Package 'pbdSLAP'

January 13, 2024

Version 0.3-5

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Title Programming with Big Data -- Scalable Linear Algebra Packages

Depends R (>= 3.6.0), methods, pbdMPI (>= 0.3-1)

LazyLoad yes

Copyright See 'pbdSLAP/inst/ScaLAPACK_LICENSE.txt' for the files in 'src/BLACS/', 'src/PBLAS/', 'src/REDIST/', 'src/ScaLAPACK/', and 'src/TOOLS/'.

Description Utilizing scalable linear algebra packages mainly including 'BLACS', 'PBLAS', and 'ScaLAPACK' in double precision via 'pbdMPI' based on 'ScaLAPACK' version 2.0.2.

SystemRequirements 'OpenMPI' (>= 1.5.4) on Solaris, Linux, Mac, and FreeBSD. 'MS-MPI' (Microsoft HPC Pack 2012 R2 MS-MPI Redistributable Package) on Windows.

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URL https://pbdr.org/

BugReports https://github.com/snoweye/pbdSLAP/issues

NeedsCompilation yes

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Repository CRAN

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R topics documented:

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pbdSLAP-package *Programming with Big Data – Scalable Linear Algebra Packages*

Description

pbdSLAP utilizes scalable linear algebra packages mainly including BLACS, PBLAS, and ScaLAPACK in double precision via pbdMPI based on ScaLAPACK version 2.0.2.

Details

This package requires **pbdMPI** and MPI system. The main purpose of **pbdSLAP** is to provide several scalable linear algebra packages containing double precision libraries for **pbdDMAC** or other useful packages.

Author(s)

Wei-Chen Chen <wccsnow@gmail.com>, Drew Schmidt, George Ostrouchov, and Pragneshkumar Patel.

References

Programming with Big Data in R Website: https://pbdr.org/

ScaLAPACK Website: https://netlib.org/scalapack/

ScaLAPACK Block Cyclic Data Distribution Website: https://icl.utk.edu/lapack-forum/viewtopic.php%3ff=5&t=4922.html

Examples

```
## Not run:
### Under command mode, run the demo with 2 processors by
### (Use Rscript.exe for windows system)

mpiexec -np 2 Rscript -e "demo(gridinfo,'pbdSLAP',ask=F,echo=F)"

## End(Not run)
```

SLAP Grid Information *SLAP Grid*

Description

These functions initializes a grid of pbdSLAP, assigns the information to a global object, and free the grid.

Usage

```
slap.init.grid(nprow, npcol = 1, ictxt = 0)
slap.exit.grid(ictxt)
slap.finalize(quit.mpi = FALSE)
```

Arguments

nprow	number of row processors.
npcol	number of column processors.
ictxt	the grid id
quit.mpi	if finalize MPI.

Details

This function arranges all processors in a (nprow * npcol) grid and the grid will map the big data matrix.

Value

`slap.init.grid` assigns a global object `.__grid_info_0` for `ictxt = 0` containing the grid information. `slap.exit.grid` free the grid. `slap.finalize` free all memory.

Author(s)

Wei-Chen Chen <wccsnow@gmail.com>, Drew Schmidt, George Ostrouchov, and Pragneshkumar Patel.

References

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Examples

```
## Not run:
### Under command mode, run the demo with 2 processors by
### (Use Rscript.exe for windows system)

mpiexec -np 2 Rscript -e "demo(gridinfo,'pbdSLAP',ask=F,echo=F)"

## End(Not run)
```

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