NATRJE Utility - 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.

The *NATRJE Utility - Natural Remote Job Entry* documentation covers the following topics:
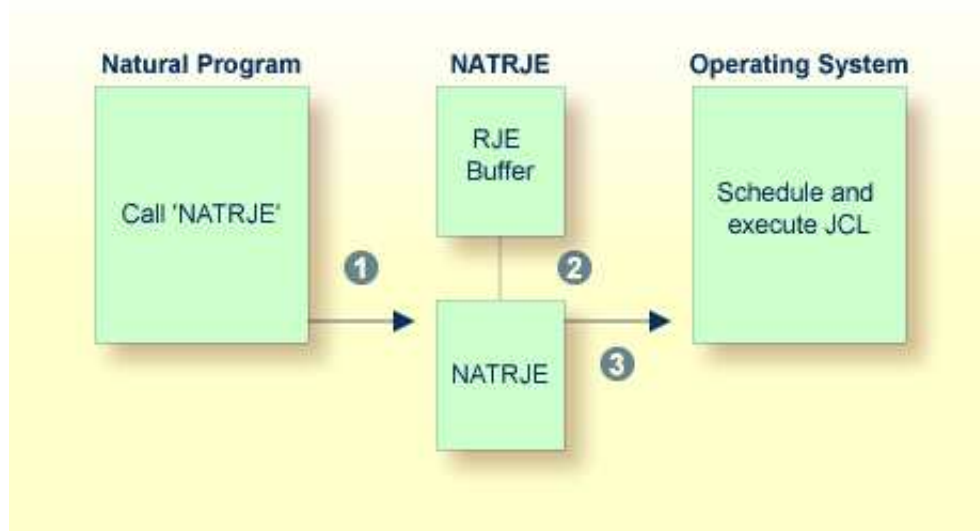
- General Information on NATRJE

- Calling NATRJE from a Natural Program

- NATRJE Return Codes

- NATRJE Features Applicable to openUTM/TIAM

Related Topic:

- *NREXPG - User Exit for NATRJE* in the *Operations* documentation

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General Information on NATRJE

The following graphic is a simplified functional diagram of the NATRJE utility:

Legend

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 *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:
   When the job generation is complete, NATRJE transfers the JCL cards to a BS2000/OSD dataset, which is generated by NATRJE. The dataset is a SAM file that contains the generated JCL cards and is submitted by using the `ENTER` command.

Calling NATRJE from a Natural Program

This section covers the following topics:

- Invoking NATRJE

- Example Programs

Invoking NATRJE

▶ **To invoke the NATRJE utility**

- In the Natural program that invokes the NATRJE utility, specify a `CALL` statement by using the following syntax:

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

The parameters specified in the `CALL` statement are explained in the following table:

Parameter	Explanation
parm1	The starting JCL card of the table which contains one or more 80-character JCL cards to be submitted.
parm2	A 4-byte binary field which contains the number of 80-character JCL cards to be submitted.
parm3	A 1-byte alphanumeric field used to indicate if all JCL cards have been submitted: ' ' 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 z/OS only: Last call for the current job. Under BS2000/OSD: The job is generated, written to the dataset, but not started automatically. Under z/OS (batch and TSO, IMS TM and CICS): The job is written to the internal reader dataset but not submitted. If function L (see below) is called subsequently, the internal reader is closed and the job(s) are submitted. In addition, the internal reader is closed and the job is submitted either on a screen I/O (IMS TM) or during session termination (z/OS batch, TSO and IMS TM). 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. BS2000/OSD environments: see *Additional Values for parm3*.
parm4	A 2-byte binary field in which NATRJE returns a response code.

Example Programs

This section provides Natural example programs that submit JCL cards:

- Example Program for z/OS
- Example Program for z/VSE
- Example Program 1 for BS2000/OSD
- Example Program 2 for BS2000/OSD

Example Program for z/OS

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 '//JOBN 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 for z/VSE

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 for 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 NATBATCH' 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 for 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 Natural program that issues a CALL statement to NATRJE results in one of the following return codes being returned in the fourth parameter of the 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 CICS and Batch under z/VSE

- Additional Return Codes for CICS under z/OS

- Additional Return Codes under BS2000/OSD

Return Codes Common to all Environments

Return Code/Hexadecimal	Return Code/Decimal	Explanation
00	00	Normal return.
04	04	NATRJE utility not available.
08	08	NATRJE utility disabled; a possible reason is that the RJESIZE profile parameter is set to 0 (see also the *Parameter Reference* documentation).
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 *NREXPG - User Exit for NATRJE* in the *Operations* documentation).

Additional Return Codes for CICS and Batch under z/VSE

Return Code	Explanation
ffrr	*ff* is the XPCC request function code and *rr* the associated return code.

Additional Return Codes for CICS under z/OS

Return Code	Explanation
01*nn*	CICS WRITEQ TD failure; *nn* is the CICS response code in hexadecimal format.
01*nn*	CICS CLOSE TD failure; *nn* is the CICS response code in hexadecimal format.

Additional Return Codes under BS2000/OSD

Return Code	Explanation
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.
D*xxx*	Operating system error: The error message is sent directly to the user program; the BS2000/OSD `HELP` command provides additional information.

NATRJE Features Applicable to *open*UTM/TIAM

This section covers the following topics:

- SDF Command SET-LOGON-PARAMETER

- Additional Values for parm3

- Name of BS2000/OSD Dataset

SDF Command SET-LOGON-PARAMETER

You can replace the ISP command `LOGON` by the SDF command `SET-LOGON-PARAMETER` in the first JCL card of the job to be executed. However, the following restrictions apply when using the SDF command:

- For the `SET-LOGON-PARAMETER` command, you must use the following command abbreviation:

```
STLGP
```

- If you want to specify a user ID, account number and/or password with the STLGP command, you must use the syntax of the ISP LOGON command. This means that you are not allowed to use the SDF keyword operands USER-IDENTIFICATION, ACCOUNT and PASSWORD. All other keyword operands are allowed in the SDF command.

Examples of ISP and SDF Commands:

ISP command

```
/.job-id LOGON user-id,account-number,'password'
```

and corresponding SDF command:

```
/.job-id STGLP user-id,account-number,'password'
```

SDF command with additional keyword operands:

```
/.job-id STGLP user-id,account-number,'password', -
/RESOURCES=*PARAMETERS(RUN-PRIORITY=220)
```

Additional Values for *parm3*

Value	Explanation
A	Combination of values T and E (see below).
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 (see also the *Parameter Reference* documentation). 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	Explanation
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.
program-name	The name of the Natural program that creates the dataset.
user-id	The corresponding Natural user ID.