



SMT Data
Specialists in IT Business Intelligence

ITBI™ for z/OS

Handling RMF/SMF data

Introduction

The required information for SMT Data's ITBI for z/OS solution is contained within the RMF and SMF records automatically recorded by the mainframe.

RMF and SMF records are typically dumped in daily intervals for each z/OS system (LPAR), perhaps merged into groups of systems, and stored on tape (often virtual).

Record Types

For the initial data collection (e.g. a Proof of Concept), SMF record type 30 and RMF types 70 and 72 are required in full (no subtype deduction allowed), extracted for a given period of time and transferred in the same file to a dedicated SMT Windows server.

Hardware information in RMF type 70 must include information for all defined LPARs (no restrictions in providing hardware configuration information are allowed). Specifically the global performance data control option must be set to allow the LPAR to data for all LPARs in the configuration.

In addition, SMF record types 101 and 110 (alternatively IMS 56FA records) must be extracted for a given period of time and transferred in separate files to the same server. All records should be uncompressed. For CICS, the CMP monitor must be turned on for each region for example using the CEMT SET MONITOR ON PERF command.

In a fully implemented ITBI solution, other records types may be included as well (according to requirements and support).

Intervals

For the manual transfer during a Proof of Concept, types 30, 72, and 72 are normally extracted for a full month, types 101 and 110 (or 56FA) only for a day or two (intervals should contain periods of special interest).

Types 30, 70 and 72 must cover the exact same period. Types 101 and 110 (or 56FA) must be from within that same period.

In a fully implemented ITBI solution, all records are normally extracted and transferred in 24-hour intervals.

Data Extraction

For each system (or group of systems), the following job must be executed. The first step extracts the data. The second step changes DCB parameters in order to be able to read the data correctly on a Windows server.

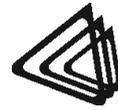
Change the job name, use installation naming conventions for the input SMFDATA and adjust the output extract data set name (please include date and System or Sysplex names in the dataset name as described).

The DATE statement in SYSIN may be removed but can be used to identify a range of extracted days if necessary (specify start and end date in Julian format).

Note that the DD-name 'INDD1' may require the specification of several datasets.

```
//<JOBname> JOB (ACCOUNT),'DUMP SMF'  
//*  
//* WARNING: CHOOSE YOUR BLKSIZE WITH CARE  
//* IF SMF INPUT BLKSIZE IS LESS THAN OR EQ TO 27998 CHOOSE 27998  
//* IF SMF INPUT BLKSIZE IS LARGER THAN 27998 THEN CHOOSE 32760
```

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```
/* IF LARGE AMOUNT OF DATA MAKE A SEPARATE DATASET
/*
//STEP1 EXEC PGM=IFASMFDP
//INDD1 DD DSN=<INPREF>.<SMFDATA>,DISP=SHR
//OUTDD1 DD DSN=<PREF>.SMF.<SYS>.<DATE>,
// DISP=(,CATLG),UNIT=(3390,9),
// SPACE=(CYL,(500,200),RLSE),
// DCB=(BLKSIZE=27998,RECFM=VBS)
//SYSPRINT DD SYSOUT=*
//SYSIN DD *
INDD(INDD1,OPTIONS(DUMP))
OUTDD(OUTDD1,TYPE(30,70,72,101,110))
DATE(2012sss,2012eee)
/*
/* PREPARE DATE FORMAT FOR FTP
/*
//STEP2 EXEC PGM=IEBGENER
//SYSUT1 DD DSN=<PREF>.SMF.<SYS>.<DATE>,DISP=SHR,
// DCB=(RECFM=U,BLKSIZE=27998)
//SYSUT2 DD DSN=<PREF>.XFER.<SYS>.<DATE>,
// UNIT=(3390,9),DISP=(,CATLG),
// SPACE=(CYL,(500,200),RLSE),
// DCB=(RECFM=U,BLKSIZE=27998)
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
/*SAMPLE FTP STEP
//STEP3 EXEC PGM=FTP
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//FTPOUT DD SYSOUT=*
//SYSIN DD *
servername
userid password
binary
lcd ..
put inputdsname outputdsname
quit
```

Note that the lcd .. command turns off prefixing. When used, be sure to avoid quotes (apostrophes are required before and after the dsname). In this way, the name of the file moved to the SMT Windows server will not contain quotes but appear exactly as written in the put command.

Use a named output dataset like Yourcompanyname.Dyyyymmdd.Type.SMF in the put command:

- put Yourinputdatasetnamewithoutapostrophes Yourcompanyname.Dyyyymmdd.Type.SMF
- put YourreferencetoJCLDDstatement Yourcompanyname.Dyyyymmdd.Type.SMF

Sample:

```
/*SAMPLE FTP STEP
// EXEC PGM=FTP
//SYSPRINT DD SYSOUT=*
//SYSABEND DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//DSNFTP DD DISP=SHR,DSN=yourinputdatasetname
//FTPOUT DD SYSOUT=*
//SYSIN DD *
servername
userid password
binary
lcd ..
```

```
put //DD:DSNFTP ABCDCOMPANY.D20120702.CICS  
quit
```

The dataset's last qualifier, in this case CICS, signals SMF record origin (here for type 110).
Transferring data in separate files allows for parallel processing.

The following qualifiers must be used for file transfers to the ITBI server:

Customer.System or Sysplex.Date.Time.DB2	(for SMF type 101)
Customer.System or Sysplex.Date.Time.CICS	(for SMF type 110)
Customer.System or Sysplex.Date.Time.MQM	(for SMF type 116)
Customer.System or Sysplex.Date.Time.IMS	(for IMS log type '56FA')
Customer.System or Sysplex.Date.Time.DCOLLECT	(for space information from Idcams Dcollect job)
Customer.System or Sysplex.Date.Time.SMF	(for all other SMF & RMF types)

Data Compression

The output data (the .XFER. data set(s)) from the **IEBGENER** step(s) must be transferred to the SMT Windows server.

Zip compression of files before transfer to SMT Data's ftp server is highly recommendable for the manual one-time file transfers during a Proof of Concept. If zip compression is not available on the mainframe, consider using a local Windows server as an intermediate step in the transfer process (since zip will reduce the size of SMF files up to a factor 10).

In a fully implemented ITBI solution, SMF files should not be compressed.

Data Transfer

Any FTP tool may be used (as long as the **IEBGENER** with parm '**RECFM=U**' is executed as described).

It is also important, that option **BINARY** is specified for all transfers of SMF data.

File Sizes

For the manual file transfers during a Proof of Concept the likelihood of transmission error increase for large files, resulting in (lengthy) repetitions of data transfers. A goal for these file transfers should be for each to complete within one hour.

In order to fulfil this goal, the transfer time of the first transmitted file may be used as a guideline to estimate transfer times of the remaining files according to their sizes. If necessary, these should be split up into smaller files in order to reach the goal of a maximum transfer time of one hour (by selecting smaller SMF intervals).

In a fully implemented ITBI solution, network bandwidth, firewall setup and transfer parallelism are customised to avoid these limitations.

Secure FTP

Certificate for secure FTP and https can be forwarded on request.

FTP Server

FTP address, userid and password will be supplied separately.

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