Backup Agent

Minimum recommended hardware:

- 1 zIIP
- 4 GB memory

Additional supported hardware (optional):

- zEDC Express
- Crypto Express

Operating system prerequisites:

- z/OS V2R1 and up
- Java 8 31-bit

COEXISTENCE

Legacy Backup

- IBM DFHSM
- CA-DISK
- FDR/ABR

Tape Management

- IBM RMM
- CA-1
- CA-TLMS
- BMC Control-M/Tape

Virtual Tape Software

- IBM VTFM
- CA-VTape

Security Software

- RACF
- CA-TSS
- CA-ACF2

SUPPORTED STORAGE PROVIDERS

Cloud

- Amazon S3
- Amazon Glacier
- Microsoft Azure
- Google Cloud
- IBM Cloud

Object

- Hitachi Content Platform
- IBM Cloud Object Storage
- EMC Elastic Cloud Storage
- NetApp StorageGRID
- Microsoft Azure Stack

Immutable

- Amazon Vault Lock
- Hitachi HCP
- NetApp StorageGRID

Traditional

- NAS
- SAN
- DASD