Z01BDFP

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

Warning: This routine is implementation specific. Unless your implementation of the NAG Parallel Library utilises PVM for message passing you must not reference this routine.

Z01BDFP returns information about PVM tasks in the grid of processors set up by Z01AAFP, including PVM task identifiers.

2 Specification

```
 SUBROUTINE Z01BDFP(ICNTXT, TIDS, LDT, MYTID, MYPOS, MYPTID,
1                   NTASKS, IFAIL)
 INTEGER            ICNTXT, TIDS(LDT), LDT, MYTID, MYPOS, MYPTID,
1                   NTASKS, IFAIL
```

3 Data Distribution

3.1 Definitions

The following definitions are used in describing the logical processor grid within this document:

m_p	–	the number of rows in the logical processor grid,
n_p	–	the number of columns in the logical processor grid,
p	–	$m_p \times n_p$, the total number of processors in the logical processor grid.

3.2 Global and Local Arguments

The input argument IFAIL is global and so must have the same value on entry to the routine on each processor. The output arguments TIDS, NTASKS and IFAIL are all global and so will return the same value on exit from the routine on each processor. The remaining arguments are local.

4 Arguments

1: ICNTXT — INTEGER *Local Input*

On entry: the BLACS context used by the communication mechanism, usually returned by a call to Z01AAFP.

2: TIDS(LDT) — INTEGER array *Global Output*

On exit: the list of PVM task identifiers within ICNTXT; otherwise TIDS is unchanged.

3: LDT — INTEGER *Local Input*

On entry: the dimension of the array TIDS as declared in the (sub)program from which Z01BDFP is called.

Constraint: LDT $\geq p$.

4: MYTID — INTEGER *Local Output*

On exit: the PVM task identifier for the local calling task; otherwise -1 is returned.

5: MYPOS — INTEGER *Local Output*

On exit: the position of the local calling task in the list of task identifiers returned in TIDS; otherwise -1 is returned.

6: MYPTID — INTEGER *Local Output*

On exit: the PVM task identifier of the parent process which spawned the local calling process or 0 if the process has no parent (i.e., it is the parent process); otherwise -1 is returned.

7: NTASKS — INTEGER *Global Output*

On exit: the number of processes in the logical processor grid associated with ICNTXT; otherwise -1 is returned.

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

On entry: IFAIL must be set to 0, -1 or 1. For users not familiar with this parameter (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 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).

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.

IFAIL = 1

The size of the array TIDS, LDT, was too small to hold the number of task identifiers associated with the logical processor grid, i.e., LDT $< p$.

6 Further Comments

None.

7 References

[1] Geist A, Beguelin A, Dongarra J J, Jiang W, Manchek R and Sunderam V (1994) *PVM: Parallel Virtual Machine. A Users' Guide and Tutorial for Networked Parallel Computing* The MIT Press, Cambridge, MA, USA

[2] Dongarra J J and Whaley R C (1995) A users' guide to the BLACS v1.0. *LAPACK Working Note 94 (Technical Report CS-95-281)* Department of Computer Science, University of Tennessee, 107 Ayres Hall, Knoxville, TN 37996-1301, USA.
URL: http://www.netlib.org/lapack/lawns/lawn94.ps