

# Z01ABFP

## NAG Parallel Library Routine Document

**Note:** before using this routine, please read the Users' Note for your implementation to check for implementation-dependent details.

### 1 Description

Z01ABFP undefines a Library Grid which has been initialized by a call to Z01AAFP, and invalidates the grid context (see Blackford *et al.* [1]) for that grid. Options are provided to enable the user to reshape the Library Grid using a further call to Z01AAFP or to terminate the NAG Parallel Library mechanism, in which case no further calls to routines from the NAG Parallel Library can be made.

Z01ABFP may be used to undefine logical processor grids that have not been created by Z01AAFP.

### 2 Specification

```
SUBROUTINE Z01ABFP(ICNTXT, CONT, IFAIL)
  INTEGER          ICNTXT, IFAIL
  CHARACTER*1     CONT
```

### 3 Usage

#### 3.1 Definitions

None.

#### 3.2 Global and Local Arguments

The following global **input** arguments must have the same value on entry to the routine on each processor and the global **output** arguments will have the same value on exit from the routine on each processor:

Global input arguments:       CONT, IFAIL  
Global output arguments:     IFAIL

### 4 Arguments

1: ICNTXT — INTEGER *Local Input*  
*On entry:* the Library context, usually returned by a call to the Library Grid initialisation routine Z01AAFP.

**Note:** the value of ICNTXT **must not** be changed.

2: CONT — CHARACTER\*1 *Global Input*  
*On entry:* indicates whether further communication is to take place:

if CONT = 'Y' then further message passing is expected – the grid context is undefined but underlying message passing mechanisms are still available and Z01AAFP may be called to re-initialise the Library Grid. This option is normally used when re-shaping the processor grid;

if CONT = 'N' then Z01BAFP has the effect of undefining the logical processor grid. Further calls to NAG Parallel Library routines are **not** permitted.

*Constraint:* CONT = 'Y' or 'N'.

**3: IFAIL — INTEGER***Global Input/Global Output*

The NAG Parallel Library provides a mechanism, via the routine Z02EAFP, to reduce the amount of parameter validation performed by this routine. For a full description refer to the Z02 Chapter Introduction.

*On entry:* IFAIL must be set to 0, -1 or 1. For users not familiar with this argument (described in the Essential Introduction) the recommended values are:

IFAIL = 0, if multigridding is **not** employed;  
 IFAIL = -1, if multigridding is employed.

*On exit:* IFAIL = 0 (or -9999 if reduced error checking is enabled) unless the routine detects an error (see Section 5).

## 5 Errors and Warnings

If on entry IFAIL = 0 or -1, explanatory error messages are output from the root processor (or processor {0,0} when the root processor is not available) on the current error message unit (as defined by X04AAF).

### 5.1 Full Error Checking Mode Only

IFAIL = -2000

The routine has been called with an invalid value of ICNTXT on one or more processors.

IFAIL = -1000

The logical processor grid and library mechanism (Library Grid) have not been correctly defined, see Z01AAFP.

IFAIL = -2

The global input argument, CONT, did not have one of the values 'Y' or 'N', or did not have the same value on all processors. The error message distinguishes between these two cases.

## 6 Further Comments

**Note:** a call to Z01ABFP is a **synchronisation point** which involves **all** processors. The user should choose when to call Z01ABFP carefully in a multigrid program to avoid the possibility of some processors sitting idle.

## 7 References

- [1] Blackford L S, Choi J, Cleary A, D'Azevedo E, Demmel J, Dhillon I, Dongarra J, Hammarling S, Henry G, Petitet A, Stanley K, Walker D and Whaley R C (1997) ScaLAPACK Users' Guide *SIAM* 3600 University City Science Center, Philadelphia, PA 19104-2688, USA. URL: [http://www.netlib.org/scalapack/slug/scalapack\\_slug.html](http://www.netlib.org/scalapack/slug/scalapack_slug.html)

## 8 Example

None.

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