

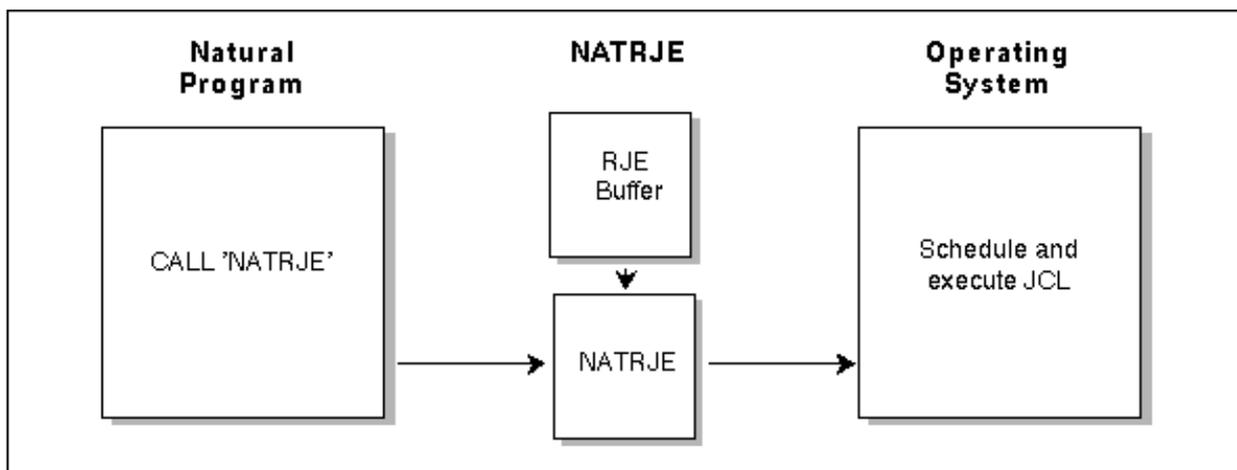
NATRJE - Natural Remote Job Entry

The NATRJE utility (Natural Remote Job Entry) can be used to submit JCL cards from a Natural program to the operating system for scheduling and execution. For example, it is possible to start a Natural batch job with NATRJE.

This section covers the following topics:

- NATRJE General Information
- Calling NATRJE from a Natural Program
- NATRJE Return Codes
- NATRJE User Exit
- NATRJE Features Applicable to UTM/TIAM

NATRJE General Information



1. The Natural program calls the NATRJE utility for the purpose of submitting JCL cards to be executed by the operating system.
2. NATRJE collects the JCL cards into the RJE buffer until the Natural program indicates that the job is complete. The RJE buffer holds the JCL cards before they are submitted. The initial size of the RJE buffer is determined by the RJESIZE profile parameter (as described in the Natural Parameter Reference documentation). If a given job does not fit into the RJE buffer, the buffer is automatically enlarged. The maximum size of a job is determined by the thread or region size.
3. NATRJE transfers the JCL cards to the operating system internal job queue for scheduling and execution by the operating system.

Note for BS2000/OSD:

In BS2000/OSD environments, when generation of the job is completed, NATRJE transfers the JCL cards to a BS2000/OSD dataset, which is generated by NATRJE. The dataset is a SAM file and is submitted via ENTER to the BS2000/OSD operating system.

Calling NATRJE from a Natural Program

Below is information on:

- Invoking NATRJE
- Example Programs

Invoking NATRJE

To invoke the NATRJE utility

- Use a CALL statement in the Natural program.

The CALL statement has the following syntax:

```
CALL 'NATRJE' parm1 parm2 parm3 parm4
```

The parameters specified in the CALL statement are:

Parameter	Explanation
<i>parm1</i>	The starting JCL card of the table which contains one or more 80-character JCL cards to be submitted.
<i>parm2</i>	A 4-byte binary field which contains the number of 80-character JCL cards to be submitted.
<i>parm3</i>	<p>A 1-byte alphanumeric field used to indicate if all JCL cards have been submitted:</p> <ul style="list-style-type: none"> ' ' Not the last call for the current job. A further JCL card follows with the next CALL statement. The JCL cards are collected into the RJE buffer. B BS2000/OSD and OS/390 only: Last call for the current job. <p>Under BS2000/OSD: The job is generated, written to the dataset, but not started automatically.</p> <p>Under OS/390 (batch and TSO, IMS/TM and CICS): The job is written to the internal reader dataset but not submitted. If function L is called subsequently, the internal reader is closed and the job(s) is submittedand. In addition, the internal reader is closed and the job is submitted:</p> <ul style="list-style-type: none"> on a screen I/O (IMS/TM), or on session termination (OS/390 batch, TSO and IMS/TM). <ul style="list-style-type: none"> C Flush the current job. The job is not submitted to the system. (Under BS2000/OSD, no dataset is created.) L Last call for the current job. The job is submitted to the system. <p>BS2000/OSD environments: see Additional Values for the <i>parm3</i> Parameter.</p>
<i>parm4</i>	A 2-byte binary field in which NATRJE returns a response code.

Example Programs

Below are Natural example programs for use under the operating systems:

- OS/390
- VSE/ESA
- BS2000/OSD (Example 1 and Example 2)

Example Program - OS/390:

The following is a Natural example program that submits, in one call to NATRJE, a three-card JCL stream.

```

DEFINE DATA LOCAL
01 COUNT (B4)
01 FLAG (A1)
01 RETHEX (B2)
01 CARDS (A240)
01 REDEFINE CARDS
    02 CARD1 (A80)
    02 CARD2 (A80)
    02 CARD3 (A80)
END-DEFINE
MOVE '//JOB JOB CLASS=G,MSGCLASS=X' TO CARD1
MOVE '//XXX EXEC PGM=IEFBR14' TO CARD2
MOVE '//DD1 DD DSN=NATRJE.SOURCE,DISP=SHR' TO CARD3
MOVE 3 TO COUNT
MOVE 'L' TO FLAG
CALL 'NATRJE' CARDS COUNT FLAG RETHEX
IF RETHEX = H'0000'
    WRITE 'JOB submitted successfully'
ELSE
    WRITE 'ERROR from NATRJE' RETHEX
END-IF
END

```

Example Program - VSE/ESA:

The following is a Natural example program that submits, in three calls to NATRJE, a seven-card JCL stream.

```

DEFINE DATA LOCAL
01 COUNT (B4)
01 FLAG (A1)
01 RETHEX (B2)
01 CARDS (A240)
01 REDEFINE CARDS
    02 CARD1 (A80)
    02 CARD2 (A80)
    02 CARD3 (A80)
END-DEFINE
MOVE '* $$ JOB JNM=DSERV,CLASS=0,DISP=D' TO CARD1
MOVE '* $$ LST CLASS=A,DISP=D' TO CARD2
MOVE '// JOB DSERV TO DSERV SOURCE MEMBERS' TO CARD3
MOVE 3 TO COUNT
CALL 'NATRJE' CARDS COUNT FLAG RETHEX
PERFORM RETCODE-CHECK
MOVE '// EXEC PROC=NATSPLP' TO CARD1
MOVE '// EXEC DSERV' TO CARD2
MOVE ' DSPLYS SD' TO CARD3
MOVE 3 TO COUNT
CALL 'NATRJE' CARDS COUNT FLAG RETHEX
PERFORM RETCODE-CHECK
MOVE '/*' TO CARD1
MOVE '/&' TO CARD2
MOVE '* $$ EOJ' TO CARD3
MOVE 3 TO COUNT
MOVE 'L' TO FLAG
CALL 'NATRJE' CARDS COUNT FLAG RETHEX
DEFINE SUBROUTINE RETCODE-CHECK
IF RETHEX NE H'0000'
    WRITE 'ERROR from NATRJE:' RETHEX

```

```

STOP
END-IF
END-SUBROUTINE
END

```

Example Program 1 - BS2000/OSD:

The following is a Natural example program that submits, in three calls to NATRJE, a nine-card JCL stream.

```

DEFINE DATA LOCAL
  01 COUNT  (B4)
  01 FLAG   (A1)
  01 RETHEX (B2)
  01 CARDS  (A240)
  01 REDEFINE CARDS
    02 CARD1 (A80)
    02 CARD2 (A80)
    02 CARD3 (A80)
END-DEFINE
MOVE '/LOGON' TO CARD1
MOVE '/SYSFILE SYSDTA=(SYSCMD)' TO CARD2
MOVE '/SYSFILE SYSIPT =IPT.PARM' TO CARD 3
MOVE 3 TO COUNT
  CALL 'NATRJE' CARDS COUNT FLAG RETHEX
  IF RETHEX NE H'0000' DO
    WRITE RETHEX (EM=HH)
  END-IF
MOVE '/SETSW ON=2' TO CARD1
MOVE '/EXEC NATB21' TO CARD2
MOVE 'LOGON APPLIC' TO CARD3
MOVE 3 TO COUNT
  CALL 'NATRJE' CARDS COUNT FLAG RETHEX
  IF RETHEX NE H'000' DO
    ...
  END-IF
MOVE 'RUNPGM' TO CARD1
MOVE 'FIN' TO CARD2
MOVE '/LOGOFF' TO CARD3
MOVE 3 TO COUNT
MOVE 'L' TO FLAG
  CALL 'NATRJE' CARDS COUNT FLAG RETHEX
  ...
  ...
  ...
END

```

Example Program 2 - BS2000/OSD:

The following is a Natural example program that submits, in one call to NATRJE, a nine-card JCL stream.

```

DEFINE DATA LOCAL
  01 COUNT  (B4)
  01 FLAG   (A1)
  01 RETHEX (B2)
  01 CARD1  (A80)
  01 CARD2  (A80)
  01 CARD3  (A80)
  01 CARD4  (A80)
  ...
  01 CARD9  (A80)
END-DEFINE

```

```

MOVE '/LOGON' TO CARD1
MOVE '/SYSFILE SYSDTA=(SYSCMD)' TO CARD2
...
MOVE '/LOGOFF' TO CARD9
MOVE 9 TO COUNT
MOVE 'L' TO FLAG
CALL 'NATRJE' CARD1 COUNT FLAG RETHEX
...
END

```

NATRJE Return Codes

A CALL to the module NATRJE results in one of the following return codes being returned in the fourth parameter of the CALL statement. There are return codes that apply to all environments and additional codes that are dependent on the operating system:

- Return Codes Common to all Environments
- Additional Return Codes for VSE/ESA
- Additional Return Codes for BS2000/OSD

Return Codes Common to all Environments

Hexadecimal	Decimal	Meaning
00	00	Normal Return
04	04	RJE utility not available
08	08	RJE utility disabled; a possible reason is that the RJESIZE parameter is set to 0
0C	12	Invalid Number of JCL cards
10	16	Invalid Function Code
14	20	No RJE Buffer Space available
18	24	Invalid Number of Parameters
1C	28	I/O Error during Submit
20	32	Job flushed by user exit NREXPG (see also NATRJE User Exit below)

Additional Return Codes for VSE/ESA

01xx	PUTSPOOL Error, xx is R15 Contents
02xx	PUTSPOOL Error, xx is XECB+4
03xx	XECBTAB Define Error, xx is Return Code
04xx	XECBTAB Delete Error, xx is Return Code

Additional Return Codes for BS2000/OSD

9001	No RJE buffer found
9002	No buffer space available
9003	Missing LOGON command
9004	Only LOGON cards generated
9005	Too many LOGON parameters
D010	Error in ENTER macro
Dxxx	Operating system error: The error message is sent directly to the user program; the BS2000/OSD HELP command provides additional information.

NATRJE User Exit

A user exit capability for Natural Remote Job Entry is provided. After the job is complete, each JCL card is passed to the exit before it is submitted to the operating system. The following data are available to the exit:

- the JCL card to be submitted,
- a return code field,
- the name of the Natural program currently being executed,
- the Natural user identification,
- a 240-byte work area.

After each call, the exit passes a return code to NATRJE indicating one of the following events:

Code	Explanation
0	Submission: the card is submitted; the exit may modify the card before submission.
4	Termination: the card is submitted; the exit is disabled for further cards of the current job.
8	Insertion: the card is skipped (based on the assumption that it contains only an INSERT character); additional specified cards are submitted.
10	Deletion: the card is not submitted.
12	The current job is flushed.

An example of the user exit, called NREXPG, is available as member XNATRJE in the Natural source library. The exit can be assembled and linked according to the rules of programs specified as CSTATIC. However, a CSTATIC entry for NREXPG is not required.

NATRJE Features Applicable to UTM/TIAM

Below is information on:

- Additional Values for the parm3 Parameter
- Name of BS2000/OSD Dataset

Additional Values for the parm3 Parameter

Value	Explanation
A	Combination of values T and E.
E	The job is generated and completed. Before submission to the BS2000/OSD operating system, the parameter ERASE=YES is added to the ENTER parameter.
T	The job is generated and completed. Before submission to the BS2000/OSD operating system, a time limit is calculated using the Natural MT parameter. If MT is set to 0, the time limit is generated as NTL. The calculated time limit is added to the ENTER parameter via the TIME= operand.

When using the values T, E or A, NATRJE does not check whether the parameters TIME= or ERASE= exist in the user-created LOGON cards.

Name of BS2000/OSD Dataset

The name of the BS2000/OSD dataset created by NATRJE for the JCL cards is as follows:

E.DDMMYY.HHMMSSSS.*program-name.user-id*

Parameter	Specifies
DD	The day of the dataset creation.
MM	The month of the dataset creation.
YY	The year of the dataset creation.
HH	The hour of the dataset creation.
MM	The minute of the dataset creation.
SSSS	The seconds and milliseconds of the dataset creation.
<i>program-name</i>	The name of the Natural program that creates the dataset.
<i>user-id</i>	The corresponding Natural user ID.