ワ software AG

Adabas Fastpath

Adabas Fastpath Installation

Version 8.2.1

May 2011

Adabas Fastpath

Table of Contents

1 Adabas Fastpath Installation

This document describes how to install Adabas Fastpath.

The Adabas Fastpath installation jobs can be created manually or generated by the Software AG System Maintenance Aid (SMA).

For each step of the installation procedure described later in this section, a job number may be used to represent a task. This job number refers to an installation job generated by SMA. If you are not using SMA, an example job with this same number which you must adapt to your site requirements is provided in the job library on the Adabas Fastpath installation tape.

For information about using System Maintenance Aid for the installation process, refer to the *System Maintenance Aid* documentation.

- **Prerequisites**

- **Before You Install**

- **Installation Procedures**

- **Verifying the Installation**

2 Prerequisites

This section provides an overview of the Adabas Fastpath Version 8.2 prerequisites.

Supported Operating Systems

Adabas Fastpath Version 8.2 is compatible with the following operating system environments:

- z/OS
- z/VSE
- BS2000

Adabas

Adabas Fastpath Version 8.2 can be used with any supported level of Adabas Version Version 8.1 or above, or any supported level of Adabas Cluster Services Version Version 8.1 or above, or any supported level of Adabas Parallel Services Version Version 8.1 or above. Refer to the Adabas documentation for more information.

Adabas System Coordinator

Adabas Fastpath Version 8.2 requires that you first install the Adabas System Coordinator Version 8.2. Refer to the Adabas System Coordinator documentation for more information.

Natural

Natural is required by the Online Services application SYSAFP.

Any supported level of Natural Version 4.1 or above can be used. Refer to the Natural documentation for more information.

3 Before You Install

This section contains information which you should review prior to performing Adabas Fastpath installation.

Single Location for Adabas Fastpath Modules

Software AG recommends that you use a single location (file) for all Adabas Fastpath modules and that you make this file known to the various databases, TP systems, and batch jobs that are to use Adabas Fastpath.

The Adabas Fastpath Online Services service Special Services, Coordinated Newcopy option can be used to simplify the application maintenance. This function can be used to apply maintenance dynamically to all jobs that are using Adabas Fastpath. Again, if there is one location where Adabas Fastpath modules can be maintained, the advantages offered by Coordinated Newcopy are enhanced.

Adabas Fastpath Buffer

Adabas Fastpath uses a buffer area for storing and maintaining optimization information.

This buffer is managed by the Adabas Fastpath asynchronous buffer manager (ABM) which runs as an optional service within the Adabas System Coordinator daemon.

To enable the ABM for the Adabas System Coordinator daemon:

- make the generated primary and alternate (if used) configuration module CORCFG available;
- set the daemon service startup parameter `PRODUCT=AFP`; and
- make the Adabas Fastpath load library available.

For more information, refer to the *Adabas System Coordinator* documentation.

Adabas Fastpath supports *global* or *connected/member* buffers. A global buffer is the default and most commonly used type.

When the same buffer profile, including file optimization definitions, is repeated several times, you may find it useful to set up a structure that allows you to make buffer or file changes for these buffers just once.

In this case, you can define a single connected buffer (and the files that qualify for optimization) and define member buffers for each operational buffer instance. Any buffer or file parameter changes are made to the connected buffer and the changes are automatically rippled to all member buffers.

There is no operational difference between a global and a member buffer, each of which is

- available to all jobs executing within the same operating system, provided you have granted the job permission to use it.

- allocated and maintained by the Asynchronous Buffer Manager, which operates as a separate service within the Adabas System Coordinator daemon.

In a sysplex cluster, you may use global buffers, connected/member buffers, or some combination of these buffer types. For the buffers in a sysplex cluster that are identical, including the file parameters, connected and member buffers can be used; otherwise, global buffers are more appropriate.

Identify Required Resources

Before you start to install Adabas Fastpath, you should identify the following resources which will be required for installation:

- a unique Node ID that is to be used by the Adabas System Coordinator daemon which provides the service for the Adabas Fastpath Asynchronous Buffer Manager.

- a DBID and FNR for the configuration file that is shared by the Adabas System Coordinator, Adabas Fastpath, and Adabas Vista.

- TP system library names.

- Adabas library names.

Use of Unmodified ADALNK

As in previous releases, there is a requirement to use an unmodified ADALNK in certain areas. With Version 8.1 this has been reduced to unmodified ADALNK being needed to run standalone Adabas utility jobs only.

Installation Under CICS

If you are installing under CICS, the Fastpath modules can be loaded either from the DFHRPL or the STEPLIB libraries. Software AG recommends that you use DFHRPL. If you are not using the CICS program autoinstall feature, you will need to define the Fastpath Client modules (AFPKRN, AFPPXY) and the configuration module (CORCFG) to CICS. All of the modules should be defined with the following characteristics: Language: Assembler ; RELoad :No ; DAtalocation: Any ; EXECKey : User.

Please also refer to the *Adabas System Coordinator Installation* documentation for similar CICS requirements for that software component.

4 Installation Procedure

This section describes the procedure for Adabas Fastpath installation:

- **z/OS Installation**
- **z/VSE Installation**
- **BS2000 Installation**
- **Verifying the Installation**

5   z/OS Installation

The Installation Tape

The installation tape contains the data sets listed in the table below. The sequence of the data sets is shown in the *Report of Tape Creation* that accompanies the installation tape.

Data Set	Contents
AFP*vrs*.LOAD	AFP load modules
AFP*vrs*.INPL	SYSAFP objects
AFP*vrs*.ERRN	SYSAFP error messages

where *vrs* in data set names represents the version, revision, and system maintenance level of the product.

Installation Checklist

The Adabas System Coordinator must be installed prior to the installation of Adabas Fastpath. See the *Adabas System Coordinator* documentation for detailed information.

Once the required System Coordinator components have been installed, you can proceed to install Adabas Fastpath. The following checklist identifies the steps necessary to complete the installation:

Step	Description
1	Restore the Adabas Fastpath libraries from the installation tape
2	Prepare SYSAFP
3	Enable the client process
4	Enable the Adabas server process
5	Prepare the asynchronous buffer manager
6	Verify the installation

System Programming Considerations

Buffer storage is acquired from extended CSA (ECSA subpool 241). The operating system parameter CSA in the IEASYSxx member of SYS1.PARMLIB defines the size available. It may need to be increased if a large buffer is required.
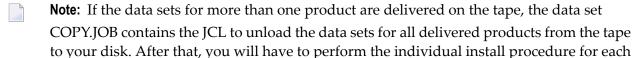
Installation Procedure

Following is the general Adabas Fastpath installation procedure. The actual installation depends on your particular requirements and the specific contents of the release package provided by Software AG for your site. Information in the release package is intended for your system. If that information differs from the information in this section, use the release package information or contact your Software AG technical support representative for assistance.

- Step1: Copying the Tape Contents to Disk
- Step 2. Prepare SYSAFP
- Step 3. Enable the client process
- Step 4. Enable the database process
- Step 5. Prepare the asynchronous buffer manager
- Step 6. Verify the installation

Step1: Copying the Tape Contents to Disk

If you are using System Maintenance Aid (SMA), refer to the SMA documentation (included on the current edition of the Natural documentation CD). If you are not using SMA, perform steps 1a, 1b and 1c as described in this section:

- Step 1a: Copy Data Set COPY.JOB from Tape to Disk
- Step 1b: Modify COPY.JOB
- Step 1c: Submit COPY.JOB

Note: If the data sets for more than one product are delivered on the tape, the data set COPY.JOB contains the JCL to unload the data sets for all delivered products from the tape to your disk. After that, you will have to perform the individual install procedure for each component.

Step 1a: Copy Data Set COPY.JOB from Tape to Disk

The data set COPY.JOB (label 2) contains the JCL to unload all other existing data sets from tape to disk. To unload COPY.JOB, use the following sample JCL:

```
//SAGTAPE JOB SAG,CLASS=1,MSGCLASS=X
//* -------------------------------
//COPY EXEC PGM=IEBGENER
//SYSUT1 DD DSN=COPY.JOB,
// DISP=(OLD,PASS),
// UNIT=(CASS,,DEFER),
// VOL=(,RETAIN,SER=<Tnnnnn>),
// LABEL=(2,SL)
//SYSUT2 DD DSN=<hilev>.COPY.JOB,
```

```
// DISP=(NEW,CATLG,DELETE),
// UNIT=3390,VOL=SER=<vvvvvv>,
// SPACE=(TRK,(1,1),RLSE),
// DCB=*.SYSUT1
//SYSPRINT DD SYSOUT=*
//SYSIN DD DUMMY
//
```

```
where:

<hilev>  is a valid high level qualifier
<Tnnnnn> is the tape number
<vvvvvv> is the desired volser
```

Step 1b: Modify COPY.JOB

Modify COPY.JOB to conform with your local naming conventions and set the disk space parameters before submitting this job:

- set HILEV to a valid high level qualifier

- set LOCATION to a storage location

- set EXPDT to a valid expiration date

Step 1c: Submit COPY.JOB

Submit COPY.JOB to unload all other data sets from the tape to your disk.

Step 2. Prepare SYSAFP

The Adabas Fastpath Online Services (SYSAFP) objects are delivered on the Adabas Fastpath installation tape.

▶ **To prepare SYSAFP:**

1   Use your everyday Natural INPL job to load the administration tool (Natural application SYSAFP) and associated message texts into your Natural system. For reference a sample Natural INPL job called CORI061 can be found with the sibling System Coordinator product in the *jobs* distribution file. The INPL job's work file 1 must reference the distribution file AFP*vrs*.INPL and work file 2 must reference AFP*vrs*.ERRN.

> **Note:** If you use Natural Security in this system, define the libraries SYSAFP and SYS-MW*vrs* (where *vrs* is the level you are installing, for example 821) and protect as you require. You may define MENU as the startup transaction for SYSAFP. However, you **must not** define a startup transaction for SYSMW*vrs*.

2   Use the following parameter to define the Natural session where SYSAFP is to be used:

```
LFILE=(152,dbid,fnr<,passw><,ciph>)
```

where *dbid* and *fnr* define the location of the Adabas System Coordinator configuration file.

Alternatively, assemble the Natural parameter module with

```
NTFILE,ID=152,DBID=dbid,FNR=fnr
```

Step 3. Enable the client process

To enable the Adabas Fastpath client process

1. for the Adabas System Coordinator:
   - make the modified Adabas link module available (COMPLIB for Com-plete, DFHRPL for CICS, STEPLIB for all other client systems);
   - make the generated configuration module CORCFG available (COMPLIB for Com-plete, STEPLIB for all other client systems); and
   - make the Adabas System Coordinator load library available (COMPLIB for Com-plete, STEPLIB for all other client systems).
2. for Adabas Fastpath:
   - make the Adabas Fastpath load library available (COMPLIB for Com-plete, STEPLIB for all other client systems).

Step 4. Enable the database process

To enable the Adabas Fastpath database process

1. for the Adabas System Coordinator:
   - make the Adabas System Coordinator load library available.
2. for Adabas Fastpath:
   - set the Adabas parameter `ADARUN FASTPATH=YES`; and
   - make the Adabas Fastpath load library available.

> **Note:** An unmodified ADALNK must be available to the database in preference to the ADALNK created during the installation of the Adabas System Coordinator.

Step 5. Prepare the asynchronous buffer manager

The asynchronous buffer manager (ABM) runs as an optional service within the Adabas System Coordinator daemon.

To enable the ABM for the Adabas System Coordinator daemon:

- make the generated primary and alternate (if used) configuration module CORCFG available;
- set the daemon service startup parameter `PRODUCT=AFP`; and
- make the Adabas Fastpath load library available.

For more information, refer to the *Adabas System Coordinator* documentation.

Step 6. Verify the installation

Use the procedure described in section Verifying the Installation to ensure that the installation has been successful.

6 z/VSE Installation

This section describes the preparation for and installation of Adabas Fastpath on z/VSE systems.

The Installation Tape

The installation tape contains the data sets listed in the table below. The sequence of the datasets is shown in the *Report of Tape Creation* that accompanies the installation tape.

Data Set	Contents
AFP*vrs*.INPL	SYSAFP objects
AFP*vrs*.LIBR	AFP installation objects
AFP*vrs*.ERRN	SYSAFP error messages

where *vrs* is the data set names represents the version, revision, and system maintenance level of the product.

Installation Checklist for z/VSE

The Adabas System Coordinator must be installed prior to the installation of Adabas Fastpath. See the *Adabas System Coordinator* documentation for detailed information.

Once the required System Coordinator components have been installed, you can proceed to install Adabas Fastpath. The following checklist identifies the steps necessary to complete the installation:

Step	Description
1	Restore the Fastpath libraries from the installation tape
2	Prepare SYSAFP
3	Enable the client process
4	Enable the Adabas server process
5	Prepare the asynchronous buffer manager
6	Verify the installation

Systems Programming Considerations

Buffer storage is allocated from the 31-bit extended SVA GETVIS area, if enough is available. To avoid impacting the 24-bit SVA area, ensure that your configuration accommodates the desired buffer size.

The CICS GETVIS parameter should be large enough to accommodate the Adabas Fastpath nucleus modules when loaded. If in doubt, increase GETVIS by 200K.

Installation Procedure

Following is the general Adabas Fastpath installation procedure. The actual installation depends on your particular requirements and the specific contents of the release package provided by Software AG for your site. Information in the release package is particularly intended for your system. If that information differs from the information in this section, use the release package information or contact your Software AG technical support representative for assistance.

Step 1. Restore the Fastpath libraries

Use the following sample JCS to restore the Adabas Fastpath library. Modify the following variables to reflect the standards at your site:

Variable	Is the ...
cuu	tape unit number
vrs	version, revision, and system maintenance level
tttttt	volume serial number of the installation tape
xx	file spacing information; see the *Report of Tape Creation*

```
* $$ JOB JNM=LIBREST,CLASS=0,DISP=D
* $$ LST CLASS=A,DISP=H
// JOB LIBREST
// ASSGN SYS006,cuu,VOL=tttttt
// ASSGN SYS005,IGN
// MTC REW,SYS006
// MTC FSF,SYS006,xx
// EXEC LIBR
  RESTORE S=SAGLIB.AFPvrs:SAGLIB.AFPvrs                -
        TAPE=SYS006 TL=tttttt LIST=Y
/*
// MTC REW,SYS006
```

```
/&
* $$ EOJ
```

Step 2. Prepare SYSAFP

The Adabas Fastpath Online Services (SYSAFP) objects are delivered on the Adabas Fastpath installation tape.

▶ **To prepare SYSAFP:**

1 Use your everyday Natural INPL job to load the administration tool (Natural application SYSAFP) and associated message texts into your Natural system. For reference a sample Natural INPL job called CORI061 can be found with the sibling System Coordinator product in the *jobs* distribution file. The INPL job's work file 1 must reference the distribution file AFP*vrs*.INPL and work file 2 must reference AFP*vrs*.ERRN.

> **Note:** If you use Natural Security in this system, define the libraries SYSAFP and SYS-MW*vrs* (where *vrs* is the level you are installing, for example 821) and protect as you require. You may define MENU as the startup transaction for SYSAFP. However, you **must not** define a startup transaction for SYSMW*vrs*.

2 Use the following parameter to define the Natural session where SYSAFP is to be used:

```
LFILE=(152,dbid,fnr<,passw><,ciph>)
```

where *dbid* and *fnr* define the location of the Adabas System Coordinator configuration file.

Alternatively, assemble the Natural parameter module with

```
NTFILE,ID=152,DBID=dbid,FNR=fnr
```

For more information, refer to the *Adabas System Coordinator* documentation.

Step 3. Enable the client process

To enable the Adabas Fastpath client process

1. for the Adabas System Coordinator:
   - make the modified Adabas link module available;
   - make the generated configuration module CORCFG available; and
   - make the Adabas System Coordinator load library available.
2. for Adabas Fastpath:

- make the Adabas Fastpath load library available (COMPLIB for Com-plete, STEPLIB for all other client systems).

Step 4. Enable the database process

To enable the Adabas Fastpath database process

1. for the Adabas System Coordinator:
   - make the Adabas System Coordinator load library available.
2. for Adabas Fastpath:
   - set the Adabas parameter `ADARUN FASTPATH=YES`; and
   - make the Adabas Fastpath load library available.

> **Note:** An unmodified ADALNK must be available to the database in preference to the ADALNK created during the installation of the System Coordinator.

Step 5. Prepare the asynchronous buffer manager

The asynchronous buffer manager (ABM) runs as an optional service within the Adabas System Coordinator daemon.

To enable the ABM for the System Coordinator daemon:

- make the generated configuration module CORCFG available;
- set the daemon service startup parameter `PRODUCT=AFP`; and
- make the Adabas Fastpath load library available.

For more information, refer to the *Adabas System Coordinator* documentation.

Step 6. Verify the installation

Use the procedure described in section *Verifying the Installation* to ensure that the installation has been successful.

7   BS2000 Installation

This section describes the preparation for and installation of Adabas Fastpath on BS2000 systems.

The Installation Tape

Review the Report of Tape Creation that accompanies the release package before restoring the release data to disk. Information in this report supersedes the information in this documentation.

The installation tape contains the following files in the sequence indicated in the report:

File	Contents
AFP*vrs*.JOBS	AFP Jobs
AFP*vrs*.SRC	AFP source modules
AFP*vrs*.MOD	AFP load modules
AFP*vrs*.INPL	SYSAFP objects
AFP*vrs*.ERRN	SYSAFP error messages

where *vrs* in file names represents the version, revision, and system maintenance level of the product.

Installation Checklist

The Adabas System Coordinator must be installed prior to the installation of Adabas Fastpath. See the *Adabas System Coordinator* documentation for detailed information.

Once the required System Coordinator components have been installed, you can proceed to install Adabas Fastpath.

After copying the tape contents to disk, the following checklist identifies the steps necessary to complete the installation:

Step	Description
1	Prepare SYSAFP
2	Enable the client process
3	Enable the Adabas server process
4	Prepare the asynchronous buffer manager
5	Verify the installation

Copying the Tape Contents to a BS2000/OSD Disk

▶ **to copy the tape contents to a BS2000/OSD disk:**

1   Copy the library SRV*nnn*.LIB from tape to disk.

This action is not necessary if you have already copied the library SRV*nnn*.LIB from another Software AG tape. For more information, refer to the element #READ-ME in this library.

The library SRV*nnn*.LIB is stored on the tape as the sequential file SRV*nnn*.LIBS containing LMS commands. The current version nnn can be obtained from the Report of Tape Creation. To convert this sequential file into a LMS library, execute the following commands:

```
/IMPORT-FILE SUPPORT=*TAPE(FILE-NAME=SRVnnn.LIBS, -
/ VOLUME=<volser>, DEV-TYPE=<tape-device>)
/ADD-FILE-LINK LINK-NAME=EDTSAM, FILE-NAME=SRVnnn.LIBS, -
/ SUPPORT=*TAPE(FILE-SEQ=3), ACC-METH=*BY-CAT, -
/ BUF-LEN=*BY-CAT, REC-FORM=*BY-CAT, REC-SIZE=*BY-CAT
/START-EDT
@READ '/'
@SYSTEM 'REMOVE-FILE-LINK EDTSAM'
@SYSTEM 'EXPORT-FILE FILE-NAME=SRVnnn.LIBS'
@WRITE 'SRVnnn.LIBS'
@HALT
/ASS-SYSDTA SRVnnn.LIBS
/MOD-JOB-SW ON=1
/START-PROG $LMS
/MOD-JOB-SW OFF=1
/ASS-SYSDTA *PRIMARY
<tape-device> = device-type of the tape, e.g. TAPE-C4
<volser> = VOLSER of tape (see Report of Tape Creation)
```

2   Copy the procedure COPY.PROC from tape to disk.

Call the procedure P.COPYTAPE in the library SRV*nnn*.LIB to copy the procedure COPY.PROC to disk:

```
/CALL-PROCEDURE (SRVnnn.LIB,P.COPYTAPE), -
/ (VSNT=<volser>, DEVT=<tape-device>)
```

If you use a TAPE-C4 device, you can omit the parameter DEVT.

3   Copy all product files from tape to disk.

Enter the procedure COPY.PROC to copy all Software AG product files from tape to disk:

```
/ENTER-PROCEDURE COPY.PROC, DEVT=<tape-device>
```

If you use a TAPE-C4 device, you can omit the parameter `DEVT`. The result of this procedure is written to the file L.REPORT.SRV.

Installation Procedure

Following is the general Adabas Fastpath installation procedure. The actual installation depends on your particular requirements and the specific contents of the release package provided by Software AG for your site. Information in the release package is intended specifically for your system. If that information differs from the information in this section, use the release package information or contact your Software AG technical support representative for assistance.

Step 1. Prepare SYSAFP

The Adabas Fastpath Online Services (SYSAFP) objects are delivered on the Adabas Fastpath installation tape.

▶ **To prepare SYSAFP:**

1   Use your everyday Natural INPL job to load the administration tool (Natural application SYSAFP) and associated message texts into your Natural system. For reference a sample Natural INPL job called CORI061 can be found with the sibling System Coordinator product in the *jobs* distribution file. The INPL job's work file 1 must reference the distribution file AFP*vrs*.INPL and work file 2 must reference AFP*vrs*.ERRN.

> **Note:** If you use Natural Security in this system, define the libraries SYSAFP and SYS-MW*vrs* (where *vrs* is the level you are installing, for example 821) and protect as you require. You may define MENU as the startup transaction for SYSAFP. However, you **must not** define a startup transaction for SYSMW*vrs*.

2   Use the following parameter to define the Natural session where SYSAFP is to be used:

```
LFILE=(152,dbid,fnr<,passw><,ciph>)
```

where *dbid* and *fnr* define the location of the Adabas System Coordinator configuration file.

Alternatively, assemble the Natural parameter module with

```
NTFILE,ID=152,DBID=dbid,FNR=fnr
```

Step 2. Enable the client process

To enable the Adabas Fastpath client process

1. for the dabas System Coordinator:

   ◼ make the modified Adabas link module available (BLSLIB*nn*);

   ◼ make the generated configuration module CORCFG available (BLSLIB*nn*); and

   ◼ make the Adabas System Coordinator load library available (BLSLIB*nn*).

2. for Adabas Fastpath:

   ◼ make the Adabas Fastpath load library available (BLSLIB*nn*).

Step 3. Enable the database process

To enable the Adabas Fastpath database process

1. for the Adabas System Coordinator:

   ◼ make the Adabas System Coordinator load library available (BLSLIB*nn*).

2. for Adabas Fastpath:

   ◼ set the Adabas parameter `ADARUN FASTPATH=YES`; and

   ◼ make the Adabas Fastpath load library available (BLSLIB*nn*).

   📄 **Note:** An unmodified ADALNK must be available to the database in preference to the ADALNK created during the installation of the System Coordinator.

Step 4. Prepare the asynchronous buffer manager

The asynchronous buffer manager (ABM) runs as an optional service within the Adabas System Coordinator daemon.

To enable the ABM for the System Coordinator daemon:

◼ make the generated configuration module CORCFG available;

◼ set the daemon service startup parameter `PRODUCT=AFP`; and

◼ make the Adabas Fastpath load library available.

For more information, refer to the *Adabas System Coordinator* documentation.

Step 5. Verify the installation

Use the procedure described in section *Verifying the Installation* to ensure that the installation has been successful.

8 Verifying the Installation

Use this procedure to ensure that the installation has been successful.

Several Natural programs are supplied in source form that demonstrate the effect of Adabas Fastpath optimization. These programs refer to the sample EMPLOYEES file distributed with Adabas.

1. Using Adabas Fastpath Online Services (SYSAFP), define a global buffer. For more information, see Parameter Maintenance.

2. Using Adabas Fastpath Online Services, define EMPLOYEES as a file to be optimized, and for all command types, set the default for optimization to ON. For more information, see Parameter Maintenance.

3. Using Adabas Fastpath Online Services, define the Client Runtime controls for the TP system (or batch job) where you wish to implement Adabas Fastpath optimization. See Parameter Maintenance.

4. Enable the database containing the EMPLOYEES file. See step 4 of the Adabas Fastpath installation procedure for the operating system you are using. For example, **step 4 for z/OS**.

5. Start the asynchronous buffer manager. See step 5 of the Adabas Fastpath installation procedure for the operating system you are using. For example, **step 5 for z/OS**.

6. Enable the client job chosen for Adabas Fastpath optimization. See step 3 of the Adabas Fastpath installation procedure for the operating system you are using. For example, **step 3 for z/OS**.

7. From the Adabas Fastpath administration menu go to the command line and LIST/STOW the Natural programs beginning with EEX* to compile them with your correct EMPLOYEES DDM.

8. The verification program relies on a certain amount of records being present in the EMPLOYEES file. Ensure the file is not empty.

9. Type `VERIFY` at the SYSAFP command line to execute the verification procedure. Use VERIFY along with the SYSAFP command `2.1` to show the optimization being achieved. Initially, only a small percentage of commands are actually optimized: this grows with the repeated use of `VERIFY` as Adabas Fastpath builds the knowledge base based on previous requests.