How MPI is used at NERSC

What types of decomposition and communication does your application use?

- Domain decomposition (33.7%)
- Problem decomposition (27.6%)
- Geographical decomposition (21.6%)
- Communication between individual processes (13.0%)
- Communication across subdomains (10.0%)

Do you use any of these features?

- Yes (65.8%)
- No (34.2%)

How do you implement point-to-point communication?

- Use a library (95.3%)
- Write own code (4.7%)

Do you use any of these libraries?

- Yes (95.3%)
- No (4.7%)

Portability issues wrt different MPI implementations

To what extent do you consider portability important when choosing an MPI implementation?

- Very important (49.8%)
- Somewhat important (41.5%)
- Not important (8.7%)

What language do you use?

- Fortran (65.8%)
- C++ (19.5%)
- C (10.0%)
- Other (4.7%)

Do you have any other comments on portability?

- Yes (10.0%)
- No (90.0%)

NERSC Hardware

Our NERSC supercomputer system, NERSC-8, is the world’s newest supercomputer under development. It has been designed to be extremely scalable, with the latest in computer technology. The system has been successfully tested and is currently in use at NERSC.

NERSC Research Areas and Users

The NERSC Research Areas and Users chart shows the number of users and research areas at NERSC. The chart is divided into different sections, each representing a specific research area. The number of users for each research area is displayed as a percentage of the total users at NERSC.

Snapshot of User Comparisons of MPI to other Programming Models at NERSC

The Snapshot of User Comparisons of MPI to other Programming Models at NERSC chart compares the usage of MPI to other programming models at NERSC. The chart is divided into different sections, each representing a specific programming model. The number of users using each programming model is displayed as a percentage of the total users at NERSC.

Comments on MPI Alternatives

Please share any comments or feedback you have on MPI Alternatives.

- MPI is reliable and is widely used.
- MPI is easy to use.
- MPI is too slow compared to other alternatives.
- MPI is too complex.
- MPI is not secure.
- MPI is too slow compared to other alternatives.
- MPI is too complex.
- MPI is not secure.

Summary

MPI is a popular open-source communication library widely used in scientific computing. It is a library that provides high-performance communication between processes. MPI is designed to be portable and scalable, allowing it to be used across a wide range of platforms and environments. MPI is used in a variety of scientific applications, including climate modeling, molecular dynamics, and astrophysics. It is an essential tool for scientists, engineers, and researchers who need to perform large-scale computations.