

# Installation for OS/390

It is recommended that you read this section from beginning to end before starting the installation process.

This document covers the following topics:

- Installation Tape
- Storage Requirements
- Copying the Tape Contents to Disk
- Installation Procedure

## Installation Tape

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

The notation *nnn* in dataset names represents the version number of the product.

Dataset Name	Contents
NPR <i>nnn</i> .JOBS	Entire System Server Installation Jobs.
NPR <i>nnn</i> .LOAD	Entire System Server Load Library.
NPR <i>nnn</i> .SRCE	Entire System Server Source Library
NPR <i>nnn</i> .INPL	Entire System Server DDM's and tutorial.
NPR <i>nnn</i> .ERRN	Entire System Server Error Messages
NPR <i>nnn</i> .DATA	Predict data for the Entire System Server.

## Storage Requirements

During installation, the following files are loaded from the installation tape:

File Name	Type	Cylinders	Disk Type
NPR <i>nnn</i> .JOBS	PDS	1	3380 / 3390
NPR <i>nnn</i> .LOAD	PDS	2	3380 / 3390
NPR <i>nnn</i> .SRCE	PDS	5	3380 / 3390
NPR <i>nnn</i> .INPL	SEQ	7	3380 / 3390
NPR <i>nnn</i> .ERRN	SEQ	1	3380 / 3390
NPR <i>nnn</i> .DATA	SEQ	7	3380 / 3390

## Copying the Tape Contents to Disk

If you are not using SMA, copy the job dataset NPR*nnn*.JOBS from tape to disk using the sample JCL below. The following values must be supplied in the JCL:

- In the dataset names, replace *nnn* with the current version number of the datasets.
- With the SER parameter, replace XXXXXX with the volume serial number of the tape.
- With the LABEL parameter, replace *x* with the sequential number of the tape dataset (see **Report of Tape Creation**).
- With the VOL=SER parameter, replace YYYYYY with the volume serial number of the disk pack.
- With the SPACE parameter, specify the device type being used.

```
// JOB CARD
//V2COPY EXEC PGM=IEBCOPY
//SYSPRINT DD SYSOUT=A
//IN1 DD DSN=NPRnnn.JOBS,DISP=OLD,UNIT=TAPE,
// VOL=(,RETAIN,SER=XXXXXX),LABEL=(x,SL)
//OUT1 DD DSN=SAGLIB.NPRnnn.JOBS,DISP=(NEW,CATLG,DELETE),
// UNIT=SYSDA,VOL=SER=YYYYYY,SPACE=(CYL,(1,1,10))
//SYSIN DD *
C I=IN1,O=OUT1
/*
```

Then adapt and run job NPRTAPE from the job dataset to copy the load and source libraries from tape to disk. The sample jobs directly use the sequential datasets from tape.

The dataset type and the space each dataset requires on disk are shown in the **Report of Tape Creation**.

## Installation Procedure

### Step 1: Scratch Libraries SYSNPE and SYSNPR

(Job I051, Step 1100)

If you are upgrading from a previous version of the Entire System Server, scratch libraries SYSNPE and SYSNPR from your existing installation. Otherwise, skip this step.

### Step 2: Load the INPL File and the ERRN File

(Job I061, Steps 1100 and 1102)

1. Use the Natural system command INPL (which is described in the Natural Reference documentation) in order to load the Entire System Server system objects (dataset NPRnnn.INPL).

This loads the following libraries:

Library	File	Contents
SYSNPR	FNAT	Installation aid (define DBIDs and define views to Natural Security)
SYSNPE	FNAT	Online tutorial
SYSNPEH1	FNAT	Help texts (English)
SYSNPEH2	FNAT	Help texts (German)

2. Load the Entire System Server error messages file (dataset NPRnnn.ERRN) using the ERRLODUS utility. The ERRLODUS utility is described in the Natural Utilities documentation.

### Step 3: Change the NATPARM Module

Add the ASIZE parameter and the following macro to the NATPARM module; then assemble and link it. For information on how to activate this NATPARM module for your Natural environment, refer to the Natural Installation Guide for Mainframes.

```
ASIZE=48
NTDB PROCESS,148
```

ASIZE specifies the size of the auxiliary buffer. The minimum value is 36K and the maximum value is 64K. A value of at least 48 is recommended.

148 is the database ID with which the Entire System Server DDMs are cataloged. This does not affect the use of additional Entire System Server nodes with different node IDs, since these can be addressed via the NODE field in each Entire System Server view. See also the subsection Multiple Entire System Server Node Support in the Section Using the Entire System Server of the Entire System Server Administration Documentation

**Note:**

If you are upgrading from a previous version of Entire System Server, use the startup parameter NODE to assign different node IDs to different versions of Entire System Server running on the same system. You may, for instance, have an Entire System Server Version 2.2.2 running in production using node ID 148, and specify NODE=168 in the startup parameter for Version 3.1.1 during installation and test.

Ensure the Natural session parameter LE is set to OFF, otherwise you may experience problems with the Online Tutorial.

### Step 4: Change Defaults

1. If you want to change default values, edit modules NATPNIP and ESYNODTB.

Assemble both and link them as described in the section Installing the Entire System Server Interface in the Natural Installation Guide for Mainframes.

- NATPNIP contains the following parameters and defaults:

BUFLEN=8192	Length of <b>all</b> Adabas buffers.
NUMREQ=5	Number of parallel requests.
MAXCBL=3000	Complex FIND buffer length.
MAXEDL=3000	Editor session buffer length.
EXTUSER=INIT-USER	When running under CICS or IMS, which user ID should be fetched to be shipped to RACF/ACF2/TSS (*INIT-USER or *USER in Natural).

- ESYNODTB contains the following parameters and defaults:

This module contains mnemonic names for Entire System Server nodes. In the DDMs, there are fields called NODE and NODE-NAME. The field NODE directs a call directly to this Entire System Server. The field NODE-NAME is translated into a node number depending on the contents of this table. We recommend, that you use your system ID as name.

The macro NAMXNOD generates table entries. The last macro call must be used with parameter LAST=Y to set end-of-table identifier.

**Example:**

```
NAMXNOD ID=148 , NAME=PRODUCTION-1
NAMXNOD ID=149 , NAME=PRODUCTION-2 , LAST=Y
```

2. The module ESYNODTB must also be linked to module XCOMV026 from NPR222-LOAD-LIB to SMA-LOAD-LIB. (SMA Job I055, Step 1108).
3. If default values are changed, relink Natural as described in the section Installing the Entire System Server Interface in the Natural Installation Guide for Mainframes.

**Step 5: Load the DATA File (optional)**

(Job I200, Step 1100)

All Entire System Server views have been documented in Software AG's repository Predict. The `NPRnnn.DATA` dataset on the installation tape contains these Predict view descriptions that can be loaded with the `MIGRATE / COORDINATOR` utility in Predict (Job I200, Step 1100). This is optional and applies to Predict Version 3.4.2 or above.

The `MIGRATE / COORDINATOR` utility is described in the Predict Reference documentation.

If, however, you have already loaded these descriptions from any previous of the Entire System Server (or Natural Process), you must also logon to Predict's online system to check the database name of DBID **148**, to which the views are linked. Its name must be `ENTIRE-SYSTEM-SERVER`. If it is not, change the database name before running Job I200, Step 1100 to load the dataset `NPRnnn.DATA`.

**Step 6: Natural Security Considerations**

If Natural Security is installed, define libraries `SYSNPE`, `SYSNPR`, `SYSNPEH1` and `SYSNPEH2` to Natural Security. If these applications are to be people-protected, link to them those user IDs that require authorization. Define libraries without "XREF = YES" to load all objects.

- `SYSNPE` contains the online tutorial;
- `SYSNPEH1` and `SYSNPEH2` contain online help information;
- the installation aid in library `SYSNPR` can be used to apply initial security definitions for the Entire System Server views.

**Step 7: Define APF Authorization**

Define APF authorization for the Entire System Server Load Library by updating the member `IEAAPFxx` in library `SYS1.PARMLIB`. You may also use the `APF` statement in a `PROGxx` parmlib member to define the Load Library in the APF-authorized list.

Ensure that all libraries in the `STEPLIB` concatenation of the Entire System Server started task in Step 12 are APF-authorized.

**Note:**

If the library is not authorized, certain Entire System Server functions return an appropriate response code, and at start-up time the following message appears on the console:

```
ESY0050W ENTIRE SYSTEM SERVER IS NOT APF AUTHORIZED
```

## Step 8: Edit the Parameter Module XCOMPARM

(Job I070, Step 1100)

Edit the parameter module XCOMPARM to set the correct startup parameters. This member is created with Job I070, Step 1100 and contains some default values. New parameters are CONSNAME, ESYTRACE, SHUTDOWN-MAX-DELAY, SYSTEMCONS, TRACE, TRACE-LEN and TRACE-SAV; the parameters MIGRAID and SYSLOG-REFRESH are no longer supported.

For a description of the parameters and an example, see the section Startup Parameters of the Entire System Server Administration Documentation.

## Step 9: Edit the Entire System Server Started Task

(Job I070, Step 1101)

Edit the example member XCOMSTC (Entire System Server's started task). This member is created with Job I070, Step 1101.

The following is an example of Entire System Server subtask JCL. Note that the Adabas Load Library must be concatenated and APF-authorized:

```
//NATPROCS PROC
//*****
/** Entire System Server Start-up Procedure
/**
/** Make the following substitutions
/**
/** &NPRSRCE - Entire System Server source library
/** &NPRLD - Entire System Server load library (APF authorized)
/** &ADALD - Adabas load library (APF authorized)
/**
//*****
// EXEC PGM=NPRINIT,REGION=3M,TIME=1440
//STEPLIB DD DSN=&NPRLD,DISP=SHR
// DD DSN=&ADALD,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
/**
//PARMS DD DSN=&NPRSRCE(XCOMPARM),DISP=SHR
/**
```

In the above example, member XCOMPARM in the Source Library referenced by the PARMS DD statement contains the Entire System Server startup parameters. For a description, see the section Startup Parameters of the Entire System Server Administration Documentation.

This started task starts the Entire System Server.

## Step 10: Create the JCL for the Entire System Server Trace Program

### Example:

```
//JOB card
//ESYTRACE EXEC PGM=ESYTRACE,PARM='199 --DISPL --NTROUT --POLL'
//STEPLIB DD DSN=your.load.library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//
```

Create the JCL to execute the program ESYTRACE. It analyzes the TRACE data of Entire System Server, if the startup parameter "TRACE=YES" is defined.

In order to start ESYTRACE in Monitor mode, the PARM "199 --POLL" is specified. The assignment of DDNAME TRACEIN is not needed here, because all data are read from the memory pool only. The analyzed and edited TRACE data will be written to SYSPRINT due the --DISPL parameter. It may also optionally be written to a file identified by the DDNAME TRACEOUT, however, in the above example this is suppressed by the --NTROUT parameter.

This task must be stopped explicitly with the operator command

```
F jobname,QUIT
```

due to the argument "--POLL".

For more information, see the subsection Creating Trace Data in the Entire System Server in the section Common Entire System Server Features of the Entire System Server Administration Documentation.



## Step 11: Activating the VTAM Interface

Edit member VTAMNATP and save it in VTAM's online Source Library SYS1.VTAMLST.

The name specified in the ACBNAME parameter should be identical to Entire System Server's VTAMACB startup parameter. (This can be skipped if VTAMACB=NONE is specified.)

### Notes:

1. The VTAM interface is used in the view NET-OPER to enable VTAM commands. By means of the view NET-OPER, you may send any VTAM command to VTAM without using the system console.
2. Another VTAM interface is used inside Entire System Server, which prints data to any VTAM printer; this feature is available with Entire Output Management.
3. Ensure that the major name is different from the minor name.

## Step 12: Assemble and Link Security Exits (Optional)

To simplify installation, the sample security exits from the distributed source library have already been assembled and linked into the distributed load library. If no modifications to these exits are needed to satisfy special security requirements, this step can be skipped.

(Job I055 Steps 1110-1116)

- Steps 1110-1116 delete the pre-linked load-modules with the suffix RACF and are necessary if you want to execute steps 1120-1126. Note that you must edit steps 1110-1116 specifying the volume where the Entire System Server load lib is allocated, and the volume type (3380, 3390 ...).

(Job I055 Steps 1120-1126)

- Steps 1120-1126 assemble and link all exits with suffix RACF for RACF, CA-ACF2 Version 4.2 and above, or CA-TOP SECRET.
- When assembling the LOGVRACF exit, be sure to include your current Adabas source library in the Assembler SYSLIB DD statements.

Security exit modules are loaded at Entire System Server startup and are used by various view processors. The names of the security modules loaded are determined by the specification of the Entire System Server SECURITY parameter which consists of a 4-byte suffix (see the section Startup Parameters of the Entire System Server Administration Documentation).

Sample security exits for CA-ACF2, CA-TOP SECRET and RACF installations are contained in the distributed Source Library. You may assemble and link these using Job I055 as described above. These exits are intended as examples and may require modification to meet your site requirements. The following table lists the sample security exits provided together with the relevant view names:

Exit Name	Views
DSNVRACF	ACCOUNTING CATALOG-UPDATE CHECK-SECURITY COPY-FILE FILE-ALLOCATE FILE-MAINTENANCE IEBCOPY LIB-DIRECTORY LIB-UPDATE LIB-ZAP LIST-VTOC READ-FILE SUBMIT VTOC-UPDATE WRITE-FILE
IDCVRACF	IDCAMS
JESVRACF	CONSOLE-LOG READ-SPOOL SPOOL-UPDATE SPOOL-FILES SPOOL UPDATE
LOGVRACF	NATPROC-LOGON
OPRVRACF	ALLOCATIONS CONSOLE LOADED-MODULES MAIN-STORAGE SPOOL-UPDATE TCB
SUBVRACF	SUBMIT
VTMVRACF	NET-OPER

## General Linkage Conventions

The following table shows the register settings on entry:

Register	Convention
R1	Exit parameter list (see below for examples)
R13	18-full word save area
R14	Return address
R15	Entry point address

Below are parameter lists of the example user exits provided in source form in the distributed Source Library. They can be changed to suit your site requirements:

Exit Name	Description	Parameters	Upon Return:
DSNVRACF	Dataset verification	<ol style="list-style-type: none"> <li>ACCESS TYPE (A1) A=Alter W=Write R=Read F=Allocate</li> <li>A (TASK ENTRY)</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, access allowed. Else, R15 ==> error text.
IDCVRACF	IDCAMS verification	<ol style="list-style-type: none"> <li>COMMAND (A80)</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, access allowed. Else, R15 ==> error text.
JESVRACF	Spool interface	<ol style="list-style-type: none"> <li>requested authority: - X'02' READ - X'04' UPDATE</li> <li>address of resource name for JESSPOOL resource class</li> <li>address of user id</li> <li>address of dynamic work area</li> </ol>	If R15=0, access allowed. Else, access denied.
LOGVRACF	Logon/logoff procedure	<ol style="list-style-type: none"> <li>FUNCTION (logon/logoff)</li> <li>USER ID (A8)</li> <li>PASSWORD</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, logon OK. Else, R15 ==> error text.
OPRVRACF	<ol style="list-style-type: none"> <li>Operator command validation.</li> <li>Address space authorization</li> </ol>	<ol style="list-style-type: none"> <li>COMMAND (A80)</li> <li>JOB NAME (A8)</li> <li>JOB NR. (N5)</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, logon OK. Else, R15 ==> error text.
SUBVRACF	Submit exit	<ol style="list-style-type: none"> <li>USER ID (A8)</li> <li>A (job card buffer)</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, logon OK. Else, R15 ==> error text.
VTMVRACF	VTAM command validation	<ol style="list-style-type: none"> <li>COMMAND (A80)</li> <li>DYNAMIC WORK AREA</li> </ol>	If R15=0, logon OK. Else, R15 ==> error text.

**Note:**

All user exits must be reentrant. The Entire System Server dynamic work area is accessible by all user exits. A copy book containing the layout of this work area is also contained in the distributed Source Library under the name VIEWWK. The task table is in XCOMTSDS.

See also the subsection Setting Up RACF Security for Operator Commands on OS/390 in Section OS/390 Considerations of the Entire System Server Administration Documentation.

## Step 13: Assemble and Link the Adabas Linkage Routine ADALNA5

Job I055 Step 1109 assembles and links the Adabas linkage routine ADALNA5. Make sure that the Assembler SYSIN DD statement specifies your current Adabas source library. This routine is needed to communicate from Entire System Server to Adabas databases as well as to other Entire System Servers in the network. Monitors such as Entire Output Management or Entire Operations and also the view COPY-FILE use this link routine.

## Step 14: Com-plete Considerations

1. If you intend to use the Entire System Server under Com-plete, you may have to adjust the setting of the ADAROLL, ADACALLS and ADASVC5 parameters (see the **Com-plete System Programmer's Manual**).
2. In order to use the SEND-MESSAGE function to users of Com-plete, the Entire System Server must be treated as a batch job from Com-plete's point of view. The subsection Batch in the section Software Interfaces in the **Com-plete System Programmer's Manual** applies here. Note the following:
  - Link the COMPBTCH module to the Entire System Server library and link the module XCOMV019 to COMPBTCH using Job I055, Step 1105.
  - The following DD card must be added to the Entire System Server JCL:

```
COMBTCH DD DSN=NODE $nnn$ .SVC $sss$ ,DISP=SHR
```

where  $nnn$  is the Com-plete node number given by the (Com-plete) ACCESS-ID sysparm, and  $sss$  is the Adabas SVC number given by the ACCESS-SVC sysparm.

- The TUBATCH module must be included in the STEPLIB concatenation of the Entire System Server JCL.

The Entire System Server logs on to Com-plete with the name of its started task and sends the message(s).

### Note:

One Entire System Server can send to only one Com-plete.

## Step 15: Additional Notes

1. An installation aid is contained in library SYSNPR. This installation aid can be used to change the DBIDs (node numbers) of Entire System Server views, and to define views to Natural Security.
2. For sites running Software AG's data center products: for all users running as subtask in Entire System Server address space who logon to Adabas, ETID=<blank> must be set in the Natural Security profile. This also applies to standard users NOPMON, NOMMON, NCLMON, NOMARC, NOMREV, NOMPRT.
3. To use System Automation Tools (SAT), Entire Output Management (NOM), Entire Operations (NOP), or Entire Event Management (NCL), Natural 3.1.3 or above must be installed.
  - Assemble and link NATOS from Natural Source Library (this is usually done with the installation of Natural Job I055, Steps 0100 to 0103). Module NATOS replaces the module NATPNTD2 from previous Entire System Server (or Natural Process) versions.
  - Link a Natural subtask as follows:

```
MODE RMODE(ANY)
INCLUDE SMALIB(NATOS)           Natural driver
INCLUDE ...
INCLUDE NPRLIB(ADANPR)         Adabas-NPR-interface
INCLUDE ...
NAME NATSUB22(R)               Example of Natural's name
```

4. If you experience a security message during startup like:

```
ICH408I USER(SAG2 ) GROUP(SAGTEST ) NAME(TEST ID )
MVS.MCSOPER.ESY148CO CL(OPERCMD5)
WARNING: INSUFFICIENT AUTHORITY - TEMPORARY ACCESS ALLOWED
FROM MVS.MCSOPER.* (G)
ACCESS INTENT(READ ) ACCESS ALLOWED(NONE )
```

then you have to give READ access to the MCS console for the NPR started task in your Security system. Contact your RACF/ACF2/TOP-SECRET administrator for assistance.