Package 'Rhpc'

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Title Permits *apply() Style Dispatch for 'HPC'

Author Junji NAKANO <nakanoj@ism.ac.jp> and Ei-ji Nakama<nakama@com-one.com>

Maintainer Ei-ji Nakama <nakama@com-one.com>

Depends R (>= 3.0.0)

Imports parallel

SystemRequirements R built as a shared or static library, 'MPI' library.

Description Function of apply style using 'MPI' provides better 'HPC' environment on R. and this package supports long vector, can deal with slightly big data.

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URL http://prs.ism.ac.jp/~nakama/Rhpc/

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R topics documented:

Rhpc-package *permits *apply() style dispatch for HPC*

Description

Rhpc_lapply, Rhpc_lapplyLB and Rhpc_worker_call using MPI provides better HPC environment on R(works fast on HPC). and this package supports long vector, can deal with slightly big data.

Usage

```
Rhpc_initialize()
Rhpc_finalize()
Rhpc_getHandle(procs)
Rhpc_worker_call(cl, FUN, ...)
Rhpc_worker_noback(cl, FUN, ...)
Rhpc_lapply(cl, X, FUN, ...)
Rhpc_lapplyLB(cl, X, FUN, ...)
Rhpc_sapply(cl, X, FUN, ..., simplify, USE.NAMES)
Rhpc_sapplyLB(cl, X, FUN, ..., simplify, USE.NAMES)
Rhpc_apply(cl, X, MARGIN, FUN, ...)
Rhpc_numberOfWorker(cl)
Rhpc_Export(cl, variableNames, pos, envir)
Rhpc_EvalQ(cl, expr, envir)
Rhpc_setupRNG(cl, iseed)
```

Arguments

cl	external pointer to MPI communicator
procs	number of process, void if Rhpc
X	vector or list. Divided into smaller vectors according to the number of workers, and distributed to workers when the function is first executed. One-sided communication is used asynchronously
FUN	string of function name or function object. Function name or string (string expresses function name) Distributed by collective communication at first, then they are not sent again
MARGIN	a vector giving the subscripts which the function will be applied over. E.g., for a matrix 1 indicates rows, 2 indicates columns, c(1, 2) indicates rows and columns. Where X has named dimnames, it can be a character vector selecting dimension names.
simplify	logical or character string; should the result be simplified to a vector, matrix or higher dimensional array if possible? For sapply it must be named and not abbreviated. The default value, TRUE, returns a vector or matrix if appropriate, whereas if simplify = "array" the result may be an array of "rank" (=length(dim(.))) one higher than the result of FUN(X[[i]]).
USE.NAMES	logical; if TRUE and if X is character, use X as names for the result unless it had names already. Since this argument follows ... its name cannot be abbreviated.

`...`	arguments. Distributed by collective communication at first, then they are not sent again
`variableNames`	string vector
`iseed`	random number seed
`expr`	expression to evaluate
`pos`	default is current environment position
`envir`	where to look for the object

Details

Rhpc batch wrapper in package directory if you use mpirun.

This package sets "Rhpc.mpi.c.comm","Rhpc.mpi.f.comm", "Rhpc.mpi.rank" and "Rhpc.mpi.procs" can get attribute of MPI in getOption().

http://prs.ism.ac.jp/~nakama/Rhpc

Author(s)

Junji NAKANO <nakanoj@ism.ac.jp> and Ei-ji Nakama<nakama@com-one.com>

Maintainer: Ei-ji Nakama <nakama@com-one.com>

Examples

```
## Not run:
# use Rhpc command
Rhpc_initialize()
cl <- Rhpc_getHandle() # ommit number of worker if use Rhpc batch

# Rhpc set to options
opstr=list("Rhpc.mpi.rank","Rhpc.mpi.procs","Rhpc.mpi.c.comm","Rhpc.mpi.f.comm")
do.call("options",opstr)
Rhpc_worker_call(cl, "do.call","options", opstr)
# warning! : pointer not export, worker Rhpc.mpi.c.comm is (nil) on master.

Rhpc_worker_call(cl, Sys.getpid)
Rhpc_lapply(cl,1:10000,sqrt)
Rhpc_lapplyLB(cl,1:10000,sqrt)
Rhpc_sapply(cl,1:10000,sqrt)
Rhpc_sapplyLB(cl,1:10000,sqrt)

df<-data.frame(a=1:4,b=5:8)
Rhpc_apply(cl,df,1,max)
Rhpc_apply(cl,df,2,max)

Rhpc_finalize()
#
# command line example
#
# mpirun -n 4 Rhpc CMD BATCH --no-save `script file for exemplified above'
#
```

```
## End(Not run)
```

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