

Prince Webdesign

TK5 Introduction and User Manual

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2. Preface.

MVS-Turnkey 5 (MVS-TK5) is a new version of the previous MVS Turnkey releases. TK5 supersedes MVS-Turnkey 3 and MVS Turnkey 4. MVS Turnkey 3 (MVS-TK3), the original version, was created by Volker Bandke. TK3 was a very successful release that was widely adopted by many satisfied users around the world. Based on the environment established by TK3, a significant number of enhancements were developed and contributed to the community by various TK3 users. Not every TK3 user installed all of these enhancements resulting in MVS 3.8 systems at various levels. Jürgen Winkelmann recognized that this was an issue and decided to build a successor to TK3 which he named TK4- in deference to the work performed by Volker Bandke in building TK3. Jürgen released TK4- in 2013. TK4- included all of the various enhancements contributed after TK3 was released. Jürgen also provided Windows and Linux based scripting to simplify the operation of Hercules and MVS 3.8. and widen the appeal of running TK4-. Subsequently, he released 8 updates to TK4- to include further enhancements as they came available from contributors.

Further enhancements became available resulting in, again, MVS 3.8 systems at various levels. This time it was Rob Prins who decided to address the issue with MVS-TK5. Rob Prins created this TK5 distribution with the help of a number of people who packaged the additional software and tested the distribution.

After many months of testing, the MVS-TK5 distribution is finally here.

Volker, Jürgen, and Rob have one thing in common: They all live in Europe. Volker in Germany, Jürgen in Switzerland, and Rob in the Netherlands.

Have a lot of fun running MVS-TK5.

3. Summary of Changes.

Update 2

When TK5 was first released Rob Prins made the commitment that, for subsequent TK5 Update releases, only TK5RES, the systems residence volume and the two usermod/package distribution volumes, TK5001 and TK5002, would be refreshed by each update. TK5 is unique because it is the first MVS 3.8 system that is resident on 3390 DASD. The move to 3390 DASD required, as a base, the installation of Jim Morrison's usermods to support 3375/3380/3390 DASD. In addition, a number of other usermods were developed and installed to facilitate MVS 3.8 support for 3390 DASD.

However, TK5 users encountered further issues with MVS 3.8 support for 3390 DASD. Each of these new issues have now been addressed with usermods that are described in the TK5 Usermod Directory.

One issue required the rework of the initial Jim Morrison contributed support for 3375/3380/3390 DASD. Further investigation revealed regression and incorrect SMP data for these essential usermods. A complete rework and repackaging of the Jim Morrison usermods has now been installed on TK5 as part of TK5 Update 2. This necessitates the inclusion of the TK5DLB volume with TK5 Update 2 to correctly reflect the SMP status of the code base and base libraries for TK5 systems. The base distribution libraries must be updated by the 3375/3380/3390 DASD support usermods because an MVS 3.8 system, specifying 3375/3380/3390 DASD, cannot be generated without these usermods installed.

The replacement of the TK5DLB volume should not impact a user's TK5 system unless SMP has been used to ACCEPT usermods that have been installed on a TK5 system resulting in data sets on TK5DLB being updated. If this is the case then the replacement of the TK5DLB volume will regress the SMP ACCEPT processing and a rerun of the ACCEPT processing will be required.

New

- MAP3270 3.1.0 installed.
- TSO CLIST command INSTREAM added.
- Usermods ZBP0001 and ZBP0002 installed to support MVS-TK5 as a guest in VM/370.
- TSO command RELOGON. Re logon with the same UserID, but without entering the password.
- Usermod RP00001 applied to correct AMDPRDMP calculation of dump records per track if the input data set is allocated on 3375, 3380 or 3390 DASD.
- Usermod RP00002 applied to correct SDUMP SVC 51 calculation of dump records per track for SYS1.DUMPxx data sets if the DUMP data set is resident on 3375, 3380 or 3390 DASD.
- HTTPD server installed.
- CATMGT installed. Option 3.7.CM in ISPF.

Changes

- Archiver:
 - ABEND0C4 in Archiver ALTER fixed.
 - Completion message of ALTER fixed.
 - Test of duplicate key in ALTER newname fixed.

- Usermod ZP60043 reworked to fix the DCB= problem if the referenced dataset is cataloged with VOLSER(*****).
- ISPF 3.7.V: package DVTOC updated to V1R0M02 to fix cross edit problems, adding PF1 key to list of PF keys, a PF5 error message and better filter functionality.
- ISPF M.XM and ISPF M.R: package RECVXMIT updated to V0R9M02 to fix cross edit problems.
- OS/360 Sort/Merge for MVS 3.8 updated to Version 1.02 to fix :-
 - Incorrect processing of PL/I F invoked Sort/Merge parameter list resulting in message IER067A being erroneously issued
 - Documentation change for message IER067A
 - 0C4 Abend using the CRCX sorting technique and variable length records caused by incorrect buffer usage calculation
- PDS command package upgraded from 8.6.19.5 to 8.6.20.0.
- RPF upgraded from 1.9.5. to 1.9.6. See RPF 7.5 for the changes.
- The usermods that provide the base MVS 3.8 support for 3375, 3380 and 3390 DASD have been extensively reworked and repackaged with two problems resolved. 3375, 3380 and 3390 DASD volumes are now, by default, set as permanently resident. An incorrect value provided in the Device Characteristics Table (DVCT) for user track calculations and propagated to data returned by the DEVTYPE SVC has been corrected. Some additional usermods, applied to address regression issues caused by later PTFs, have been deleted and replaced by rework of the original usermods. The source for the base MVS 3.8 support for 3375, 3380 and 3390 DASD usermods is provided in data set USERMOD.M023000 with documentation in the TK5 Usermod Directory.

Update 1

New

- Usermod MS00100 has been installed providing new functionality by removing the restriction that Link Library List (LNKLST) data sets must be cataloged in the Master Catalog. Following the name of each data set appearing on a LNKLST record a volume serial number enclosed in parenthesis can be provided to avoid the requirement for the data set to be cataloged in the Master Catalog. The ***** notation for the volume serial number can be used if the data set is resident on the systems residence volume.
- The TSO Logon Pre-Prompt Exit IKJEFLD installed by usermod ZJW0005 has been reworked. IKJEFLD now overrides the TSO UserID UADS entry for Generic Unitname allocations with the generic name of SYSDA. This change avoids TSO allocation issues experienced when a SYS1.UADS data set, brought across from a TK3 or TK4- system, specifies a Unitname that was not supported by TK5. The temporary change in TK5MIG.CNTL(\$RSTUADS) of not copying UADS information for TSO UserIDs HERC01 through to HERC04 from the migrating system to the TK5 system has been removed.
- Packages DFSPC and DALCDS upgraded to V1R2M00 and installed to complete ISPF option 3.7
- Program UXL01 installed, ISPF dialog to display free space of a volume (ISPF 3.7 option X).

Changes

- The Algol F Compiler NOSOURCE option generated incorrect code. This has been resolved.

- The email address provided for Volker Bandke in Hercules tk5.rc script and Netsol source has been updated.
- Incorrect JCL in procedure DUMPEREP has been corrected.
- The ISPF T1 option panel has been changed from 25 lines to 24 lines.
- Package DVTOC (ISPF 3.7) upgraded from V0R9M00 to V1R0M00.
- The MAP3270 package has been upgraded to Version 3.01.
- TSSO load modules moved from SYS1.LINKLIB and SYS1.LPALIB to SYS2.LINKLIB and the INVALID KEYWORD error message issued for every TSO command has been resolved.
- The source code for the TSO command UNITS has been placed in TK5.ASM and the load module in SYS2.CMDLIB rebuilt from the TK5.ASM source.
- TK4* variable names changed to TK5* in the scripts start-herc, start-herc.bat and shutdown.
- TK4- text in SYS1.PARMLIB start- and shutdown members updated to reflect TK5.
- The RPF DSLIST =n(.n) problem has been resolved.
- The NJE38 libraries are renamed from SYS2.NJE38.* to NJE38.*

4. Introduction.

MVS-TK5 is not a new product. It is an evolution and enhancement of MVS-TK3 and MVS-TK4-. After so many years of adhoc changes it was time to rethink and redesign the packaging for TK5 to position it for the future and ease of installing update releases. This has resulted in some considerable changes to the MVS 3.8 environment. The most significant change is the reduction of the number of DASD volumes by moving to 3390 DASD where possible. MVS-TK5 consists of only 15 DASD volumes whereas MVS-TK4- consists of 28 DASD volumes. Future releases of TK5 will only replace 3 DASD volumes making the upgrade process easy to implement for all users to keep current with the latest release of TK5.

5. Overview.

MVS-TK5 contains the following updates:

1. The number of DASD volumes have been reduced from 28 volumes to 15 volumes.
2. The mix of 2314, 3340, 3350, 3375, 3380 and 3390 type DASD volumes has been greatly simplified. MVS-TK5 consists of 12x 3390 volumes, 1x 3380 volume and 2x 3350 volumes.
3. The system residence volume is on a 3390 DASD device.
4. The Master catalog is on a separate 3390 catalog volume. This will not be replaced in a TK5 update release.
5. All the user-created modifications to MVS (the usermods) are in separate libraries.

Many software components enhancing the MVS 3.8 environment are re-packaged and have been updated with new releases

6. Why Migrate to TK5?

TK5 provides benefits to all users. All the latest usermods and community contributed software enhancements are pre-installed making it easy to stay current with all the advances in user contributed software. The downloading and installation effort needed to stay current is no longer an issue. TK5 will be regularly updated to include newly available usermods and software enhancements.

An unprecedented level of documentation is provided with TK5 to document the functionality provided by the installed usermods. Refer to the document TK5 Usermod Directory for a description of every installed usermod. Documentation has also been provided in the doc directory for all the many user contributed software enhancements. The Related Documents Section contains a list of these documents.

Previously released Turnkey system updates replaced volumes and Catalogs regressing user changes. This caused significant disruption to the user's system. TK5 update releases will replace only the updated systems residence volume and the two volumes containing usermod data sets and user contributed programming enhancements. Installing a future TK5 update release will result in minimal or no disruption to the user's environment because usermods and user contributed programming enhancements libraries are isolated to the systems residence volume and two volumes designated for package storage.

TK5 is unique in that for the first time in any MVS 3.8 environment, the systems residence volume can be cloned with a new volume serial and IPLed without impact on catalog entries and configuration specifications in PARMLIB members. This functionality has only previously been available in Operating Systems that superseded MVS 3.8. Users who prefer to install their own usermods will find the new DASD volume allocations and systems residence data set cataloging convention are of real benefit to them.

In the TK5 system all data sets on the system's residence volume are cataloged with a volume serial of *****. Usermods installed in the TK5 MVS 3.8 system dynamically replace the ***** specification within MVS with the volume serial and the device type of the current systems residence volume. Additional usermods installed in TK5 implement the ***** notation for the systems residence volume in SYS1.PARMLIB members where the volume serial for data sets on the systems residence volume must be specified. Masking is now implemented in the VATLSTxx and IEAAPFxx PARMLIB entries allowing only the partial specification of a volume serial to set usage, allocation attributes and APF authorization. The document TK5 Usermod Directory contains further information describing the usermods implementing the ***** systems residence volume notation.

The task of migrating a current system across to a TK5 system will take some effort. In order to minimize the work required a suggested migration strategy is provided in Section 6 Migration Considerations.

When deciding if the task to migrate to a TK5 system is worthwhile it is important to consider that the migration process is a one time only task. As described previously, future TK5 updates can be installed with minimal or no disruption to an installed TK5 system. Thereafter, future TK5 updates will ensure that your system will be continually enhanced with the latest usermods and user contributed software.

The effort of migration will certainly be worthwhile because TK5 offers so many benefits for its users.

7. TK5 Migration considerations for TK3, TK4 and RYO installations

One of the key considerations for the development of TK5 was to simplify the task for users of initially installing TK5 and subsequent TK5 update releases that will follow over time. Installation and update issues have been a problem with all previous Turnkey releases. Prior to TK5 the standard distribution method was to replace all DASD volumes. This meant that all User Catalogs were also replaced with each update. TK5 takes an entirely new approach to greatly simplify TK5 updates after the initial installation of TK5. This section will discuss how to migrate an existing system to a TK5 system to take advantage of the enhanced TK5 design features.

TK5 Volume Allocations

Referring to the section on DASD Volumes, the actual IPLable MVS 3.8 system is contained on 4 volumes being the systems residence volume TK5RES, the Master Catalog volume TK5CAT, the JES2 Spool volume SPOOL0 and the paging volume PAGE00. There is also the MVS 3.8 DLIB volume TK5DLB that is not required for an IPL but provided for the installation of maintenance and enhancements.

Community developed MVS usermods, installed via SMP and user contributed programming enhancements installed in the TK5 system are allocated on volumes TK5001 and TK5002. Volumes TSO001, TSO002 and TSO003 are allocated for the storage of permanent user data sets. Volumes WORK01 through to WORK04 are available for temporary data sets, User data sets from the user's currently installed system should, ideally, be re-located to the TSO00x volumes in the migration process.

Planning for Migration to TK5

The steps provided in this section assume a typical TK3 or TK4- configured system. If the current system is best described as a RYO system then the suggested migration steps will, at best, be only guidelines on how to migrate a RYO system to TK5.

The first task is to take inventory of the data sets on the current running system. An IDCAMS listing of the Master Catalog and the two usually present User Catalogs will provide useful input for planning the migration process.

```
//T1LC JOB 111,TA,MSGCLASS=C ←--- CUSTOMIZE
//LISTCAT EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
LISTCAT /* MASTER CATALOG */
LISTCAT CATALOG(SYS1.UCAT.TSO)
LISTCAT CATALOG(SYS1.UCAT.MVS)
/*
```

The Master Catalog listing will show a number of ALIAS entries and a large number of non VSAM data set entries. There may also be additional User Catalogs listed other than SYS1.UCAT.MVS and SYS1.UCAT.TSO. The non VSAM entries for data sets with HLQs of SYS1 and SYS2 do not need to be migrated as these entries, and their data sets, will be present in the TK5 Master Catalog and the TK5 systems volumes. Data sets cataloged in the Master Catalog with a HLQ other than SYS1 or SYS2 will need to be migrated to the TK5 system and preferably not cataloged in the TK5 Master Catalog.

It is specifically the ALIAS entries, listed in the Master Catalog, that need attention as they identify data sets that, potentially, will require migration to TK5 Catalogs and volumes. Again, much of the work required to achieve this has already been done. The TK5 system already has pre-installed all popular and well-known user contributed software enhancements. These software enhancements have their own unique ALIAS to identify their cataloged data sets. ALIAS entries for system support data sets relating to EREP and SMF have already been setup in the TK5 system. The table below lists the ALIAS entries for the associated data sets that have been included in the TK5 system.

ALGOL	BREXX	CALNDR2	CATMGT	CCOMPR	CLGLST	CUTIL00
DALCDS	DFSPC	DSCOPY	DUCBD	DUCHESS	DVTOC	EREP
EXH	FSE	FSI	HTTPD	IBMUSER	ISPOPT5	INSTALL
INT	JCC	KLINGON	LISTDSJ	MAP3270	MVS	NJE38
PASCAL	PDPCLIB	PL360	PUTCARD	RCQCAL	RECVXMIT	RPF
RPFPROF	SCRIPT	SIMULA	SMF	SORT	TK5	TK5MIG
USERMOD	WATFIV					

Table of ALIAS entries in the TK5 Master Catalog

Additionally, ALIAS entries for TSO UserIDs HERC01, HERC02, HERC03 and HERC04 have been provided in the TK5 system. However, the data sets associated with these TSO UserIDs are resident on the current system and therefore will need migration to the TK5 system. This equally applies to any other TSO UserIDs, and their associated data sets, that may have been created in the current system.

Catalog listings for SYS1.UCAT.MVS and SYS1.UCAT.TSO will contain many non VSAM data set entries with HLQs matching the ALIAS entries listed in the above table. The data sets associated with these ALIAS entries, listed in the above table, except for the data sets associated with the TSO UserIDs, do not need migration as they are already present in TK5.

The Catalogs SYS1.UCAT.MVS, SYS1.UCAT.TSO and any User Catalogs identified in the Master Catalog listing may contain user allocated VSAM data sets that require migration. An example being the VSAM data set for the Archiver application. Each VSAM data set will require specific processing prior to migration.

Some users may have additional DASD volumes containing data sets to support specific user projects or collections of data. These data sets may have been cataloged in the usual SYS1.UCAT.MVS or SYS1.UCAT.TSO User Catalogs or an ALIAS entry may have been created to relate to a User Catalog allocated on one of the additional DASD volumes. Identify the ALIAS entries that relate to these User Catalogs as they will need to be re-established in the TK5 Master Catalog. Examples of this would be the volumes containing the MVS source code data sets and the CBT data sets where these data sets are cataloged in their own User Catalogs.

The result of taking an inventory of the current system should be a list containing:

1. All TSO UserIDs in the system including HERC01, HERC02, HERC03 and HERC04
2. All HLQs, identifying data sets, not listed in the above table of TK5 ALIAS entries or not prefixed with a TSO UserID.

3. All application VSAM data sets that require migration.
4. All additional DASD volumes.
5. All ALIAS entries relating to any additional User Catalogs and the name of these User Catalogs (if present).

The data sets associated with the TSO UserIDs and the HLQs unique to the current system will require migration to the TK5 system. Additional volumes will need to be brought online to the TK5 system with their User Catalogs imported and their related ALIAS entries defined in the TK5 Master Catalog.

Migrating datasets from pre-TK5 systems

There are many techniques available to migrate data sets from the current MVS 3.8 system, whether it is an MVS Turnkey system, or a user-built RYO MVS system. The most appropriate technique is the one that requires the least amount of preparation and also less likely to fail to migrate all the required data sets. The technique recommended therefore is to use the DSSDUMP utility program, contributed by Gerhard Postpischil, to dump all the data sets that need to be migrated to a tape volume. Then use the DSSREST utility program, contributed by Charlie Brint, to restore the data sets from the dump tape volume into the TK5 system. These utility programs are already installed in TK4- and TK4 DASD Rollup systems. For other systems, where DSSDUMP is not installed, an aws file, dss001.aws, is provided in the tape directory to install DSSDUMP in the current system to implement the migration process. An example jobstream to install the DSSDUMP utility program is provided in Appendix 1.

In systems where RAKF is installed, the TSO UserID HERC01 should be used to submit all the jobs identified below because it has the Operations Authority required for system wide data set access.

Step 1 (Optional for VSAM Data Set Migration).

The DSSDUMP utility program will not process VSAM data sets so every VSAM data set that requires migration to the TK5 system will need to be exported, on the current system, to a sequential data set prior to running DSSDUMP. A sample job is provided below.

```
//HERC01DP JOB (SYS), 'DUMP VSAM',MSGCLASS=X,NOTIFY=HERC01
//DUMP EXEC PGM=IDCAMS,REGION=4096K
//SYSPRINT DD SYSOUT=*
//DUMP DD DSN=HERC01.VSAMDUMP,UNIT=3390,
// SPACE=(CYL,(20,20),RLSE),
// DISP=(NEW,CATLG,DELETE)
//SYSIN DD *
EXPORT clustname OUTFILE(DUMP) TEMPORARY
/*
```

The TEMPORARY parameter must be specified otherwise the VSAM data set will be deleted from the current system. Select a HLQ for the sequential exported data set that will be specified in the DSSDUMP control statements. A TSO UserID HLQ such as HERC01 is ideal for this purpose. Allocating the sequential export data set on an existing 3390 volume will provide optimum performance.

Step 2 SYS1.UADS Migration for TSO UserIDs.

To migrate all TSO UserIDs in the current system, with their configuration settings, across to the TK5 system the SYS1.UADS data set will need to be brought across to the TK5 system. Use IEBCOPY to copy the SYS1.UADS data set to a data set that will be selected for dumping by DSSDUMP. Select a HLQ for the data set that will be specified in the DSSDUMP control statements. A TSO UserID HLQ such as HERC01 is ideal for this purpose. Example JCL is provided below.

```
//HERC01D1 JOB (SYS), 'DUMP SYS1.UADS',MSGCLASS=X,NOTIFY=HERC01
//DUMP1 EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=*
//IN DD DSN=SYS1.UADS,DISP=SHR
//OUT DD DSN=HERC01.UADS,UNIT=3390,SPACE=(CYL,(2,,10)),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),
// DISP=(NEW,CATLG,DELETE)
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
```

Step 3 (Only for users migrating from a system with RAKF installed).

To migrate the current RAKF security configuration settings and passwords from the current system to the TK5 system the SYS1.SECURE.CNTL data set must be brought across to the TK5 system. Use IEBCOPY to copy the SYS1.SECURE.CNTL data set to a data set that will be selected for dumping by DSSDUMP. The TSO UserID HERC01 must be used to submit this job as RAKF requires the TSO UserID to have the RAKFADM Profile to access SYS1.SECURE.CNTL. Example JCL is provided below.

```
//HERC01D2 JOB (SYS), 'DUMP RAKF',MSGCLASS=X,NOTIFY=HERC01
//DUMP2 EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=*
//IN DD DSN=SYS1.SECURE.CNTL,DISP=SHR
//OUT DD DSN=HERC01.SECURE.CNTL,UNIT=3390,SPACE=(CYL,(2,,10)),
// DCB=(RECFM=FB,LRECL=80,BLKSIZE=27920),
// DISP=(NEW,CATLG,DELETE)
//SYSIN DD *
COPY INDD=IN,OUTDD=OUT
/*
```

Step 4 Prepare DSSDUMP Control Statements and run DSSDUMP.

On the current system prepare the input jobstream for the DSSDUMP job from the list prepared from the inventory of the current system. The control statements for DSSDUMP will need to be coded to identify:

1. All TSO UserIDs in the system including HERC01, HERC02, HERC03 and HERC04
2. All HLQs, identifying data sets, not listed in the above table of pre-installed TK5 ALIAS entries or not prefixed with a TSO UserID listed above.

Note that HLQs that are related to User Catalogs on additional volumes should not be coded as input to DSSDUMP as the User Catalog will be imported into the TK5 system. An example of a jobstream and control statements for DSSDUMP is below. The use of a period after the HLQ on the DSSDUMP control statements coded requests DSSDUMP to select and dump all data sets found in the catalog with that HLQ.

```

//HERC01DP JOB (SYS), 'DSSDUMP', CLASS=A, MSGCLASS=X, NOTIFY=HERC01
//*
//* SAMPLE DSSDUMP JCL AND CONTROL STATEMENTS
//*
//DSSDUMP EXEC PGM=DSSDUMP, REGION=4096K
//STEPLIB DD DSN=SYS2.DSSLIB, DISP=SHR
//SYSPRINT DD SYSOUT=*
//TAPE DD DSN=HERC01.DUMP.DATA, VOL=SER=DUMP01,
// UNIT=TAPE, DISP=(NEW, KEEP)
//SYSIN DD *
*
* ALL TSO USERIDS
*
* CODE A . AFTER THE HLQ TO SELECT ALL DATA SETS WITH
* | THE HLQ FOUND IN THE CATALOG
* |
* V
DUMP HERC01.
DUMP HERC02.
DUMP HERC03.
DUMP HERC04.
DUMP MYTSOID.
*
* HLQS, IDENTIFYING DATA SETS REQUIRED TO BE MIGRATED
* (IF PRESENT)
DUMP MYPROJ.
/*

```

Before submitting the job create a new tape volume using the HercGUI utility HETINIT or identify a PC file to be mounted on a Hercules tape drive when requested by the system. This tape volume will contain the output from the dump process later needed in the restore steps.

Submit the job and review the resulting output. DSSDUMP will list each data set found with the specified HLQ and report on the success of the dumping operation. Running DSSDUMP does not change any data on the current running system. Therefore, DSSDUMP can be run multiple times if a particular HLQ has been missed or should not have been included in the DSSDUMP control statements.

Refer to the document Guide to Using DSSDUMP and DSSREST for further information if specific data set filtering is required to exclude some data sets.

Now it is time to shut down the current system.

Step 5 Start TK5.

Start TK5. See the Section Running the TK5 Environment for startup instructions. At this stage none of the data sets associated with each TSO UserID are available in the TK5 system. A data set named TK5MIG.CNTL has been allocated on TK5001 and is available for use in the data set restoration process.

The restoration process is a multi-step process.

Step 6 Define ALIAS Entries.

If there were any TSO UserIDs other than HERC01 through HERC04 included in the dump process or if there were any other HLQs included in the dump process then ALIAS entries must be defined the TK5 Master Catalog for those TSO UserIDs and data set HLQs before the restoration steps are run. Either issue DEFINE commands in a TSO session or submit a IDCAMS job to update the TK5 Master Catalog. An example is provided below.

```
//HERC01AL JOB (SYS), 'DEFINE ALIASSES',MSGCLASS=X,NOTIFY=HERC01
//IDCAMS EXEC PGM=IDCAMS,REGION=4096K
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
  DEFINE ALIAS(NAME('MYTSOID') RELATE('SYS1.UCAT.TSO'))
  DEFINE ALIAS(NAME('MYPROJ') RELATE('SYS1.UCAT.TSO'))
/*
```

Step 7 Run DSSREST JCL Generation.

Run the utility program DSSREST to generate the JCL that will actually restore the dumped data sets. Member \$GENJCL in TK5MIG.CNTL provides sample JCL for this step. It is listed in Appendix 2. The DSSREST generated JCL will be written to TK5MIG.CNTL(\$RESTORE). This job will read the dump tape generated in Step 4 to generate the data set restoration JCL.

Step 8 Edit DSSREST Generated JCL.

Edit the DSSDUMP generated TK5MIG.CNTL(\$RESTORE) member. A sample of part of a jobstream generated by DSSREST is provided below.

```
//T1RRES JOB TIME=1440
//RESTORE EXEC PGM=DSSREST,REGION=8000K,TIME=1440,
// PARM='*'
//STEPLIB DD DISP=SHR,DSN=SYS2.DSSLIB
//SYSPRINT DD SYSOUT=*
//REPORT DD SYSOUT=*
//SYSUT1 DD DISP=OLD,DSN=DSSDMP,
// UNIT=TAPE,VOL=SER=(DUMP01),
// LABEL=(1,SL)
/*
//SYSUT2 DD DSN=HERC01.TEST.ASM, /*1*/
// DISP=(,CATLG,DELETE),FREE=CLOSE,DCB=(DSORG=PO,
// RECFM=FB,LRECL=80,BLKSIZE=19040),
// SPACE=(CYL,(1,1,1)),
// UNIT=3390 VOL=SER=MVSCAT
//SYSUT2 DD DSN=HERC02.COMDPROC, /*2*/
// DISP=(,CATLG,DELETE),FREE=CLOSE,DCB=(DSORG=PO,
// RECFM=FB,LRECL=80,BLKSIZE=19040),
// SPACE=(CYL,(1,1,1)),
// UNIT=3390 VOL=SER=MVSCAT
//SYSUT2 DD DSN=HERC02.TEST.ASM, /*3*/
// DISP=(,CATLG,DELETE),FREE=CLOSE,DCB=(DSORG=PO,
// RECFM=FB,LRECL=80,BLKSIZE=19040),
// SPACE=(CYL,(1,1,1)),
// UNIT=3390 VOL=SER=MVSCAT
//SYSUT2 DD DSN=HERC03.COMDPROC, /*4*/
// DISP=(,CATLG,DELETE),FREE=CLOSE,DCB=(DSORG=PO,
// RECFM=FB,LRECL=80,BLKSIZE=19040),
// SPACE=(CYL,(1,1,1)),
// UNIT=3390 VOL=SER=MVSCAT
```

The JOB statement will require editing to conform to TK5 standards. The JCL generated does not specify the target volume for each data set. Instead, it provides a comment VOL=SER=xxxxxx identifying the volume from where the data set was originally dumped. To restore the datasets to the TSOxxx volumes in TK5, change, on all the SYSUT2 DD statements, every UNIT= parameter to UNIT=TSO. Submit this edited JCL. This job will, again, read the dump tape generated in Step 4 to allocate and restore the contents of the data sets. DSSREST will generate a warning message that data sets have been restored to a DASD unit type different from where they were dumped. This can be ignored as the 3390 track capacity is greater than or equal to any of volumes used for storage of the dumped data sets.

At the completion of this job all the selected data sets should now be successfully migrated to the TK5 system

Step Update TK5 SYS1.UADS.

The SYS1.UADS data set provided in the initial TK5 distribution needs to be replaced with the SYS1.UADS data set brought across from the previous system. The TSO ACCOUNT command, subcommand SYNC, must be run to synchronise the newly updated SYS1.UADS data set with SYS1.BROADCAST. Example JCL is provided in TK5MIG.CNTL(\$RSTUADS) and also listed below. In this example the UserIDs are not replaced.

```
//HERC01R1 JOB (SYS), 'RESTORE SYS1.UADS',MSGCLASS=X,NOTIFY=HERC01
//RESTUADS EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=*
//IN DD DSN=HERC01.UADS,DISP=SHR
//OUT DD DSN=SYS1.UADS,DISP=SHR
//SYSIN DD *
COPY INDD=((IN,R)),OUTDD=OUT
/*
//ACCOUNT EXEC PGM=IKJEFT01
//SYSTSPRT DD SYSOUT=*
//SYSUADS DD DSN=SYS1.UADS,DISP=SHR
//SYSLBC DD DSN=SYS1.BROADCAST,DISP=SHR
//SYSTSIN DD *
ACCOUNT
SYNC
END
/*
```

Step 10 (Only for users migrating from a system with RAKF installed).

For RAKF users, the SYS1.SECURE.CNTL data set from the previous system needs to be brought into the TK5 system.

```
//HERC01R1 JOB (SYS), 'RESTORE RAKF',MSGCLASS=X,NOTIFY=HERC01
//REST2 EXEC PGM=IEBCOPY,REGION=1024K
//SYSPRINT DD SYSOUT=*
//IN DD DSN=HERC01.SECURE.CNTL,DISP=SHR
//OUT DD DSN=SYS1.SECURE.CNTL,DISP=SHR
//SYSIN DD *
COPY INDD=((IN,R)),OUTDD=OUT
/*
```

The TSO UserID HERC01 must be used to submit this job as RAKF requires the user to have the RAKFADM Profile to update the SYS1.SECURE.CNTL data set. Complete the migration process for RAKF by issuing the command S RAKFUSER on the MVS TK5 Master Console to update the running RAKF system. Acknowledgement messages of the update should appear on the Master Console. Example JCL is provided in TK5MIG.CNTL(\$RSTRAKF).

Step 11 Import User Catalogs.

For those users who have additional volumes of data sets such as MVS source data sets or CBT data sets the migration process is very easy. Update the Hercules configuration file used for TK5 to bring these volumes online to the TK5 system. If the volumes contain their own User Catalogs then run an IMPORT CONNECT OBJECTS command, either in batch or via TSO to connect the User Catalog to the TK5 Master Catalog. After the User Catalog has been connected to the TK5 Master Catalog then DEFINE the relevant ALIAS entries to the connected User Catalogs. An example of this for the CBT data sets is provided below.

```
//HERC01CB JOB (SYS), 'IMPORT USERCAT CBT',MSGCLASS=X,NOTIFY=HERC01
//IDCAMS EXEC PGM=IDCAMS,REGION=4096K
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
IMPORT CONNECT OBJECTS ( -
    SYS1.UCAT.CBT -
    DEVICETYPE (3350) -
    VOLUMES (CBTCAT) )
DEFINE ALIAS(NAME('CBT') RELATE('SYS1.UCAT.CBT'))
DEFINE ALIAS(NAME('CBTCOV') RELATE('SYS1.UCAT.CBT'))
/*
```

If the data sets on the additional volumes do not have their own Catalog then they will need to be individually re-cataloged in the TK5 system using RFE or RPF.

Step 12 (Optional for VSAM Data Set Migration).

If there were any VSAM data sets that were exported to sequential export data sets, as identified in Step 1, then they need to be imported into the TK5 system. A sample job is provided below. This job will IMPORT a VSAM data set by dynamically allocating it on the TSO001 volume and cataloging it into the SYS1.UCAT.TSO User Catalog.

```
//HERC01RS JOB (SYS), 'RESTORE VSAM',MSGCLASS=X,NOTIFY=HERC01
//RESTORE EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//DUMP DD DSN=HERC01.VSAMDUMP,
// DISP=OLD
//SYSIN DD *
IMPORT INFILE(DUMP) OUTDATASET(clustername) INTOEMPTY -
    OBJECTS((clustername) VOLUMES(TSO001))) -
    CATALOG(SYS1.UCAT.TSO)
/*
```

Step 13 Identifying and creating TSO UserID's in the TK5 System.

As TK5 has RAKF installed, all TSO UserIDs must be identified to RAKF. This is an essential requirement for users migrating to TK5 from a non RAKF system. To do this add a record in member USERS in SYS1.SECURE.CNTL for each TSO UserID. A sample record is shown below:

```
MYTSOID USER password N
```

The format of the record is defined below:

Column	Description
1-8	TSO UserID
10-17	User group (installation defined)
18	Asterisk '*' multiple user groups exist for this userid.
19-26	Password
28	Operations Authority (Y or N). Always allow access 1)
31-50	Comment field (used by "IBM RACF").

Operations Authority can be compared with privilege "special operations" in IBM's RACF.

After member USERS in SYS1.SECURE.CNTL has been updated then update RAKF by issuing the command S RAKFUSER on the MVS TK5 Master Console. Acknowledgement messages of the update should appear on the Master Console

New TSO UserIDs can also be created in the TK5 system by running ADDUSRON in SYS2.JCLLIB by specifying the new TSO UserID and whether the TSO UserID is for a

system programmer or a user. The TSO UserID is entered into SYS1.UADS and a SYNC command is issued to synchronize the SYS1.UADS data set SYS1.BROADCAST.

New TSO UserIDs can also be added with job ADDUSER in SYS2.JCLLIB. This job creates a TSO UserID, deletes all datasets with a HLQ matching the TSO UserID and then allocates all necessary TSO datasets on the TSO00x volumes.

All newly created TSO UserIDs will then have to be identified to RAKF as described above.

The migration process is now complete. You have a new TK5 system to enjoy.

8. Catalogs.

The following VSAM catalogs are present in TK5.

Catalog name	Volume	Description/function
SYS1.MCAT.TK5	TK5CAT	The MVS Master Catalog, containing all the system data sets, ALIAS entries and their associated User Catalogs.
SYS1.UCAT.TSO	TSO001	Catalog for all the user datasets on the TSOxxx volumes
SYS1.UCAT.TK5	TK5001	Contains all the contribution, usermod and install datasets. This Catalog will be replaced in future TK5 update releases
SYS1.UCAT. ICOM	INT001	Contains the Intercomm libraries and datasets

The only Catalog that will be replaced with future TK5 updates is SYS1.UCAT.TK5. None of the other three Catalogs will be replaced by TK5 updates so any entries placed in these Catalogs will not be impacted by future TK5 updates.

9. DASD volumes.

MVS-TK5 consists of the following DASD volumes.

Volume	Device Type	Unit Addr	Description
TK5RES	3390	390	MVS system residence volume IPL volume
TK5CAT	3390	391	MVS Master Catalog volume
TK5DLB	3390	392	MVS system distribution libraries
TK5001	3390	298	Package volume 1
TK5002	3390	299	Package volume 2
PAGE00	3350	248	Page volume
SPOOL0	3350	249	SPOOL volume for JES2
TSO001	3390	190	TSO volume 1 for user data sets
TSO002	3390	191	TSO volume 2 for user data sets
TSO003	3390	192	TSO volume 3 for user data sets
WORK01	3390	290	Work volume 1 for temporary data sets
WORK02	3390	291	Work volume 2 for temporary data sets
WORK03	3390	292	Work volume 3 for temporary data sets
WORK04	3390	293	Work volume 4 for temporary data sets
INT001	3380	380	Intercomm volume

Only the highlighted volumes will be replaced when an update release is provided for TK5. To minimize any disruption or loss of data when installing a future TK5 update users should avoid allocating any data sets on the TK5RES volume.

The TK5DLB volume is a one-time replacement requirement for TK5 Update-2.

10. Installation.

Installing the complete MVS Turnkey 5 system.

MVS-TK5 is available on <https://www.prince-webdesign.nl/tk5>

Installation of MVS-TK5 is easy. Execute the following steps:

- Download the complete distribution from the website listed above, preferably into the root directory of a disk in Windows or the root directory of `/home/userid` in Linux.
- For Linux: add the execute attribute with the command `chmod +x mvs-tk5.zip`.
- Unzip the file, creating a directory with the name of `mvs-tk5`.
- Select the newly created directory `mvs-tk5`.
- For Linux: set the permissions to execute with the command `chmod -R +x *`.
- Select the unattended directory in the `mvs-tk5` directory.
- Run the script `./set_console_mode` for Linux or `set_console_mode.bat` in Windows.

Install an update on a previously installed TK5 system.

All updates are cumulative as they include all previous updates so only the latest available update need be installed to upgrade a TK5 system to the most current level.

The latest update is available at <https://www.prince-webdesign.nl/tk5>

- Download the latest Update into the `mvs-tk5` directory.
- For Linux: add the execute attribute with the command `chmod +x mvstk5-updaten.zip`. where *updaten* is the name of the latest update.
- Unzip the downloaded file `mvstk5-updaten.zip` in place. Accept Replace Files if prompted.
- For Linux: select the directory `mvs-tk5` and execute the command `chmod -R +x *`.
- Remove unneeded files, for Unix run the script `cleanup`, for Windows run `cleanup.bat`.

MVS-TK5 is now updated and ready to run.

Post installation update task

Start the system (see next chapter) and submit the provided job to update catalog entries in the Master Catalog to reflect changes and additions made to the system by the update.

Run the command `devinit 00c update.txt` on the Hercules console to submit the update job. Job HERC01UN will be submitted to update the Master Catalog.

11. Running the TK5 environment.

Start MVS normally.

Go to the directory `mvs-tk5` and run the script `./mvs` for Linux or `mvs.bat` in Windows. This script will open a command prompt and Hercules will start. An IPL with CLPA from unit 390 (TK5RES) will take place. The MVS console is embedded in the Hercules command window. You can enter MVS commands with the prefix `'/'` (forward slash).

Along with the IPL, you should start a 3270 emulator like `x3270`, `w3270` or Vista `TN3270` from Tom Brennan. Start this emulator with the IP address of the Hercules console (mostly `'localhost'`) and port number 3270. The network solicitor screen will appear.

Now you can logon into TSO with `HERC01`, `HERC02` (both with password `CUL8TR`) and `HERC03` or `HERC04` (both with password `PASS4U`).

`HERC01` and `HERC02` are identified to `RAKF` as privileged users. Both have the Operations Authority while `HERC01` also has the `RAKFADM` Profile to administer `RAKF`. `HERC03` and `HERC04` are normal TSO users.

Start MVS with a minimal configuration.

If on an x86 based Hercules host the minimal instead of the default configuration is desired, set environment variable `REP101A` to the value `specific` (i.e. `export REP101A=specific` on Linux, or `set REP101A=specific` on Windows) before starting TK5 or enter the respective command into your `mvs-tk5/local_conf/tk5.parm` file.

In this case the IPL message `IEA101A` will be replied with `R 00,CMD=02`. `TCAM` (jobname `TP`), `MF1`, `JRP` and `SNASOL` won't be started and the `NCP`'s won't be loaded.

If you want to go back to the normal configuration, just delete `tk5.parm` in `mvs-tk5/local_conf`. or set the variable `REP101A` to the value `default` with `export REP101A=default` for Linux or `set REP101A=default` for Windows.

Shutdown MVS.

Shutting down MVS is very easy. Logon to TSO with `HERC01` or `HERC02`, exit `ISPF` and issue the command `SHUTDOWN` in `READY` mode and log off. The shutdown is fully automated, and the Hercules window will close after shutting down MVS.

If you want to shutdown manually. Logoff from TSO and enter the following commands:

- `/f bsppilot,shutnow` This command stops all the running tasks in the system except `JES2`.
- After the message `$HASP000 ALL AVAILABLE FUNCTIONS COMPLETE` issue the command `/$PJES2`. `JES2` will stop in a few seconds.
- Issue the command `/QUIESCE` to stop the CPU's in the system.
- Issue the Hercules command `stopall`.
- Issue the Hercules command `sysclear`. The response is "sysclear complete".
- Enter `exit` to close the Hercules command window.

12. Installed packages.

Many very useful enhancements, contributed by the mainframe community, have been installed in TK5 to greatly improve the MVS 3.8 experience.

Archiver

Archiver is a component written by Rick Fochtman and maintained by Rob Prins. It provides the facility to archive different types of data into a single VSAM cluster.

For more information refer to the manual "ARCHIVER 6.1.4 User's Guide"

BREXX/370

This enhancement is contributed by Mike Großmann and Peter Jacob. BREXX is a nearly fully compatible clone of IBM's REXX. It's a little more basic but have many functionalities compared with REXX.

BREXX/370 uses the same syntax and the same DD Names. If you create a partitioned dataset with RECFM=VB and LRECL=255 and allocate DD Names SYSEXEC and SYSUEXEC and allocate the BREXX dataset BREXX.VxRyMz.RXLIB to DD Name RXLIB, you have a valid (B)REXX environment.

BREXX comes with many examples collected in BREXX.VxRyMz.SAMPLES.

DSSDUMP and DSSREST

The DSSDUMP utility program, contributed by Gerhard Postpischil, dumps data sets in a format compatible with the DFSMSdss component utility program ADRDSSU provided in the MVS successors MVS/ESA, OS/390 and z/OS, with the exception that it does not dump VSAM data sets. DSSDUMP has powerful selection and exclusion control statements with masking functions that filter the data sets selected for dumping.

The DSSREST utility program, contributed by Charlie Brint, will restore dumped data sets from either DSSDUMP or ADRDSSU, again with the exception of VSAM datasets. DSSREST restores datasets in two stages. In the first stage DSSREST generates the JCL to run the second DSSREST stage that actually restores the selected data sets.

Used in combination, DSSDUMP and DSSREST provide a powerful and flexible facility to move or relocate data sets across DASD volumes and systems with minimal effort.

While DSSDUMP and DSSREST are not TSO command processors, HELP members are provided to assist in the preparation of their JCL and control statements. Enter 'HELP DSSDUMP' or 'HELP DSSREST' in a TSO session for more information.

DSSDUMP and DSSREST are installed in SYS2.DSSLIB, which is APF authorized. The installation JCL and additional members resides in SYS2.DSSCNTL.

EDIT

If ETPS is not available or the preference is for another method to make emergency changes then subsystem EDIT is available. Like ETPS, being a subsystem, EDIT does not need JES2.

EDIT uses the MVS Master Console for input and output. EDIT is a line-editor that interacts using WTO's and WTOR's to communicate via the MVS Master Console.

Similar to ETPS, EDIT requests an authorized user and password. Use the same logon credentials as for TSO UserID HERC01.

The document, EDIT 3.3 User's Guide in the doc directory, provides further information on the operation of EDIT.

ETPS

The worst nightmare of every systems programmer becomes a reality when JES2, VTAM or TSO fail to start because of some JCL error or missing APF authorization.

Emergency Tele Processing System (ETPS) is here to save the day by providing an edit facility to quickly correct the error. The component is installed as a subsystem so JES2 is not needed.

ETPS is a fullscreen stand-alone application that can be used to edit libraries. The only resource needed is a 3270 model 2, 3 or 4 terminal. As a stand-alone application ETPS does not use VTAM. However, it is recommended to shut down VTAM, if it was running, to avoid any clash with 3270 device allocations. The default terminal used by ETPS is unit address 0C0, configured as a 3270 model 4. The model and the unit address can be overridden in the start command. An example of the start command is below:

```
S  ETPS                                (with default terminal on 0C0 and a 3270 model 4).  
    OR  
S  ETPS ,T=2 ,U=0C1                    (with terminal on 0C1 and a 3270 model 2)
```

After startup a welcome screen appears on the selected terminal. A logon is required. Use the logon credentials as for TSO UserID HERC01.

HTTPD

HTTPD is a basic webserver running on MVS 3.8J. This component can be started with S HTTPD on the MVS Operator console. The default port, where HTTPD listens to is 8080.

The webpages are stored in HTTPD.HTML. This is a partitioned dataset with a record length of 255 and a record format of variable blocked.

These html members can be created or modified with RPF or REVIEW/RFE.

The name of the member is the url. E.g., member JESST can be called with <http://address-of-mvs-system:8080/jesst.html>

Intercomm

TK5 provides a 3380 volume with volume serial of INT001 dedicated to the component Intercomm. This is a CICS-like application, that provides an online interactive environment to run transactions written in COBOL or Assembler.

Unlike applications like CICS or IMS, Intercomm is started by submission of a job and is not run as a started task. See member RUNICOM in SYS2.JCLLIB.

Stop Intercomm by replying 'NRCD' to the outstanding WTOR message:

```
00 INTVT034R INTERCOM ENTER INTERCOMM MESSAGES USING THIS ID
```

For more information refer to the Intercomm manuals listed in the Related Documents Section.

ISPF

ISPF is the TSO dialog manager. IBM's ISPF is a licensed Program Product. To provide similar functionality for MVS 3.8 users Wally Mclaughlin developed his own version of ISPF with compatible functionality.

Wally's ISPF is a dialog manager providing table services, panel functions (such as creating user panels), and integrated CLIST support. It does not have PDF functionality such as EDIT, Browse, DSLIST and OUTPUT functions. The PDF functionality is fulfilled by REVIEW/RFE and RPF.

NJE38

Network Job Entry is a standard component of MVS/ESA and its successors. To provide similar functionality for MVS 3.8 users Bob Polmanter has developed NJE38 to enable running jobs across an MVS network. When NJE38 is configured, jobs can be run and output received across several MVS 3.8 systems.

For a single system environment, the NJE component of NJE38 is not required. However, to facilitate transferring data sets across an NJE environment Bob provided the TSO commands RECEIVE and TRANSMIT that can operate independently of NJE38. Using these commands XMI format files can be imported into an MVS system with the RECEIVE command and XMI format files created with the TRANSMIT command (alias XMIT) can be exported out of an MVS system. The syntax of the NJE38 provided TRANSMIT and RECEIVE commands are compatible with the same commands provided by TSO/E.

OS/360 Sort/Merge for MVS 3.8

OS/360 Sort/Merge for MVS 3.8 is a major enhancement from the version distributed with OS/360 Release 21. It has many new features and enhancements. The Sort/Merge Program now supports intermediate storage on all DASD unit types that are supported by MVS 3.8. The geometry and track capacity of all DASD unit types are recognized and utilized. To further enhance the usability of the Sort/Merge Program SORTWKdd data sets used for intermediate storage can now be dynamically allocated by the Sort/Merge Program. The DASD space allocated for each data set will be calculated by the Sort/Merge Program based on information provided on control statements, the size of the input data set and installation set defaults. The DASD unit type selected for dynamic allocation can be specified for each sort operation or default to an installation defined unit type.

Further information and details on other enhancements can be found in the documents OS/360 Sort-Merge for MVS 3-8 Application Programming Guide and OS/360 Sort-Merge for MVS 3-8 Installation Customization and Diagnosis Guide.

PDS command package

PDS is a TSO command processor, contributed by John Kalinich, that provides extensive management facilities for PDS data sets. A powerful set of subcommands, appropriate for source libraries or load module libraries, can modify or enter data in PDS directory entries or in the actual PDS members. Further changes can be made to PDS directory entries or PDS members by PDS subcommands directly invoking other commands, like REVIEW, RPF, FSE, AMBLIST, IEBCOPY and many other utilities.

A list of the PDS subcommands is provided below:

```
SUBCOMMANDS: ATTRIB  ALIAS  AMBLIST  CHANGE  COMPARE  COMPRESS  CONTROL
                COPY   CONDEND  DISPLAY  DCF      DIRENTRY  DELETE    DSNAME
                DSPRINT DISASM  ASMD     END      EXEC      FIND      FIXPDS
                FSE    HELP   HISTORY  IF       LIST     LOAD      MAP
                MATCH  COMPDIR MEMBERS  OPTIONS  OFFLOAD  OUTCOPY   PATTERN
                PRINTOFF RECALL  RENAME  REPLACE  REPRO    RESTORE   REVIEW
                SMPGEN SUBMIT  SUBLIST TIME     TSO      TSOEDIT  TSOLIST
                USAGE  VERIFY  VPSPRINT
```

Enter 'HELP PDS' in a TSO session for more information.

RAKF

RAKF is a security component providing functionality similar to IBM's RACF or CA-ACF2. RAKF is a basic security product and is controlled by 2 members in SYS1.SECURE.CNTL, and member RAKFINIT in SYS1.PARMLIB.

Member USERS identified the users that can be either a TSO UserID or a started task.

Member PROFILES contains the access rights for datasets and other resources.

Both members can be updated by TSO user HERC01. TSO UserIDs HERC01 and HERC02 have all rights (like SPECIAL in RACF or SECURITY in ACF2).

Macro driven programming interfaces to RACF such as RACINIT and RACHECK are compatible with RAKF.

For more information concerning RAKF, refer to the RAKF User's Guide in the doc directory

REVIEW/RFE

Greg Price develops and maintains REVIEW/RFE to provide most of the PDF functionality like EDIT (ISPF option 2), Browse (ISPF option 1), Library (ISPF option 3.0), Move/Copy (ISPF option 3.3), DSLIST (ISPF option 3.4), Reset (ISPF option 3.6) and OUTLIST (ISPF option 3.8).

REVIEW can be started with the command RFE in the TSO READY mode which launches the Review Front End (RFE).

RPF

Rob's Programming Facility (RPF) is developed and maintained by Rob Prins. RPF has a similar user interface to RFE and provides PDF functionality including EDIT, Browse, RESET, Library, Move/Copy, DSLIST and OUTLIST functions. Additionally, RPF provides the SEARCH function to search for strings in sequential or partitioned datasets and an interface to ARCHIVER.

RPF is available in ISPF option R (for EDIT, Browse, Library and RESET) and in ISPF option 3.4R for the DSLIST function.

RPF can also be started in TSO READY mode with the command RPF.

13. Installed language processors.

MVS-TK3, MVS-TK4- and MVS-TK4 DASD Rollup included many language processors and their libraries as part of their distribution. TK5 continues to provide these language processors and will include additional language processors when they become available.

The following language processors are installed in TK5:

- Assembler-XF, referred to as its program name of IFOX00. This is the standard assembler for MVS 3.8. Other more advanced assemblers such as Assembler H (ASMH) and the High-Level Assembler (HLASM) are not available because these assembler programs are IBM licensed Program Products.
- ANSI Cobol compiler and library, also known as COBOL-68. An example of a Cobol compilation job is provided in member TESTCOB in SYS2.JCLLIB. The Cobol compiler is installed in SYS2.LINKLIB and the Cobol Library is installed in SYS1.COBLIB.
- PL/I F compiler and library. An example of a PL/I compilation job is provided in member TESTPL1 in SYS2.JCLLIB. The compiler is installed in SYS2.LINKLIB and the PL/I F library is installed in SYS1.PL1LIB.
- ALGOL F compiler. This updated version is new in TK5. See the manual “*ALGOL F Level 2.1 Independent Component Release for MVS 3.8*”. The Algol F compiler is installed in SYS2.LINKLIB and the Algol F library is in SYS1.ALGLIB. The sample jobs IEXSAMP1. IEASAMP2. IEXSAMP3 and IEXSAMP4 are available in SYS1.SAMPLIB.
- FORTRAN G and FORTRAN H compiler and library. Both the H and G versions are installed in SYS2.LINKLIB. A sample job for both versions is provided in SYS2.JCLLIB(TESTFORT). The FORTRAN library is in SYS1.FORTLIB.
- RPG. This compiler is installed in SYS2.LINKLIB. Member TESTRPG in SYS2.JCLLIB is provided as a sample job.
- Waterloo FORTRAN. This compiler is installed in WATFIV.JOBLIB and the library is installed in WATFIV.OBJLIB. Test jobs are available in SYS2.JCLLIB(TESTWATV) and in WATFIV.TESTS.
- GCC. This C compiler is installed in SYS2.LINKLIB. The compiler program is named GCC with an alias of GCC370. The Include library is named PDPCLIB.INCLUDE. A sample job is provided in SYS2.JCLLIB(TESTGCC).
- Jason’s C compiler (JCC). This compiler is installed as JCC in SYS2.LINKLIB. The other libraries are available with a HLQ of JCC. A test job is provided in member TESTJCC in SYS2.JCLLIB.
- PASCAL. The Pascal compiler and library are installed in PASCAL.PASLIB. A sample job is available in SYS2.JCLLIB(TESTPASC).
- PL/360. See the libraries with HLQ of PL360 for more information.

14. Additional programs and TSO commands.

The source code for the programs and TSO commands listed below are provided in TK5.ASM. The installation JCL streams are provided in TK5.CNTL. Both data sets are resident on TK5001.

See the \$\$\$INDEX member of TK5.ASM below:

All the programs in TK5.ASM are installed in TK5. The TSO commands are installed in SYS2.COMDLIB and the programs are installed in SYS2.LINKLIB. The installation JCL for the programs can be found in TK5.CNTL.

```

//*****
//*
//* NAME: TK5.ASM($$$INDEX)
//*
//* Desc: Short index of members in this PDS with sources
//*       The jobs for assembly and link are in TK5.CNTL
//*       The membernames can be recognized with the name
//*       of the source member in this library suffixed with '$'
//*
//*****
//*

```

Membername	Short description	Remarks
\$\$\$INDEX	THIS member, you are reading it	
AFPCNTRL	Switch additional floating point (AFP) registers on or off.	
AUTO	This routine provides for job submission and automatic commands in an MVS/JES2 environment.	
AUPGM	AUPGM, authorized version pf DOPROG/DOPGM TSO command	
AUPGMUPD	IEBUPDTE input to add RAKF support in AUPGM	
BLKDISK	Calculate optimal blksize for different kind of devices: 2314,3330,3330-1,3340,3350,3380,3390 and 9345	BLKdev e.g BLK3390
BLKSPTRK	Physical blocks per DASD track calculator	
BYPASCRN	SVC screening routine	
BYPASSNQ	SCRATCH/RENAME a data set without ENQ	+BYPASUPD
CBMACSMV	Mapping macros control blocks for LOOKMVS	LOOKMVS
CHECKMOD	Check for presence of a load module	
CLRSCRN	Clear TSO screen no matter wat scrsz is	
COMPRESS	TSO command to compress a partitioned data set	
COPYPDS	This TSO command copies a partitioned data set, using the IEBCOPY utility program.	
C3270**	CLIST Communication Routine for 3270 Terminals	
DDUX	TSO command to display disk records allocate temporary dataset with FILE(X)	FILE(X)
DDUVOLX	Clone of DDUX	
DOPROG	TSO command processor to load and execute a program. Command name = DOPGM	
DSAT	Display data sets and their attributes	
DSPACE	List free space of a single volume or a volume list.	
ETPS****	EMERGENCY TELE-PROCESSING SERVICES If TSO, VTAM or JES2 is not available	
FILLDASD	Fill free DASD space with binary zeroes	
FREEALL	Free dynamically allocated datasets. Alias=FA.	
HELP	HELP wrapper: Call TSO HELP or FSH as appropriate.	
INSTREAM	This TSO command copies the input stream	

	following it into a dataset. The user is placed in a 'INSTREAM'	
JRPUPDT	Update JRP with IEBUPDTE	
LETTERS	Changes CRT screen sizes without requiring entering the RESET + CLEAR keys	
LISTCDS	TSO command to list MOD, LMOD, SYSMOD, MAC, SRC and SYSTEM entries in the SMPADS.	
LISTVOL	List attributes all online DASD volumes	
LOOKMVS	Fullscreen TSO command to display storage	+CBMACSMV
OFFLOAD	Offload a card image PDS to IEBUPDTE or PDSLOAD sequential dataset. Need EXH.COLEMAC	
PDSLOAD	Load IEBUPDTE or OFFLOAD dataset into a PDS	
PDSUPDTE	Update strings in an entire partitioned dataset	
PRINTON	TSO command to print data sets or members. Alias is LIST	
RELEASE	Release unused space from a dataset. Alias=RLSE	
RELOGON	Re LOGON with the same UserId, without entering the password.	
RUNZ9	Belongs to SIMZ9	SIMZ9
SHOWDS	TSO command processor to show dataset attributes	
SHOWSS	TSO command processor to show subsystems	+SHSSUPD
SIMZ9	z9 Series Instruction Simulator uses the following macros in SYS2.MACLIB 1. ENTER 2. FINISH 3. ICATCHER 4. IEZBITS 5. IEZREGS 6. IHAPIE 7. MODULEID	
SNASOL	Network solicitor for VTAM	
STEPLIB	Dynamically concatenate a load library into the STEPLIB. Needs STEPLUPD	
SVC244	Toggle authorization	
SYSTEM	TSO command processor to display system info	
TAPEMAP	List contents of a tape. including job	
TCBUVTAM	Macro belongs to ETPS	ETPS
TESTZ9	Test and Demonstrate z9 Opcode Simulations	SIMZ9
TSTVTAM2	Test VTAM application	
TSSUSER	TSO command processor to display active users	
TSSO	TSO Subsystem for operator consoles	
TSSOEF	Edit File (EF) command of TSSO	
TSSOGIDE	TSSO user's Guide, copied to SYS2.HELP	
TSSOSSSM	TSSO Subsystem Support module	
TSSOSTCK	TSSO Stack command	
TSSOUPSS	Set SSCTUPSS bit on and start TSSO	
TSSOWTO	This program reads a dataset and writes every record on the operator's console.	
TSTVS***	Emergency subsystem EDIT, See EDIT User's guide	
ULXL01	ISPF dialog to display free space of a volume. It's a part of ISPF 3.7 (option X)	
UNITS	TSO command to display UNIT esoteric- and generic names.	
USERMODD	Program to make a PDF file with the contents of the cover letters of the USERMOD.* libraries	

15. Additional Jobs

SYS2.JCLLIB

In every MVS system there are housekeeping tasks that need to be performed to keep the system running. These tasks include backing up and clearing the SMF and EREP data sets, adding or deleting TSO UserID's and running utilities. JCL is also provided for many of the programs mentioned in the previous chapter.

Examples being installation validation jobs for the installed language processors, IBM utilities, service aids and TSO batch utilities.

These jobs are collected in **SYS2.JCLLIB** and documented in member **\$\$\$INDEX**.

The jobs marked with 'NO RAKF' are provided for information purposes only and should not be run in the TK5 system unless RAKF has not been started. This is not recommended.

The recommended way to use these jobs is to copy the JCL to your own data set and then customize the JCL to your requirements. Any changes made to SYS2.JCLLIB will be lost when a new TK5 update is installed as SYS2.JCLLIB will be replaced by the TK5 update.

SYS2.TK5.INSTALL.CNTL

This library is resident on TK5RES and contains the installation jobs for the packages that have been installed on the TK5001 and TK5002 volumes.

These jobs are provided for information purposes only and do not need to be run because these jobs have already been run during creation of TK5 and updates on TK5.

16. Related documents.

All related documents are present in MVS-TK5 in the directory “doc”.

The following documents are present in the directory:

ALGOL F Level 2.1 Independent Component Release for MVS 3.8

ARCHIVER User's Guide

BREXX370 Users Guide V2R5M2

BREXX370 VSAM Guide V2R5M2

BREXX370 Installation Guide V2R5M2

BREXX370 Formatted Screens Guide V2R5M2

BREXX370 String Array functions

BREXX External Function Feature

BREXX370 Migration notices

EDIT 3.3 User's Guide

INTERCOMM Assembler Language Programmers Guide Release 8 9 10 1989

INTERCOMM Basic System Macros Release 9 10 1986

INTERCOMM COBOL Programmers Guide Release 9 10 1989

INTERCOMM Concepts and Facilities Release 9 1987

INTERCOMM Message Mapping Utilities Release 9 1983

INTERCOMM Messages and Codes Release 9 1986

INTERCOMM Operating Reference Manual Release 9 1983

INTERCOMM Planning Guide Release 9 1982

INTERCOMM System Control Commands Release 9 1982

INTERCOMM Generalized_Front_End_Facility_Release 9 1982

MAP3270 Tutorial Version 2.1.0

MVS TK4- v100 User's Manual

MVS VM install and use

NJE38 Installation and Usage Guide

OS-360 Sort/Merge for MVS 3.8 Application Programming Guide

OS-360 Sort/Merge for MVS 3.8 Installation Customisation and Diagnosis Guide

PDSUPDTE manual

RAKF User's Guide

RPF User's Guide

TK5 Introduction and User Manual (this document)

TK5 Usermod Directory

17. Appendices

Appendix 1: Sample installation job for DSSDUMP.

```
//HERC01IN JOB 01,'INSTALL DSSDUMP',MSGCLASS=X,REGION=512K,
//          NOTIFY=HERC01
//*-----
//* INSTALL PROGRAM DSSDUMP AND DSSRES
//* AS DSSDUMP MUST RUN AUTHORIZED IT MUST BE RESIDENT IN AN
//* APF AUTHORIZED LIBRARY
//*
//* UPDATE SYS1.PARMLIB(IEAAPF00) TO AUTHORIZE SYS2.DSSLIB
//* AND RE-IPL BEFORE RUNNING DSSDUMP
//* THE UPDATE PASSWORD OF THE MASTER CATALOG MAY BE
//* REQUIRED.
//*-----
//STEP01   EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=*
//INDD     DD DSN=SYS2.DSSLIB.UNLOAD,UNIT=TAPE, ← file tape/dss001.aws
//          VOL=SER=DSS001,DISP=OLD
//OUTDD    DD DSN=SYS2.DSSLIB,UNIT=SYSALLDA,VOL=SER=MVSRES,
//          SPACE=(CYL,(10,2,20),RLSE),
//          DISP=(NEW,CATLG,DELETE)
//SYSIN    DD *
COPY INDD=INDD,OUTDD=OUTDD
/*
```

Appendix 2: Sample DSSREST job to generate JCL.

```
//HERC01RS JOB (ROBPRINS),CLASS=A,MSGCLASS=X,NOTIFY=HERC01
//*
//* DOC: SAMPLE DSSREST EXECUTION JCL.
//*      THE RESTORE JCL WILL BE GENERATED AND WRITTEN TO
//*      JCLOUT DD NAME
//*
//GENJCL   EXEC PGM=DSSREST,REGION=4096K
//STEPLIB  DD DSN=SYS2.DSSLIB,DISP=SHR
//SYSPRINT DD SYSOUT=*
//REPORT   DD SYSOUT=*
//SYSUT1   DD UNIT=TAPE,DISP=OLD,LABEL=(1,SL),VOL=SER=DUMP01,
//          DSN=HERC01.DUMP.DATA
//JCLOUT   DD DSN=TK5MIG.CNTL($RESTORE),DISP=SHR
```