

# Choosing an MPI Library

## Category: Best Practices

**Summary:** Use an up-to-date version of SGI's MPT library (such as version 2.04). MPT is generally more efficient on SGI systems than third-party MPI libraries, and versions 2.04 and later help system administrators identify issues with the InfiniBand interconnect more quickly.

Message Passing Interface (MPI) is a standardized and portable message-passing library specification. It is widely used for parallel programming across a network of computers.

Among the three MPI implementations available on Pleiades (Intel MPI, MVAPICH2, and SGI MPT) and their installed versions, we recommend using SGI MPT version 2.04 -- specifically, the module `mpi-sgi/mpt.2.04.10789` -- unless there is a strong reason for using something else. You can get that library with the following:

```
%module load mpi-sgi/mpt.2.04.10789
```

### **Benefits of using SGI MPT instead of other MPI libraries:**

- SGI MPT contains MPI enhancements that are specific to SGI systems; in particular, it offers multiple features for scaling applications to very large process counts
- Use of MPT on Pleiades is supported by SGI; MPT bugs or issues encountered on Pleiades are tracked closely by SGI to provide timely resolution

### **Benefits of using `mpi-sgi/mpt.2.04.10789` instead of other MPT modules:**

- SGI MPT 2.04 is a full implementation of the MPI 2.2 specification
- The Lustre awareness feature of MPT 2.04 can improve MPI I/O performance on Lustre filesystems (`/nobackupp1-6`)
- On Pleiades, the environment variable `MPI_IB_RAILS` is set to 2 by default, in order to make use of both InfiniBand (IB) fabrics for communications; this can increase communication transfer rates in some cases
- With `mpi-sgi/mpt.2.04.10789`, IB issues or failures may be recorded in system logfiles, allowing system administrators to better track issues with the IB network

Detailed information about the enhancements and bug fixes/issues is found in sections 4 and 5, respectively, of the following document on Pleiades:

`/nasa/sgi/mpt/2.04.10789/doc/README.relnotes.`

See the article [Porting with SGI MPT](#) to learn more on using `mpi-sgi/mpt.2.04.10789`.

---

Article ID: 305

Last updated: 31 Jul, 2012

Computing at NAS -> Best Practices -> Choosing an MPI Library

<http://www.nas.nasa.gov/hecc/support/kb/entry/305/?ajax=1>