IBM Application Time Facility for z/OS

IBM

Installation and Customization Guide

Version 2 Release 8 Modification 7

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> **Note!**
>
> Before using this information and the product it supports, be sure to read the general information under "Notices" on page 63.

Contents

About this document

This document is intended for people who install Application Time Facility for z/OS® (which, from here on, is now called "ATF"), and customize it for use at an installation. For information about using ATF, see the *Application Time Facility for z/OS User's Guide*.

Before now, this product was known as "TICTOC for z/OS", and the product and this document retain a few references to TICTOC. These will be replaced in the next release.

This document consists of four parts:

- Part 1, "Installation and maintenance," on page 1 explains how to install and maintain ATF.
- Part 2, "Customizing ATF," on page 19 describes how to use the ATF processing options.
- Part 3, "Optional support," on page 33 discusses how ATF is incorporated with other services.
- Part 4, "Additional topics," on page 49 deals with z/OS matters.

Summary of changes

This Fourth edition of the document (SC31-6922-03) has changed from the previous edition, to correct minor naming errors:

- "ATF ACIKSAMP library member" was changed to "ATF SCIKSAMP library member".
- Data set name "ACIKMAC" was changed to "SCIKMAC"
- Data set name "LOADLIB" was changed to "SCIKLOAD"
- Data set name "ISPPLIB" was changed to "SCIKPLIB"
- Data set name "ISPSLIB" was changed to "SCIKSLIB"
- Data set name "ISPMLIB" was changed to "SCIKMLIB"

Where these names appear in JCL samples, the names used in this document are correct. The names that appear in the actual shipped samples are not correct.

These changes are marked with a vertical change bar (|) in the left margin of the page.

Part 1. Installation and maintenance

Chapter 1. Installation steps

Before undertaking the following installation steps, make sure that the SMP/E install is complete, as outlined in *Application Time Facility for z/OS Program Directory*, GI11-4715.

The installation process consists of these steps:
- "Step 1: APF-authorize the ATF load library"
- "Step 2: Upgrade from an earlier version of ATF" on page 4
- "Step 3: Install ATF ISPF online interface CLISTs" on page 5
- "Step 4: Add ATF to the ISPF Primary Option Menu" on page 6
- "Step 5: Run the ATF customization program" on page 6
- "Step 6: Modify and install the ATF system program JCL procedure" on page 10
- "Step 7: Start ATF" on page 10

Step 1: APF-authorize the ATF load library

Several ATF programs must be APF-authorized. This requires that an entry for ATF be added to the active z/OS APF Authorization Table.

Use one of the following methods to accomplishing this:
- Move all ATF load modules to a library that is already APF-authorized. This approach does not require an IPL.
- Dynamically update the memory-resident copy of the APF Authorization Table. This approach does not require an IPL. This can be done by either using CIKICAPF, a utility included with ATF, or by issuing the z/OS SETPROG APF operator command (refer to *z/OS MVS System Commands, SA22-7627)*.
- Add an entry for the ATF load library to the active APF Authorization Table member in SYS1.PARMLIB, which is read during the next IPL. The entry must specify the full data set name of the ATF load library as well as its VOLSER. You must then re-IPL to use ATF. For more information, refer to *z/OS MVS System Commands, SA22-7627.*

To use CIKICAPF, copy it from the ATF load library to an existing APF authorized library. Use JCL like the following, which is provided in member CIKCLAPF of the ATF SCIKSAMP library. Boxed letters refer to the notes that follow.

```
********************************** Top of Data *************************
//APFATF   JOB  << FILL IN THE APPROPRIATE JOBCARD PARAMETERS >>   A
//*----------------------------------------------------------------
//APFAUTH  EXEC PGM=TICAPF
//STEPLIB  DD DISP=SHR,DSN=????????.????????   <=== SUPPLY DATASET NAME   B
//TICLIB   DD DISP=SHR,DSN=ATF.V287.SCIKLOAD   C
//
```

A   Supply a valid JOB card.

B   Specify the APF-authorized library to which you have copied CIKICAPF.

C   Change the first and second-level qualifiers of the data set name, if appropriate.

After the job has run successfully, delete the copy of CIKICAPF from the library to which it was copied.

Step 2: Upgrade from an earlier version of ATF

Run program CIKCCONV

If you are installing ATF for the first time, skip this installation step.

If you are upgrading from an earlier ATF version, release or modification level, use program CIKCCONV to copy and retain your previous version's customization settings.

To run program CIKCCONV, use JCL like the following, which is provided in member CIKLCONV of the ATF SCIKSAMP library. Boxed letters refer to the notes that follow.

```
//CONVTCTC JOB  << FILL IN THE APPROPRIATE JOBCARD PARAMETERS >>   A
 //*
 //*   FOR USERS OF EARLIER VERSIONS, THIS JOB AUTOMATICALLY CONVERTS
 //*   CUSTOMIZATION OPTIONS FOR USE WITH THE CURRENT VERSION.
 //*
 //*   IF YOU HAVE CHANGED ANY VARIABLES IN THE 'LOADTCTC' JOB,
 //*   APPLY THE SAME CHANGES HERE.
 //*
 //*----------------------------------------------------------------
 //CONVTCTC PROC IDX=ATF,     ---- CURRENT HIGH-LEVEL DATASET QUALIFIER    B
 //         VER=V287,         ---- CURRENT PRODUCT VERSION                 C
 //         IDS=SCIKLOAD,     ---- CURRENT LOADLIB DATASET NAME SUFFIX     D
 //         PREVIDX=TICTOC,   <<-- PREVIOUS HIGH-LEVEL DATASET QUALIFIER   E
 //         PREVVER=V?R?M?,   <<-- PREVIOUS PRODUCT VERSION                F
 //         PREVIDS=SCIKLOAD  <<-- PREVIOUS LOADLIB DATASET NAME SUFFIX    G
 //*
 //*----------------------------------------------------------------
 //*
 //COPYOPTS EXEC PGM=IEBCOPY       COPY CUSTOMIZATION OPTIONS
 //SYSPRINT DD SYSOUT=*
 //SYSUT3   DD UNIT=SYSDA,SPACE=(CYL,(1,1))
 //SYSUT4   DD UNIT=SYSDA,SPACE=(CYL,(1,1))
 //SYSUT1   DD DISP=SHR,DSN=&PREVIDX..&PREVVER..&PREVIDS
 //SYSUT2   DD DISP=SHR,DSN=&IDX..&VER..&IDS
 //*
 //CIKCCONV  EXEC PGM=CIKCCONV        CONVERT CUSTOMIZATION OPTIONS
 //STEPLIB  DD DISP=SHR,DSN=&IDX..&VER..&IDS
 //TICLIB   DD DISP=SHR,DSN=&IDX..&VER..&IDS
 //TICLOG   DD SYSOUT=*
 //SYSUDUMP DD SYSOUT=*
 //*
 //        PEND
 //*================================================================
 //CONVERT  EXEC CONVTCTC
 //COPYOPTS.SYSIN DD *
   COPYMOD I=SYSUT1,O=SYSUT2
   S M=((TICOPTS,,R))
 //*================================================================
```

A Supply a valid JOB card.

B This statement assumes that the first-level qualifier chosen for the current installation is ATF.

C This statement assumes that the middle-level qualifier chosen for the current installation is V287.

D This statement assumes that the data set qualifier specifying the ATF load library data set for the current installation is SCIKLOAD.

   E   This statement assumes that the first-level qualifier of the previous ATF version's data sets is TICTOC.

   F   This statement must be modified to specify the middle-level qualifier of the previous ATF version's data set.

   G   This statement assumes that the data set qualifier of the previous ATF version's load library data is SCIKLOAD.

Submit the CIKLCONV job stream. All steps should complete with a condition code of zero.

Replace IMS support module CIKICIMS

If ATF's support was enabled for use in a prior version of ATF, make sure that *all* copies of CIKICIMS from that prior release are deleted from the system.

In its place, move (*do not just copy*) the new version of the CIKICIMS load module to a load library accessed by all IMS message regions. To accomplish this, it is recommended that load module CIKICIMS be moved to a LINKLIST library. Once this is done, issue an LLA REFRESH to make the new copy of CIKICIMS available to IMS message regions.

Assemble site modified exit programs and tables

In addition to executing program CIKCCONV, as described above, the following ATF supplied exit programs and tables should be reassembled, if they were previously customized at your installation for an earlier version of ATF:
1. Time User Exit Module CIKEXTIM
2. ATF Security Table CIKSECTB
3. ATF Security Exit Module CIKEXSEC
4. ATF Initialization No. 1 Exit Module CIKEXIN1

When reassembling, make sure that your assembler procedure references the latest version of ATF's macro and load libraries.

Step 3: Install ATF ISPF online interface CLISTs

The ATF SCIKSAMP library contains two CLIST members, CIKATF and CIKATFCU, used to invoke the ATF Online User and Customization interfaces respectively.

Member CIKATF contains the following statements to invoke the ATF Online User Interface:

```
PROC 0
ISPEXEC LIBDEF ISPLLIB DATASET ID('ATF.V287.SCIKLOAD')   A
ISPEXEC LIBDEF ISPPLIB DATASET ID('ATF.V287.SCIKPLIB')   B
ISPEXEC LIBDEF ISPSLIB DATASET ID('ATF.V287.SCIKSLIB')   C
ISPEXEC LIBDEF ISPMLIB DATASET ID('ATF.V287.SCIKMLIB')   D
ISPEXEC SELECT CMD(TOCISPF) NEWAPPL(TOC) PASSLIB
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPSLIB
ISPEXEC LIBDEF ISPMLIB
EXIT
```

Member CIKATFCU contains the following statements to invoke the ATF Online Customization Interface:

Step 3: Install ATF ISPF online interface CLISTs

```
PROC 0
ISPEXEC LIBDEF ISPLLIB DATASET ID('ATF.V287.SCIKLOAD')    A
ISPEXEC LIBDEF ISPPLIB DATASET ID('ATF.V287.SCIKPLIB')    B
ISPEXEC LIBDEF ISPSLIB DATASET ID('ATF.V287.SCIKSLIB')    C
ISPEXEC LIBDEF ISPMLIB DATASET ID('ATF.V287.SCIKMLIB')    D
ISPEXEC SELECT CMD(CIKATFCU) NEWAPPL(TOC) PASSLIB
ISPEXEC LIBDEF ISPLLIB
ISPEXEC LIBDEF ISPPLIB
ISPEXEC LIBDEF ISPSLIB
ISPEXEC LIBDEF ISPMLIB
EXIT
```

Modify both CLIST members as follows:

A **Load library**

Specify the ATF load library name SCIKLOAD.

B **Panel library**

Specify the ATF panel library name (SCIKPLIB).

C **Skeleton library**

Specify the ATF skeleton library name (SCIKSLIB).

D **Message library**

Specify the ATF message library name (SCIKMLIB).

Once CLIST members CIKATF and CIKATFCU have been modified and saved, copy them to one of the CLIST libraries made accessible to TSO users via their TSO logon procedures.

Step 4: Add ATF to the ISPF Primary Option Menu

To use the ATF online interface, the ISPF Primary Option Menu (or another menu) can be optionally modified to add ATF as a menu option. Perform the following steps. (The instructions here assume you are adding ATF to the ISPF Primary Option Menu. If not, perform these steps on the panel you have chosen instead.)

1. Locate your installation's ISPF panel library and find the member containing the ISPF Primary Option Menu. Depending on your version of ISPF, this may be the member ISP@PRIM or ISR@PRIM.
2. Edit the ISPF Primary Option Menu. Find a line in the panel like the following:

   ```
   %       7+ Dialog Test - perform dialog testing
   ```
3. Following this line, insert a new line like this one. (The use of "ATF" as the option abbreviation for ATF is recommended. However, any unused number or string can be used.)

   ```
   %       ATF+ Application Time Facility
   ```
4. Find a line in the panel like the following:

   ```
   7,'PGM(ISRYXDR)   NOCHECK'
   ```
5. Following this line, insert a new line like this one (using the same option number or abbreviation you used in Step 4 above):

   ```
   ATF,'CMD(CIKATF) NEWAPPL(TOC)'
   ```
6. Save the changes made to the panel definition member.

Step 5: Run the ATF customization program

How you invoke ISPF dictates how you invoke the ATF customization program:

- If when you logon to TSO, TSO puts you in READY mode (rather than directly invoking ISPF), enter the following TSO command at the READY prompt:

  ```
  ISPSTART CMD(CIKATFCU) NEWAPPL(TOC) PASSLIB
  ```

- If your TSO LOGON procedure invokes ISPF directly, enter the following command on any ISPF command line:

  ```
  TSO CIKATFCU
  ```

  or, from ISPF option 6 (TSO COMMANDS), enter the command:

  ```
  CIKATFCU
  ```

When you invoke the customization program, the following panel is displayed:

```
TICTOC ----------------- TICTOC CUSTOMIZATION MENU -------- ATF IS NOT ACTIVE
OPTION ===> _
Specify one of the following options:

    C  CLASSES        - Specify execution classes eligible for virtual timing
    D  DATE FORMATS   - Select date formats for TICTOC screens and reports
    P  PASSWORDS      - (This option is no longer available)
    R  REPORTS        - Update options related to TICTOC report output
    S  SYSTEM SETTINGS - Set TICTOC system-wide execution options
    T  TICLIB         - Set the dataset name of the TICLIB load library
    V  VCD UTILITIES  - Create and manage the TICTOC Virtual Clock Dataset
    W  WTO CONTROL    - Decide when and how TICTOC will issue WTOs


Press the END key to save updated customization settings.
Use the CANCEL command to cancel any changes made.
         TT                            TT
        TT                            TT
    TTTTTTTTTT     II    CCCCCCC   TTTTTTTTTT     0000000      CCCCCCC
       TT          II   CC    CC      TT          00   00     CC    CC
       TT   TT     II   CC             TT   TT    00   00     CC
       TT   TT     II   CC    CC       TT   TT    00   00     CC    CC
        TTT        II    CCCCCC        TTT         000000      CCCCCC
(C) COPYRIGHT IBM CORPORATION 2006 ALL RIGHTS RESERVED        VERSION 2.8.700
```

To complete the installation, you must use:

- Option T to specify the TICLIB (ATF load library) data set name if you have changed it from the default.
- Option V to allocate a VCD.

These operations are discussed on the following pages. Other customization options are discussed in Part 2, "Customizing ATF," on page 19.

Specifying the TICLIB data set name

By default, the ATF load library is named ATF.V287.SCIKLOAD. If you changed the library to another name or moved the ATF load modules to an APF-authorized library when you installed ATF, you must specify that name to the customization program. (If you have not changed the name of the ATF load library, skip this operation.) Select option T (TICLIB) from the ATF Customization Menu to specify the TICLIB data set name. The following panel appears:

Specifying the TICLIB data set name

```
TICTOC -------------- TICLIB LOAD LIBRARY DATASET NAME ----------------------

OPTION ===> _



TICLIB Dataset  ===> ATF.V287.SCIKLOAD


    The TICLIB load library dataset name specifies the dataset to be
    used by TICTOC as a private task library for loading programs
    during various TICTOC execution phases and for storing TICTOC
    customization settings.


    Usually, the TICLIB dataset name is the same as the name of the
    TICTOC load library created when TICTOC was installed. If, however,
    TICTOC's load modules were moved to another load library, then the
    TICLIB dataset name should be set to that name accordingly.




Press the END key to save TICTOC TICLIB dataset name settings.

Use the CANCEL command to cancel any changes made.
```

The prompt field for the ATF load library name is initially displayed with the
default value, ATF.V287.SCIKLOAD, or with whatever value you last specified for
it.

Make whatever changes are appropriate and press END. You are returned to the
customization menu with a message confirming the change.

Allocating the Virtual Clock Data Set (VCD)

Select option V (VCD UTILITIES) from the ATF Customization Menu to allocate
the VCD. A panel like the following is displayed:

```
TICTOC --------------------- VCD UTILITIES MENU -----------------------------

OPTION ===> _

Specify one of the following options:

    A  ALLOCATE    - Create and format the Virtual Clock Dataset
    D  DELETE      - Delete the VCD dataset
    F  FREE        - Free unused VCD dataset space
    I  INFORMATION - List VCD dataset allocation information
    R  RENAME      - Rename the VCD dataset
    X  EXIT        - Return to the TICTOC Customization Options Menu




Press the END key to return to the previous screen.
```

Select option A to allocate and format a new VCD. A panel like the following is
displayed:

```
 TICTOC ------------------ ALLOCATE AND FORMAT VCD ---------------------------
 COMMAND ===>


    VCD DATASET NAME   ===> _
    VOLUME SERIAL      ===>            (DASD volume to contain the VCD) *
    UNIT NAME          ===>            (Generic group name or unit address) *
    SPACE UNITS        ===>            (BLKS, TRKS or CYLS)
    PRIMARY QUANTITY   ===>            (In above units)
    BLOCK SIZE         ===>            (Minimum 512, maximum 32760)


    * Only one of these fields may be specified




 Press the END key to allocate and format the new VCD dataset.

 Use the CANCEL command to cancel the request.
```

Specify either a VOLSER or UNIT NAME (but not both), and specify how much
space should be allocated for the VCD. Ten tracks on a 3390 hold over one
thousand VCD entries, which should be enough for most installations. (Note that
there is no secondary allocation for the VCD; the size of the VCD is fixed on
allocation.) For example:

```
 TICTOC ------------------ ALLOCATE AND FORMAT VCD ---------------------------
 COMMAND ===> _


    VCD DATASET NAME   ===> ATF.V287.VCD
    VOLUME SERIAL      ===> SYS123     (DASD volume to contain the VCD) *
    UNIT NAME          ===>            (Generic group name or unit address) *
    SPACE UNITS        ===> TRKS       (BLKS, TRKS or CYLS)
    PRIMARY QUANTITY   ===> 2          (In above units)
    BLOCK SIZE         ===> 6144       (Minimum 512, maximum 32760)


    * Only one of these fields may be specified




 Press the END key to allocate and format the new VCD dataset.

 Use the CANCEL command to cancel the request.
```

Press END to allocate the VCD (or enter CANCEL on the COMMAND line to
cancel the allocation) and return to the VCD submenu. A message is displayed
confirming that the allocation was successful.

At this point, basic ATF customization is complete. If you want to change other
options, refer to Part 4, "Additional topics," on page 49. Otherwise, press END
from the ATF Customization Menu to record the changes you have made. Then
continue with the next installation step.

Step 6: Modify and install the ATF system program JCL procedure

The component of ATF that actually provides the virtual date and time services to executing jobs is known as the ATF System Program, CIKICMVS. Program CIKICMVS is normally executed as a started task but it can also be run as a standard batch job.

To execute CIKICMVS, use JCL like the following, which is included as member CIKLATF in the ATF SCIKSAMP library. Boxed letters refer to the notes that follow.

```
//ATF      PROC CLASS='*'   A
//TICSYSTM EXEC PGM=TICMVS
//STEPLIB  DD   DISP=SHR,DSN=ATF.V287.SCIKLOAD   B
//TICLOG   DD   SYSOUT=&.CLASS      <=== THIS IS OPTIONAL   C
//TICSNAP  DD   SYSOUT=&.CLASS
//SYSUDUMP DD   SYSOUT=&.CLASS
```

A By default, CIKICMVS assigns all printouts it produces to the procedure's default SYSOUT class. To assign the program's printouts to another class, change the CLASS specification appropriately.

B Change the first and second-level qualifiers of the data set name if appropriate.

C This DD can be dynamically allocated (Part 2, "Customizing ATF," on page 19).

Copy the modified procedure to a started-task procedure library (such as SYS1.PROCLIB) with the name CIKLATF, ATF, or another name of your choice.

Step 7: Start ATF

Start the ATF System Program from the operator console by issuing an z/OS START command using the name of the procedure you gave in Step 4 (or submit a batch job that issues the START command):

```
S CIKLATF
```

The ATF System Program should complete initialization within a few seconds and notify the operator that it is ready to accept operator commands.

If you want ATF virtual timing services to be available at all times, include the ATF System Program in the list of started tasks that are initiated whenever the system is IPLed. Otherwise, you have to manually issue the z/OS START command following each IPL.

Notes:

1. You can override the CLASS parameter in the cataloged procedure by specifying it in the START command, like this:

```
S CIKLATF,CLASS=X
```

2. Later, when you are ready to terminate ATF, issue the following command:

```
F CIKLATF,SHUT
```

Chapter 2. Verifying the installation

Verifying that the installation was successful involves checking to make sure that the ATF online interface is accessible and that the ATF system program successfully provides its virtual timing services.

Verifying the ATF online interface

Logon to ISPF. ATF should appear on the ISPF Primary Option Menu if you modified the menu as per the instructions in Step 4. Select ATF from the menu. If ATF is active, a message to that effect is displayed in the upper-right hand corner of the ATF main menu panel. Refer to the *Application Time Facility for z/OS User's Guide* for information on using the ATF online interface.

Verifying the ATF system program

To verify that the ATF System Program has been installed properly, ATF provides a simple test program called CIKCTEST. CIKCTEST writes the virtual date and time specified to the operator console and to the job's JES log. To submit CIKCTEST, use a job like the following (included as member CIKLTEST in the ATF SCIKSAMP library). Highlighted letters refer to the notes below.

```
//TESTATF JOB   << FILL IN THE APPROPRIATE JOBCARD PARAMETERS >>  A
//*
//*---------------------- SET THE DATE/TIME
//SETIME   EXEC PGM=TICON
//STEPLIB  DD DISP=SHR,DSN=ATF.V287.SCIKLOAD  B
//TICLOG   DD SYSOUT=*  C
//TICIN    DD *
DATEFRMT=1  D
VIRTDATE=2000/01/01  E
VIRTTIME=10:00
/*
//*---------------------- DEMONSTRATE OPERATIONAL
//TIMETEST EXEC PGM=TICTEST
//STEPLIB  DD DISP=SHR,DSN=ATF.V287.SCIKLOAD  F
//
```

A   Modify the JOB statement as appropriate.

B   If the ATF load library is in LINKLIST or the ATF load modules are in LPA, this statement is unnecessary. Otherwise, specify the ATF load library name.

C   This DD can be dynamically allocated, as described in Part 2, "Customizing ATF," on page 19.

D   The DATEFRMT=1 statement means that YYYY/MM/DD is the format being used for the date specified on the following VIRTDATE statement.

E   Substitute whatever date or time (or both) you like.

F   If the ATF load library is in LINKLIST or the ATF load modules are in LPA, this statement is unnecessary. Otherwise, specify the ATF load library name.

Verifying the ATF system program

Chapter 3. Controlling the ATF system program

Several commands to control ATF are available via the z/OS MODIFY command.

Starting the ATF system program

As discussed in Step 5, you start ATF with a START command like this (assuming the procedure for the ATF program is named CIKLATF):

```
S CIKLATF
```

Logically stopping the ATF system program

To "logically" stop ATF, issue a STOP (P) command like this:

```
P CIKLATF
```

The STOP command disables newly executed jobs and TSO users from being eligible to use ATF's virtual timing services. Jobs and TSO users that were executing using ATF virtual timing services continue to do so; however, jobs that start after the STOP command do not execute with ATF services. (The ATF System Program can be restarted via the START or RESTART MODIFY command, as discussed below.)

Note: The STOP command does **not** terminate the ATF System Program region. To accomplish this, use the SHUT command, described below, instead.

You can also stop ATF using the z/OS F (MODIFY) command, like this:

```
F CIKLATF,STOP
```

This is equivalent to P CIKLATF.

Logically halting the ATF system program

Occasionally, you may want to halt virtual timing services, without regard to its effect on jobs and TSO users currently executing under ATF's virtual timing services.

To "logically" halt ATF, issue a HALT command like this:

```
F CIKLATF,HALT
```

The HALT command immediately disables all jobs and TSO users from being eligible or continuing to receive ATF's virtual timing services. Jobs and TSO users that were executing using ATF virtual timing services revert back to receiving the current system date and time; jobs that start after the HALT command execute without ATF services. (The ATF System Program can be restarted via the START or RESTART MODIFY command, as discussed below.)

Note: The HALT command does **not** terminate the ATF System Program address space. To accomplish this, use the SHUT command, described below, instead.

Terminating the ATF system program region

To terminate the ATF System Program region, issue a SHUT command like this:

`F CIKLATF,SHUT`

The SHUT command immediately disables all jobs and TSO users from being eligible or continuing to receive ATF's virtual timing services. Jobs and TSO users that were executing using ATF virtual timing services revert back to receiving the current system date and time; jobs that start after the SHUT command execute without ATF's virtual timing services.

Note: The SHUT command is the only command that **does** terminate the ATF System Program address space.

Restarting ATF

If you have stopped the ATF System Program using P CIKLATF or MODIFY CIKLATF with STOP or HALT (but not SHUT), you can resume ATF virtual timing services (for new jobs that start after you have restarted ATF and that qualify for such services). Use either of two commands:

F CIKLATF,RESTART
Reactivate the ATF System Program, refresh the VCD, and make ATF virtual timing services available.

F CIKLATF,START
Reactivate the ATF System Program and make ATF virtual timing services available. Do not refresh the VCD.

Other commands to control ATF

Other commands are available for the ATF System Program to control other aspects of ATF processing. They are all issued via the z/OS F (MODIFY) command.

F CIKLATF,CLOSELOG
Closes and reopens the SYSOUT data set of the ATF Activity Log (TICLOG). This places all TICLOG output that was produced since the ATF System Program was last started (or since the last CLOSELOG command) on the JES spool data set, making it immediately available for printing. This command is available only when the TICLOG DD statement has been dynamically allocated.

F CIKLATF,LIST
Prints the contents of the active VCD to the ATF Activity Log (TICLOG).

F CIKLATF,NOTE,comment
Places comment text in the ATF Activity Log (TICLOG).

F CIKLATF,REFRESH
Refreshes the active VCD with the contents of the VCD as last saved. This is equivalent to selecting the R (REFRESH) option from the ATF online interface Primary Option Menu.

F CIKLATF,SNAP
Use only when directed by a ATF customer support representative.

Chapter 4. Security considerations

By default, anyone who has access to the TSO CLISTs you created in installation Step 3 can use the ATF online interface to add, change, and delete entries in the VCD. Also by default, any job, in any job class, can include JCL to invoke ATF virtual timing services. Finally, by default, anyone can invoke the ATF Customization Program (CIKATFCU) to customize ATF execution options.

If you want to restrict use and customization of ATF, you can use the security package at your installation (such as or ACF2) for this purpose. You can also use features of ATF itself to restrict and control how ATF is used.

ATF and your installation's security package

If your installation uses an z/OS security package such as RACF or ACF2, you can use the resource protection features of that package to limit access to ATF data sets and programs. For example, under RACF, you could do the following:

- Define a generic profile for ATF data sets (for example, ATF.V287.*).
- If you have given the ATF VCD a name that is not included in the generic profile for the ATF data sets, define a discrete profile for it.
- Define generic profiles for the ATF programs (for example, profile names TIC* and TOC*).
- Grant authority to these resources as follows:

CLASS OF USER	AUTHORITY
Users who are to run jobs under ATF control	READ
Users who are to add, change or delete VCD entries	UPDATE
System programmers	ALTER
Managers	ALTER

Note: If you prefer, you could define discrete profiles for the ATF load library dataset name (for example, ATF.V287.SCIKLOAD), the VCD (for example, ATF.V287.VCD), and each of the ATF programs (CIKICMVS, CIKTICON, CIKICOFF, CIKICAPF, CIKICISPF, CIKCCUST and so on) and grant authority to each discrete resource in the same way.

If you are using an external security package other than RACF, follow the equivalent procedures in the package you are using.

ATF security features

ATF includes a number of features to help make its use more secure. You can specify that only jobs in one or more classes are eligible for virtual timing services. You can use the VCD to restrict the jobs and TSO users that can use virtual timing services. You can also use ATF's own security table to specify which users can add, change, or delete which VCD entries.

Restricting ATF by class

By default, a job whose name matches an entry in the VCD run with the virtual timing settings specified in the VCD itself or in the JCL of the job. You can restrict ATF virtual timing services to certain job classes and direct users to submit their test jobs using one of those classes. This prevents jobs from being run inadvertently with a virtual date or time.

To specify the classes to which ATF is to be restricted, select option C (CLASS) from the ATF Customization Program main menu, described in Part 2, "Customizing ATF," on page 19.

Using the VCD to restrict use of ATF

As discussed in the *Application Time Facility for z/OS User's Guide* an entry in the VCD specifies a job (or generic group of jobs) eligible for ATF virtual timing services. Optionally, the virtual date or time (or both) a matching job is to run under can be specified in the VCD entry itself or via JCL in the job itself.

When ATF is first installed, the VCD contains a single entry enabling all jobs (but not TSO users) to run using ATF virtual timing services. However, you can use the VCD to regulate the use of ATF virtual timing services. In conjunction with the ATF Security Table (discussed below), this allows you to control precisely which users can use ATF with which jobs.

Only the jobs you actually specify in the VCD run with ATF virtual timing services, and only with the specified dates and times if you:
- Confine VCD entries to full non-patterned job names (that is, you do not specify wildcard or generic characters in job names) and
- Specify the date and time in the entries themselves.

If you use only specific job names in the VCD but do not specify date or time, only the jobs you actually specify run with ATF virtual timing services, but only if the JCL to specify a virtual date or time, or both, is actually included in the job. As an intermediate level of restriction, you can use wildcards in the job names of the VCD entries to restrict use of ATF to jobs in a particular group, such as all jobs whose names begin "TEST", or jobs with names in the form "ACCxxTST".

For more information on the VCD and defining virtual clock definitions, see the *Application Time Facility for z/OS User's Guide*.

The ATF security table

To control use of the VCD at a more detailed level than can be offered by external security packages, the ATF Security Table is provided. Using this table, you can restrict certain users to the job names they are permitted to add, change, or delete.

(The ATF Security Table imposes no restrictions, however, on which entries the user sees when they use the online interface to browse or edit the VCD. In addition, the ATF Security table is not used to determine the virtual time eligibility of a job, user or application at execution time).

ATF is shipped with a default precompiled Security Table that allows all users to add, change, and delete entries in the VCD without restriction. The source for the default table can be found in ATF SCIKSAMP library member CIKSECTB.

The ATF Security Table is defined using a series of one or more TI#SECTB Assembler Language macro statements, followed by an END statement, like this:

```
namea    TI#SECTB DEFINE,USERS=(user,...),JOBNAMES=((name,(type,...))...)
nameb    TI#SECTB DEFINE,USERS=(user,...),JOBNAMES=((name,(type,...))...)
namec    TI#SECTB DEFINE,USERS=(user,...),JOBNAMES=((name,(type,...))...)
  .
  .
  .
  namez  TI#SECTB DEFINE,USERS=(user,...),JOBNAMES=((name,(type,...))...)
         END
```

USERS can consist of the keyword 'ALL' (surrounded by single quotation marks (')) or a series of specific or generic user names, such as USER$_*$ or INTT??Z.

JOBNAMES can consist of the keyword 'ALL' or 'NONE' (surrounded by single quotation marks (')) or a series of specific or generic names, such as ACCT$_*$ or ACC?TST and types (JOB, STC, TSU, IMS and USR). If type is not specified, all types are assumed.

In both USERS and JOBNAMES, question marks ("?") match any single character in the corresponding position of a name, and an asterisk ("$_*$") matches zero or more characters from the location of the asterisk to the end of the user ID or name. For example, a JOBNAMES entry for "ACCT$_*$" matches all jobs with names starting "ACCT". An entry for "A??T$_*$" matches all jobs with an "A" in the first position and a "T" in the fourth position. ATF permits the use of up to eight question marks, but only one asterisk. Note that "????????" matches only names that are (exactly) eight characters long, but "$_*$" matches names of any length.

The default Security Table, as supplied in ATF SCIKSAMP library member CIKSECTB, looks like this:

```
DEFAULT TI#SECTB DEFINE,USERS=('ALL'),JOBNAMES=('ALL')
        END
```

If you want to restrict all users to particular groups of VCD entry names and types, you can change this entry in the Security Table. For example, you might change it to something like this:

```
DEFAULT TI#SECTB  DEFINE,USERS=('ALL'),JOBNAMES=((TEST*,(JOB)),(DEV*,(JOB,STC)))
```

If you want to restrict which users can update entries in the VCD, add the appropriate entry in the Security Table and change the default entry to specify JOBNAMES=('NONE'), like this:

```
ENT1    TI#SECTB DEFINE,USERS=(A*,X*),JOBNAMES=((TEST*,(JOB)))
ENT2    TI#SECTB DEFINE,USERS=(DEVGRP*),JOBNAMES=((DEV*,(JOB,STC)))
DEFAULT TI#SECTB DEFINE,USERS=('ALL'),JOBNAMES=('NONE')
        END
```

Note: You can change the JOBNAMES specification for the USERS=('ALL') entry, but do not remove this entry. Specific or generic names do not need to be surrounded by single quotation marks (').

After you code and assemble the Security Table, the resulting load module (CIKSECTB) must be linkedited into the ATF load library. Sample JCL for doing this is included as member CIKLASM in the ATF SCIKSAMP library.

Installation and maintenance

Part 2. Customizing ATF

As explained in Installation Step 5, a number of ATF processing options are controlled using the ATF Customization Program. You used this program to allocate the VCD for your installation. You also use the ATF Customization Program to:

- Set user defaults for date formats in displays and reports.
- Control WTO processing.
- Set options for the ATF Activity Log and ATF reports.
- Manage the VCD.
- Restrict eligibility for ATF services to one or more job classes.

Customizing ATF

Chapter 5. Invoking the ATF customization program

Invoke the ATF customization program using one of the commands below:

- From TSO READY mode:

  ISPSTART CMD(CIKATFCU) NEWAPPL(TOC) PASSLIB

- From any ISPF command line:

  TSO EX CIKATFCU

- From ISPF option 6 (TSO COMMANDS), enter the command:

  EX CIKATFCU

The following panel is displayed:

```
TICTOC ----------------- TICTOC CUSTOMIZATION MENU ------------ ATF IS ACTIVE
OPTION ===> _
Specify one of the following options:

   C  CLASSES        - Specify execution classes eligible for virtual timing
   D  DATE FORMATS   - Select date formats for TICTOC screens and reports
   P  PASSWORDS      - (This option is no longer available)
   R  REPORTS        - Update options related to TICTOC report output
   S  SYSTEM SETTINGS - Set TICTOC system-wide execution options
   T  TICLIB         - Set the dataset name of the TICLIB load library
   V  VCD UTILITIES  - Create and manage the TICTOC Virtual Clock Dataset
   W  WTO CONTROL    - Decide when and how TICTOC will issue WTOs

Press the END key to save updated customization settings.
Use the CANCEL command to cancel any changes made.
         TT                              TT
        TT                               TT
     TTTTTTTTTT     II     CCCCCCC   TTTTTTTTTT     0000000      CCCCCCC
        TT          II    CC    CC      TT          00   00     CC    CC
        TT   TT     II    CC           TT   TT      00   00     CC
        TT   TT     II    CC    CC     TT   TT      00   00     CC    CC
         TTT        II     CCCCC        TTT          000000      CCCCC
(C) COPYRIGHT IBM CORPORATION 2006 ALL RIGHTS RESERVED       VERSION 2.8.700
```

Each of the options on this panel is discussed below.

CLASSES (C)

As explained earlier, to make sure that no job is inadvertently run with a virtual date or time, you can restrict ATF virtual timing services to certain job classes, and direct users to submit their test jobs using one of those classes. To do so, select this option.

A panel like the following appears:

CLASSES (C)

```
TICTOC ----------------- ELIGIBLE EXECUTION CLASSES -------------------------

COMMAND ===> _

Specify 'Y' (YES) or 'N' (NO) to indicate which job execution classes are to
be eligible for TICTOC virtual timing services:

    A => Y        B => Y        C => Y        D => Y        E => Y        F => Y

    G => Y        H => Y        I => Y        J => Y        K => Y        L => Y

    M => Y        N => Y        O => Y        P => Y        Q => Y        R => Y

    S => Y        T => Y        U => Y        V => Y        W => Y        X => Y

    Y => Y        Z => Y        0 => Y        1 => Y        2 => Y        3 => Y

    4 => Y        5 => Y        6 => Y        7 => Y        8 => Y        9 => Y


Press the END key to save TICTOC execution class settings.

Use the CANCEL command to cancel any changes made.
```

On this panel, you can specify which job classes are eligible for ATF virtual timing services. By default, all classes are eligible for ATF virtual timing services.

To restrict ATF from processing jobs in a particular class, simply change the Y to N. To record these specifications, press END (or enter CANCEL on the COMMAND line to leave this panel without making any changes).

DATE FORMATS (D)

This option controls user defaults for date formats on ATF online panel displays and in printed reports. Individual users are able to override these defaults.

When you select this option, a panel like the following is displayed:

```
TICTOC -------------------- DATE FORMAT DEFAULTS ----------------------------

COMMAND ===> _

Formats available (using January 25th, 2003 as an example):

    1 - 2003/01/25  2 - 01/25/2003  3 - 25/01/2003  4 - 25JAN2003  5 - 2003.025

    Batch Default  ===> 1
    Online Default ===> 1








Press the END key to save TICTOC date format settings.

Use the CANCEL command to cancel any changes made.
```

Select the appropriate option for batch reports and for the online interface. Then press END (or enter CANCEL on the COMMAND line to exit this panel without making any changes).

REPORTS (R)

This option controls settings pertaining to the ATF Activity Log (TICLOG) and to ATF reports (TICRPT). The TICLOG contains all messages generated by ATF programs during their execution. TICRPT is used by programs that generate formatted reports, such as CIKLSVCD (list VCD contents report program).

When you select this option, a panel like the following appears:

```
 TICTOC ----------------------- REPORT OPTIONS --------------------------------

 COMMAND ===> _

 Number of Lines Per Page:

     TICLOG Reports ===> 60    (20-256)

     TICRPT Reports ===> 60    (20-256)

 TICLOG Dynamic Allocation Options:

     Batch Programs?  => Y (Y/N)  Class => A  Dest => LOCAL008  Hold? => Y (Y/N)
     Online Sessions? => N (Y/N)  Class => X  Dest =>           Hold? => N (Y/N)




 Press the END key to save TICTOC report option settings.

 Use the CANCEL command to cancel any changes made.
```

You can change the settings as required and press END to record them (or enter CANCEL on the COMMAND line to leave this panel without making any changes).

Note: If you elect not to have the TICLOG allocated dynamically, users must include the following DD statement in their JCL for all ATF batch programs (including CIKTICON and CIKICOFF):

```
//TICLOG DD SYSOUT=*
```

SYSTEM SETTINGS (S)

This option controls settings that globally affect ATF's execution. When you select this option, a panel like the following appears:

```
TICTOC ---------------- SYSTEM-WIDE EXECUTION OPTIONS ------------------------

COMMAND ===>
DO NOT MODIFY OPTIONS BELOW WITHOUT PRIOR APPROVAL OF TICTOC CUSTOMER SUPPORT.
XPC work obtain attempts     ===> 0255  (1-9999)
TWB/TCB excess threshold     ===> 255   (1-255)
TIME User Exit enabled?      ===> Y  (Y or N)  Module name ===> CIKEXTIM
STC support disabled?        ===> Y  (Y or N)
VCD Move/Copy disabled?      ===> Y  (Y or N)
VCD Switch disabled?         ===> Y  (Y or N)
Format VCD default record?   ===> Y  (Y or N)
ESA timing service enabled?  ===> Y  (Y or N)
ESA timing if XCF coupled?   ===> Y  (Y or N)
ESA STCKSYNC support enabled? ===> Y (Y or N)
Storage protection override? ===> Y  (Y or N)
Privileged callers enabled?  ===> Y  (Y or N)
IMS support enabled?         ===> N  (Y or N)
STCK replacement SVC enabled? ===> N (Y or N)  SVC number  ===> 245  (200-255)
Auditing enabled?            ===> N  (Y or N)  SMF rec no. ===> 177 (128-255)
Migration pseudo-volser name ===> MIGRAT      SMF Dynamic Exit ==> N (Y or N)
SUBSYS name                  ===> TICT
Reset above to defaults?     ===> N  (Y or N)
Press the END key to save TICTOC system-wide execution option settings.
Use the CANCEL command to cancel any changes made.
```

Note: Most of these execution options should never be changed unless you are advised to do so by your ATF customer support representative or by instructions in this document.

Each of the options is discussed below:

XPC Work Obtain Attempts

This option defines the number of times ATF is to attempt to reserve an already existing working storage area when determining a job's virtual timing status.

The default value of 256 should not be changed unless you are advised to do so by your ATF customer support representative.

TWB/TCB Excess Threshold

This option defines the maximum number of work areas obtained by ATF in an address space at which point ATF automatically releases all work areas no longer in use.

The default value of 255 should not be changed unless you are advised to do so by your ATF customer support representative.

Time User Exit Enabled?/Module Name

This option enables and disables the TIME User Exit module. This exit receives control whenever an address space under ATF virtual time issues a date or time request that is handled by ATF.

The default value of "Y" enables the exit module whose name follows on the right hand side of this option's screen line. The default module name is CIKEXTIM. Specifying "N" disables the call to the exit.

ATF is distributed with a working version of module CIKEXTIM, located in ATF SCIKLOAD library member CIKEXTIM, that prevents programs operating in supervisor state or non-problem protect keys from receiving

virtual time. The source code to the supplied version of module CIKEXTIM is located in ATF SCIKSAMP library member CIKEXTIM.

The default values of "Y", the module name "CIKEXTIM", and the supplied sample exit should not be changed unless you are advised to do so by your ATF customer representative.

STC Support Disabled?
This option specifies whether virtual clock definitions can be defined and used for started tasks (STCs).

The default value of "Y" disables the ability to use started tasks with ATF. Specify "N" to enable the use of started tasks with ATF.

VCD Move/Copy Disabled?
This option specifies whether options for moving and copying virtual clock definitions from one Virtual Clock Data Set to another are to be enabled and displayed on the ATF Online Interface's Primary Option Menu.

The default value of "Y" disables these options. This is the recommended setting as these options are rarely used. Specify "N" to enable the move and copy options.

VCD Switch Disabled?
This option defines whether Option "S" for switching the Virtual Clock Data Set name is to be enabled and displayed on the ATF Customization Program's VCD Utilities Menu.

The default value of "Y" disables this option. This is the recommended setting as this options is rarely used. Specify "N" to enable the switch option.

Format VCD Default Record?
This option specifies whether a default virtual clock definition record is automatically added to the Virtual Clock Data Set when it is allocated. The default record enables all batch jobs to be used with ATF's JCL Interface, as described in the *Application Time Facility for z/OS User's Guide*.

The default value of "Y" creates the default record when the VCD is initially allocated and formatted. This is the recommended setting. Specify "N" to prevent this record from being added automatically to the VCD.

Note: The default record can be deleted, if necessary, using the ISPF Interface.

ESA Timing Service Enabled?
This option indicates whether ATF is to intercept time requests called by the z/OS assembler macros TIME LINKAGE=SYSTEM and STCKSYNC.

The default value of "Y" enables ATF's support for these requests. This is the recommended setting. Specify "N" to disable ATF's support for these services.

The default value of "Y" should not be changed unless you are advised to do so by your ATF customer support representative.

ESA Timing If XCF Coupled?
This option specifies whether ATF's z/OS timing services, described above, are to be conditionally enabled or disabled if z/OS is XCF coupled in a SYSPLEX configuration.

The default value of "Y" enables ATF's support for these requests whether z/OS is XCF coupled or not. This is the recommended setting. Specify "N" to disable ATF's support for z/OS timing services if z/OS is XCF coupled in a SYSPLEX configuration.

This option has no effect if "N" was specified for option "ESA TIMING SERVICE ENABLED", described above, or if z/OS is not XCF coupled.

The default value of "Y" should not be changed unless you are advised to do so by your ATF customer support representative.

ESA STCKSYNC Support Enabled?

This option indicates whether ATF is to intercept time requests called by z/OS assembler macro STCKSYNC.

The default value of "Y" enables ATF's support for STCKSYNC requests. This is the recommended setting. Specify "N" to disable ATF's support for STCKSYNC macro calls. This option has no effect on ATF's support for calls made by the z/OS TIME LINKAGE=SYSTEM macro.

The default value of "Y" should not be changed unless you are advised to do so by your ATF customer support representative.

Storage Protection Override?

This option specifies whether ATF is to support the z/OS Storage Protection Override Facility. This facility is described in IBM's document "Principles Of Operation".

The default value of "Y" enables ATF's support for the Storage Protection Override Facility. Specify "N" to disable ATF's support for this facility.

The default values of "Y" should not be changed unless you are advised to do so by your ATF customer support representative.

Privileged Callers Enabled?

This option indicates whether ATF should intervene for date and time requests made by calling programs that are executing in supervisor state (caller's PSW bit 15 equals 0) or under storage protection keys 0 through 7.

The default value of "Y" enables ATF to return the virtual time to these privileged callers. Specify "N" to disable ATF's virtual timing support for privileged callers. This is the recommended setting

The supplied sample TIME User Exit module, CIKEXTIM, sets a return code that prevents privileged callers from receiving virtual time even if this option is enabled. If the exit is modified to nullify its testing for privileged callers, it is recommended that "N" be specified here to disable this option.

IMS Support Enabled?

This option specifies whether ATF is to enable virtual timing support for IMS/DC MPR and BMP message regions on an IMS USERID and application name level and support for updating the IOPCB local date and time fields.

The default value of "N" means that ATF's support for these services is disabled.

Specifying a value of "Y" enables ATF's support for virtual timing of IMS/DC MPR and BMP message region users and applications. This is the recommended setting.

This option has no effect if IMS is not installed in your system.

STCK Replacement SVC Enabled?/SVC Number

This option specifies whether the ATF STCK (store clock) Replacement SVC Routine is to be enabled and dynamically installed by the ATF System Program, CIKICMVS, and which SVC number it is to be installed as.

STCK is an z/OS machine instruction that returns the z/OS system clock's contents to the program that issues it. The STCK instruction is coded in assembler routines only.

Normally, the STCK machine instruction cannot be intercepted. However, using ATF's STCK replacement service allows the STCK instruction to be replaced by a call to the ATF STCK Replacement SVC Routine, CIKCSVST. Refer to Chapter 6, "z/OS Store Clock (STCK) instruction support With ATF," on page 35 for more information.

The default value of "N" disables ATF's automatic support for this service. The STCK replacement SVC module CIKCSVST can still be activated externally and used with ATF by installing it separately under z/OS as a permanent user SVC routine that is loaded during z/OS IPL processing. This is the recommended method.

Specifying "Y" dynamically loads the STCK replacement SVC routine, CIKCSVST, into extended CSA storage and updates the z/OS SVC table accordingly during ATF startup execution. In this case, when ATF is terminated, the SVC table is restored and module CIKCSVST is deleted from extended CSA storage.

Warning: Whether ATF dynamically installs the SVC or whether z/OS loads the SVC during z/OS IPL processing, **an unused SVC number from 200 to 255 must be specified for ATF's exclusive use**. Specifying an SVC number that is or will be used by another program or product will produce unpredictable results.

Auditing Enabled - SMF Record number

This option specifies whether the ATF Time Services Auditing Facility is to be enabled and which SMF record number is to be used by ATF when writing statistic records.

The default value of "N" disables ATF's automatic support for this service.

Specifying "Y" enables ATF's support for this service. SMF records of the specified SMF record number are written automatically for all jobs, users and applications that are defined in the VCD as being eligible for auditing.

Warning: If auditing is enabled, **an unused SMF record number from 128 to 255 must be specified for ATF's exclusive use**. Specifying an SMF record number that is or will be used by another program or product will produce unpredictable results.

Migration Pseudo-VOLSER Name

This option is reserved for future use.

The default value of "MIGRAT" should not be changed unless you are advised to do so by your ATF customer support representative.

SMF Dynamic Exit

This option is only applicable if the ATF Time Services Auditing Facility is enabled and ATF executes under z/OS.

When this option is set to "Y" and auditing is enabled and ATF executes under z/OS V1R4 above, ATF dynamically installs its own version of SMF

exit IEFACTRT. The installation of this exit by ATF will **not** affect or replace any existing version of exit IEFACTRT being used in your system. This is the recommended setting.

When this option is set to "N" and auditing is enabled or even when this option is set to "Y" but ATF executes under an z/OS version prior to 1.4, ATF uses its own alternate execution point where it writes out its SMF records.

SUBSYS name

The z/OS SUBSYSTEM name TICT has been reserved by ATF for its internal use.

The default value of "TICT" can only be changed via special arrangement with your ATF customer support representative, if the need arises.

Reset Above To Defaults?

This option specifies whether all of the system-wide execution option settings are to be reset to their default values.

The default value of "N" allows modifications to the system-wide execution options. Specify "Y" to reset all options to their default installation settings.

VCD UTILITIES (V)

This option provides functions to allocate and format your VCD, to free unused space in the VCD, to display detailed information about the VCD, and to rename the VCD. (You already used option "A" to allocate and format the VCD when ATF was installed.)

When you select this option, a menu panel like the following appears:

```
TICTOC --------------------- VCD UTILITIES MENU -----------------------------

OPTION ===> _

Specify one of the following options:

    A  ALLOCATE    - Create and format the Virtual Clock Dataset
    D  DELETE      - Delete the VCD dataset
    F  FREE        - Free unused VCD dataset space
    I  INFORMATION - List VCD dataset allocation information
    R  RENAME      - Rename the VCD dataset
    X  EXIT        - Return to the TICTOC Customization Options Menu




Press the END key to return to the previous screen.
```

Each of the options (except EXIT) is discussed below.

ALLOCATE (A)

This option was described in Installation Step 3. This step is normally done only once. For more information, see "Step 3: Install ATF ISPF online interface CLISTs" on page 5.

DELETE (D)

Under normal circumstances, you will never select this option. If, however,

you want to allocate a new VCD under the same name as the existing one, you can use this option to delete the existing one.

If you select this option, a confirmation panel is displayed, like this:

```
TICTOC --------------------- CONFIRM VCD DELETE -----------------------------

COMMAND ===> _

VCD DATASET NAME: ATF.V287.VCDTEST
VOLUME SERIAL:    SYS123
CREATION DATE:    96/02/05




Press the END key to delete the VCD.
Use the CANCEL command to cancel the request.
```

FREE (F)

After using ATF for a while, you may find that more entries in the VCD have been allowed for than are really necessary. As a result, you may want to free some of the excess space allocated. To do so, select this option. A panel like the following is displayed:

```
TICTOC -------------------- FREE UNUSED VCD SPACE -----------------------------

COMMAND ===> _

VCD DATASET NAME:  ATF.V287.VCD2000
VOLUME SERIAL:     SYS123
CREATION DATE:     96/0205

ALLOCATED RECORDS: 136
USED RECORDS:      67
FREE RECORDS:      69

     Percentage of free records to be kept ===>    (0-99)




Key in the percentage of free VCD records to be kept and press
the END key to free the remaining free record space.

Use the CANCEL command to cancel the request.
```

As you can see, this panel shows you information about your VCD, including how many of the allocated records (entries in the VCD) are used and how many are unused. You can then specify what percentage of the free records is to be retained.

The following example demonstrates how to specify free space percentage.

You initially allocated enough space for 500 records. After using ATF for a while, you see that you have only used 100 records, while 400 records are free. You decide to allow the number of entries to double from its present

size, so you specify 25 as the percentage to retain. ATF retains 25% of the 400 unused records, or 100 records, and frees the space allocated for the other 300 records.

Press END to free the space you have indicated and return to the VCD submenu (or enter CANCEL on the COMMAND line to return to the VCD submenu without making any changes).

INFORMATION (I)

To display information about the VCD, select option I. A panel like the following is displayed:

```
TICTOC ------------------ VCD DATASET INFORMATION ---------------------------

COMMAND ===> _

VCD DATASET NAME: ATF.V287.VCD2000

GENERAL DATA:                             CURRENT ALLOCATION:
    Volume serial:        SYS123             Allocated tracks:            2
    Device type:          3390               Allocated records:         136
    Organization:         PS
    Record format:        U
    Record length:        0               CURRENT UTILIZATION:
    Block size:           6144               Used tracks:                 1
                                             Used records:               67
    Creation date:        96/02/05
    Expiration date:      **NONE**

                                          LAST UPDATE HISTORY:
                                             Date:              96/02/05
                                             Time:              09:23:01
                                             Job name:          TSYS01
                                             Job number:        TSU 4065
```

This panel contains display-only information. When you are finished looking at it, press END to return to the VCD submenu.

RENAME (R)

If you want to rename your VCD, you can do so via this option. When you select it, a panel like the following is displayed:

```
TICTOC --------------------- VCD DATASET RENAME -----------------------------

COMMAND ===> _

VCD DATASET NAME: ATF.V287.VCDONCE
VOLUME SERIAL:    SYS123
CREATION DATE:    96/02/05




    Enter VCD's new name ===>









Press the END key to rename the VCD.
Use the CANCEL command to cancel the request.
```

Type in the new name (fully qualified, and without quotation marks). Press END to process the change and return to the VCD submenu (or enter CANCEL on the COMMAND line to return to the VCD submenu without processing any change).

WTO CONTROL (W)

ATF uses z/OS WTOs (write to operator macros) to issue messages to the system operator console. Most messages that ATF issues scroll off the display as other messages displace them. These are called regular messages. ATF also issues some more important messages that are highlighted, and that remain on the console until an operator manually deletes them. These are called permanent messages.

You can control where and how the messages appear using WTO descriptor and routing codes.

Use this option to control whether or not the ATF online interface issues WTOs and what descriptor and routing codes it uses for its regular and permanent messages.

When you select this option, a panel like the following appears:

```
TICTOC --------------------- WTO OUTPUT CONTROL -----------------------------

COMMAND ===> _


    Issue WTOs Online?   ===> NO   ('YES' or 'NO')

    Regular WTO Desc Codes    ===> 0000000000000000
    Regular WTO Route Codes   ===> 0000000000000000
    Permanent WTO Desc Codes  ===> 0100000000000000
    Permanent WTO Route Codes ===> 0100000000000000




Press the END key to save TICTOC WTO option settings.
Use the CANCEL command to cancel any changes made.
```

There are sixteen descriptor codes and sixteen routing codes. The fields on this panel display the codes in order, from 1 to 16; 0 deactivates the corresponding code and 1 activates it. For information about these codes, see the appropriate IBM documentation.

The defaults (shown above) should be appropriate for most installations. If you want to change the settings, refer to the IBM documentation and check your installation standards before doing so. To record your changes, press END (or enter CANCEL on the COMMAND line to leave this panel without making any changes).

VCD UTILITIES (V)

Part 3. Optional support

Chapter 6. z/OS Store Clock (STCK) instruction support With ATF

The STCK replacement SVC routine

The STCK machine instruction is an assembler instruction that returns the current value of the system time-of-day (TOD) clock as an 8-byte microsecond time value.

Normally, the STCK machine instruction cannot be intercepted by software. This poses a problem for programs containing the STCK instruction that need to be tested under virtual time.

To resolve this problem, ATF provides an SVC routine that can be called as a substitute to the STCK instruction. This SVC is known as the STCK replacement SVC routine. It is supplied as ATF SCIKLOAD library member CIKCSVST.

Installing STCK replacement support

Selecting an SVC number

z/OS makes SVC numbers 200 through 255 available for defining user SVC routines. All SVC numbers less than 200 are available for z/OS only.

An SVC number must be chosen and assigned for the exclusive use of the ATF STCK Replacement SVC routine. The SVC number must not be in use by any other SVC routine that is defined to z/OS or that will be dynamically loaded by z/OS or other software at a later time.

Warning: Assigning an SVC number to the STCK replacement SVC routine that is already in use or that will be used later on by another program or product may cause unpredictable results.

Method 1: Using z/OS to define the SVC

The STCK Replacement SVC routine, CIKCSVST, can be installed using standard z/OS facilities for defining user SVC routines. This method of installation makes the STCK replacement SVC's support immediately available when z/OS is IPLed. This is the recommended method.

Using this method, programs that call the STCK replacement SVC routine function correctly whether ATF is active or not. If ATF is not active, the SVC routine returns the real clock value to the calling program. If ATF is active and the calling program's region, user or application name is defined to ATF to receive virtual timing services, then a virtual date and time value are returned to the calling program.

The supplied STCK replacement SVC routine, CIKCSVST, must be defined as a type 3 or 4 SVC. The routine does not require any locks to be obtained.

For instructions on defining user SVCs to z/OS, consult the appropriate IBM z/OS documentation.

Method 2: Using ATF to dynamically install and uninstall the SVC

If it is desired that the STCK replacement SVC should only be made available for exclusive use with ATF (for example, only while ATF is executing), ATF can be customized to dynamically install and uninstall the routine during the ATF System Program's startup and termination phases.

Using this method, programs that call the STCK replacement SVC when ATF is not executing abnormally terminate when they issue the call (ABEND code **Fxx**, where xx is the hexadecimal value of the user SVC number).

To customize ATF to dynamically install and uninstall the STCK replacement SVC routine, refer to "STCK Replacement SVC Enabled?/SVC Number" on page 27.

Modify ATF SCIKMAC library member STCK

The ATF SCIKMAC library contains a member named STCK that is used for assembling source code containing STCK instructions. During assembly of the source code, the macro automatically converts and expands STCK instructions to call the STCK replacement SVC.

The supplied STCK macro member's code must be modified to define the SVC number selected for ATF's exclusive use. The statement to be modified is marked with the words "SVC NUMBER MUST BE SET".

Edit member STCK and change the SVC number value on the marked statement from zero to the SVC number that was selected. Save the modifications made.

Modifying source code to call the STCK replacement SVC

As mentioned above, the ATF SCIKMAC library contains a member named STCK that is used for assembling source code containing STCK instructions. During assembly of the source code, the macro automatically converts and expands STCK instructions to call the STCK replacement SVC.

To assemble programs using the ATF-supplied STCK macro, perform the following steps:
* Concatenate the ATF SCIKMAC library to the assembler JCL step's SYSLIB DD statement.
* Add the following line at the beginning of the program source code being assembled:

```
STCKSVC  COPY  STCK
```

Modifying load modules to call the STCK replacement SVC

In cases where source code is not available to assemble with ATF's STCK macro, the STCK replacement SVC service can still be called by modifying a program's load module code and zapping all occurrences of the STCK instruction within the module.

The STCK machine instruction is assembled into the following 4-byte hexadecimal value:

B205*aaaa*

"B205" is the machine code value of the STCK instruction.

"*aaaa*" can be any hexadecimal value that represents the address where the CPU is to store the 8-byte system clock value.

To convert the STCK instruction to call the STCK replacement SVC routine, the 2-byte "B205" instruction code must be changed to the following hexadecimal value:

0A*nn*

"0A" is the machine code value of the SVC call instruction.

"*nn*" must be equal to the hexadecimal value of the SVC number assigned for ATF's exclusive use. For example, if 245 is the assigned SVC number, "B205" must be changed to "0AF5" (decimal number 245 equals hexadecimal value X'F5').

Note: No changes should be made to the "*aaaa*" hexadecimal value of the original STCK instruction.

Backup load modules before making modifications

It is highly recommended that original copies of load modules be backed up and saved before they are zapped and modified to call the STCK replacement SVC routine.

Optional support

Chapter 7. Using ATF with Language Environment

IBM's Language Environment product includes several date and time retrieval and formatting routines that can be called by many applications, in several programming languages and under various execution environments.

Language Environment itself obtains the current date and time by issuing an STCK machine instruction. Therefore, in order to use Language Environment in combination with ATF, the STCK instruction issued by Language Environment, contained in various Language Environment modules, must be changed to call ATF's STCK replacement SVC routine (see "The STCK replacement SVC routine" on page 35).

ATF's ACIKSRVC service library contains zaps for various versions of Language Environment, as well as zaps which support specific programming languages, such as C and C++, which interact with Language Environment code differently than programming languages such as COBOL and PL/1.

Usually, these zaps come both in SMP/E USERMOD format and non-SMP/E format. Whenever possible, it is recommended that the appropriate Language Environment support zaps be applied to Language Environment using SMP/E.

If your system has a different version of Language environment or you require additional assistance in installing ATF's Language Environment support, contact your ATF customer support representative.

Optional support

Chapter 8. Using ATF with CICS

There are two ways to run ATF with

- Defining the entire CICS region to ATF.
- Using the ATF/CICS Interface (refer to the *Application Time Facility for CICS Installation and Customization Guide* and *Application Time Facility for CICS User's Guide*).

The following sections describe how to setup CICS with ATF.

CICS midnight rollover

CICS regions can be defined under ATF to execute under virtual time. However, when virtual time reaches midnight, the CEMT PERFORM RESET command must be issued to resynchronize CICS's time with ATF's virtual clock setting.

Program CIKCCIMN

To automate the CICS clock reset procedure, define the ATF supplied program CIKCCIMN to CICS and the transaction ID TICM to be associated with the program.

The program can then be executed by either adding the program name CIKCCIMN to the CICS PLT for automatic execution at CICS startup (this is the recommended method) or by manually issuing transaction TICM.

Once executed, the program automatically restarts itself the next time virtual time reaches midnight, even when the CICS region continues executing over a period several days or weeks.

If the program CIKCCIMN is executed in a CICS region that is not defined to ATF or if ATF is not active, the program issues an appropriate message and terminates without any additional processing.

Required CICS resource definitions

To define these program and transaction resources using CICS RDO transaction CEDA, perform the following steps:

1. Add the group name TICTOC to a new list named TICTOC using the following CEDA command:

   ```
   ADD GROUP(TICTOC) LIST(TICTOC)
   ```

   TICTOC is the suggested group and list name. However, any name can be substituted in these places.

2. Define transaction TICM using the following CEDA command:

   ```
   DEFINE TRANSACTION(TICM)
          GROUP(TICTOC)
          PROGRAM(CIKCCIMN)
          TWASIZE(512)
          TASKDATALOC(ANY)
          TASKDATAKEY(CICS)
          ISOLATE(NO)
   ```

Required CICS resource definitions

Command keywords TASKDATALOC, TASKDATAKEY and ISOLATE are not available for all CICS releases. However, they must be set as described if they are available in the CICS version for which the transaction is being installed.

3. Define program CIKCCIMN using the following CEDA command:

```
 DEFINE PROGRAM(CIKCCIMN)
        GROUP(TICTOC)
        LANGUAGE(ASSEMBLER)
        DATALOCATION(ANY)
        EXECKEY(CICS)
```

Command keywords DATALOCATION and EXECKEY are not available for all CICS releases. However, they must be set as described if they are available in the CICS version for which the program is being installed.

3. Install the group by using the following CEDA command:

```
 INSTALL GROUP(TICTOC)
```

The INSTALL command dynamically makes the program and transaction resource definitions available to CICS.

Chapter 9. Using ATF with IMS

Enable ATF/IMS's IMS message region support

ATF has a customization option that enables or disables virtual timing support for IMS MPR and BMP message region users and applications. In addition, this IMS support also updates the local date and time fields in an IMS transaction's IOPCB with the user's or application's virtual date and time.

To enable IMS Message Region support, follow the instructions documented earlier in this document at the beginning of installation Step 5 to invoke the ATF customization program.

When you invoke the customization program, the following panel is displayed:

```
TICTOC ------------------ TICTOC CUSTOMIZATION MENU ------------ ATF IS ACTIVE
OPTION ===> _
Specify one of the following options:

   C  CLASSES        - Specify execution classes eligible for virtual timing
   D  DATE FORMATS   - Select date formats for TICTOC screens and reports
   P  PASSWORDS      - (This option is no longer available)
   R  REPORTS        - Update options related to TICTOC report output
   S  SYSTEM SETTINGS - Set TICTOC system-wide execution options
   T  TICLIB         - Set the dataset name of the TICLIB load library
   V  VCD UTILITIES  - Create and manage the TICTOC Virtual Clock Dataset
   W  WTO CONTROL    - Decide when and how TICTOC will issue WTOs

Press the END key to save updated customization settings.
Use the CANCEL command to cancel any changes made.
         TT                          TT
        TT                           TT
   TTTTTTTTTT     II    CCCCCCC   TTTTTTTTTT    0000000     CCCCCCC
       TT         II   CC    CC      TT         00   00    CC    CC
      TT    TT    II   CC             TT    TT   00    00    CC
      TT    TT    II   CC    CC      TT TT    00    00    CC    CC
       TTT        II    CCCCC         TTT       000000      CCCCC
(C) COPYRIGHT IBM CORPORATION 2006 ALL RIGHTS RESERVED        VERSION 2.8.700
```

From the Customization Menu panel, select option S. This option controls settings that globally affect ATF's execution. When you select this option, a panel like the following appears:

43

Enable ATF/IMS's IMS message region support

```
TICTOC ---------------- SYSTEM-WIDE EXECUTION OPTIONS ------------------------

 COMMAND ===>
 DO NOT MODIFY OPTIONS BELOW WITHOUT PRIOR APPROVAL OF TICTOC CUSTOMER SUPPORT.
 XPC work obtain attempts      ===> 0255  (1-9999)
 TWB/TCB excess threshold      ===> 255   (1-255)
 TIME User Exit enabled?       ===> Y  (Y or N)  Module name ===> CIKEXTIM
 STC support disabled?         ===> Y  (Y or N)
 VCD Move/Copy disabled?       ===> Y  (Y or N)
 VCD Switch disabled?          ===> Y  (Y or N)
 Format VCD default record?    ===> Y  (Y or N)
 ESA timing service enabled?   ===> Y  (Y or N)
 ESA timing if XCF coupled?    ===> Y  (Y or N)
 ESA STCKSYNC support enabled? ===> Y  (Y or N)
 Storage protection override?  ===> Y  (Y or N)
 Privileged callers enabled?   ===> Y  (Y or N)
 IMS support enabled?          ===> N  (Y or N)
 STCK replacement SVC enabled? ===> N  (Y or N)  SVC number  ===> 245  (200-255)
 Auditing enabled?             ===> N  (Y or N)  SMF rec no. ===> 177 (128-255)
 Migration pseudo-volser name  ===> MIGRAT      SMF Dynamic Exit ==> N (Y or N)
 SUBSYS name                   ===> TICT
 Reset above to defaults?      ===> N  (Y or N)
 Press the END key to save TICTOC system-wide execution option settings.
 Use the CANCEL command to cancel any changes made.
```

Make sure that the "IMS SUPPORT ENABLED" option is set to "Y". Press the END key twice to save changes made and to exit the ATF online customization program.

Move load module CIKICIMS to a LINKLIST library

To complete installation of ATF's IMS Message Region support, module CIKICIMS must be moved (not copied) from the ATF load library to an z/OS LINKLIST library.

It is highly recommended that module CIKICIMS be moved and not copied in order to avoid maintaining duplicate copies of the module. A note should be made for future reference, indicating the name of the LINKLIST library to which load library CIKICIMS was moved to.

After moving module CIKICIMS, an LLA REFRESH operator command must be issued to make the module available to all IMS Message Regions.

Note: Failure to move module CIKICIMS to a LINKLIST library and to issue the LLA REFRESH command prior to activating ATF results in IMS Message Regions abending with code S806 if ATF's IMS Message Region support option is enabled.

Chapter 10. Using ATF with DB2

Several date and time retrieval functions are available when using IBM's through SQL. In particular, the SQL special registers CURRENT DATE, CURRENT TIME, and CURRENT TIMESTAMP can be used explicitly. Additionally, INSERT functions that do not specify any date, time or timestamp with a corresponding column or columns defined as "NOT NULL WITH DEFAULT," cause an implicit retrieval of the DATE, TIME, or TIMESTAMP. ATF supports all explicit and INSERT requests for the specified date and time values.

DB2 obtains the current date and time by issuing an STCK machine instruction. In order to use ATF with DB2, the STCK instruction issued by DB2, contained in CSECT DSNXVCTS in DB2 module DSNXGRDS, must be changed to request the date and time in STCK format from z/OS. This allows ATF to gain control and substitute the virtual date and time, where applicable. By making this change, DB2 operates normally whether ATF is active or inactive.

To modify DB2 for use with ATF, perform the following steps:

1. Create a backup copy of module DSNXGRDS from the DB2 load library. This can be done by copying the module to a separate library or by copying the module to the same library with a new name (for example, ORGXGRDS).
2. Apply one of the following zaps contained in the ATF PMR library:
   - Zap PMR7047S for DB2 Version 7.1.
   - Zap PMR7048S for DB2 Version 8.1.
   - Zap PMR7050S for DB2 Version 9.1.
3. Make the zapped DB2 module DSNXGRDS available to the DSNDBM1 region. The PMR zap to DB2 has no effect if the zapped DB2 load module is not loaded by the DSNDBM1 region. If a new DB2 load library was created for the modified load module, this library must then be concatenated above the DB2 supplied DSNLOAD library in the STEPLIB DD statement of the DSNDBM1 region's JCL.
4. Cycle (stop then start) the DB2 subsystem.

Using ATF with DB2

Chapter 11. Using ATF with NATURAL

ATF and ATF/CICS fully support the built-in date functions of the product NATURAL, from Software AG.

To provide this support, ATF and ATF/CICS NATURAL support modules must be linkedited into the appropriate NATURAL nucleus load module.

Linkedit the NATURAL batch and TSO nucleus

If your version of NATURAL uses a shared nucleus module for all NATURAL environments, skip to the "Linkedit the NATURAL CICS nucleus."

Use the following JCL example to linkedit ATF's NATURAL support module into the NATURAL batch or TSO nucleus:

```
//NATLINK  JOB   ***** FILL IN THE APPROPRIATE JOB CARD INFORMATION
 //*
 //LKEDNUCL EXEC PGM=IEWL,PARM='LIST,LET,XREF,MAP'
 //SYSLIB   DD  DISP=SHR,DSN=NATURAL.LOAD              <<=== REVIEW
 //SYSLIN   DD  DDNAME=SYSIN
 //SYSLMOD  DD  DISP=SHR,DSN=NATURAL.LOAD             <<=== REVIEW
 //SYSPRINT DD  SYSOUT=*
 //SYSUT1   DD  UNIT=SYSDA,                           <<=== REVIEW
 //            SPACE=(TRK,(10,10))
 //TICLOAD  DD  DISP=SHR,
 //            DSN=ATF.V287.SCIKLOAD                  <<=== REVIEW
 //SYSIN    DD  *
  REPLACE CMCOTIME
  INCLUDE SYSLIB(NATURAL_NUCLEUS_NAME)
  INCLUDE TICLOAD(CIKICNAT)
  NAME    NATURAL_NUCLEUS_NAME(R)
 /*
 //
```

Linkedit the NATURAL CICS nucleus

If your version of NATURAL uses a shared nucleus module for all NATURAL environments, skip to "Linkedit the NATURAL Shared Nucleus" on page 48.

Use the following JCL example to linkedit ATF's and ATF/CICS's NATURAL support module into the NATURAL CICS nucleus:

```
//NATLINK JOB   ***** FILL IN THE APPROPRIATE JOB CARD INFORMATION
 //*
 //LKEDNUCL EXEC PGM=IEWL,PARM='LIST,LET,XREF,MAP'
 //SYSLIB   DD  DISP=SHR,DSN=NATURAL.CICS.LOAD        <<=== REVIEW
 //SYSLIN   DD  DDNAME=SYSIN
 //SYSLMOD  DD  DISP=SHR,DSN=NATURAL.CICS.LOAD        <<=== REVIEW
 //SYSPRINT DD  SYSOUT=*
 //SYSUT1   DD  UNIT=SYSDA,                           <<=== REVIEW
 //            SPACE=(TRK,(10,10))
 //TICLOAD  DD  DISP=SHR,
 //            DSN=ATF.V287.SCIKLOAD                  <<=== REVIEW
 //SYSIN  DD  *
  REPLACE (CMCOTIME,CIKICNAT)
  INCLUDE SYSLIB(NATURAL_CICS_NUCLEUS_NAME)
```

Linkedit the NATURAL CICS nucleus

```
     INCLUDE TICLOAD(CIKICNAT)
     NAME    NATURAL_CICS_NUCLEUS_NAME(R)
 /*
 //
```

Continue with the topic "NATURAL Parameter TD", below.

Linkedit the NATURAL Shared Nucleus

If your version of NATURAL uses separate nucleus modules for each NATURAL environment, return to the topics "Linkedit the NATURAL Batch and TSO Nucleus" and "Linkedit the NATURAL CICS Nucleus", above.

Use the following JCL example to linkedit ATF's and ATF/CICS's NATURAL support module into the NATURAL shared nucleus:

```
 //NATLINK JOB   ***** FILL IN THE APPROPRIATE JOB CARD INFORMATION
 //*
 //LKEDNUCL EXEC PGM=IEWL,PARM='LIST,LET,XREF,MAP'
 //SYSLIB   DD  DISP=SHR,DSN=NATURAL.LOAD            <<=== REVIEW
 //SYSLIN   DD  DDNAME=SYSIN
 //SYSLMOD  DD  DISP=SHR,DSN=NATURAL.LOAD            <<=== REVIEW
 //SYSPRINT DD  SYSOUT=*
 //SYSUT1   DD  UNIT=SYSDA,                          <<=== REVIEW
 //             SPACE=(TRK,(10,10))
 //TICLOAD DD  DISP=SHR,
 //             DSN=ATF.V287.SCIKLOAD                <<=== REVIEW
 //SYSIN    DD  *
 REPLACE (CMCOTIME,CIKICNAT)
 INCLUDE SYSLIB(NATURAL_SHARED_NUCLEUS_NAME)
 INCLUDE TICLOAD(CIKICNAT)
 NAME    NATURAL_SHARED_NUCLEUS_NAME(R)
 /*
 //
```

Continue with the topic "NATURAL Parameter TD", below.

NATURAL parameter TD

In order to assure that the virtual date and time returned by ATF and ATF/CICS to NATURAL applications is calculated correctly, the NATURAL installation parameter TD must be set to TD=0.

Part 4. Additional topics

Chapter 12. z/OS operating system programs

z/OS system programs such as access methods (for example, QSAM and BSAM) and SMF are not affected by ATF. So, for example, the "last referenced" date of data sets opened by jobs under ATF control contain the real date, not the virtual one. Also, all SMF records written for a job under ATF control contain the real dates and times and computations performed by SMF (for things like CPU timing) are correct.

There are some exceptions to this rule, however, such as the IBM supplied IDCAMS utility program. To handle this and other known exceptions, consider installing the version of the ATF Time User Exit routine supplied in SCIKSAMP member CIKEXTI1.

Towards the bottom of this sample exit there is a program name exclusion table. The supplied sample exit already excludes IDCAMS and other z/OS and vendor programs.

In addition to providing program exclusion logic, sample exit CIKEXTI1 includes the same elementary logic that is contained in INSTALL member CIKEXTIM, the default version of the Time User Exit routine.

To make sample exit CIKEXTI1 effective, assemble and linkedit it into the ATF SCIKLOAD library as member CIKEXTIM.

Additional topics

Chapter 13. z/OS performance monitors

z/OS performance monitors (for example and TSOMON) are not affected by ATF virtual timing services.

Additional topics

Chapter 14. Authorized user programs and started tasks

As distributed, ATF does not affect user programs running in supervisor state or protection keys 0-7 (supervisor state keys). This limitation applies both to authorized user programs that run as standard jobs and to programs that run as started tasks.

Additional topics

Chapter 15. TSO user IDs

TSO users running under ATF virtual timing receive either the real or virtual date and time, depending on how the date and time are accessed.

For example, the TSO LOGON date and time are real. However, CLIST variables &SYSDATE, &SYSTIME, &SYSSDATE and &SYSSTIME, the DATE() function and the ISPF 'Z' system date and time variables reflect the virtual date and time.

Additional topics

Chapter 16. Assembler language considerations

ATF does not have any effect on programs that retrieve the current date from field CVTDATE in the z/OS CVT (Communications Vector Table) control block.

The z/OS STCK (store clock) machine instruction can be converted in program source code and in executable load modules to call ATF's STCK Replacement SVC routine.

Refer to Chapter 6, "z/OS Store Clock (STCK) instruction support With ATF," on page 35 for more information.

Additional topics

Part 5. Appendixes

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Index

A
activity log
    adjusting settings   23
APF
    Authorization Table   3
    authorize ATF load library   3
assembler language
    considerations   59
ATF
    customizing   19
    other control commands   14
    restarting   14
    restricting by class   16
    starting   10
authorized user programs and started
  tasks
    effects of running under ATF   55

C
CICS
    midnight rollover   41
    required resource definitions   41
    using ATF with   41
CIKCCIMN
    automate CICS clock reset   41
CIKCCONV
    to convert earlier version   4
CIKICIMS
    moved to a LINKLIST library   44
    replacing   5
classes, execution
    specifying   21
CLISTs
    install   5
customization program
    invoking   21
    run   6

D
date formats
    specifying   22
DB2
    using ATF with   45

E
execution classes
    specifying   21
exit programs
    assemble modified site   5
exit tables
    assemble modified site   5

I
IMS
    enabling ATF message region
      support   43
    replacing support module
      CIKICIMS   5
    using ATF with   43
installation   3
    verifying   11
installation security package
    interaction with ATF   15
installation steps   3
ISPF online interface CLISTs
    install   5
ISPF Primary Option Menu
    add ATF to   6

L
Language Environment
    using ATF with   39
license inquiry   63
load library
    APF authorize   3
load modules
    backing up before modification   37
    modifying to call STCK replacement
      SVC   36

M
maintenance   3

N
NATURAL
    using ATF with   47
NATURAL batch and TSO nucleus
    linkedit   47
NATURAL CICS nucleus
    linkedit   47
NATURAL parameter TD
    required setting   48
NATURAL Shared Nucleus
    linkedit   48

O
online interface
    verifying   11
optional support   35

P
Primary Option Menu
    add ATF to   6

R
reports
    adjusting settings   23

S
security considerations   15
security features
    of ATF   15
security table
    control use of VCD   16
source code
    modifying to call STCK replacement
      SVC   36
STCK
    modifying   36
STCK replacement support
    installing   35
STCK replacement SVC routine   35
support
    optional   35
SVC
    defining through z/OS   35
    dynamically installing and
      uninstalling   36
SVC number
    selecting   35
system program
    controlling   13
    logically halting   13
    logically stopping   13
    starting   13
    verifying   11
system program JCL procedure
    modifying and installing   10
system program region
    terminating   14
system settings
    adjusting   24

T
TD
    required setting   48
TICLIB data set name
    specify   7
trademarks   64
TSO users
    effects of running under ATF   57

U
upgrade
    from earlier version   4

V
VCD
    allocate   28

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Complete	☐	☐	☐	☐	☐
Easy to find	☐	☐	☐	☐	☐
Easy to understand	☐	☐	☐	☐	☐
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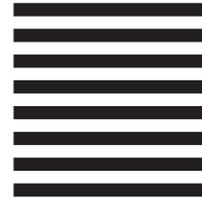Fold and Tape   **Please do not staple**   Fold and Tape

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