



The Cluster Performance Tuning Workshop

SCICOMP
Boulder, CO

IBM
July, 2006

Contact Information:

Roch Archambault

Steve Behling
sbehling@us.ibm.com

**Note: This workshop
covers POWER5/POWER5+
and AIX nearly exclusively**

Agenda

Overview Topics

- **Software and Hardware**
 - Getting to know your system
 - Essential commands
 - Configuration
- **Compilers and Libraries**
 - Organization and Usage
 - Optimization
 - ESSL and MASS
- **Parallel Processing**
 - OpenMP
 - MPI

Advanced Topics

- **System Architecture**
 - POWER5, pSeries
 - HPS
- **pSeries Tuning**
 - Large Pages
 - Memory Affinity
 - Process Binding
 - Simultaneous Multi Threading

Areas of emphasis

- **Compiler**
- **Large and medium pages**
 - **VMM**
 - **Prefetch**
 - **TLB**
- **False sharing**
 - **OpenMP performance**
- **SMT**
- **Using IBM HPS effectively**
- **MIO**
- **Profiling and performance measurements**

How do you make a cluster more efficient?

1. **Work with a scalable application**
2. **Have excellent hardware**
3. **Tune the hardware and network**
4. **Minimize internode communication**
5. **Let the compiler do the work for you – or help it**
6. **Maximize performance of the application for single threads**
7. **Never be satisfied; keep working at it**
8. **Be on very good terms with your system administrator**

Important Workshop References

- **Software:**
 - **IBM Infocenter**
 - <http://publib.boulder.ibm.com/infocenter/pseries/v5r3/index.jsp>
 - **Redbooks:**
 - www.redbooks.ibm.com/