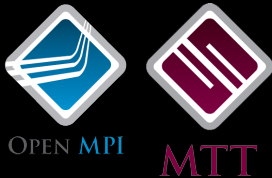


MPI Implementation Health Assessment Through Multi-Institutional Distributed Testing

Joshua Hursey
jjhursey@osl.iu.edu



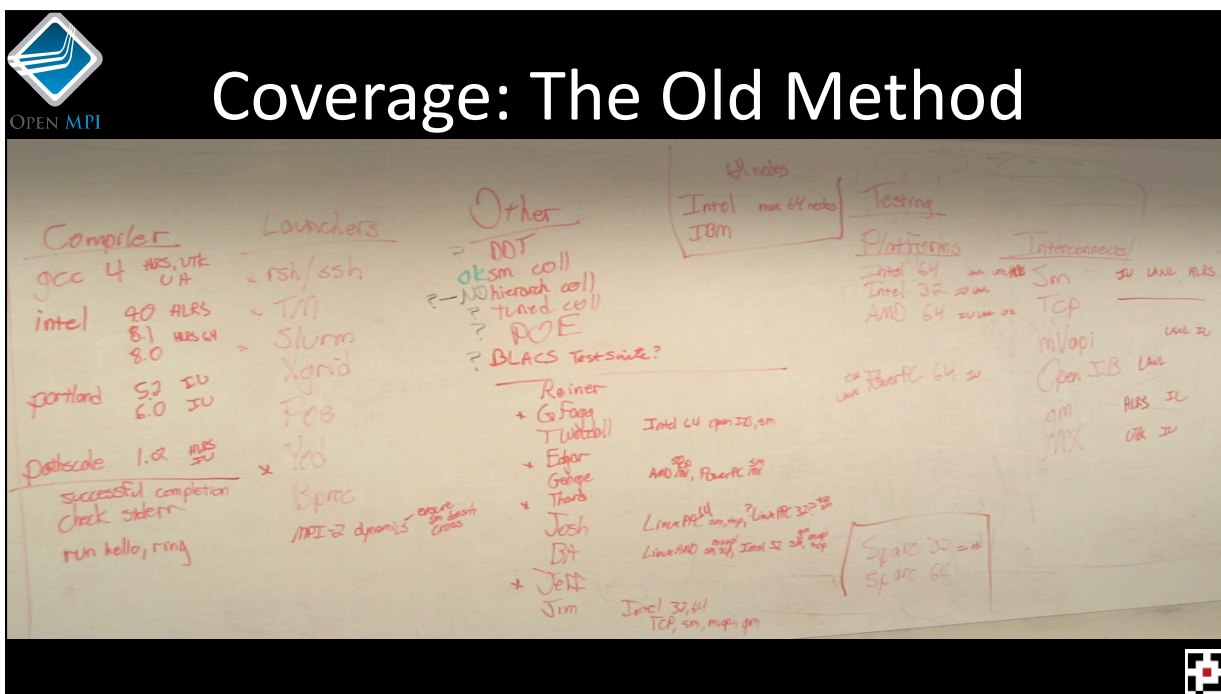
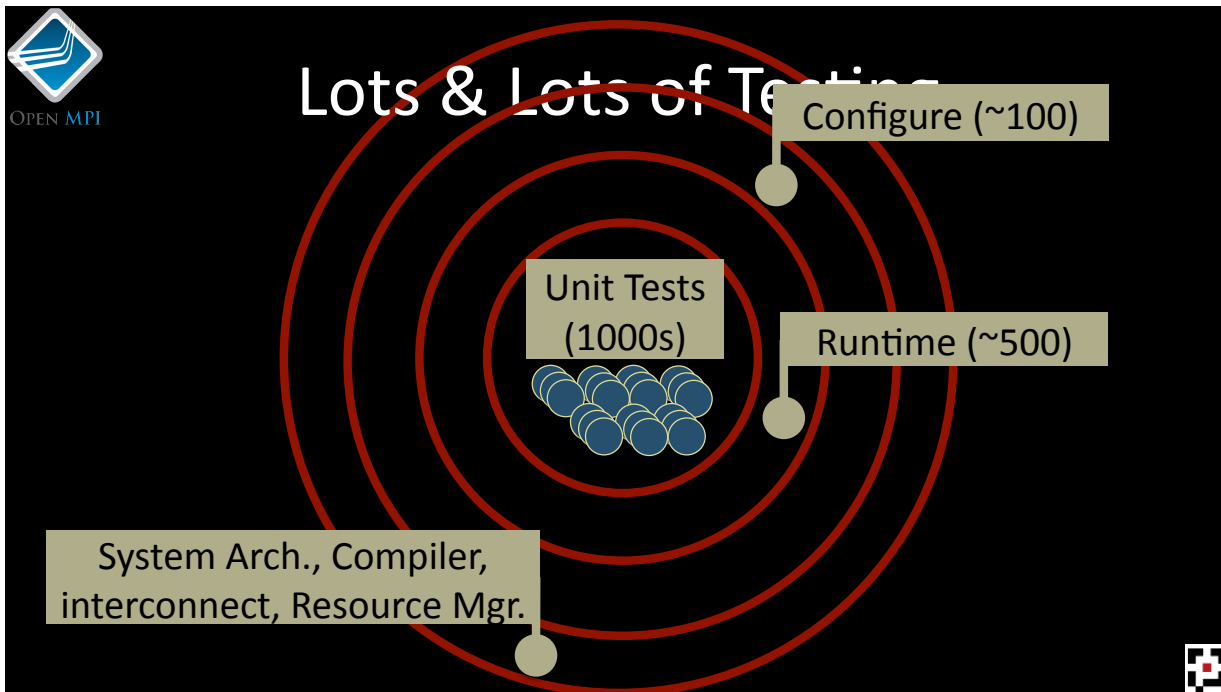
Open MPI

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?







The MPI Testing Tool (MTT)

Infrastructure for automated, distributed testing

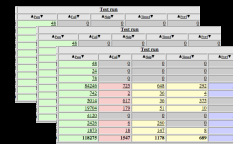
- Institutions volunteer testing resources
- Combine all testing results into a database
- Provide tools for testing analysis



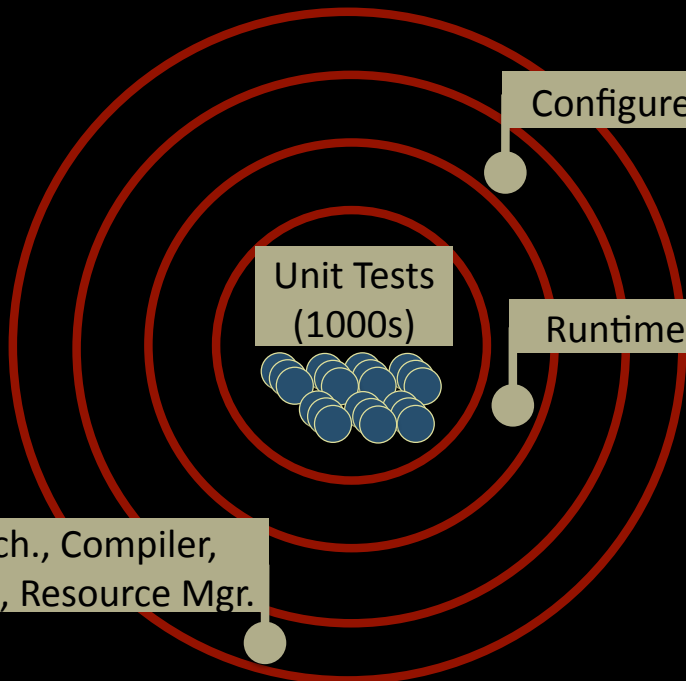
Local Testing



Data Storage

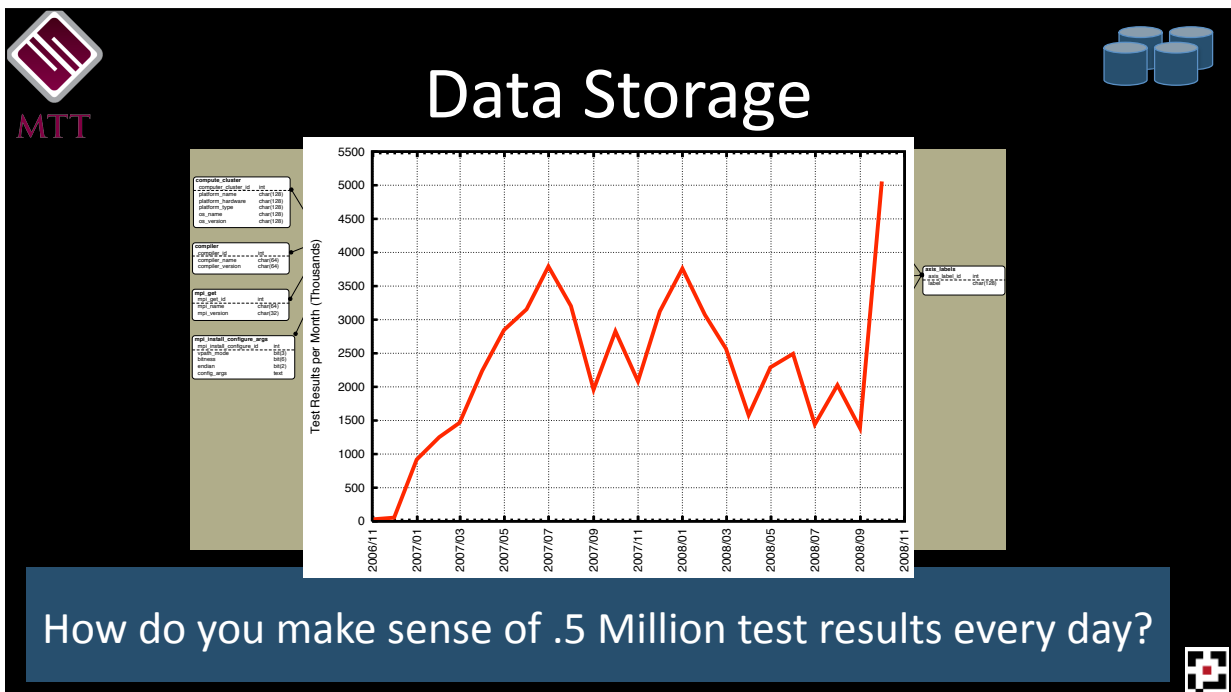
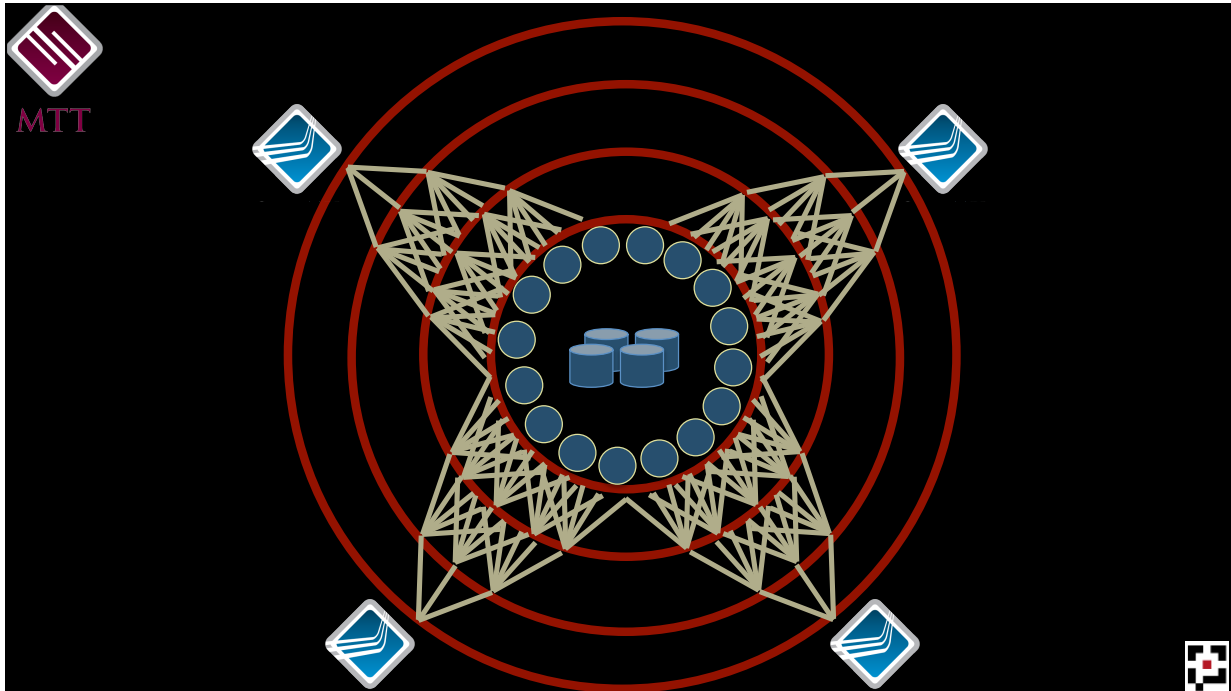


Analysis



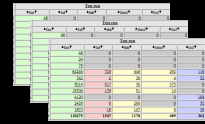
System Arch., Compiler, interconnect, Resource Mgr.







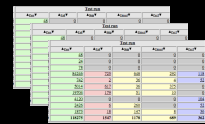
Analysis: The Old Way



	TCP	sm	pm	mx	mvopi	qparib
Linux/Intel 32						
Linux/IA64						
Linux/AMD/EM64						
OSX PPC 32/64						
AIX PPC 32/64						
Linux PPC 64						
Solaris Sparc V8/V9/V9+						



MTT Reporter



MTT Reporter

All phases MPI install Test build Test run

Date range: past 24 hours

Hardware: all Show

OS: all Show

Local username: all Hide

MPI name: all Hide

Platform name: all Hide

MPI version: all Hide

[Reset form] [Start over] Summary Detail Performance [Preferences] [Advanced]

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: 10

Absolute date range: [Create permalink](#)
 Relative date range: [Create permalink](#)

#	Org	Hardware	OS	MPI install		Test build		Test run				
				AComp	AJob	AComp	AJob	AComp	AJob	AJob		
1	abssoft	ia32	Linux	2	0	2	0	58	0	0	0	
2	abssoft	ppc	Darwin	2	0	2	0	24	0	0	0	
3	abssoft	undef	undef	0	0	3	0	28	0	0	0	
4	cisco	x86_64	Linux	8	5	26	0	84246	725	648	292	
5	ibm	ia32	Linux	4	0	20	0	752	2	26	4	
6	ibm	ppc64	Linux	8	0	23	0	5014	617	36	325	
7	ibm	x86_64	Linux	15	12	71	0	19704	129	51	10	
8	melanox	x86_64	Linux	5	0	30	0	4120	0	0	104	
9	sun	s8pc	SunOS	2	0	12	0	2526	6	260	52	
10	sun	sparc	SunOS	1	1	6	0	1873	18	147	8	
Totals				47	18	228	0	118275	1547	1178	689	362

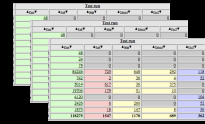
Total script execution time: 8 second(s)
 Total SQL execution time: 2 second(s)

Overall MTT contribution graph (updated nightly): [mtt.contrib.pdf](#)





MTT Visualization



Difficult to assess project health in the Reporter

Focus Groups:

Organization x Platform Bitness x Compiler Name

MTT Visualization (Static)
ompi-nightly-trunk / 1.4a1r19857

Arch x Compiler:

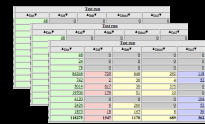
Arch x NP:

Arch x Compiler Version:

Last Updated on: Fri Oct 31 16:07:36 EDT 2008



MTT Visualization



ompi-nightly-trunk : 1.4a1r19857
ALL Orgs : ALL Platforms
ALL Compilers : ALL Bitness

Legend

- 100% Passed
- ◐ Some failures (fill indicates percent)
- 100% Failure
- Trivial all pass
- Trivial at least one fail
- No tests applicable

trivial (background)

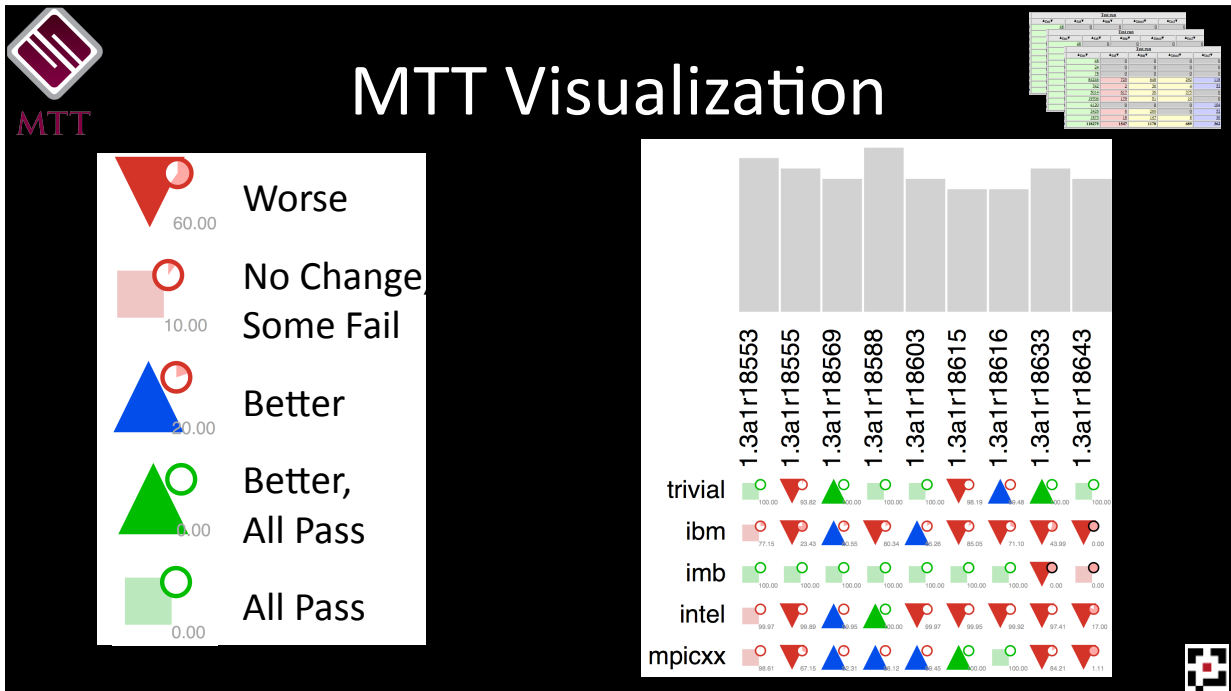
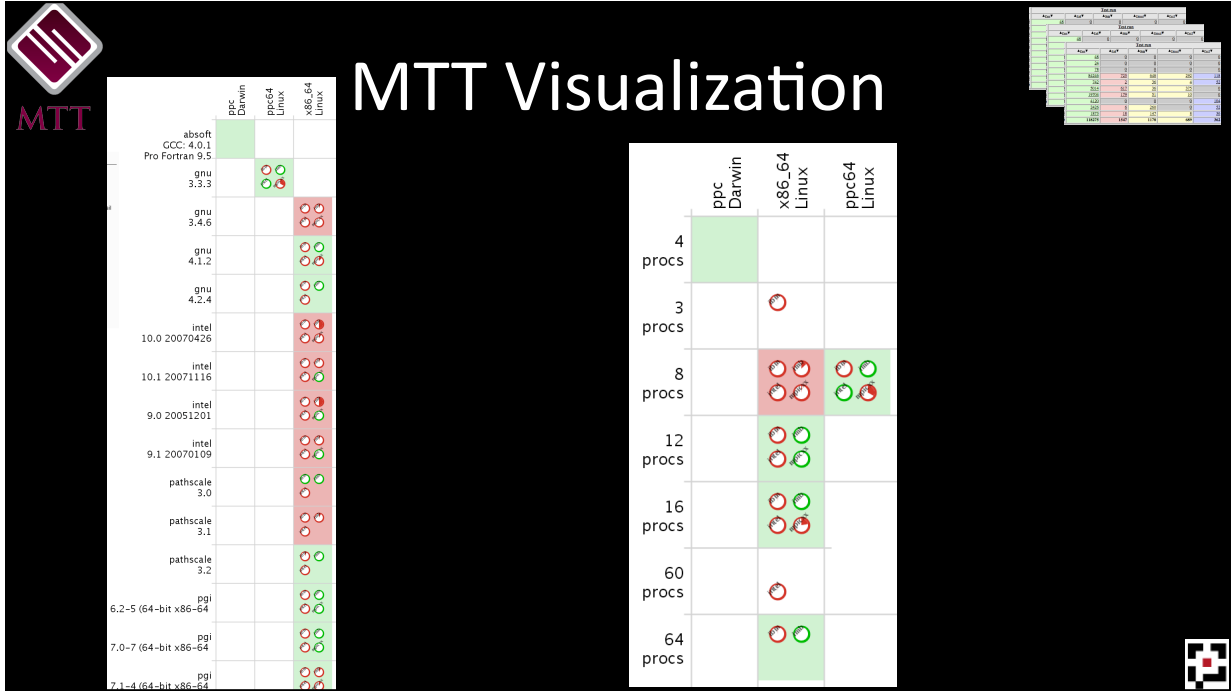
○ ibm

○ imb

○ intel

○ mpickx

	ppc Darwin	ppc64 Linux	x86_64 Linux
32 absoft			
32 gnu		◐ ◐ ◐ ◐	◐ ◐ ◐ ◐
64 gnu		◐ ◐ ◐ ◐	◐ ◐ ◐ ◐
64 intel			◐ ◐ ◐ ◐
64 pathscale			◐ ◐ ◐ ◐
64 pgi			◐ ◐ ◐ ◐



Future Directions



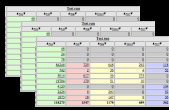
Local Testing

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



Data Storage

- Improve Performance Reporting
- Information Tagging



Reporting

- Interactive Visualization Environment
- Time based visualization



Questions & Comments



OPEN MPI



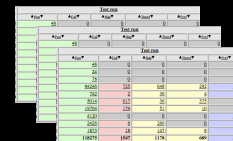
MTT



Local Testing



Data Storage



Analysis



