software AG

Adabas

Release Notes

Version 8.4.2

October 2017

ADABAS & NATURAL

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1   Adabas 8.4 Release Notes

This document provides a brief summary of the new and changed features included in Adabas 8.4, with links for more information to other areas of the Adabas documentation set.

⚠️ **Important:** Be sure that you apply all supplied Adabas 8 maintenance and concatenate Adabas 8 patch-level libraries (L00n), as they are delivered to you. This will ensure that your Adabas 8 code remains up-to-date, supporting all Adabas 8 features as they are enhanced and maintained.

If you are upgrading to this Adabas release from a release prior to the most recent Adabas release (for example, if you are upgrading from Adabas 8.2 SP6 to Adabas 8.4 and skipping the intermediate upgrade to Adabas 8.3), please read the Release Notes for the releases you are skipping to get a complete understanding of all of the changes implemented in Adabas since you last updated your software.

This document covers the following topics:

Supported Operating System Platforms	Describes the currently supported operating environments for this version of Adabas.
Enhancements	Describes the new and changed features in Adabas 8.4.
Future Plans	Describes future plans of Adabas, such as any plans for Adabas to stop supporting specific features.
Limitations and Restrictions	Lists the limitations and restrictions currently existing in this version of Adabas.
Adabas Data Set Compatibility	Describes the compatibility of Adabas data sets across Adabas releases.
Applying Zaps	Describes general information on where to locate and how to apply Adabas zaps.
Software AG Mainframe Product Compatibility	Describes the compatibility of this version of Adabas with other Software AG mainframe products.

Using COR-based Add-ons	Describes using the COR-based Add-on products Adabas System Coordinator (COR), Adabas SAF Security (AAF), Adabas Fastpath (AFP), Adabas Transaction Manager (ATM), and Adabas Vista (AVI) with this version of Adabas.
AFPLOOK /AVILOOK Considerations	Describes considerations regarding the demo programs AFPLOOK and AVILOOK.
End of Maintenance	Describes how you can determine the end-of-support dates for your Software AG products.
Documentation and Other Online Information	Describes the documentation and other online information you can obtain for this release of Adabas.

2 About this Documentation

Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
`Monospace font`	Identifies service names and locations in the format *`folder.subfolder.service`*, APIs, Java classes, methods, properties.
Italic	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
`Monospace font`	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
|	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the | symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Software AG Documentation Website

You can find documentation on the Software AG Documentation website at **https://documenta-tion.softwareag.com**.

Software AG Empower Product Support Website

If you do not yet have an account for Empower, send an email to empower@softwareag.com with your name, company, and company email address and request an account.

Once you have an account, you can open Support Incidents online via the eService section of Empower at **https://empower.softwareag.com/**.

You can find product information on the Software AG Empower Product Support website at **https://empower.softwareag.com**.

To submit feature/enhancement requests, get information about product availability, and download products, go to **Products**.

To get information about fixes and to read early warnings, technical papers, and knowledge base articles, go to the **Knowledge Center**.

If you have any questions, you can find a local or toll-free number for your country in our Global Support Contact Directory at **https://empower.softwareag.com/public_directory.aspx** and give us a call.

Software AG Tech Community

You can find documentation and other technical information on the Software AG Tech Community website at **https://techcommunity.softwareag.com**. You can:

- Access product documentation, if you have Tech Community credentials. If you do not, you will need to register and specify "Documentation" as an area of interest.

- Access articles, code samples, demos, and tutorials.

- Use the online discussion forums, moderated by Software AG professionals, to ask questions, discuss best practices, and learn how other customers are using Software AG technology.

- Link to external websites that discuss open standards and web technology.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

3 Supported Operating System Platforms

Software AG generally provides support for the operating system platform versions supported by their respective manufacturers; when an operating system platform provider stops supporting a version of an operating system, Software AG will stop supporting that version.

For information regarding Software AG product compatibility with IBM platforms and any IBM requirements for Software AG products, please review the *Product Compatibility for IBM Platforms* web page.

Before attempting to install this product, ensure that your host operating system is at the minimum required level. For information on the operating system platform versions supported by Software AG products, complete the following steps.

1. Access Software AG's Empower web site at *https://empower.softwareag.com*.

2. Log into Empower. Once you have logged in, you can expand **Products & Documentation** in the left menu of the web page and select **Product Version Availability** to access the Product Version Availability screen.

3. Use the fields on the top of this screen to filter its results for your Software AG product. When you click the **Search** button, the supported Software AG products that meet the filter criteria are listed in the table below the filter criteria.

   This list provides, by supported operating system platform:

   - the Software AG general availability (GA) date of the Software AG product;
   - the date the operating system platform is scheduled for retirement (OS Retirement);
   - the Software AG end-of-maintenance (EOM) date for the product; and
   - the Software AG end-of-sustained-support (EOSS) date for the product.

   > **Note:** Although it may be technically possible to run a new version of your Software AG product on an older operating system, Software AG cannot continue to support operating system versions that are no longer supported by the system's provider. If you have questions

about support, or if you plan to install this product on a release, version, or type of operating system other than one listed on the Product Version Availability screen described above, consult Software AG technical support to determine whether support is possible, and under what circumstances.

4 Enhancements

This chapter lists the Adabas 8.4 enhancements.

Category	Enhancements
Adabas 8.4 SP2 Enhancements	*ADARUN Parameter Enhancements*
	Operator Command Enhancements
	Miscellaneous Changes and Enhancements
Adabas 8.4 SP1 Enhancements	*ADARUN Parameter Enhancements*
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	Miscellaneous Changes and Enhancements

Adabas 8.4 SP2 ADARUN Parameter Enhancements

This section describes the ADARUN Parameter enhancements made in Adabas version 8.4 SP2.

- AUDITLOG Parameter

For more information about any ADARUN parameter, read *Adabas Initialization (ADARUN Statement)* , in the *Adabas Operations Manual*.

AUDITLOG Parameter

This parameter allows you capture AUDIT data for utility and AOS functions on the console including the time, USERID, and the type of function requested. The default for the parameter is NO. To activate the AUDIT logging feature, AUDITLOG=CONSOLE may be specified. Once AUDITLOG has been enabled, it is not possible to turn it off without cycling of the database for security reasons.

For more information about the AUDITLOG ADARUN parameter, read *AUDITLOG Parameter: Audit of AOS and Utility Functions*, in the *Adabas Operations Manual*.

Adabas 8.4 SP2 Operator Command Enhancements

This section describes the operator command enhancements made in Adabas version 8.4.

- Operator Command DPARM

- Operator Command Change Summary

Operator Command DPARM

Operator command DPARM lists the new ADARUN parameters added to Adabas Version 8.4 SP2 and the values they currently have in the Adabas session: AUDITLOG.

Operator Command Change Summary

The following table lists new and changed operator commands in Adabas 8.4 SP2.

Command	New or Changed	Enhancement Description
DPARM	Changed	Operator command DPARM lists the new ADARUN parameters added to Adabas Version 8.4 SP2 and the values they currently have in the Adabas session: AUDITLOG.

For more information about any Adabas operator command, read *Operator Commands*, in the *Adabas Operations Manual*.

Adabas 8.4 SP2 Miscellaneous Changes and Enhancements

Adabas 8.4 SP2 provides the following miscellaneous changes and enhancements:

- AUDIT Enhancement
- Alternative Conversion System SAGICS

AUDIT Enhancement

Customers have requested a method to track and report on any activities real time that influence the behavior of software running in a production environment for auditing purposes. The focus in this release is on administration and DBA tasks executed via

- AOS

- Adabas utilities

- CONNX SQL calls

Operator commands are already written to the console so in an effort to minimize console messages, an additional audit message will not be generated for operator commands.

The audit data captured will contain the time, user ID, originator, and product code and text describing the function executed for AOS and utility functions.

The new AUDITLOG parameter enables the auditing enhancement. The default setting is NO since a heavily used environment AUDIT can generate many AAUD01 messages. This enhancement enables customers to log audit data via an AAUD01 message for AOS or utility functions. Once activating the enhancement, it is not possible to turn it off by an operator or ADADBS command. The only method to disable it once it has been activated is by cycling the Adabas nucleus and specifying AUDITLOG=NO.

Each AOS or utility function will be tracked with an AAUD01 message that captures

- The time the function was executed

- USERID that initiated the function

- Type of function and where it originated (AOS, utility, ConnX) and product code

- Text describing the function or activity (e.g. `RALOCKF release advanced lock fnr= 1`)

Example

```
12.48.29 JOB01234  AAUD01 00199 USAXXX  ADAUTI RALOCKF release advanced lock fnr= ↵
   1
```

This allows auditors and management to get an overview of changes or attempted changes and which users initiated the functions and when. Please keep in mind, that the parameters specified when running utilities affect the functions and type of calls issued to the Adabas nucleus and will affect the audit data written.

This release of AUDIT is intended to give an overview of what functions were executed by the users in AOS or by invoking a utility. AUDIT logs the audit data as the request executes on the nucleus side.

AUDIT can and should be used in conjunction with the checkpoint file to determine exact details. Further details may be provided in a later release to generate a finer granularity if deemed necessary.

Please also keep in mind, that having `AUDITLOG=CONSOLE` enabled can generate a lot of console output if there is heavy DBA type functions being executed such as ADARES REGENERATE. Also if a number of functions are executed at once, as in an ADADBS OPERCOM job for example, the AAUD01 messages will occur in the order they are processed by the nucleus, not necessarily in the order they were specified in the job.

Examples of output generated by `AUDITLOG=CONSOLE`**:**

An online save file will produce the following messages with timestamps and can be checked against the checkpoint file when noticing that a utility checkpoint was written:

```
AAUD01 61010 USAXXX    ADAUTI Write utility checkpoint              rsp000
AAUD01 61010 USAXXX    ADAUTI Finish online file save              rsp000
AAUD01 61010 USAXXX    ADAUTI Write utility checkpoint              rsp000
```

If `fnr=` is displayed without a file number, the command pertains to all files:

```
AAUD01 00199 USAXXX    ADAUTI RALOCKF release advanced lock fnr=
AAUD01 00199 USAXXX    ADAUTI RALOCKF release advanced lock fnr=    1
```

Note that sometimes a command can result in multiple messages. For instance an ADADBS OPERCOM DSTAT will result in:

```
20:45:23 AAUD01 dbid    userid      ADAUTI Read System status
20:45:23 AAUD01 dbid    userid      ADAUTI Read Thread status
```

Also note that the displaying of queues will often result in multiple entries followed by a `rsp3` when hitting the end of the queue:

```
AAUD01 00199 USAXXX    ADAUTI DAUQ - Display active users          rsp000
AAUD01 00199 USAXXX    ADAUTI DAUQ - Display active users          rsp003/000
```

Alternative Conversion System SAGICS

The Universal Encoding Support in Adabas Version 8.4.2 can use the alternative code page conversion subsystem SAGICS.

SAGICS is based on International Components for Unicode (ICU V58.2), an open source project initiated by IBM (see *http://site.icu-project.org/*). ICU is already being used with other Software AG products like Natural (on mainframes) or Adabas on Linux, UNIX and Windows.

For the time being, Software AG's Entire Conversion Services (ECS) is the default code page conversion subsystem for mainframe Adabas but will be retired and replaced by SAGICS in the next release.

ADAICS is delivered in the Adabas load library L001 in conjunction with codepage modules of SAGICS in a separate load library ICS221. If SAGICS is to be used, both load libraries need to be in the load library concatenation for the nucleus or utility job step.

Special zap AY842165 needs to be applied to switch to using SAGICS instead of Entire Conversion Subsytem. The zap is in the S001 source library member ZAPTOPT.

SAGICS does not require the SMARTS runtime system (APSxxx). SAGICS provides the same code pages as ECS does.

ADARUN Parameter Enhancements

This section describes the ADARUN Parameter enhancements made in Adabas version 8.4.

- INDEXUPDATE Parameter
- SMFDETAIL Parameter
- UPDATECONTROL Parameter
- ADARUN Parameter Change Summary

For more information about any ADARUN parameter, read *Adabas Initialization (ADARUN Statement)* , in the *Adabas Operations Manual*.

INDEXUPDATE Parameter

This enhancement allows you to control how Adabas performs certain types of index updates that affect the structure of the index tree. For each file in the database, the file's index stores the descriptor values from the file's data storage records in a tree structure. The original structure defined for index trees in Adabas has been modified into an advanced structure such that certain index updates can be performed more efficiently. Furthermore, less protection data related to those index updates is written to the WORK dataset.

The advanced index structure is more general and flexible than the original structure. An index tree conforming to the original structure always conforms to the advanced structure as well; no conversion is needed.

The new ADARUN parameter INDEXUPDATE may be used to control whether or not the Adabas nucleus performs index updates according to the rules for the advanced index structure. The index update rules previously used by Adabas are set by INDEXUPDATE=ORIGINAL. This is the default value. With this setting, the nucleus performs all index updates according to the same rules as before.

The new, advanced index update rules may be specified by setting INDEXUPDATE=ADVANCED. With this setting, the nucleus performs certain index updates according to modified rules that are less strict than the original ones. The processing of these types of index updates is more efficient than before. For more information about the INDEXUPDATE parameter, read *INDEXUPDATE Parameter: Index Update Processing Control*, in the *Adabas Operations Manual*.

SMFDETAIL Parameter

An additional new option SESS can be specified with the SMFDETAIL parameter. With this option nucleus session statistics data will be recorded with SMF. For more information about the SMFDETAIL parameter, read *SMFDETAIL Parameter: Selecting Detail SMF Record Sections*, in the *Adabas Operations Manual*.

UPDATECONTROL Parameter

The new ADARUN parameter UPDATECONTROL may be used to set the scheduling policy for update commands at the end of buffer flushes.

The scheduling policy previously used by Adabas is set by UPDATECONTROL=DELAY. This is the default value. With this setting, the nucleus shortly delays the scheduling of new update commands at the end of every buffer flush, to help the session autorestart recover the database in the case of a nucleus failure.

A new scheduling policy may be specified by setting UPDATECONTROL=NODELAY. With this setting, the nucleus continues update command processing without delay at the end of buffer flushes. New techniques in the session autorestart recover the database even if updates were in progress all the time. This setting avoids the short update command processing delays at the end of buffer flushes and, in a cluster, reduces the need for collaboration between the nuclei in the cluster.

Setting UPDATECONTROL=NODELAY requires setting INDEXUPDATE=ADVANCED.

For more information about the UPDATECONTROL parameter, read *UPDATECONTROL Parameter: Control Scheduling of Update Commands During Buffer Flush*, in the *Adabas Operations Manual*.

ADARUN Parameter Change Summary

The following table summarizes the ADARUN parameter changes in Adabas 8.4.

Parameter	New or Changed	Enhancement Description
INDEXUPDATE	New	This enhancement allows you to control how Adabas performs certain types of index updates that affect the structure of the index tree.
SMFDETAIL	Changed	The new option SESS can be specified. With this option nucleus session statistics data will be recorded with SMF.
UPDATECONTROL	New	This new parameter allows you to set the scheduling policy for update commands at the end of buffer flushes.

Utility Enhancements

This section describes the utility enhancements made in Adabas version 8.4.

ADADBS Enhancements

The ADADBS ISNREUSE,MODE=ON,RESET option now allows a specific ISN to be specified. For customers knowing where their reusable ISNs (ISNs previously deleted) reside, they can now quickly set the rotating ISN pointer to the specific ISN.

For more information, read about the *ADADBS RESETISN* utility, in the *Adabas Utilities Manual*.

The TYPE=4E, SYNS checkpoint for RESETISN was also enhanced to capture the specific ISN as needed for ADARES REGENERATE. ADAREP CPEXLIST also displays the ISN if it was specified.

The ADADBS OPERCOM function DUQE now displays the time zone information a user is associated with. For more information, read about the *ADADBS OPERCOM* utility, in the *Adabas Utilities Manual*.

ADADBS Utility Functions DELETE and REFRESH Changes

Prior to this release, when the DELETE or REFRESH function (whether issued via ADADBS or AOS) completed successfully, any file lock previously set automatically or with the operator command LOCKU was reset.

With Adabas Version 8.4, when the *DELETE* or *REFRESH* function completes successfully, if the file was previously locked automatically by Adabas, the automatic lock is reset. Any file lock previously set with the operator command LOCKU remains set.

Not releasing a lock that was set explicitly (via LOCKU) keeps the file protected against interference by users in a multi-step sequence of utility operations; for example, in a sequence such as ADADBS OPERCOM LOCKU - ADAULD UNLOAD - ADADBS REFRESH - ADALOD UPDATE - ADADBS OPERCOM UNLOCKU, which may be used to reorder a file within its current extents.

⚠️ **Caution:** If you have sequences of job steps where ADADBS OPERCOM LOCKU is followed by ADADBS DELETE or REFRESH and no ADADBS OPERCOM UNLOCKU follows, you may need to add an ADADBS OPERCOM UNLOCKU step after the last utility function in such a sequence. The need to do that would become apparent through a response code 17, subcode 9, when users attempt to access the file in question.

This change is also available on request in Adabas Version 8.3 SP4 via zap AN834010.

ADACHK ACSCAN

A new function has been added to ADACHK to scan the address converter and print ranges of reusable ISNs with the option to RESET the rotating AC pointer. For further information see here: *ADACHK Utility*, in the *Adabas Utilities Manual*

ADACHK CHECK LAYOUT

ADACHK CHECK LAYOUT=LONG has now been enhanced to give more output including the full ICHECK output when the file contains records. ADACHK was designed with performance being one of the number one goals and to limit reading structures more than once prior to calling the sorter for optimal performance. Due to the way ADACHK works, the output may differ slightly between running

1. ADACHK ACCHECK LAYOUT=LONG, ADACHK DSCHECK LAYOUT=LONG, ADACHK ICHECK LAYOUT=LONG, and ADACHK VALIDATE LAYOUT=LONG and

2. ADACHK CHECK LAYOUT=LONG.

The same checks are indeed done for both but in slightly different order for performance reasons and therefore the output differs slightly. ADACHK CHECK LAYOUT=MEDIUM provides the same output with Adabas Version 8.4 as ADACHK LAYOUT=LONG did at Adabas Version 8.3 for compatibility reasons. For further information see here: *ADACHK Utility*, in the *Adabas Utilities Manual*

ADACHK CHECK and ADACHK VALIDATE SORT Dataset Improvements

The utilization of the SORT dataset has been optimized to use less space based on the number of descriptors in use.

ADADEF Enhancements

The ADADEF DEFINE option now allows to specify a default time zone for a database. The ADADEF MODIFY option allows to modify and remove the default time zone for a database. For more information, read about the *ADADEF Utility*, in the *Adabas Utilities Manual*.

ADAREP Enhancements

The ADAREP "General Database Information" now informs when a default time zone is active for a database and if the Adabas database server is declared as "Replicator". For more information, read about the *ADAREP utility*, in the *Adabas Utilities Manual*.

The ADAREP checkpoint report may be restricted to a certain class or classes of checkpoints. For more information, read about the CP parameter of the ADAREP utility, in the *Adabas Utilities Manual*.

ADAZIN Enhancements

Some delivered load modules do not have the standard module header needed to report on maintenance. These modules may be, for example, non-executable data modules, CICS modules with a CICS-mandated prefix, non-assembly language programs, subroutines and sample programs, and are excluded from the report. All excluded modules cannot have maintenance applied using standard fixes and were previously reported as warnings. These excluded modules are no longer mentioned in the ADAZIN report.

Utility Change Summary

Adabas 8.4 SP1 introduces the following utility enhancements:

Utility Function	New or Changed?	Enhancement Description
ADADBS RESETISN	Changed	The ADADBS ISNREUSE,MODE=ON,RESET option now allows a specific ISN to be specified.
ADADBS DELETE ADADBS REFRESH	Changed	When the DELETE or REFRESH function completes successfully, if the file was previously locked automatically by Adabas, the automatic lock is reset. Any file lock previously set with the operator command LOCKU remains set.
ADADBS OPERCOM DUQE	Changed	The ADADBS OPERCOM DUQE function now displays the time zone information a user is associated with.
ADACHK ACSCAN	New	Scan the address converter and print ranges of reusable ISNs with the option to RESET the rotating AC pointer.
ADACHK CHECK	Changed	ADACHK CHECK LAYOUT=LONG has now been enhanced to give more output including the full ICHECK output when the file contains records.

Utility Function	New or Changed?	Enhancement Description
ADACHK CHECK ADACHK VALIDATE	Changed	The utilization of the SORT dataset has been optimized to use less space based on the number of descriptors in use.
ADADEF	New	Specify, modify or remove default time zone.
ADAREP	New	Display default time zone and inform when database server is of type "Replicator".
ADAREP CP	New	Restrict list of checkpoints to a certain class or classes.
ADAZIN	Changed	Excluded modules are no longer mentioned in the ADAZIN report.

Operator Command Enhancements

This section describes the operator command enhancements made in Adabas version 8.4.

- Operator Command DPARM
- Operator Command DSTAT
- Operator Command DUQE
- Operator Command Change Summary

Operator Command DPARM

Operator command DPARM lists the new ADARUN parameters added to Adabas Version 8.4 and the values they currently have in the Adabas session: INDEXUPDATE and UPDATECONTROL. In cluster nuclei (Adabas Cluster Services and Adabas Parallel Services), it also lists new cluster-related ADARUN parameters and their current values.

Operator Command DSTAT

Operator command DSTAT lists additional I/O statistics for the writes to WORK Part 1 (the protection data area) and to the protection log (PLOG):

- "WORK1 protection blocks" (abbreviated to "WORK1 prot. blks") shows the total number of blocks written to WORK Part 1. Some blocks may have been written more than once (with increasing amounts of data).

- The new "WORK1 different blocks" (abbreviated to "WORK1 diff. blks") shows the number of different blocks written to WORK Part 1 - that is, counting each block once if it was written multiple times in a row. This number correlates with the actual amount of protection data written to WORK.

- "WORK1 protection I/Os" (abbreviated to "WORK1 prot. I/Os") shows the number of I/Os performed to write the protection data to WORK Part 1. Where possible, Adabas writes multiple consecutive blocks in a single I/O operation, if sufficient I/O buffers are available (based on the NWORK1BUFFERS parameter).

■ The "PLOG protection blocks", the new "PLOG different blocks" and the "PLOG protection I/Os" statistics are similar.

The "WORK1 different blocks" and "PLOG different blocks" numbers have also been added to the Adabas session end statistics.

Operator Command DUQE

Operator command DUQE now displays the time zone information a user is associated with.

Operator Command Change Summary

The following table lists new and changed operator commands in Adabas 8.4.

Command	New or Changed	Enhancement Description
DPARM	Changed	Operator command DPARM lists the new ADARUN parameters added to Adabas Version 8.4 and the values they currently have in the Adabas session: INDEXUPDATE and UPDATECONTROL.
DSTAT	Changed	Operator command DSTAT lists additional I/O statistics for the writes to WORK Part 1 (the protection data area) and to the protection log (PLOG).
DUQE	Changed	Operator command DUQE displays the time zone information a user is associated with.

For more information about any Adabas operator command, read *Operator Commands*, in the *Adabas Operations Manual*.

Miscellaneous Changes and Enhancements

Adabas 8.4 SP1 provides the following miscellaneous changes and enhancements:

- ■ Field Definitions
- ■ ADASMF

- Miscellaneous

Field Definitions

It is now possible to define subdescriptors and subfields as well as superdescriptors and superfields with parents that have the LA option. Still, the relative byte positions for begin and end must be in the range of 1 to 253. For further details refer to the descriptions of subdescriptors, subfields, superdescriptors and superfields in the section *Field Definition Statements*, in the *Adabas Utilities Manual*. Also read about the *LA: Long Alpha Field Option* in section *FNDEF: Field and Group Definition*, in the *Adabas Utilities Manual*

ADASMF

The ASMFREC macro has been changed:

- In the Product ID section in the field ASSMFVC it reports the interface version 1.4 (ASSMFV14).
- The parameter section was reordered and expanded with new ADARUN parameters.
- A new section SESS describes the nucleus session statistics information.

ADASMF output data has changed:

- Additional storage pool elements are reported. For details, refer to *Storage Pool Section: STG*, in the *Adabas DBA Tasks Manual*.
- Additional parameters are returned in the parameter section.
- A new optional SESS section reports nucleus session statistics.

Miscellaneous

- When running with ADARUN LFIOP>0, Adabas session statistics now include new WORK1 and PLOG write I/O counts.
- The ISNREUSE algorithm in the nucleus has been enhanced to minimize increases of TOPISN, which also reduces the chances of a Response 78.
- The Adabas 8 LGBLSET macro parameter REVREL= is now redundant. Refer to the z/OS parameter description *REVREL: Adabas Review Release* and the z/VSE parameter description *REVREL: Adabas Review Release* for more information. This change is not applicable to BS2000.

5 Future Plans

The follow plans are in place for a future release of Adabas.

- Support for the ADAACK, ADADCK, ADAICK, ADAPRI, and ADAVAL utilities will be dropped. You will be required to use the new ADACHK utility instead. To determine which ADACHK utility function to use for one of these utilities, read *ADACHK Function Equivalences with Other Utility Functions*, in the *Adabas Utilities Manual*.

- The Adabas 8 LGBLSET macro parameter REVREL= is now redundant and will be dropped in a future version. Please remove any use of this parameter in order to avoid future assembly errors. Refer to the current z/OS parameter description *REVREL: Adabas Review Release* and the z/VSE parameter description *REVREL: Adabas Review Release* for more information on this parameter. This change is not applicable to BS2000.

6 Limitations and Restrictions

The following limitations and restrictions exist in this version of Adabas. Enhancements to resolve these limitations may be considered in a future release.

1. The following restrictions and limitations apply to large object (LB) fields in this release:

   - At this time, character conversion of LB field values from one code page to another is not supported. This functionality may be considered in a future release.

   - Some utility parameters are not supported for files containing LB fields. For more information, refer to the documentation for the utility in *Adabas Utilities Manual* and to the utility limitations and restrictions, provided later in this chapter.

   - At this time, large object (LB) fields can be define only with format A.

2. The new format buffer length indicator is only supported for LA and LB fields. Future versions of Adabas will consider supporting the specification of the length indicator for other fields too. For more information about the format buffer length indicator, read *Length Indicator (L)*, in the *Adabas Command Reference Guide*.

3. The prefetch feature is not supported in ACBX interface direct calls -- it will not support ACBX calls with multiple buffers; you should use the multifetch feature instead. However, the prefetch feature still supports ACB interface direct calls.

4. At this time, system files do not support spanned records or the extended MU and PE field counts.

5. At this time, fields defined with the NB option must also be defined with either the NU or NC option.

6. The following restrictions and limitations apply to spanned records in this release:

   - The ADAULD utility does not support spanned records on ADAULD SAVETAPE runs.

   - At this time, ADAM files do not support spanned records.

   - System files do not support spanned records at this time.

■ The number of records that comprise a spanned record is limited. The Adabas nucleus allows up to five physical records (one primary record and four secondary records) in a spanned record. If you need more space, try relocating the Data Storage of the file to a different device type with a larger block size.

For more information about spanned record support in Adabas, read *Spanned Record Support*, in the *Adabas Concepts Manual*.

7. At this time, Adabas Review Pulse reports do not support ADARUN CLOGLAYOUT=8.

8. The following table lists restrictions and limitations of the Adabas utilities:

Utility	Restrictions or Limitations
ADACMP	At this time, LB fields cannot be specified in the FORMAT parameter for either ADACMP COMPRESS or ADACMP DECOMPRESS if the LOBVALUES parameter is set to YES.
ADACNV	ADACNV will not allow you to REVERT the database to Adabas 8.2 if any of the following apply: ■ The database contains a Security file in which a password is or was defined that applies to more than 191 files or relates to more security-by-value criteria than fit into a single data storage record. (This condition persists even if that password is deleted.) ■ The database contains a file in which a system field of type SECUID is defined. For information about reverting back to versions prior to Adabas 8.2, refer to the *Adabas 8.2 Release Notes*. To access a copy of these, read *Documentation and Other Online Information*, elsewhere in this guide.
ADALOD	The MIXDSDEV parameter is not supported in an ADALOD LOAD run if the file you are loading is a LOB file or may contain spanned records. You cannot use the DDISN or DELISN parameters in an ADALOD UPDATE function to delete records in a *LOB file*. Furthermore, you can only use these parameters to delete records in a *base file* of a *LOB group* if the records to be deleted contain no references to LOB values longer than 253 bytes which are stored in the LOB file. (ADALOD will terminate with an error if such a LOB value is encountered.)

9. BS2000 database communication can support a maximum of 32,767 buffers in the ABD list. Read *Adabas Buffer Descriptions (ABDs)*, in the *Adabas Command Reference Guide* for more information. ABD lists with more than 32,767 buffers will result in a response code 152.

7 Adabas Data Set Compatibility

Generally, Adabas utilities accept sequential input data sets that were produced as output data sets by utilities of the same version. Utilities of Adabas 8.4 also accept input data sets produced by utilities of versions prior to Adabas 8.4. However, utilities for versions prior to Adabas 8.4 cannot generally work with input data sets produced by Adabas 8.4 utilities.

Importing Files

A file cannot be imported (loaded, stored, or restored) into a database running with an earlier Adabas version if it uses features that are supported only in a later Adabas version.

Save Data Sets

Generally, restoring a whole database is possible only with the same Adabas release used for creating the save data set. Restoring individual files is possible with the same or any later Adabas release used for creating the save data set.

Using the ADASAV utility of Adabas 8.4, you can restore files into an Adabas 8.4 database from a database save or file save data set created with the ADASAV utility from any prior Adabas version. Likewise, using the ADAREP or ADAULD utilities of Adabas 8.4, you can print a report or unload a file from a database save or file save data set created with the ADASAV utility from any prior Adabas version.

However, you can only restore files from an Adabas 8.4 database save or file save data set into a database running with Adabas 8.3 if you have applied one of the following zaps to your Adabas 8.3 installation, as appropriate:

- For Adabas 8.3.4 installations, apply zap AU834015.

- For Adabas 8.3.3 installations, apply zap AU833017.

- For Adabas 8.3.2 installations, apply zap AU832032.

In addition, with the above zaps applied, it is possible to do a RESTONL FILE from an Adabas 8.4 database save with the corresponding PLOG created by Adabas 8.4 into a database running with Adabas 8.3.

Using the ADASAV utility of Adabas 8.4 for Delta SAVE MERGE, at least one DELTA save must be created by Adabas 8.4 for the MERGE to work correctly.

You cannot use an ADAREP or ADAULD utility from an Adabas version prior to Adabas 8.4 to print a report or unload a file from a save data set created by the ADASAV utility of Adabas 8.4.

Unload Data Sets

Using the ADALOD utility of Adabas 8.4, you can load a file from an unload data set created using the ADAULD or ADACMP utilities from any prior Adabas version.

Using the ADALOD utility of Adabas 8.3, you can load a file that was unloaded from an Adabas 8.4 database into a database running with Adabas 8.3 as long as the file does not use features supported only in version 8.4.

ADAORD DD/FILEA Data Sets

Using the ADAORD utility of Adabas 8.4, you can store files (STORE function) from a DD/FILEA data set created using the ADAORD REDB or REF functions from any prior Adabas version.

Using the ADAORD utility of Adabas 8.3, you can store files (STORE function) from a DD/FILEA data set created using the ADAORD REDB or REF functions in Adabas 8.4 into a database running with Adabas 8.3, as long as the files do not use features supported only in version 8.4.

Sequential Protection Logs

Any sequential protection log (PLOG) used for the ADARES utility (REGENERATE, BACKOUT, or COPY function) or ADASEL utility in Adabas 8.4 must have been created with Adabas 8.4. Using a sequential PLOG created with one Adabas version for an ADARES or ADASEL function in a different Adabas version is not supported.

However, the PLOG written during an online save operation in a version prior to Adabas 8.4 may be used, together with the save data set, for an ADASAV RESTONL FILE or FMOVE operation in Adabas 8.4 (see *Save Data Sets*, earlier in this section).

8 Applying Zaps

⚠️ **Important:** Be sure that you apply all supplied Adabas maintenance and concatenate Adabas patch-level libraries (L00*n*), as they are delivered to you. This will ensure that your Adabas code remains up-to-date, supporting all Adabas features as they are enhanced and maintained. The latest zaps for this product are available in the Knowledge Center in Software AG's Empower (*https://empower.softwareag.com*) web site.

In general, zaps for Adabas components (such as Adabas nuclei, the Adabas router, Adabas utilities) can be applied and made active one component at a time.

- Adabas utility zaps should be applied to the load library. The utility can then be run or rerun to make use of the zap.

- Adabas nucleus zaps should first be applied to the load library. Then the nucleus should be stopped and restarted to activate the zap.

- Adabas router (on z/OS, ADASVC) zaps should first be applied to the load library. Then all Adabas nuclei and other MPM servers running on the router should be stopped and the router should be reinstalled to activate the zap. Finally, the Adabas nuclei and MPM servers should be restarted.

Finally, the distributed source library contains member ZAPOPT, which lists some optional zaps that you may choose to apply for the activation or deactivation of various features and optional user settings of Adabas. A ZAPOPT member will be included with each SM level distribution.

9 Software AG Mainframe Product Compatibility

The following table describes Adabas 8.4 compatibility with other Software AG mainframe products, including prior releases of Adabas itself. You may need to upgrade your installation of the software if your existing release is not listed. .

> **Note:** Any exceptions to the product compatibility described here will be covered in the documentation for the specific product.

Product	Compatible Version Levels and Notes
Adabas (ADA)	The version of the Adabas SVC or router (BS2000) used must be the same as or greater than the version of any Adabas database used in your Adabas environment. For example, the Adabas 8.4 SVC/router can be run in the same environment with Adabas 8.3 or 8.4 databases. However, an Adabas 8.4 database cannot run in the same environment with an Adabas 8.3 SVC/router. For any given database (on disk), the Adabas nucleus and utilities of the same version and release level as the database must be used. If you need to convert a database to a higher version or release level, or revert it to a lower version or release level, the ADACNV utility of the higher level must be used. The Adabas link (ADALNK) routines can be used across versions. For example, Adabas 8.4 link routines can be used to issue calls to Adabas 8.3 databases. Software AG recommends that you use the Adabas 8 link routines for all programs that issue Adabas direct calls.
Adabas Bridge for DL/I (ADL)	Version 2.3 SP2 supports Adabas 8.
Adabas Bridge for VSAM (AVB)	Version 5.1 SP1 releases on z/OS 2.1 support Adabas 8.4 databases that do not make use of the expanded features (for example, spanned records, increased limits, or large object fields) available since Adabas 8.3.
Adabas Caching Facility (ACF)	Version 8.4 supports Adabas 8.4 databases and requires the Adabas 8.4 load library, with appropriate Adabas 8.4 zaps applied.

Product	Compatible Version Levels and Notes
Adabas CICS Interface (ACI)	Version 8.4 supports Adabas 8.4 databases, with appropriate Adabas 8.4 zaps applied.
Adabas Cluster Services (ALS)	Version 8.4 supports Adabas 8.4 databases and requires the Adabas 8.4 load library, with appropriate Adabas 8.4 zaps applied.
Adabas Delta Save Facility (ADE)	Version 8.4 supports Adabas 8.4 databases and requires the Adabas 8.4 load library, with appropriate Adabas 8.4 zaps applied.
Adabas Fastpath (AFP)	The minimum supported level of Adabas Fastpath is version 8.2 SP2. For more information, refer to *Using COR-based Add-ons.*.
Adabas IMS Interface (AII)	Version 8.4 supports Adabas 8.4 databases, with appropriate Adabas 8.4 zaps applied.
Adabas Native SQL (SQL)	Version 2.4 SP1 supports Adabas 8 databases that do not make use of the expanded features (for example, spanned records, increased limits, or large object fields) available in Adabas 8.
Adabas Online System (AOS)	Version 8.4 supports Adabas 8.4 databases, with appropriate Adabas 8.4 zaps applied.
Adabas Parallel Services (ASM)	Version 8.4 supports Adabas 8.4 databases and requires the Adabas 8.4 load library, with appropriate Adabas 8.4 zaps applied.
Adabas Review (REV)	Version 4.8 SP2 and above support Adabas 8.4. For more information, refer to your *Adabas Review* documentation.
Adabas SAF Security z/OS (AAF)	The minimum supported level of Adabas SAF Security is version 8.2 SP2. For more information, refer to *Using COR-based Add-ons*.
Adabas Statistics Facility (ASF)	Version 8 fully supports all Adabas databases 8.3 SP3 or above databases and expanded features.
Adabas SQL Gateway (ACE)	All currently supported versions of ACE support Adabas 8 databases. Please check the individual release notes for further information on which databases features are supported
Adabas System Coordinator (COR)	The minimum supported level of Adabas System Coordinator is version 8.2 SP2. For more information, refer to *Using COR-based Add-ons*. .
Adabas Text Retrieval (TRS)	Version 2.1 SP4 works with Adabas 8.4 SP1 when the Adabas Text Retrieval 2.1 SP4 hyperdescriptor exit TRSHEX12 is enabled to run with the Version 8 interface by applying zaps TR21454 and TR21455. This hyperdescriptor exit will then only operate with Adabas Version 8. If you then want to run Adabas Text Retrieval 2.1 SP4 with an older Adabas version, you must either undo the zaps or use a copy of the hyperdescriptor exit where zaps TR21454 and TR21455 are not applied. If you do use TR21454 and TR21455, the following additional Adabas Text Retrieval fixes must be applied as prerequisite zaps: TR21420, TR21421, TR21422, TR21423 and TR21424. These zaps can be found in Empower. It is not necessary to use the Adabas Hyperdescriptor Exit Stub in conjunction with Adabas Text Retrieval.
Adabas Transaction Manager (ATM)	The minimum supported level of Adabas Transaction Manager is version 8.2 SP2. For more information, refer to *Using COR-based Add-ons*.

Product	Compatible Version Levels and Notes
Adabas Vista (AVI)	The minimum supported level of Adabas Vista is version 8.2 SP2. For more information, refer to *Using COR-based Add-ons*.
Data Archiving for Adabas (ADR)	Data Archiving for Adabas is compatible with all supported versions of Adabas in z/OS environments.
Entire Net-Work (WCP)	Version 6.3 and above fully support Adabas 8 databases and expanded features, as well as ACBX interface direct calls.
Entire System Server (NPR)	Entire System Server Version 3.5 and later versions fully support Adabas 8 databases and expanded features.
Event Replicator for Adabas (ARK)	Version 3.5 SP4 and above support Adabas 8.4. For more information, refer to your Event Replicator for Adabas documentation.
Natural (NAT)	Version 8.2 SP7 fully supports Adabas 8.4 databases and expanded features.
Predict (PRD)	Version 8.4 SP1 fully supports Adabas 8.4 databases and expanded features.
EntireX/webMethods EntireX (EXX)	All currently supported versions of EntireX support Adabas 8 databases. Please check the individual release notes for further information. **Note:** In order to work with the Adabas 8.4 SVC, certain EntireX fixes must be applied, depending on the EntireX version you are using. These are currently: EXX912L006, EXX910L015, EXX990L019 or EXX970L036. The latest product fixes are available under *Product Fixes* in the Knowledge Center in Software AG's Empower (*https://empower.softwareag.com*) web site.

10 Using COR-based Add-ons

This document describes using version 8.2 SP2 of the Adabas COR-based Add-on products with Adabas 8.4 SP2 and later. It covers the following topics:

Introduction

You can use the following Adabas COR-based Add-on products in conjunction with Adabas 8.4 SP2 or later:

- Adabas System Coordinator(COR) 8.2 SP2 Patch Level 2 and above
- Adabas SAF Security (AAF) 8.2 SP2
- Adabas Fastpath (AFP) 8.2 SP2
- Adabas Transaction Manage (ATM) 8.2 SP2
- Adabas Vista (AVI) 8.2 SP2

> **Note:** These 8.2 SP2 products do not support any new Adabas 8.4 features.

Implementation

Review the following information with regard to the implementation of the COR-based Add-on products with Adabas 8.4 SP2.

1. We always recommend that the latest maintenance is applied to each of the COR-based Add-on products in use at your site.

   For reference, the specific maintenance for supporting Adabas 8.4 SP2 is as follows:

Add-on Product	Version	Fix number
Adabas System Coordinator	8.3 SP1	n/a
	8.2 SP2 Patch Level 3	n/a
	8.2 SP2 Patch Level 2	MI822179
Adabas Fastpath	8.2 SP2	AW822048
Adabas SAF Security	8.2 SP2	AX822008
Adabas Transaction Manager	8.2 SP2	AT822030
Adabas Vista	8.2 SP2	AV822055

2. Make sure the libraries for the relevant Adabas COR-based Add-on products are available to Adabas.

> **Note:** Starting from Adabas 8.4 SP1, it is no longer necessary for a COR*vrs*.LX*nn* library to be concatenated above the Adabas library for Adabas nuclei.

3. If you have applied maintenance that modifies the Adabas System Coordinator stubs (CORS*nn*) then relink your LNKGBLS modules to include the modified stubs. You will also need to relink any Adabas link modules that include a LNKGBLS module.

4. If, after loading the Adabas 8.4 SP2 INPL library, there is a requirement to (re)load the Adabas COR-based Add-on INPLs, (for example to apply an INPL update) then these INPL jobs should specify the Check Date option. This option loads the libraries in a date-sensitive manner by checking the dates of your existing INPL library and not allowing older members to replace members of the same name with newer dates. The use of the INPL Check Date option is determined by the following CMSYNIN command input (assuming the Natural input parameters in the job are specified in comma-delimited mode, or IM=D):

```
B,,,,,,,Y
```

For reference, a sample INPL job CORI061 can be found in the JOBS library of the Adabas System Coordinator.

Required Adabas Maintenance

Fixes may be produced after the final freeze of the Adabas release. Depending upon timing some or all of these fixes may be supplied with the installation kit in an "all zaps" dataset (*Z000). These fixes, and any others that also appear in Empower, should be applied during the Adabas installation process. The following Adabas fixes are currently known to be required when using the Adabas COR-based Add-on products:

- Fixes Required For Adabas 8.4 SP2 or later

Fixes Required For Adabas 8.4 SP2 or later

- None

11 AFPLOOK /AVILOOK Considerations

Note that the memory requirement of the database has increased by approximately 150K (above that required by Adabas 8.4) when running with ADARUN FASTPATH=YES or ADARUN VISTA=YES.

12 End of Maintenance

For information on how long a product is supported by Software AG, access Software AG's Empower web site at *https://empower.softwareag.com*.

Log into Empower. Once you have logged in, you can expand **Products** in the left menu of the web page and select **Product Version Availability** to access the Product Version Availability application. This application allows you to review support information for specific products and releases.

13 Documentation and Other Online Information

The following online resources are available for you to obtain up-to-date information about your Software AG products:

Software AG Documentation Website

You can find documentation for all Software AG products on the Software AG Documentation website at *http://documentation.softwareag.com*. This site requires Empower credentials. If you do not have an Empower user ID and password yet, you will find instructions for registering on this site (free for customers with maintenance contracts) or you can also use the TECHcommunity website to access the latest documentation.

Software AG TECHcommunity

You can find documentation and other technical information on the Software AG TECHcommunity website at *http://techcommunity.softwareag.com*. You can:

■ Access product documentation, if you have TECHcommunity credentials. If you do not, you will need to register and specify "Documentation" as an area of interest. If you already have TECHcommunity credentials, you can adjust your areas of interest on the TECHcommunity website by editing your TECHcommunity profile. To access documentation in the TECHcommunity once you are logged in, select **Documentation** from the **Communities** menu.

■ Access articles, demos, and tutorials.

■ Use the online discussion forums, moderated by Software AG professionals, to ask questions, discuss best practices, and learn how other customers are using Software AG technology.

■ Link to external websites that discuss open standards and web technology.

Software AG Empower Product Support Website

You can find product information on the Software AG Empower Product Support website at *https://empower.softwareag.com*. This site requires Empower credentials. If you do not have an Empower user ID and password yet, you will find instructions for registering on this site (free for customers with maintenance contracts).

To submit feature/enhancement requests, get information about product availability, and download products and certified samples, select **Products & Documentation** from the menu once you are logged in.

To get information about fixes and to read early warnings, technical papers, and knowledge base articles, select **Knowledge Center** from the menu once you are logged in.

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