

Natural in Batch Mode under BS2000/OSD

This document contains special considerations that refer to Natural in batch mode under the operating system BS2000/OSD.

The following topics are covered:

- Files and System Files Used by Natural in BS2000/OSD Batch Mode
- Keyword Parameters
- BS2000/OSD Job Variables

See also *Natural under BS2000/OSD Batch Mode Error Messages*.

For considerations that refer to Natural in batch mode generally, see:

- *Adabas Datasets*
- *Sort Datasets*
- *Subtasking Session Support for Batch Mode Environments*

Files and System Files Used by Natural in BS2000/OSD Batch Mode

The following optional sequential files or system files are used during a Natural under BS2000/OSD batch mode session:

| Link Name | System File | Explanation |
|-----------|-------------|--|
| CMPRMIN | | Dynamic Parameter Dataset |
| | SYSIPT | Dynamic Parameter Input |
| | SYSDTA | Dynamic Parameter Input |
| | SYSDTA | Primary Input and Input for Natural INPUT Statements |
| | SYSLST | Primary Report Output |
| | SYSOUT | Primary Report Output |
| | SYSLST nn | Optional Report Output for Natural Tracing |
| Pnn | | Additional Reports, nn is the report number |
| Wnn | | Natural Work Files, nn is the work file number |

CMPRMIN - Dynamic Parameter File

CMPRMIN can be used as dynamic parameter file if the system files SYSIPT or SYSDTA shall not be used or are not available to Natural. The parameter file must be of FCBTYPE SAM.

All input records from CMPRMIN are concatenated into one parameter string. Trailing blanks at the end of each record are truncated; no commas are inserted.

For further information on reading dynamic parameters, see the keyword parameter DYNPAR for macro NAMBS2 (see DYNPAR=FILE).

SYSIPT - Dynamic Parameter System File

The system file SYSIPT can be used as dynamic parameter file.

All input records from SYSIPT are concatenated into one parameter string. Only the first 72 positions of each SYSIPT record are significant. Trailing blanks at the end of each record are truncated; no commas are inserted.

For further information on reading dynamic parameters, see the keyword parameter DYNPAR for macro NAMBS2.

SYSDTA - Dynamic Parameter System File

The system file SYSDTA can be used as dynamic parameter file.

All input records from SYSDTA are concatenated into one parameter string. Trailing blanks at the end of each record are truncated; no commas are inserted.

Note:

If SYSDTA is assigned to SYSCMD, the parameter input has to be closed off by an /EOF command to separate it from succeeding primary input data.

For further information on reading dynamic parameters, see the keyword parameter DYNPAR for macro NAMBS2 (see DYNPAR=FILE).

SYSDTA - Primary Input

The system file SYSDTA is used as the primary input file that contains Natural commands, Natural source programs, and (optionally) data to be read by INPUT statements during the execution of Natural programs.

The number of characters actually processed per line is determined by the current setting of the profile/session parameter SL. This setting applies for both source statement and execution time input data. This enables identification or sequence numbers to be placed in the rightmost columns of every record, if desired.

SYSOUT, SYSLST - Primary Report Output

The system files SYSOUT or SYSLST are used for the primary output report, resulting from DISPLAY, PRINT and WRITE statements in a Natural program.

The actually used system file depends on the value for the keyword parameter `WRITE` in the assembly of the reentrant part of the Natural batch driver.

The system files `SYSOUT` or `SYLST` are also used as optional report output for dynamic parameters. If the profile parameter `PLOG` is set to `ON`, all dynamic profile parameters are written to the same destination as the primary report output.

SYSLST nn - Optional Report Output for Natural Tracing

If profile parameter `ETRACE` is set to `ON`, all trace output is written to this file during the session.

Depending on the value for the keyword parameter `TRACE` in the assembly of the reentrant part of the Natural batch driver, one of the alternate `SYSLST` system files `SYLST01` - `SYLST99` is used as destination for the trace records.

P nn - Additional Reports 01-31

`P nn` is used for each additional report referenced by any Natural program compiled or executed during the session. nn must be a two-digit decimal number in the range 01-31, corresponding to the report number used in a `DISPLAY`, `PRINT` and `WRITE` statement.

Instead of `P nn` , any other link names may be used by setting the keyword subparameter `DEST` of profile parameter `PRINT` to an appropriate value, for example:

```
PRINT=( ( $nn$ ) , . . . , DEST=PRNT $nn$ )
```

W nn - Natural Work Files 01-32

`W nn` is used for each Natural work file referenced by any Natural program compiled or executed during the session. nn must be a two-digit decimal number in the range 01 - 32, corresponding to the number used in a `READ WORK FILE` or `WRITE WORK FILE` statement.

Instead of `W nn` , any other link names may be used by setting the subparameter `DEST` of profile parameter `WORK` to an appropriate value, for example:

```
WORK=( ( $nn$ ) , . . . , DEST=WRK $nn$ )
```

Keyword Parameters

The Natural BS2000/OSD batch mode driver is generated by assembling the macro `NAMBS2`. For the control of conditional assembly of the driver modules, the following keyword parameters are available:

```
ADACOM | ADDBUFF | APPLNAM | CODE | DELETE | DYNPAR | ILCS | JV | LF | LINK |
LINK2/LINK3/LINK4 | NUCNAME | PARMOD | REQMLC | SYSDTA | TERM | TRACE | USERID |
WRITE
```

ADACOM

| | |
|-------------------------|--|
| Possible values: | ADACOM=ADAUSER, ADACOM=ADABAS, ADACOM=ADALNK |
| Default value: | ADACOM=ADALNK |

This parameter applies to the generation of the front-end part. It determines which Adabas link module is to be used. Possible values:

| | |
|----------------|---|
| ADACOM=ADAUSER | The module ADAUSER is linked to the front-end part (Adabas versions lower than 7.1). |
| ADACOM=ADABAS | The modules ADAUSER and SSFB2C are linked to the front-end part (Adabas Version 7.1 and higher). |
| ADACOM=ADALNK | The module ADALNK is linked to the front-end part (Adabas versions lower than 7.1) or the modules ADALNK, ADAL2P and SSFB2C are linked to the front-end part (Adabas Version 7.1 and higher). |

ADDBUFF

| | |
|-------------------------|--------|
| Possible values: | 1 to 8 |
| Default value: | None |

This parameter applies to the generation of the front-end part.

It determines the additional number of pages (4 KB units) for the terminal I/O buffer.

APPLNAM

| | |
|-------------------------|-------------|
| Possible values: | <i>name</i> |
| Default value: | NATBS2 |

This parameter applies to the generation of the front-end part.

name is the name (maximum 8 characters) of the Natural batch application. This name is part of the serialization ID when the Natural batch task is initialized.

CODE

| | |
|-------------------------|--------------|
| Possible values: | FRONT / RENT |
| Default value: | FRONT |

This parameter applies to the generation of both the front-end and reentrant parts.

It determines which part of the Natural BS2000/OSD interface is to be generated.

| | |
|------------|--|
| CODE=FRONT | indicates the generation/assembly of the front-end part. |
| CODE=RENT | indicates the generation/assembly of the reentrant part. |

DELETE

| | |
|-------------------------|--------|
| Possible values: | ON/OFF |
| Default value: | ON |

This parameter applies to the generation of the reentrant part.

| | |
|------------|---|
| DELETE=ON | The setting of the profile parameter DELETE in the Natural parameter module determines whether dynamically loaded non-Natural programs are unloaded at the end of the Natural program in which they are loaded or whether they are unloaded when command mode is entered. |
| DELETE=OFF | A dynamically loaded non-Natural program once loaded is kept for the duration of the whole Natural session. |

DYNPAR

| | |
|-------------------------|-----------------------|
| Possible values: | SYSDTA/SYSIPT/FILE/NO |
| Default value: | NO |

This parameter applies to the generation of the front-end part.

| | |
|---------------|--|
| DYNPAR=NO | No dynamic parameters are read. |
| DYNPAR=SYSDTA | <p>The dynamic parameters are read from SYSDTA. If SYSDTA is assigned to SYSCMD, at least an /EOF card must follow the /EXEC Natural card.</p> <p>Example:</p> <pre> /LOGON /SYSFILE SYSDTA=(SYSCMD) /EXEC NATBAT /EOF * Null dynamic parameters LOGON SYSEXT L * * FIN /LOGOFF </pre> |
| DYNPAR=SYSIPT | The dynamic parameters are read from SYSIPT. |
| DYNPAR=FILE | <p>The dynamic parameters are read from a sequential file. The input of this SAM file is interpreted as one single text string, which means that the individual entries must be separated from each other by a comma, even at the end of a line. Such a parameter file must be defined with a FILE command by using the LINK parameter CMPRMIN.</p> <p>Example:</p> <pre> /FILE NAT.PARAMS, LINK=CMRMIN </pre> |

ILCS

| | |
|-------------------------|-------------|
| Possible values: | YES/NO/CRTE |
| Default value: | NO |

This parameter applies to the generation of the reentrant part.

| | |
|-----------|---|
| ILCS=CRTE | 3GL subprograms are invoked with common runtime environment convention. For this to be possible, the ILCS initialization routine IT0SL# must be linked to the Natural front-end: INCLUDE IT0SL#,SYSLNK.CRTE.010 RESOLVE,SYSLNK.CRTE.010 |
| ILCS=YES | 3GL subprograms are invoked with enhanced ILCS linkage convention. For this to be possible, the ILCS initialization routine IT0INITS must be linked to the Natural front-end: INCLUDE IT0INITS,SYSLNK.ILCS RESOLVE,SYSLNK.ILCS |
| ILCS=NO | Standard processing applies. |

JV

| | |
|-------------------------|--------|
| Possible values: | ON/OFF |
| Default value: | OFF |

This parameter applies to the generation of the front-end part.

| | |
|--------|---|
| JV=ON | The condition code created when the Natural session is terminated is passed to a job variable if one has been declared with the link name *NATB2JV. |
| JV=OFF | If your BS2000/OSD installation does not include the Siemens product "Job Variables," this parameter must be set to OFF; otherwise assembly errors in the NAMBS2 compilation occur. |

LF

| | |
|-------------------------|-------|
| Possible values: | X'zz' |
| Default value: | X'25' |

This parameter applies to the generation of the front-end part.

With this parameter, you specify the control character to be used for line advance when printing on the local printer.

LINK

| | |
|-------------------------|---|
| Possible values: | <i>name</i> (<i>name,name,...</i>) |
| Default value: | none |

This parameter applies to the generation of the front-end part.

The *name(s)* of programs and modules that are called from Natural programs and linked with the non-reentrant part must be specified with this parameter. Conversely, the programs and modules whose names are specified must be linked with the non-reentrant part, otherwise the application is put into status SYSTEMERROR and all users are rejected with an error message.

A "TABLE" macro call is performed for the specified programs and modules, which enters their load addresses into the dynamic loader's link table. It is therefore not necessary to dynamically load these programs when they are called by Natural programs. For dynamically loaded programs, only the load library needs to be defined in the Natural parameter module.

Example:

```
LINK=PROG1
LINK=(PROG1,PROG2,MODUL111)
```

LINK2/LINK3/LINK4

| | |
|-------------------------|---|
| Possible values: | <i>name</i> (<i>name,name,...</i>) |
| Default value: | none |

These parameters apply to the generation of the front-end part.

The parameters LINK2, LINK3 and LINK4 are an extension of the LINK parameter. Since an operand definition cannot be longer than 127 characters (including parentheses), these parameters are provided for cases where the operand of parameter LINK would be too long. The syntax is analogous to that of LINK.

Examples:

```
NAMBS2 LINK=(PROG1,PROG2,...),
LINK2=(PROG54,...)
NAMBS2 LINK=(PROG1,PROG2,PROG3,PROG4)
```

NUCNAME

| | |
|-------------------------|-------------|
| Possible values: | <i>name</i> |
| Default value: | NB2RENT |

This parameter applies to the generation of the front-end part.

With this parameter, you specify the name of the bounded, reentrant Natural module. You must use this name for the Natural pool and load information in macro ADDON (macro ADDON assembles BS2STUB).

PARMOD

| | |
|-------------------------|--|
| Possible values: | <i>(nn,loc)</i> <i>nn</i> : 24/31 <i>loc</i> : BELOW/ABOVE |
| Default values: | (31 , ABOVE) |

This parameter applies to the generation of both the front-end and reentrant parts.

The first part of this parameter (*nn*) is used to define an addressing mode (24-bit or 31-bit mode) for the Natural BS2000/OSD application.

31-bit mode is required if the Natural buffer pool, the reentrant part of the Natural BS2000/OSD application, Adabas or the Adabas Fast Path pool is located above 16 MB.

The second part of this parameter (*loc*) is used to define the front-end part location of the Natural BS2000/OSD application. If you load the front-end part of the application above 16 MB, this must be defined in the front-end part's link procedure as follows:

```
LOADPT=*XS
```

or

```
LOADPT=X'address'
```

Example:

```
/EXEC TSOLINK
PROG NAT230,FILENAM=NAT230,LOADPT=*XS,...
TRAITS RMODE=ANY,AMODE=31
INCLUDE...
/* PARMOD=(nn,loc) MUST BE IDENTICAL IN THE FRONT-END AND REENTRANT PARTS
```

REQMLOC

| | |
|-------------------------|-----------------|
| Possible values: | RES/BELOW/ABOVE |
| Default value: | RES |

This parameter applies to the generation of both the front-end and reentrant parts in 31-bit mode (PARMOD=31).

This parameter determines where the requested Natural work areas are to be allocated by the system using request memory.

| | |
|---------------|--|
| REQMLOC=BELOW | All areas are requested below 16 MB. |
| REQMLOC=ABOVE | All areas are requested above 16 MB. |
| REQMLOC=RES | All areas are requested depending on the location of the reentrant part. |

The REQMLOC parameter corresponds to the LOC parameter of the BS2000/OSD system macro REQM.

SYSDTA

| | |
|-------------------------|----------------|
| Possible values: | PRIMARY/SYSCMD |
| Default value: | PRIMARY |

This parameter applies for the generation of the front-end part.

| | |
|----------------|--|
| SYSDTA=PRIMARY | After reading of dynamic parameters from SYSDTA, SYSDTA is set to SYSDTA=(PRIMARY). |
| SYSDTA=SYSCMD | After reading of dynamic parameters from SYSDTA, SYSDTA is set to SYSDTA=(SYSCMD). |

TERM

| | |
|-------------------------|-----------|
| Possible values: | PRGR/STEP |
| Default value: | PRGR |

This parameter applies to the generation of the front-end part.

| | |
|-----------|---|
| TERM=PRGR | The Natural batch application will be terminated. |
| TERM=STEP | The system additionally executes the next SET-JOB-STEP command. |

TRACE

| | |
|-------------------------|--|
| Possible values: | <i>nn, ll</i> <i>nn</i> : 01 to 99 <i>ll</i> : 71 to 132 |
| Default value: | 99,71 |

This parameter applies to the generation of the reentrant part.

With this parameter, you specify the number of a trace file and the maximum length of a trace print record. *nn* is the number for the SYSLST*nn* trace file and *ll* is the maximal length in characters of a trace print record.

If any external Natural trace function is active, the trace records will be written to SYSLST*nn*. In this case, the Natural batch mode driver creates the following trace file:

Example:

```
NATURAL .TRACE .BTCH .TTTT ,SPACE=( 30 , 3 )
SYSFILE SYSLSTnn=Natural .TRACE .BTCH .TTTT
/* TTTT is the task sequence number
```

Before the Natural batch mode session is terminated, the trace file will be closed as follows:

```
SYSFILE SYSLSTnn=(PRIMARY)
```

USERID

| | |
|-------------------------|--------------------------|
| Possible values: | YES / SYSTEM / NO / USER |
| Default value: | USER |

This parameter applies to the generation of the front-end part.

| | |
|--------------------------------|---|
| USERID=SYSTEM or USERID=YES | The Natural user ID is created by using the BS2000/OSD user ID. |
| USERID=USER or USERID=NO | The Natural user ID is created by using the job name; that is, the / .JOBNAME of the LOGON command. If no BS2000/OSD job name has been specified with the LOGON command, the Natural user ID is created as with USERID=SYSTEM or YES. |

WRITE

| | |
|-------------------------|-----------------|
| Possible values: | SYSOUT / SYSLST |
| Default value: | SYSLST |

This parameter applies to the generation of both the front-end and reentrant parts.

This parameter controls whether output produced by Natural is written to SYSOUT or SYSLST.

BS2000/OSD Job Variables

The Natural batch mode driver uses the BS2000/OSD facility "Job Variables" to pass return codes to the user or to subsequent jobs (steps). The return codes are created either by Natural itself (in the range 1 to 31) or by the Natural application if a TERMINATE statement is used with the condition-code option (the range to be used is 32 to 256).

The job variable which is to contain the return code has to be declared using the link name *NATB2JV. The support of job variables depends on the setting of the SET parameter &JV in the Natural BS2000/OSD batch mode driver NATBS2.

Example:

```
/LOGON  
/DCLJV NATBJV, LINK=*NATB2JV  
/EXEC NATnnnB  
*TERMCC  
/LOGOFF
```

To assign Return Code 36 to NATBJV, the Natural program TERMCC could be coded as follows:

```
ASSIGN CC(N8) = 36  
TERMINATE CC  
END
```