

# z/OS Installation

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## 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 datasets in the sequence indicated in the report:

Dataset	Contents
COR <sub>vrs</sub> .LOAD	COR load modules
COR <sub>vrs</sub> .INPL	SYSCOR INPL file
COR <sub>vrs</sub> .ERRN	SYSCOR error messages file
COR <sub>vrs</sub> .SRCE	Source modules
COR <sub>vrs</sub> .JOBS	Installation jobs
COR <sub>vrs</sub> .SYSF	Base configuration file
COR <sub>vrs</sub> .LX01	When used with Adabas Version 7.4, the supplied COR <sub>vrs</sub> .LX01 library is required. This contains the COR Version 8.1 database components (ADAPOx, AFPADA, AVIADA). This library must be added to the start of the load library concatenation in all database startup procedures, replacing the equivalent modules in the Adabas Version 7.4 library. If the Adabas nucleus is running with APF-authorization the LX01 library must also be APF-authorized.

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

## Installation Overview

The steps needed for a successful installation are as follows:

Step	Description	Required	Job Name
1	Restore the libraries from the installation tape	Yes	
2	Load (INPL) the SYSCOR application	Yes	CORI061
3	Load the configuration file and prepare SYSCOR	Yes	CORI050
4	Assemble the configuration module	Yes	CORI055
5	Add the System Coordinator to the Adabas clients	Yes	CORI060, CORI080x (for Version 8 Adalnks) CORI0607, CORI070x (for Version 7 Adalnks)
6	Define the System Coordinator group and members	Required if a COR daemon is to be used	
7	Install the CICS node error program (optional)	Optional	
8	Add cache structure(s) to the CFRM policy	Required if cross-system DTR is to be used.	
9	Create startup procedures for the Adabas System Coordinator daemons	Required if a COR daemon is to be used	
10	Define runtime controls for Client jobs and TP systems	Optional	

## System Programming Considerations

In a multi-systems environment a Coordinator daemon is normally defined for each system. In a parallel sysplex daemons use the IBM XCF facility to communicate. All COR daemons are defined (in the COR configuration file) with the same group name, and this name is used as the XCF group name. The group name selected must be unique to the COR daemon group, and must *not* be the same as the group name (CLUGROUPNAME) selected for any Adabas Cluster Services database.

If cross-system Dynamic Transaction Routing (DTR) is to be supported, a coupling facility cache structure must be defined. The cache structure name is defined in the coordination group definition as well as in the CFRM policy of the sysplex environment.

The Adabas System Coordinator daemon must execute:

- from an authorized load library; and
- at a higher priority than the TP monitors, databases, and jobs it is used to coordinate.

## Installation Procedure

Following is the general Adabas System Coordinator 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 Software AG technical support for assistance.

### 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 datasets for more than one product are delivered on the tape, the dataset COPY.JOB contains the JCL to unload the datasets 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 the 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: Load (INPL) the SYSCOR Application (Job I061)

Use sample job CORI061 to load the SYSCOR online administration and error messages file into Natural.

### Step 3: Load the Configuration File and Prepare SYSCOR (Job I050)

System Coordinator and related products operate according to definitions contained in the configuration file. You must allocate a new Adabas file for the Version 8.1 configuration file and load CORvrl.SYSF into it using the supplied sample job CORI050. The online services will guide you through the steps required to make the new file ready for use, including conversion from previous versions of System Coordinator.

#### To load the configuration file

1. Load the Adabas System Coordinator configuration file from the distribution tape using the standard Adabas load utility ADALOD. Use sample job CORI050. If you are using an alternate configuration file you need to run this job to initialize both files.
2. If Natural Security is installed, define the libraries SYSCOR and SYSMP<sub>vrs</sub> (where *vrs* is the version you are installing, for example 812) and protect as required. You may define MENU as the startup transaction for SYSCOR. DO NOT define a startup transaction for SYSMP<sub>vrs</sub>.
3. Use the following parameter to define the Natural session where SYSCOR is to be used:

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

where *dbid* and *fnr* define the primary Adabas System Coordinator file.

Alternatively, assemble the Natural parameter module with:

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

► **To convert a previous version's definitions to version 8 format**

1. Logon to library SYSCOR and enter MENU. SYSCOR will detect that the configuration file is new and will guide you through the steps required to copy and convert the definitions from a previous version.
2. Repeat this procedure for each configuration file to be converted. The procedure only needs to be done once for each configuration file, regardless of how many products use it. Other products may have additional conversion requirements.

## Step 4: Assemble the Configuration Module (Job I055)

Adabas System Coordinator parameters are located in the configuration file. At job start, the Adabas System Coordinator needs to know the location of this file. This information is kept in the configuration module.

Create the configuration module by assembling the CORMCFG parameters defining the SVC, database, and file number of the Adabas System Coordinator configuration file.

Keyword	Description
SVC=	Your installation's Adabas SVC number
DBID=	Database number for the System Coordinator configuration file
FNR=	File number for the System Coordinator configuration file
ADBID=	Database number for the alternate System Coordinator configuration file. If not specified, an alternate file will not be used.
AFNR=	File number for the alternate System Coordinator configuration file. If not specified, an alternate file will not be used.
SF148=WAIT	Use this keyword if you want client jobs to wait when the specified configuration file is not active. If you omit this keyword, the RETRY= setting takes effect (see below).
CRITICAL=	Use this keyword if you want System Coordinator to check for availability and correct functioning of supported add-on products. You may specify one or more of the following, separated by commas: <ul style="list-style-type: none"> <li>● AVI - AdabasVista</li> <li>● AFP - Adabas Fastpath</li> <li>● ATM - Adabas Transaction Manager</li> </ul> <p>If any critical product is not functioning correctly, all Adabas requests will be rejected with response code 101, subcode 59.</p>
DMWAIT=	Specifies a maximum time (in minutes) that the System Coordinator daemon will wait for the configuration file database to be activated. If not specified, the daemon will wait indefinitely. The default is 60.

Keyword	Description
ZOSDUMP=	<p>This option applies to z/OS installations only and determines the style of dump the System Coordinator daemon produces, in the event of an abnormal termination.</p> <p>The default, ABEND, produces a standard operating system dump to SYSUDUMP, SYSABEND or SYSMDUMP.</p> <p>SVC produces an SVC dump on the system dump datasets. This can often be quicker than producing a standard dump. The daemon issues message: COR037I SVC dump created and the operating system writes messages to the system log to identify the dump dataset.</p> <p>If the SVC dump fails for any reason, the daemon issues message: COR038E SVC dump failed, R15: hhhhhhhh and a standard dump is produced.</p>
RETRY=	<p>RETRY specifies the frequency (number of Adabas calls issued in this client job) at which System Coordinator in the client job will retry access to its configuration file after a response 148. The default is 1000. Client services provided by System Coordinator and its supported add-on products are not available until the configuration file becomes active. RETRY only takes effect if SF148=WAIT has not been specified.</p>

Name the resulting load module CORCFG (this is required).

Use sample job CORI055.

### Step 5: Add the System Coordinator to the Adabas Client (Jobs I060, I070x, I080x)

Link the appropriate Adabas System Coordinator client component with your Adabas link modules.

The stub modules are called CORS0*n* where *n* is a subsystem suffix.

The modified link module is for use by client jobs only.

Adabas System Coordinator is compatible with Version 8 and Version 7 link modules. When using Version 8 link modules you must re-assemble the LNKGBLS table, specifying the parameter COR=YES in the LGBLSET macro.

The load library contains the kernel modules CORKRN and CASKRN, which must also be available to all client jobs that will use the Adabas System Coordinator.

If you are migrating from a previous version, you must ensure that you use the new load library modules. It is not possible to use the Version 8 link module stub with Coordinator modules from a previous version. If you need to run multiple versions in a TP monitor client, please see the Versioning Tool section for more information.

Job Type	Stub Module	Sample Job
Batch/TSO	CORS01	CORI060 (Version 8 link), CORI0607 (Version 7 Link)
Com-plete	CORS02	CORI080C (Version 8 link), CORI070C (Version 7 Link)

Job Type	Stub Module	Sample Job
CICS Command Level	CORS03	<p>CORI080B (Version 8 link), CORI070B (Version 7 Link)</p> <p><b>Note:</b> If you are installing under CICS, the Coordinator 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 Coordinator Client modules (CORKRN, CASPXY, CASKRN), 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.</p> <p>A sample job, CORI080R, is supplied in the installation JOBS library.</p> <p><b>Note:</b> For CICS, ensure that the LUSAVE parameter in the Adabas link module is set to at least 72. Software AG recommends that you also use the XWAIT=YES parameter.</p> <p><b>Note:</b> Adabas System Coordinator does not yet support CICS threadsafe operation. Ensure that the program definitions for modules that use Adabas System Coordinator (for example Adabas link modules and task-related user exits that use a LNKGELS with CORS03 linked in) are defined to CICS with a Concurrency of Quasirent.</p>
IMS	CORS05	CORI080G (Version 8 link), CORI070G (Version 7 link)
Multi-task Batch (NIM TP Monitor)	CORS07	<p>CORI080H (Version 8 link), CORI070H (Version 7 link)</p> <p><b>Note:</b> For a multi-tasking batch job, the client component (CORS07) must be linked with the reentrant link module (ADALNKR).</p>
Triggers and Stored Procedures	CORS08	CORI080S.J (Version 8 link), CORI070S.J (Version 7 link)
Adabas SQL Gateway	CORS07,CORLNKR	<p>CORI080H (Version 8 link), CORI070H (Version 7 link)</p> <p><b>Note:</b> See section Installing the Adabas System Coordinator with the Adabas SQL Gateway in z/OS.</p>

## Step 6: Define a System Coordinator Group

Define your System Coordinator group and member(s). This is required if you intend to use:

- Adabas Fastpath
- clustered applications with dynamic transaction routing.

Job parameters for each product also contain settings that are relevant to the operation of the Adabas System Coordinator. For more information, see SYSCOR Administration.

## Step 7: Install the CICS Node Error Program (Optional)

The node error program CORNEP is used by sites running CICS command-level applications in CICS/ESA or CICS Transaction Server for z/OS. It is not an essential component, but it does improve efficiency when reclaiming user memory after user sessions terminate.

CORNEP must be called as a started task (with Transaction ID ANEP) from the real CICS node error program DFHZNEP. If you do not use DFHZNEP, a sample is provided on the source library. If you do use DFHZNEP, you will need to implement the code for starting CORNEP into your own DFHZNEP as shown in the provided sample source.

Following are the required CICS resource definition parameters for CORNEP:

```
Language: Assembler
RESident: No
Datalocation: Any
EXECKey: User
```

### Note:

To use CORNEP, assemble your Adabas link module with PARMTYP=ALL on the ADAGSET (Version 7 link module) or LGBLSET (Version 8 link module) macro.

### Note:

CORNEP must be called only from DFHZNEP.

## Step 8: Add the Cache Structure(s) to the CFRM Policy

### Note:

This step is required if you intend to run clustered applications with dynamic transaction routing in an IBM sysplex environment.

Run a job similar to the following example to update the CFRM administrative policy data in the COUPLE dataset:

```
//STEP20 EXEC PGM=IXCMIAPU
//SYSPRINT DD SYSOUT=A
//SYSABEND DD SYSOUT=A
//SYSIN DD *
DATA TYPE(CFRM) REPORT(YES)
DEFINE POLICY NAME(POLICY1) REPLACE(YES)
CF NAME(CF)
TYPE(009674)
MFG(IBM)
```



```

PLANT(02)
SEQUENCE(000000040101)
PARTITION(1)
CPCID(00)
DUMPSPACE(2000)
.
.
STRUCTURE NAME(xxxxxxxxxx)
SIZE(500)
INITSIZE(10)
PREFLIST(

```

—where

Parameter	Is the . . .
STRUCTURE NAME	Cache structure name, which must match the name specified in the Adabas System Coordinator group definition.
SIZE	Maximum size for the cache structure in the coupling facility. Calculate this by determining the maximum number of concurrent users of the clustered applications (CICS, IMS, etc) that will use this coupling facility. Each user will require approximately 256 bytes of cache memory.
INITSIZE	Initial size for the cache structure in the coupling facility. Use this together with the SIZE parameter to manage the difference between the average and maximum user sessions to be supported in coupling facility memory.

### Step 9: Create Startup Procedures for the System Coordinator Daemon(s)

The following is a job example for running a Adabas System Coordinator daemon:

```

//SYSCO1 PROC
//*-----*
//* System Coordinator SYSCO Vv.r.s. STARTUP *
//*-----*
//SYSCO1 EXEC PGM=SYSCO,REGION=0M,TIME=1440
//STEPLIB DD DISP=SHR,DSN=SAG.CORvrs.LOAD
// DD DISP=SHR,DSN=ADABAS.Vvrs.LOAD
//SYSUDUMP DD SYSOUT=*
//CORDUMP DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//DDPRINT DD SYSOUT=*
//DDCARD DD DISP=SHR,DSN=SAG.CORvrs.SRCE(CORCNTL)
//*

```

The file referenced by the DDCARD statement should contain the following control statements:

```

PRODUCT=CAS

PRODUCT=AFP (If FASTABM is to be run)

FORCE=NO

```

If SYSCO terminates abnormally, it may be necessary to specify FORCE=YES on restart.

## Step 10: Define Runtime Controls for Client Jobs and TP Systems

System Coordinator can be installed for all client jobs, but will be inactive until runtime controls are defined. Controls are defined in the SYSCOR Natural application, using the Maintenance menu. Refer to the Online Services section for further information.

Alternatively, you can delay this task until you have installed the appropriate add-on product(s). You may then use any of the supplied maintenance applications (SYSAFP, SYSAVI or SYSATM).

## Installing the Adabas System Coordinator with the Adabas SQL Gateway in z/OS

- Background
- Common Installation Steps
- Basic Multi-Thread (not APF authorized) Install
- Authorized Multi-Thread Install

### Background

The Adabas SQL Gateway uses z/OS UNIX Systems Services to run as a multi-threaded server. This requires re-entrant operation which has additional installation considerations for products based upon Adabas System Coordinator such as Adabas Fastpath, Adabas Vista and Adabas Transaction Manager. Specifically, it is important that a single copy of the Adabas Link Module (ADALNKR) containing the System Coordinator interface (CORS07) is used, and that this module is linked as serially re-usable (REUS).

The Adabas SQL Gateway uses z/OS UNIX Systems Services to run either in basic or authorized multi-threaded server mode. This choice affects the method of installation of the Adabas System Coordinator as the base for Adabas Fastpath, Adabas Vista, Adabas Transaction Manager, etc.

Specifically, it is important that a single copy of the Adabas Link Module (ADALNKR) containing the System Coordinator interface (CORS07) is used, and that this module is linked as serially re-usable (REUS).

There are two ways to run the Adabas SQL Gateway which directly affect the way Adabas System Coordinator must be installed:

- Basic multi-thread (not APF authorized): When the Adabas SQL Gateway runs without APF authorization it does not activate its low-level RACF interface.
- Authorized multi-thread (APF authorized): In its authorized state the Adabas SQL Gateway activates its RACF interface.

### Common Installation Steps

 **The following steps are required for both installation types:**

1. Complete normal SQL Gateway installation (and make sure it works correctly in isolation) before adding the System Coordinator interface. (See the *Installation for z/OS* section of the Adabas SQL gateway documentation).
2. Assemble the Adabas Link routine globals module LNKGBLS. Use sample member ASMGBLS from the Adabas JOBS dataset. The following LGBLSET macro parameters must be specified:

```
COR=YES          (Tell the Link module to call System Coordinator)
GBLNAME=LNKGBLS (name the globals module)
RENT=NO
```

3. Link a COR-enabled version of ADALNKR, using the link globals table previously created. Use sample member LNKLNKR8 from the Adabas JOBS dataset, with the following changes:
  - Change the PARM options in the EXEC statement to specify REUS, and remove RENT – the linked module must be re-usable but not re-entrant.
  - Add a CORLIB DD statement, naming the System Coordinator installation load library. This is for including the COR interface module CORS07.
  - Change INCLUDE USERLIB(LNKRGBL) to
 

```
INCLUDE USERLIB(LNKGBLS)
```
  - Add statement INCLUDE CORLIB(CORS07).
4. Modify the Server Job CNXADA. Include the Coordinator load library, plus any installed add-on product libraries (Fastpath, Vista, ATM), in the STEPLIB concatenation. For the authorized installation, all libraries must be APF-authorized.
5. Define the SQL Gateway started task as job type multi-TCB to the desired product(s) in the appropriate administration center: Adabas Fastpath (SYSAFP), Adabas Vista (SYSAVI) and/or Adabas Transaction Manager (SYSATM). See the relevant product documentation for details.

## Basic Multi-Thread (not APF authorized) Install

### for this type of operation:

1. Ensure that SQL Gateway basic multi-thread installation is completed before adding the System Coordinator interface.
2. Re-link the module named CNXRUNA with the REUS attribute, replacing ADALNK with ADAUSER. Here is a sample of the required JCL:

```
//LKED EXEC PGM=IEWL,PARM='REUS'
//ADALIB DD DSN=ADABAS.VVRS.LOAD,DISP=SHR ... Adabas library ...
//SYSLMOD DD DSN=PPP.CONNX.LOAD,DISP=SHR ... Connx Library ...
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
REPLACE ADABAS ... Delete ADALNK entry ...
INCLUDE SYSLMOD(CNXRUNA)
INCLUDE ADALIB(ADAUSER)
ENTRY MAIN
NAME CNXRUNA(R)
/*
```

The Linkage Editor will produce warning messages indicating that some Csects are not re-usable. These can be ignored.

3. Re-link the module named CNXADA0B with the REUS attribute, replacing ADALNK with ADAUSER. Here is a sample of the required JCL:

```
//LKED EXEC PGM=IEWL,PARM='REUS'
//ADALIB DD DSN=ADABAS.VVRS.LOAD,DISP=SHR ... Adabas library ...
//SYSLMOD DD DSN=PPP.CONNX.LOAD,DISP=SHR ... Connx Library ...
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
REPLACE ADABAS ... Delete ADALNK entry ...
INCLUDE SYSLMOD(CNXADA0B)
INCLUDE ADALIB(ADAUSER)
ENTRY MAIN
NAME CNXADA0B(R)
/*
```

The Linkage Editor will produce warning messages indicating that some Csects are not re-usable. These can be ignored.

Do *not* specify the RENT attribute for either of these modules. The linked modules must be re-usable but not re-entrant. Failure to do this will result in the System Coordinator failing with S0C4 (addressing) abends.

## Authorized Multi-Thread Install

### for this type of operation:

1. Ensure that SQL Gateway authorized multi-thread installation is completed before adding the System Coordinator interface.
2. Re-link the module named CNXRUNA with the RENT and AC=1 attributes, replacing ADALNK with CORLNKR. Here is a sample of the required JCL:

```
//LKED EXEC PGM=IEWL,PARM='RENT,AC=1'
//CORLIB DD DSN=SAG.CORVRS.LOAD,DISP=SHR ... COR library ...
//SYSLMOD DD DSN=PPP.CONNX.LOAD,DISP=SHR ... Connx Library ...
//SYSPRINT DD SYSOUT=*
//SYSLIN DD *
REPLACE ADABAS ... Delete ADALNK entry ...
INCLUDE SYSLMOD(CNXRUNA)
INCLUDE CORLIB(CORLNKR)
ENTRY MAIN
NAME CNXRUNA(R)
/*
```

3. Re-link the module named CNXADA0B with the RENT and AC=1 attributes, replacing ADALNK with CORLNKR. Here is a sample of the required JCL:

```
//LKED EXEC PGM=IEWL,PARM='RENT,AC=1'  
//CORLIB DD DSN=SAG.CORVRS.LOAD,DISP=SHR ... COR library ...  
//SYSLMOD DD DSN=PPP.CONNX.LOAD,DISP=SHR ... Connx Library ...  
//SYSPRINT DD SYSOUT=*  
//SYSLIN DD *  
REPLACE ADABAS ... Delete ADALNK entry ...  
INCLUDE SYSLMOD(CNXADA0B)  
INCLUDE CORLIB(CORLNKR)  
ENTRY MAIN  
NAME CNXADA0B(R)  
/*
```