MPI Implementation
Health Assessment Through
Multi-Institutional
Distributed Testing

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Open MPI

Combine the expertise from across the HPC community to create the highest-quality, open-source MPI implementation capable of efficiently supporting desktop to petaflop systems.

How well are we meeting our goals?

How can we assess the health of the project?
Lots & Lots of Testing

- Configure (~100)
- Runtime (~500)
- Unit Tests (1000s)

System Arch., Compiler, interconnect, Resource Mgr.
Coverage: The Old Method
The MPI Testing Tool (MTT)

Infrastructure for automated, distributed testing

- Institutions volunteer testing resources
- Combine all testing results into a database
- Provide tools for testing analysis

Local Testing  Data Storage  Analysis
Configure (~100)

Run, me (~500)

Unit Tests (1000s)

Runtime (~500)

System Arch., Compiler, interconnect, Resource Mgr.
How do you make sense of .5 Million test results every day?
Analysis: The Old Way

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<th>mx</th>
<th>mvapi</th>
<th>pmilib</th>
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# MTT Reporter

## Current time (GMT): 2008-05-14 13:10:09

### Date range (GMT): 2008-05-13 13:10:09 - 2008-05-14 13:10:09

#### Phase(s): MPI install, Test build, and Test run

**Number of rows:** 0

### Summary of Results

<table>
<thead>
<tr>
<th>#</th>
<th>Org</th>
<th>Hardware</th>
<th>OS</th>
<th>MPI install</th>
<th>Test build</th>
<th>Test run</th>
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**Totals:**

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<th>#</th>
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</table>

**Total script execution time:** 8 seconds(s)

**Total SQL execution time:** 2 seconds(s)

*Overall MTT contributor graph (updated nightly): mtt_contrib.pdf*
MTT Reporter

Date range: 2006-05-24 05:11:05
Org: 26
Platform name: Windows
Hardware: AMD
OS: Linux
Compiler: g++
Vpath mode: unknown
Compiler version: 2.x.x

Configure arguments:

```
--with-configurations=conf
--with-openssl-config=openssl-config
--with-xml2-config=xml-config
--with-libxml2-config=xml-config
--with-libtool
--with-xml-config=xml-config
--with-xml2-config=xml-config
--with-mysql
--with-mysqli
--with-gdb-config=gdb
--with-gdb-config=gdb
```

Description

Exit value: 2
Signal: -1
Duration: 00:00:11
Client serial: 4855

Rental message: Failed to build: make -j 0 still

Subtest

```
```

--- Failed to build: make -j 0 still
```
MTT Visualization

Difficult to assess project health in the Reporter

MTT Visualization (Static)

Last Updated on: Fri Oct 31 16:07:36 EDT 2008
MTT Visualization
Future Directions

- Extended reporting (topology, hidden info)
- Parallel testing

- Improve Performance Reporting
- Information Tagging

- Interactive Visualization Environment
- Time based visualization