Adabas Cluster Services

Release Notes

Version 8.4.1

May 2019

ADABAS & NATURAL

This document applies to Adabas Cluster Services Version 8.4.1 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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1 Release Notes

This document provides detailed information on Adabas Cluster Services version 8.4 and describes the updates and modifications of this 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.

This document provides release notes for the Adabas Cluster Services 8.4 release.

Enhancements	Describes the new and changed features in Adabas Cluster Services 8.4.
Adabas Product Support	Describes Adabas Cluster Services support of Adabas add-ons and other Adabas products.
Restricted Support for Adabas Features	Describes any restrictions on Adabas Cluster Services support of Adabas features.
Migrating from Prior Versions	Describes how to migrate from prior versions of Adabas Cluster Services.
Zap Information	Describes information about Adabas Cluster Services zaps.
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 about this release of Adabas Cluster Services.

2 About this Documentation

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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://documentation.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 Adabas Cluster Services 8.4 Enhancements

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This chapter describes the Adabas Cluster Services 8.4 enhancements.

Category	Enhancements
Adabas Cluster Services 8.4 SP1 Enhancements	*PLXCB Structures in Dataspace*
	Collaboration Between Cluster Nuclei
	ADARUN Parameter Enhancements
	Operator Command Enhancements
	Utility Enhancements
	ADASMF Enhancements

PLXCB Structures in Dataspace

Adabas Cluster Services Version 8.4 introduces the ability to place the PLXCB structures in a dataspace, in order to provide relief from 31-bit ECSA storage constraints. The PLXCB structures maintain information about the active nuclei and users of a cluster database, which is used to route the commands of the users to their assigned nuclei in the cluster. If several different cluster databases have nuclei or users running on the same system, placing their PLXCB structures in dataspaces may substantially reduce the use of common storage (ECSA), if the configured maximum number of users (NU parameter) is large.

For a given operating system image, to place the PLXCB structures for a cluster database in a dataspace, specify the new parameter LOC=DSP in the ADACOM initialization task for that database. In this case, ADACOM must be started before the first cluster nucleus starts on the system image and it must stay active as long as a nucleus or users of the database are active on that system. For more information, read *PLXCB Structures* in the Adabas Cluster Services*Introduction* and *LOC - Specify PLXCB Location* in the Adabas Cluster Services*Reference*.

Collaboration Between Cluster Nuclei

Two enhancements in Adabas Cluster Services Version 8.4 make the Adabas nuclei in a cluster more independent of one another, by reducing the need for nuclei to collaborate in cluster-wide internal processes. This takes away two classes of scenarios where a temporarily unresponsive nucleus may impact the processing of the other nuclei in the cluster.

For more information about these enhancements than that given here, read *Collaboration Between Cluster Nuclei* in the Adabas Cluster Services*Operations*.

Buffer Flush Independence

The new ADARUN parameters CLUPUBLPROT and CLUWORK1CACHE may be used to configure the publishing of protection data within the cluster. This influences the way buffer flushes react if one nucleus in the cluster is slow or unable to respond when asked by a buffer flush to write its latest protection data to the WORK data set.

The publishing policy previously used by Adabas is set by CLUPUBLPROT=NO. This is the default value. With this setting, cluster nuclei do not publish their protection data within the cluster (i.e., make it available to the other nuclei) before they write related updated ASSO or DATA blocks to the cache. Instead, when a buffer flush is about to write updated blocks out to the database, all nuclei in the cluster must collaborate with the buffer flush and write their latest protection data to their WORK data sets.

A new publishing policy may be specified by setting CLUPUBLPROT=YES. With this setting, the nuclei publish their protection data in the global cache or on their WORK data sets before they write related updated ASSO or DATA blocks to the cache. In return, a buffer flush can proceed even if a nucleus is slow or unable to respond to a request to write its latest protection data to WORK. In this case, the buffer flush reads the latest protection data of the unresponsive nucleus from the cache and writes it to WORK by itself.

The new CLUWORK1CACHE parameter configures how many WORK blocks a cluster nucleus may keep in the global cache at the same time, if CLUPUBLPROT is set to YES. CLUWORK1CACHE implicitly regulates the use of cache writes versus WORK I/Os for the publishing of protection data and is performance-sensitive for update-intensive workloads.

Setting CLUPUBLPROT=YES makes the nuclei in a cluster more independent of one another by allowing any nucleus to perform a buffer flush without the collaboration of all of its peer nuclei.

For more information about these parameters, read *CLUPUBLPROT Parameter: Publishing of Protection Data* and *CLUWORK1CACHE Parameter: Number of WORK Blocks in Global Cache*.

Update Command Synchronization

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

This parameter is available for both cluster and non-cluster nuclei. It is introduced in the Release Notes for Adabas Version 8.4.

Setting UPDATECONTROL=NODELAY makes the nuclei in a cluster more independent of one another, by not forcing the runout of all update commands (update command synchronization) after every buffer flush. These synchronization processes require the collaboration of all nuclei in the cluster.

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

ADARUN Parameter Enhancements

Adabas Cluster Services Version 8.4 introduces two new ADARUN parameters: CLUPUBLPROT and CLUWORK1CACHE. Both are related to the *Buffer Flush Independence* enhancement described above under ***Collaboration Between Cluster Nuclei***. See that section for more information.

Operator Command Enhancements

Adabas Cluster Services Version 8.4 introduces or enhances the following operator commands:

Command	New or Changed	Enhancement Description
`CLUPUBLPROT=YES|NO`	New	This new command dynamically modifies the setting of the ADARUN CLUPUBLPROT parameter.
`DPARM`	Changed	In cluster nuclei, the parameters listed include the new CLUPUBLPROT and CLUWORK1CACHE parameters.
`DRES`	Changed	In cluster nuclei, the resources listed include the new protection data area extension on the WORK dataset ("Work Pt 1b"). This is also shown in the Adabas session end statistics.
`DSTAT`	Changed	In cluster nuclei, the statistics include the extra WORK I/Os for publishing protection data and the timeouts of buffer flush-related V2 commands, if at least one of these numbers is nonzero or `CLUPUBLPROT` is set to YES. This is also shown in the Adabas session end statistics.
`DXCACHE`	Changed	This includes the cache I/Os for WORK blocks, if at least one of the related numbers is nonzero. This is also shown in the Adabas session end statistics.
`DXSTAT`	Changed	This includes the cache I/Os for WORK blocks, if at least one of the related numbers is nonzero, and it also includes the report by the new `DXWORK` command.
`DXWORK`	New	This new command displays the I/O statistics for the WORK datasets of all nuclei in the cluster. See *WORK Data Set I/O Statistics* for more information about these statistics. This is also shown in the Adabas session end statistics.

Utility Enhancements

Adabas Cluster Services Version 8.4 introduces or enhances the following ADADBS OPERCOM functions:

Utility Function	New or Changed	Enhancement Description
ADADBS OPERCOM CLUPUBLPROT=YES|NO	New	This new function dynamically modifies the setting of the ADARUN CLUPUBLPROT parameter.
ADADBS OPERCOM DPARM	Changed	For cluster nuclei, the parameters listed include the new CLUPUBLPROT and CLUWORK1CACHE parameters.
ADADBS OPERCOM DRES	Changed	For cluster nuclei, the resources listed include the new protection data area extension on the WORK dataset ("Work Prt1b").
ADADBS OPERCOM DSTAT	Changed	For cluster nuclei, the statistics include the extra WORK I/Os for publishing protection data and the timeouts of buffer flush-related V2 commands, if at least one of these numbers is nonzero or `CLUPUBLPROT` is set to YES.
ADADBS OPERCOM DXCACHE	Changed	This includes the cache I/Os for WORK blocks, if at least one of the related numbers is nonzero.
ADADBS OPERCOM DXSTAT	Changed	This includes the cache I/Os for WORK blocks, if at least one of the related numbers is nonzero, and it also includes the report by the new DXWORK function.
ADADBS OPERCOM DXWORK	New	This new function displays the I/O statistics for the WORK datasets of all nuclei in the cluster. See *WORK Data Set I/O Statistics* for more information about these statistics. This is also shown in the Adabas session end statistics.

These functions are also available via the Adabas Online System (AOS).

Furthermore, for each WORK dataset in a cluster, the ADAWRK utility prints information from the protection data area extension as part of its summary report.

ADASMF Enhancements

Adabas Cluster Services 8.4 adds the following information to the SMF records created by cluster nuclei, if ADARUN parameter SMF=YES:

- If SMFDETAIL includes ‘CSHB’, the cache statistics include those for block type ‘WORK’.
- If SMFDETAIL includes ‘PARM’, the parameter settings include those for the new CLUPUB-LPROT and CLUWORK1CACHE parameters.

- If SMFDETAIL includes ‘IODD’, the I/O statistics include those for other WORK datasets in a cluster. The DD names have prefix ‘ADW’.
- If SMFDETAIL includes ‘SESS’, the session statistics include the blocks, I/Os and waits for the extra publishing of protection data on WORK Part 1 induced by CLUPUBLPROT=YES, as well as the buffer flush V2 timeouts.

4 Adabas Product Support

In general, Adabas Cluster Services version 8.4 supports or is supported by the same add-on products as Adabas 8.4. The following table describes Adabas 8 compatibility with other Adabas products, including prior releases of Adabas itself. You may need to upgrade your installation of the software if your existing release is not listed.

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 8.2, 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 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.
Adabas CICS Interface (ACI)	Version 8.4 supports Adabas 8.4 databases, with appropriate Adabas 8.4 zaps applied.

Product	Compatible Version Levels and Notes
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 8.2 COR-based Add-ons*, in the *Adabas Release Notes*.
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 8.2 COR-based Add-ons*, in the *Adabas Release Notes*.
Adabas Statistics Facility (ASF)	Version 8 fully supports all Adabas 8 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 8.2 COR-based Add-ons*, in the *Adabas Release Notes*. .
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.

Product	Compatible Version Levels and Notes
Adabas Transaction Manager (ATM)	The minimum supported level of Adabas Transaction Manager is version 8.2 SP2. For more information, refer to *Using 8.2 COR-based Add-ons*, in the *Adabas Release Notes*.
Adabas Vista (AVI)	The minimum supported level of Adabas Vista is version 8.2 SP2. For more information, refer to *Using 8.2 COR-based Add-ons*, in the *Adabas Release Notes*.
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, as does version 3.5 SP3 with additional library L003. For more information, refer to your Event Replicator for Adabas documentation.
Natural (NAT)	Version 8.2 SP4 fully supports Adabas 8.4 databases and expanded features.
Predict (PRD)	Version 8.3 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.

5 Restricted Support for Adabas Features

This section describes facilities of Adabas that are not supported by cluster nuclei running under this Adabas Cluster Services or Adabas Parallel Services version. The facilities are supported normally for noncluster nuclei; however, no Adabas Cluster Services or Adabas Parallel Services functionality is available to them.

For an Adabas nucleus running in cluster mode (CLUSTER=LOCAL or SYSPLEX), the following features are not available and cannot be specified:

- `MODE=SINGLE`
- sequential protection log (DDSIBA)
- synchronous buffer flush (LFIOP=0)

The following features are not currently supported by nuclei running in cluster mode under this Adabas Cluster Services or Adabas Parallel Services version, but may be supported in subsequent versions of the product:

- `READONLY=YES` (receives PARM ERROR 71 if attempted).
- `UTIONLY=YES` can be specified for a cluster nucleus; if you start cluster nuclei with conflicting settings of `UTIONLY`, the system will change them to conform to the setting of the first active nucleus. Currently, however, the `UTIONLY` setting cannot be changed using an ADADBS OPERCOM or Adabas Online System function. Once the cluster is started, the only way to change the `UTIONLY` setting is to bring down the whole cluster and restart it with a different setting.
- online reorder.

Enhanced error recovery is supported; however, option changes are effective only for the local nucleus.

TCP/IP direct links are supported; however, the IP address/port is tied to an individual nucleus.

6 Migrating from Prior Versions

To migrate from your current Adabas Cluster Services version to Adabas Cluster Services 8.4, complete the following steps:

1. Shut down all nuclei in the cluster and the ADACOM subtasks for the (SVC) / DBID set. Run Adabas ADARES PLCOPY and ADASAV SAVE utility operations as necessary for your installation. For more information on these utility functions, refer to your Adabas documentation.
2. Replace the load library in your existing installation with the library supplied by Software AG containing the Adabas 8.4 SP1 (ADA841.LOAD) and Adabas Cluster Services 8.4 SP1 (ALS841.LOAD) data sets. Apply the zaps delivered with Adabas 8.4 SP1 and Adabas Cluster Services 8.4 SP1 and any Adabas Cluster Services zaps and pertinent Adabas zaps downloaded from Software AG's Empower (***https://empower.softwareag.com***) web site.
3. Install the Adabas 8.4 SP1 SVC if you have not already done so.
4. Run the ADACNV utility with TOVERS=84 to convert the database to version 8.4 format. For more information about the ADACNV utility, refer to the *Adabas Utilities Manual*.
5. Restart the nuclei in the cluster.

Migrating to Higher Service Pack (SP) Levels Later

To migrate from one SP level of Adabas Cluster Services 8.4 to a higher SP level (after SP1), it will usually be possible to shut down the affected components (Adabas nuclei, ADACOM task, Adabas SVC) on one system at a time, upgrade them to the higher SP level, and to bring them up again, on one system after the other, without ever shutting down the entire cluster.

Should that not be possible for a particular new SP level, it will be clearly indicated in the release notes for that SP level and instructions will be given on how to upgrade and activate the new SP level properly.

7 Zap Information

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- Applying Zaps to Adabas Cluster Services Components 22

This chapter covers the following topics related to zaps and your use of Adabas Cluster Services:

Adabas Zaps on Empower

Please be sure to check the Knowledge Center in Software AG's Empower (*https://empower.softwareag.com*) web site for any cluster-related Adabas zaps when you install Adabas Cluster Services. The complete Adabas zaps may not be supplied with your Adabas Cluster Services product.

Applying Zaps to Adabas Cluster Services Components

Usually, zaps for components of Adabas Cluster Services (Adabas nuclei, the SVCCLU component of the Adabas SVC, the ADACOM task) can be applied and made active one component at a time. That is, individual components can be shut down, have the zap applied, and be brought up again without ever shutting down the entire cluster. This is the default method of applying zaps, which is in effect if the zap description does not explicitly state otherwise.

In some cases, it may be possible that applying and activating a zap one component at a time would introduce erroneous behavior in the components that have not yet been zapped. If this is the case for a zap, it will be clearly indicated in the zap description, and instructions will be given for how to apply and activate the zap properly.

8 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.

9 Documentation and Other Online Information

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- Software AG Empower Product Support Website 26

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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