

# ScaLAPACK

ScaLAPACK (Scalable LAPACK) is a linear algebra library for parallel computers. Routines are available to diagonalize or solve dense and narrow band systems of linear equations.

ScaLAPACK implements block-oriented LAPACK linear algebra routines, adding a special set of communication routines to copy blocks of data between processors as required. Similar to LAPACK, a single subroutine call typically carries out the necessary computations.

ScaLAPACK installations include the following libraries: scalapack, redistrib, pblas, tools, blacs, blacsCinit, and blacsF77init.

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## An meeting with Professor Choi J.

I finally met Prof. Choi J. which a member of ScaLAPACK team on the 23th of June, 2008 and, He agreed to teach me some advanced topics in mathematics. I have been hearing about him for quite a long time.

- Written in Fortran77 with a few in C
- Covers dense and band matrices, **not** general **sparse matrices**
- Written in a Single-Program-Multiple-Data style using explicit message passing for inter-processor communication.
- Assumes matrices are laid out in a **two-dimensional block** cyclic decomposition.

Lastly, I heard that the Hama is **worthwhile** to continue the research on the basis of the ScaLAPACK's ideas.

## Some Performance Report

- [Performance data](#) for Version 1.4 of ScaLAPACK on four distributed memory computers and two networks of workstations

## RScaLAPACK

**Note** that the following result is based on an internal, rudimentary experiment.

dimension	solve	sla.solve (t=32)
5000	real 9m2.438s, user 9m0.473s, sys 0m1.649s	real 1m55.863s, user 0m10.638s, sys 0m2.621s
10000	x	x
15000	Doesn't Work	Doesn't Work