

# Installing the Entire System Server Interface

Installing the Entire System Server Interface is required if the product Entire System Server or Natural ISPF is to be used.

You may choose between standard installation (recommended) and customized installation.

- Prerequisites
- Standard Installation
- Customized Installation
- Assembling the Parameter Modules for the Entire System Server Interface Component
- Linking the ESXNUC Module
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## Notation *vrs* or *vr*:

If used in the following document, the notation *vrs* or *vr* stands for the relevant **version**, **release**, **system** maintenance level numbers. For further information on product versions, see *Version* in the *Glossary*.

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## Prerequisites

A supported version of either of the following products must be installed before you can install the Entire System Server Interface:

- Entire System Server or Natural ISPF, version as specified under *Natural and Other Software AG Products* in the current *Natural Release Notes for Mainframes*.

## Standard Installation

If you want to use the recommend standard value settings in the modules ESYNODTB and NATPNIP (used by the Entire System Server and Natural ISPF), proceed with *Linking the ESXNUC Module*.

## Customized Installation

If you do *not* want to use the recommend standard value settings, first edit the module NATPNIP in the Natural source library and then relink the ESXNUC module.

The content of module NATPNIP is:

```
NAMVIEWP BUFLLEN=8192,NUMREQ=5,MAXCBL=3000,MAXEDL=3000,EXTUSER=INIT-USER
```

The default values are included. The NATPNIP parameters are explained below:

BUFLLEN	Length of all Adabas buffers in bytes.
NUMREQ	Number of possible nested FIND loops in Natural calling Entire System Server.
MAXCBL	Complex FIND buffer length.
MAXEDL	Editor session buffer length.
EXTUSER	External user ID which will be passed to Entire System Server for security checks.

Possible values for EXTUSER are:

EXTUSER=INIT-USER	Recommended for z/OS platforms.  The value of the Natural variable *INIT-USER is transferred via Entire System Server to an external security system, for example, RACF, ACF2, TOP-SECRET, and all calls to security restricted resources are handled under this user ID.
EXTUSER=USER	Recommended for UTM on BS2000/OSD.  Similar processing using Natural variable *USER.
EXTUSER=ADDRESS-SPACE	Recommended for TIAM and batch mode on BS2000/OSD.  The security description of this address space is used for security evaluation.

You may also edit the module ESYNODTB in the Natural source library which contains the following default values:

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

### When do I need to change these values?

Normally, calls to Entire System Server from Natural are handled via a NODE parameter, for example:

```
FIND ACTIVE-JOBS WITH JOB-NAME = 'ADA*' AND NODE = 148
```

where NODE contains a numeric value, but no character-oriented values.

Programmers need to know a numeric value pointing to a real Entire System Server. Using the value NODE-NAME, they may code:

```
FIND ACTIVE-JOBS WITH JOB-NAME = 'ADA*' AND NODE-NAME = 'DAEF'
```

where DAEF is the logical name of the production Entire System Server.

The table ESYNODTB defines these mappings and contains the following parameters:

ID	Entire System Server node number (also known as DBID).
NAME	Entire System Server node name.
LAST	Indicator for last entry in table.

## Assembling the Parameter Modules for the Entire System Server Interface Component

### With Natural ISPF

This section applies if Natural ISPF is used as INCORE database.

The jobs mentioned below can be found in the data set `ISPvrs.JOBS`.

#### Under z/OS and z/VSE

Link the parameter module NATPNIP, using Job I055, Step 1106. In this case, the module ESYNODTB is not required.

#### Under BS2000/OSD

Link the parameter module NATPNIU (for UTM) or NATPNIT (for TIAM/batch mode), using Job I055, Steps 1106 and 1108. In this case, the module ESYNODTB is not required.

### With Entire System Server

This section applies if the Entire System Server is used.

The jobs mentioned below can be found in the data set `NPRvrs.JOBS`.

#### Under z/OS and z/VSE

Assemble and link the modules using Job I055, Step 1106 (NATPNIP) and, optionally, 1107 (ESYNODTB).

#### Under BS2000/OSD - UTM Environments

Assemble and link the modules using Job I055, Step 1108 (ANATPNIU) and, optionally, 1107 (AESYNODTB).

ANATPNIU must be assembled with `NAMVIEWP EXTUSER=USER` in order to use the Natural Security user ID as user ID for Entire System Server calls (if no NATPROC-LOGON is issued).

#### Under BS2000/OSD - TIAM and Batch Environments

Assemble and link the modules using Job I055, Step 1106 (ANATPNIT) and, optionally, 1107 (AESYNODTB).

NATPNIT must be assembled with `NAMVIEWP EXTUSER=ADDRESS-SPACE`. The LOGON user ID will be used as Entire System Server user ID if no NATPROC-LOGON has been issued.

## Linking the ESXNUC Module

### Under z/OS

You can either link all modules to the shared nucleus or link them all to the front-end.

Include the following instructions in your link job:

INCLUDE NATLIB(NATPNIP)	Entire System Server Interface parameters
INCLUDE NATLIB(ESXNUC)	Entire System Server Interface nucleus
INCLUDE NATLIB(ESYNODTB)	Optional, node table

Optionally:

If you want to run Entire System Server in single user mode, proceed as described in the section *Running Entire System Server in Single-User Mode* below.

Note that you may do so only under TSO or in batch mode.

### Under z/VSE

You can either link all modules to the shared nucleus or link them all to the front-end.

Include the following instructions in your link job:

INCLUDE NATPNIP	Entire System Server Interface parameters.
INCLUDE ESXNUC	Entire System Server Interface nucleus.
INCLUDE ESYNODTB	Optional, node table.

Optionally:

If you want to run Entire System Server in single user mode, you may do so only in batch mode.

INCLUDE NATLIB(NATPSNGL) to the front-end and link it now as NON-REENTRANT.

This allows you to use Entire System Server in single-user mode. This module *must not* be linked to the shared nucleus.

### Under BS2000/OSD

All modules have to be linked to the front-end part of Natural to handle different configuration settings.

Include the following instructions in your link job:

INCLUDE NATPNIP, NATvrs.MOD	Entire System Server Interface parameters.
INCLUDE ESXNUC, NATvrs.MOD	Entire System Server Interface nucleus.
INCLUDE NATPRBSU, NATvrs.MOD	BS2000/OSD service module.
INCLUDE NATPSNGL, NATvrs.MOD	Optional, allow use of Entire System Server in single-user mode (only possible under TIAM or in batch mode).
INCLUDE ESYNODTB, NATvrs.MOD	Optional, node table.

## Under VM/CMS

Modify the variable `LOADLIST` in `NAT$LOAD EXEC` to include the following modules:

Module	Explanation
NATPNIP	Entire System Server Interface parameters.
ESXNUC	Entire System Server Interface nucleus.
ESYNODTB	Optional, node table.

Proceed as described in the VM/CMS installation procedure under the heading *Generate a Natural Module*.

## Running Entire System Server in Single-User Mode under z/OS

- General
- Installing ESY for Single-User Mode

### General

Single-user ESY under z/OS is only available in batch mode and under TSO.

Running the Entire System Server (ESY) in single-user mode is advantageous, for example, in the following cases:

- Executing long running batch jobs comprising a large number of call to the Entire System Server.
- Performing test scenarios using a Natural session under TSO performing many calls to the Entire System Server, without disturbing the production environment.
- Exploring new Entire System Server functionality or versions.

From a Natural point of view, the ESY single-user mode is accessible as ESY node 148, irrespective of whether such a node does already exist on your machine or network.

The following is an example of a Natural program that is running in a single-user environment:

```
FIND ACTIVE-JOBS WITH NODE = 148 AND JOB-NAME = 'XCOM*'
```

This statement calls a single-user Entire System Server that runs within the same address-space. Calling a different ESY node that runs elsewhere in the network is possible by using a different node number, as shown in the following example:

```
FIND ACTIVE-JOBS WITH NODE = 53 AND JOB-NAME = 'NUC*'
```

This statement calls a multi-user ESY with node number 53 out of the same Natural program which called the single-user ESY session.

## Installing ESY for Single-User Mode

Single-user ESY is only available in batch mode and in a TSO environment.

The following topics are covered below:

- Installing for Batch Mode
- Installing for TSO

### Installing for Batch Mode

Perform the following steps:

1. Create a new PDS load library, which must be APF authorized.
2. Copy all members of the ESY load library into the new load library.
3. Link-edit the Module NATPSNGL, which handles ESY single user features, with the standard batch Natural nucleus front-end. Note that this module *must not* be linked with a shared Natural nucleus.

Alternatively, you may also use the RCA parameter to load this module by setting RCA=NATPSNGL.

In both cases, the Natural front-end must be link-edited, authorized by parameter AC=1, into the new load library.

4. To handle the ESY-relevant steps, add the mandatory cards PARMS and SYSPRINT to your JCL. In addition, you may add the optional cards ESYTRACE and CLOG.

```
//ESYTRACE DD  SYSOUT=*           <== internal trace
//SYSPRINT DD  SYSOUT=*           <== modules/zap directory of NPR
//CLOG      DD  DISP=SHR,DSN=xxx   <== Command log dataset
//PARMS     DD  DISP=SHR,DSN=xxx   <== NPR Parameter
```

5. Add an Adabas load library to your JCL, which also has to be APF authorized.
6. Edit your ESY parameter member. Here, the parameter NODE will be ignored, since Natural routes any calls to node number 148 through to the single-user ESY node.

## Installing for TSO

Perform the following steps:

1. Ask your system programmer to add the name of the Natural nucleus as AUTHPGM in the TSO definition member named IKJTSO00. Usually, this member is in dataset SYS1 . PARMLIB.
2. Proceed analogously as described in the batch mode installation above.