

# Z01ZBFP

## NAG Parallel Library Routine Document

**Note:** before using this routine, please read the Users' Note for your implementation to check for implementation-dependent details. You are advised to enclose any calls to NAG Parallel Library routines between calls to Z01AAFP and Z01ABFP.

### 1 Description

Z01ZBFP creates an MPI communicator from a Library Grid 'context'. This communicator can be used to call MPI routines in conjunction with NAG Parallel Library routines. It is the responsibility of the user to free this communicator by a call to `MPI_COMM_FREE` (Gropp, [2]).

### 2 Specification

```
SUBROUTINE Z01ZBFP(ICNTXT, MPICOMM, IFAIL)
  INTEGER          ICNTXT,MPICOMM,IFAIL
```

### 3 Usage

None.

### 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: MPICOMM — INTEGER *Local Output*  
*On exit:* the MPI communicator.

**Note:** MPICOMM must be freed by a subsequent call to `MPI_COMM_FREE`.

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 on the current error message unit (as defined by X04AAF).

Errors detected by the routine:

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.

## 6 Further Comments

None.

## 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>
- [2] Gropp W, Lusk E and Skjellum A (1999) *Using MPI: Portable Programming with the Message-passing Interface* The MIT Press, Cambridge, MA, USA (2nd Edition)

## 8 Example

See the on-line Tutorial available on our web site.

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