SMFVIEW
THE ISPF SMF DATA BROWSER & EDITOR

VERSION 1.1.0

SYSTEM PROGRAMMERS GUIDE

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1. INTRODUCTION

SMFVIEW is a powerful ISPF based SMF data examination and modification tool. It acts as a front end processor for the SMFUTIL product, utilizing SMFUTIL to locate and retrieve the data requested. Input data is then presented to the user, one record at a time, in a formatted ISPF full screen display utilizing a scrollable data window. It provides an appropriately authorized SMF System Administrator total control in selecting SMF data to view. If desired, the viewed data may be selectively saved into an output data set for post processing by an SMF analysis application (i.e. RMF).

In addition to being able to view the data, each record may be modified by the Administrator prior to being saved into the output data set. It should be noted that the input data set is **not** altered and the SMF data within the normal SMF archives remains in it's original condition. Modifications to a record may be done in hexadecimal or in clear text (EBCDIC translation). Only bytes physically altered by the Administrator will be altered in the output record.

SMF Data may be input from:

1.   A user specified sequential SMF data input data set.

2.   An SMF Logstream Data Structure (i.e. IFASMF.SMFDATA)
        NOTE: To properly support Logstream input to SMFVIEW, the minimum maintenance level for the SMFUTIL product must be V8.0/ZL097 or better.

2.   The current SMF system MANx files that contain data (i.e. SYS1.MANx VSAM data sets). This includes the currently active SMF data set.

3.   Dynamically, via the SMFUTIL Archive Database

The input data may be selectively filtered for:

1.   Record type

2.   Record subtype

3.   Userid

4.   Job name

5.   Account code

6.   Data set name

7.   Volume serial

A PRINT function is provided to print the contents of selected records. Both a hex dump and EBCDIC translation are printed.

An option is provided to allow the user to save all records into an output data set or only selected records.

The user may view records presented sequentially or may skip forward past large numbers of records.

2. INSTALLATION

The installation of the product consists of the following steps:

1. Download the full product file from the appropriate web site.

2. Execute the file to unzip it.

3. Upload the JCL file to the mainframe using Binary transfer with fixed 80 byte records.

4. Modify the mainframe JCL file to meet local standards then submit it for execution to create the product distribution files.

5. Modify the LICENSE member of the INSTLIB to match the supplied license code.

3. Modify the INSTALL job stream in the INSTLIB data set. Change the data set specification parameters to match local requirements. Parameters that begin with "DIST" are distribution data sets previously created in step 4. Parameters that begin with "TGT" are target data set parameters for local usage of the product. You should not attempt to use the distribution data sets to execute the product. The INSTALL job must be used to place the product into an execution environment.

3. Submit the INSTALL job stream to install SMFVIEW load modules, panels and messages into data sets appropriate for ISPF LIBDEF usage.

4. Modify the SMFVLBDF member of the target ISPCLIB (CLIST) data set. If necessary, place it into a different (than copied to by the INSTALL job) local CLIST library concatenated to the SYSPROC DD statement in the logon procedure to be used to access SMFVIEW.

5. Modify a local menu panel to include an item to launch SMFVIEW. See member SMFVPRIM in the distribution INSTLIB data set for an example primary menu.

2.1 CREATING THE INSTALLATION FILES

SMFVIEW is distributed as a downloadable executable PC file package. Executing this downloaded file will expand its contents into several files in a directory on the PC. One of these files is a large EBCDIC named SMFVIEW.JCL. This file must be uploaded to the mainframe environment in a very specific manner. It must be transferred a predefined z/OS dataset with dcb characteristics of (RECFM=FB,LRECL=80,BLKSIZE=27920) using Binary transfer mode (CRLF is NOT checked). The block size of 27920 is not an absolute requirement. You may use any block size that is a multiple of 80.

After the JCL file is uploaded, edit the file on the mainframe and perform the following modifications to the JCL.

1. Update the JOB card to meet local standards and requirements.
2. Modify the PROC statement in the SVSETUP step to use dataset names that conform to local requirements. Look for the word MODIFY as an indicator of the lines that need to be update.
3. Save the JCL job.
4. Using the TSO SUBMIT command, submit the job for execution. Due to the size of the job the SUB command from an ISPF command line will fail with a x37 abend. Use the command TSO SUB 'userid.SMFVIEW.JCL' from an ISPF command line instead.

After running the above job five datasets will be created, INSTLIB, DISTOBJ, DISTPLIB, DISTMLIB and DISTCLIB.

2.2 INSTALLING THE PRODUCT

In most installations, SMFVIEW is licensed by processor on a calendar period basis. The product is sensitive to the serial and model number of the processor on which it is executed and the date of execution. Each processor to execute the product must be licensed and appear in the license table matrix that is inserted during installation or a SITE license must be obtained. Up to 16 individual serial numbers may be specified. Beyond 16, a site license is required. A site license will enable the product on all processors at a single location.

Each Customer site is supplied with a customized cover letter containing the CPU's that it are licensed to operate SMFVIEW, the date of the expiration of the license, and a code key value that enables the execution of the product on the specified processors. THIS INFORMATION MUST BE CORRECTLY SPECIFIED DURING THE INSTALLATION OF THE PRODUCT FOR SMFVIEW TO BE EXECUTABLE. This information is either incorporated into member LICENSE of the INSTLIB dataset using ISPF edit or a file containing the required entries may be obtained from ASPG as an email attachment. This attachment that can be CUT and PASTED into the LICENSE member.

SITE licensed installations will be able to execute the product at a "HOT" site for disaster recover purposes. For non-SITE licensed installations, special provision has been made for execution of the product at an alternate site. If your disaster recovery plans call for collection of SMF data at the "HOT" site, contact ASPG Technical support in the event of an emergency and a special code will be supplied to enable the product at the "HOT" site.

Once the installation files are created and the LICENSE member is modified, SMFVIEW must be installed via the INSTALL job stream in the INSTLIB data set.

The INSTALL applies all outstanding maintenance to the product, inserts the product license date, code, and valid CPU serial numbers, and links all SMFVIEW product modules to an installation defined load module data set. It is recommended that they be placed in the same LNKLSTxx data set that SMFUTIL resides in. Remember, a LNKSTL refresh (F LLA,REFRESH command on the operator console) is required to enable SMFVIEW to be used.

The INSTALL job also copies the SMFVIEW panels and messages to an ISPF PLIB and MLIB data sets to be used by LIBDEF statements. These should be data sets reserved for SMFVIEW only.

From time to time a new license code will be required to enable the program for a new license period. A warning message will be given 45 days prior to expiration of the license code. The INSTALL should be run again with the new code. An ASPG Sales representative will supply you with the appropriate code and date parameters as required.

Note that the license code is CPU serial sensitive. If you add or change a processor you must obtain a new license code to enable SMFVIEW to execute on the processor with the new serial number.

2.3 LOCAL CUSTOMIZATION

The CLIST SMFVLBDF that is copied to the site CLIST library must be modified to allocate the proper SMFVIEW PLIB and MLIB data sets. The PREFIX(SMFVIEW) variable in the "PROC" statement should be altered to fit the naming convention for the SMFVIEW data sets.

A local selection menu must be modified to incorporate an SMFVIEW item. Member SMFVPRIM in the INSTLIB data set contains an example of the necessary items that must be added. Note that this menu is an example only for illustration purposes. Do not incorporate it directly as an ISPF menu.

After completion of the modifications you must exit ISPF and restart it for the SMFVIEW menu item to appear.

NOTE: SMFVIEW interfaces to SMFUTIL for the acquisition of SMF data to be displayed. There are two principle load modules involved. SMFVIEW proper is an ISPF "front end" that handles the ISPF oriented tasks of preparing the environment to properly display the data using ISPF panels. SMFVIEWX is an SMFUTIL "exit" that is called for each record to be processed by SMFVIEW. Note that SMFVIEWX is not called using ISPF load module methods from an ISPF executable library (i.e. ISPLLIB), but rather it is called using a standard system LOAD function like a batch program module. For this reason, the SMFVIEW and SMFVIEWX should NOT be installed in a separate load library with access attempted via an ISPLLIB allocation. This will render the SMFVIEWX exit module unreachable to SMFUTIL during execution. These two modules should be installed in the same place as SMFUTIL itself, in a LNKLSTxx library.

3. DATA HANDLING METHODOLOGY

3.1 INPUT DATA HANDLING

Input data can be brought into SMFVIEW in a number of ways. First, the SMF MANx files may be used alone or in combination with other input. Either an SMF Logstream Data Structure may be specified for sequential input or the user may specify a specific sequential data set as an input source or may request the input be located via the SMFUTIL Archive database. SMFVIEW differentiates between Logstream data and sequential datasets by examining the first qualifier. Any dsname string that begins with IFASMF is expected to be a Logstream Structure. This first qualifier is mandated by the IBM SMF LOGR standards.

3.2 OUTPUT DATA HANDLING

Viewed data may be discarded, always written to an output data set, or optionally written to an output data set record by record. If data is to be written, an output data set must be defined by the user. A new data set may be created or an existing data set may be written over (disposition OLD) or added to (disposition MOD).

4. ISPF SESSION PROCESSING

An SMFVIEW session is divided into two components. A definition session, consisting of several panels where the user defines the data to be viewed, the source of the data, a destination for the data (if any) and any filtering criteria to be applied. Upon completion of the definition session a viewing session is begun. The viewing session is composes of an SMFUTIL execution to retrieve the required data and an SMFVIEW exit operated by SMFUTIL to present the data retrieved to the user.

4.1 ISPF PROCESSING OPTIONS

Upon entry to SMFVIEW the first time, the following panel will be displayed. This panel sets the processing options for SMFVIEW. After the initial setup, this panel can be reentered and the options changed by keying the primary command "OPTIONS" from the first SMFVIEW definition session panel.

```
-------------------- SMFVIEW - PROCESSING OPTION DEFAULTS --------------------
COMMAND ===>

 OUTPUT DATA SET PROCESSING OPTIONS
   Enter "/" to select option:
      / Write skipped records to output dataset.
        Write output records upon "SAVE" command only.
      / Invoke in "TEST" mode

   SYSOUT Class for PRINT function -  X

 NEW OUTPUT DATA SET OPTIONS
   Unit   => SYSDA
   Volume => WOVEN1     (Optional)
   Space  => CYL        (TRK or CYL)
   Pri Qty=> 001        (001 to 999)
   Sec Qty=> 025        (001 to 999)
```

The character "/" is used as a check mark to enable an option as described.

The first option, "**Write skipped records to output data set.**", indicates how SMFVIEW handles "skipped" records. These are records bypassed by SMFVIEW due to a "SKIP" primary command being entered by the user. If this options is checked ("/" entered on the line), skipped records will be written to the output data set. If unchecked, skipped records will be discarded.

The second option, "**Write output records upon SAVE command only.**", instructs SMFVIEW what records are to be normally written to the output data set. If this option is checked ("/" entered on the line), no records will be written unless specifically "SAVED" by the user via a "SAVE" primary command being entered. If unchecked, all viewed records will be written to the output data set. Checking this option also causes skipped records to be discarded as a "SAVE" command was never entered for them.

Note that the first and second option are ignored if an output data set is not in use.

The third option, "**Invoke in 'TEST' mode.**" is not normally required by an end user. It is to be enabled only if requested by an ASPG Technical Support technician.

The "**SYSOUT CLASS FOR PRINT FUNCTION**" specifies the SYSOUT class to be assigned to the SYSPRINT SPIN data set generated by a user "PRINT" command request. The actual printing is done by SMFUTIL to DD name SYSOUT. The DD is marked FREE=CLOSE and will be available for printing from the JESx spool queue when the SMFVIEW viewing session has ended.

The "**NEW OUTPUT DATA SET OPTIONS**" specifications are used when the user specifies an output dates that does not currently exist in the catalog. You should enter values appropriate for your data center and the requirements of your output data.

4.2 ISPF PROCESSING - SELECTING INPUT SMF DATA

At startup, SMFVIEW begins a definition session. This is a series of panels that allow the user to define the data to be viewed, the source and destination of the data, and any filtering criteria to be applied.

The following panels are used for this purpose:

```
--------------------- SMFVIEW - RECORD TYPE SELECTION --------------------
COMMAND ===>


Enter OPTIONS on the command line to change processing default options.


SPECIFY THE DATA TO BE VIEWED

  Record types to be viewed: (optional)
    =>      =>      =>      =>      =>      =>      =>      =>


  If you do not specify a record type, all types will be presented.


  If you specified one or more record types above, you may
  limit the data selected to specific record subtypes below:
    =>      =>      =>      =>      =>      =>


  Each subtype specified will apply to ALL record types selected.




  Press ENTER to proceed to the next panel.
  Press END to terminate SMFVIEW.
```

This panel allows the user to select up to eight specific record types. If no record types are specified, all record types will be considered selected.

The user may also specify up to six record subtypes. If no record types are selected, record types that do not have subtypes will be selected. Record types that have subtypes must have their subtype match a user specification to be selected. If one or more record types are specified by the user, any type that does not have subtypes will be selected. Any type that does have subtypes must meet at least one user specified subtype selection criteria to be selected.

After completion of the record type selection panel press enter and the following panel is presented:

```
------------------ SMFVIEW V1.1Beta - DATA SOURCE SELECTION ------------------
COMMAND ===> _

INPUT DATA SOURCE(S):   (At least one must be specified)
        Input Current SMF MAN Datasets => NO      (Yes or No)

  (or)  Specify SMF LogStream LOGR Data Structure to be read:
  (or)  Specify SMF sequential data dataset to be read:
        Input Dsname    => 'IFASMF.WOVEN'

  (or)  Specify SMFUTIL Archive Database and Archive Set Name to select:
        Archive Cluster =>
                Set Name =>                Allow Tape Mounts => NO    (Yes or No)
                Always Search => NO        (Yes or No to append to other data)


OPTIONAL OUTPUT DATASET
        Output Dsname=>
        Disposition  => OLD    (NEW, OLD, or MOD)


  Press ENTER to proceed to the next panel.
  Press END to return to the previous panel.
```

This panel allows the user to define where the input data is to be obtained. At least one source of input must be specified.

The first possible input source is the current SMF MANx data sets. The user need only reply "YES" to obtain them as an input source. They need not be named as SMFVIEW is able to locate the current MANx data sets via the SMF control blocks and will dynamically determine which has data and in what order they should be presented.

The second possible source of input data is a sequential data set specified by the user. Standard TSO naming conventions apply. Note that the MANx input data set may be input in conjunction with the sequential data set and will be input last.

The final source of input data is the SMFUTIL Archive Database. If the ARCHIVE Cluster name is supplied by the user, the archive will be searched if a specific date range is selected by the user (explicitly or implicitly). This is accomplished by input on the next panel. If the user specified a sequential input data set, the archive will not be searched unless the "ALWAYS SEARCH" option is set to "YES".

If output data is to be kept for later processing, an output data set may also be specified. If a disposition of NEW is specified, the volume and space parameters specified on the OPTIONS panel will be used to create the data set. If OLD or MOD is specified, the data set must already exist. OLD will overlay the data set and MOD will add data to the data already in the data set.

When completed with this panel press the enter key. The following panel will be displayed:

```
----------------- SMFVIEW - SPECIFY DATA RESTRICTION FILTERS ---------------
COMMAND ===>


SPECIFY DATE AND TIME BOUNDARIES    (Optional)


  Explicit: Start:  Date=>          Time=>
            End  :  Date=>          Time=>
  Implicit: Use "/" to select one or more
              -Today         -Yesterday
      (or)    -This Week     -Last Week


FILTERING CRITERIA   (Any record matching any filter will be presented)


 NOTE: An '*' indicates any character in that position is matched and a  '-'
       at the end of the mask indicates any remaining characters are matched.
    SMF ID Mask  =>
    Jobname Mask =>
    User ID Mask =>
    Account Mask =>
    Dsname Mask  =>
    Volume Mask  =>


   Press ENTER to proceed to the next panel.
   Press END to return to the previous panel.
```

This panel allows the user to define specific date and/or time boundaries. Dates may be explicitly specified via the "START" and "END" fields or implicitly requested via the "TODAY", "YESTERDAY", "THIS WEEK" and "LAST WEEK" check boxes. Place a "/" character by any of these fields to enable that option. Note that "TODAY" and "YESTERDAY" may not be specified when the "THIS WEEK" option is also selected. "THIS WEEK" implies today and usually implies yesterday as well.

In addition, a variety of filtering criteria may be specified. Each of the filter fields are masks. They may contain an "*" in any position to indicate that any character is acceptable in that position. They may end with the character "-" to indicate that any further characters are acceptable.

The DSNAME mask is a bit more completes. Any qualifier may end with a "-" to indicate any additional characters in that qualifier are acceptable. The entire mask may end with a "--" (double dash) to indicate any additional characters and/or qualifiers are acceptable.

When input on this panel is complete press the enter key. The SMFVIEW definition session is complete and the viewing session will be launched.

4.3 ISPF PROCESSING - RECORD VIEWING SESSION

Unless the "TEST" option has been enabled, the next panel displayed will be the first SMF record selected for the user. The following panel is an example of a viewed record:

```
-------------------- SMFVIEW - SELECTED RECORD DISPLAY --- Row 1 to 14 of 22
COMMAND ===>                                          SCROLL ===> CSR
 Records Read=> 1            Records Written=> 0
 Record Type=> 64        Date=> 1995.070 Time=> 05:57:17.49 Length=> 339
 COMMANDS: S=Save  P=Print
 SYSID=> SYSA


   OFFSET
  HEX   DEC            Hexidecimal Dump                  EBCDIC Dump
  ----  -----   -----------------------------------   *----------------*
  0000 00000    01530000 06400020 B6050095 070FE2E8   *..... .....n..SY*
  0010 00016    E2C1C9C5 C5E2E8E2 C1E2006A B7300095   *SAIEESYSAS.¦...n*
  0020 00032    059F4040 40404040 40408080 C9C3C6C3   *..        ..ICFC*
  0030 00048    C1E34BE5 D4E7C1C3 E3F14040 40404040   *AT.VMXACT1      *
  0040 00064    40404040 40404040 40404040 40404040   *                *
  0050 00080    40404040 40404040 E2E8E2F1 4BD4C1D5   *        SYS1.MAN*
  0060 00096    F14BC4C1 E3C14040 40404040 40404040   *1.DATA          *
  0070 00112    40404040 40404040 40404040 40404040   *                *
  0080 00128    40404040 000003A9 8000001A 00020000   *    ...z........*
  0090 00144    0065000E E2E8E2D3 C2F10660 00003030   *....SYSLB1.-....*
  00A0 00160    200E0000 00000000 00AD0000 00000000   *................*
  00B0 00176    00010000 00000000 00000000 00000000   *................*
  00C0 00192    00000000 000003A9 80000000 00000000   *.......z........*
  00D0 00208    00000000 03200000 00000000 00000000   *................*
```

This panel is the heart of the SMFVIEW system. It displays a single SMF record selected for viewing according to the user specified criteria. The displayed fields have the following uses and/or meanings:

RECORDS READ   Shows the number of records that SMFUTIL read to reach this record.

RECORDS WRITTEN Represents the number of records that have been previously written to the users output data set during this session.

RECORD   The SMF Record Type of the current record. Range is 0 to 255.

DATE   The date this record was created. Taken from the standard SMF record header.

TIME   The time this record was created. Taken from the standard SMF record header.

LENGTH   The length of this record, including the RDW (record descriptor word).

SYSID   The System ID that produced this record.

In addition, any field that matched a user specified filter mask will be displayed with the matching value.

If the user presses enter on this panel the record is written to the output data or discarded as indicated in the OPTIONS specified by the user. If the user presses "END" the view session is terminated and a definition session is started again. The current record is discarded.

From this panel the user may enter the following primary commands:

SKIP nnn   Skip this record plus 'nnn" additional records. Output as indicated in the OPTIONS specifications. For example: "SKIP 100" would skip the current record plus 100 more records that would have been selected. This does not include records that do not match any user specified record types, subtypes or filters. Such records are skipped automatically.

P   Print the current record and continue to next selectable record. Record output disposition is according to the OPTIONS settings.

SAVE   Write current record to output data set and proceed to next record.

The lower portion of the panel is a scrollable table of the entire record content. The data is displayed in hex and in character. Full editing of the record is supported in both hex and character modes by over typing the displayed data with replacement hex or characters. The only exception is that the first 14 bytes of the record may only be modified in the hex field. This is to prevent incorrect RDW values and date and time problems.

If the user alters the RDW (record length in the first 2 bytes) the length of the displayed record will change. If it is made shorter the displayed record will be shorter. If it is made larger (record lengthened) the displayed record will be longer and whatever was in the buffer will become part of the record. **IT IS THE USERS RESPONSIBILITY TO EDIT REQUIRED DATA INTO THE ADDED PORTION OF A LENGTHENED RECORD**. If this is not done the record will contain garbage in the new section which may or may not cause errors in whatever program uses that record type.

Note that the same line may not be modified in both the hex values and the character valued at the same time. If changes are made to both sides of the display the changes to the hex values will be used and changes made to the character values will be ignored.

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For each line of the display that is altered a confirmation panel will be displayed as follows:

```
------------------- SMF EXAMINE - CONFIRM RECORD UPDATE --------------------
COMMAND ===>                                           SCROLL ===> CSR

 Press ENTER to confirm alterations of this portion of the record.
 Press END to cancel these alterations of the record.

 Record Type=> 64  Date=> 1995.070  Time=> 05:57:17.49  Length=> 339


-------------------- ALTERED RECORD VALUES -----------------------
  OFFSET
HEX   DEC             Hexidecimal Dump                  EBCDIC Dump
---- -----   ----------------------------------    *----------------*
0010 00016   E2C1C9C5 C5E2E8E2 C1E2006A B7300095    *SBIEESYSAS.¦...N*

  Old Data:                                         *SAIEESYSAS.¦...N*
```

Note that only actual the data side being changed will have it's old values displayed.

If the changes to the record are to be accepted, press the enter key. If the user wishes to discard the changes, press the END key.

When an end of file condition is reached the view session will terminate and a panel will indicated that all available data has been viewed. After pressing enter on this panel another definition session will be started.