

SUPERCOMPUTING CHALLENGES 2007



**CLUSTER
CHALLENGE**



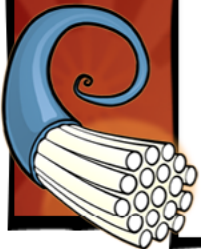
**BANDWIDTH
CHALLENGE**

SUPERCOMPUTING CHALLENGES 2007



RENO, NEVADA
NOVEMBER 10-16, 2007

THE PURDUE UNIVERSITY
CLUSTER AND BANDWIDTH
CHALLENGE TEAMS WILL
BE SHOWCASING
COMPUTATIONAL POWER
AT SC07, THE PREMIER
INTERNATIONAL
CONFERENCE ON HIGH-
PERFORMANCE COMPUTING,
NETWORKING, STORAGE
AND ANALYSIS, IN **RENO,
NEV.**



FOR DETAILS ABOUT THE SC07 BANDWIDTH
CHALLENGE:

[HTTP://SC07.SUPERCOMPUTING.ORG/?PG=CHALLENGES.HTML](http://sc07.supercomputing.org/?pg=challenges.html)

FOR DETAILS ABOUT THE SC07
CONFERENCE:

[HTTP://SC07.SUPERCOMP.ORG/](http://sc07.supercomp.org/)



MEANWHILE, BACK AT THE
CONVENTION CENTER ...



RENO, NEVADA
RENO-SPARKS CONVENTION CENTER



CLUSTER CHALLENGE

THE NEXT GENERATION OF HIGH—
PERFORMANCE COMPUTING TALENT

TRENT NELSON, ALEX YOUNTS, ANDY HOWARD,
DAVID MATTHEWS, JOSH WILDEY, RICHARD
MILLER, DONGHAN RYU, AND TAESUK YOON

— WILL HARNESS THE **INCREDIBLE POWER**
OF TODAY'S CLUSTER HARDWARE ...

THE TEAM WILL FACE THE CHALLENGE OF
OPTIMIZING WORKLOAD FOR TWO DAYS.
THEY WILL RUN BENCHMARKS AND APPLICATIONS
SELECTED BY **INDUSTRY** AND HIGH—
PERFORMANCE COMPUTING VETERANS.

THE TEAM THAT EARNS THE MOST POINTS FOR
SPEED OF BENCHMARKS AND THE THROUGHPUT
OF APPLICATION RUNS WILL BE NAMED THE
WINNER OF THE CHALLENGE ON NOVEMBER 15.

ASSEMBLING ...
TESTING ...
TUNING ...

UNTIL THE MOMENT
THEY RECEIVE THE
OFFICIAL DATA SET ...

AND THEN
THE RACE IS ON.

BEEP!



MEET THE 2007 CLUSTER
CHALLENGE TEAM!





JEFF EVANS

ASSISTANT PROFESSOR OF ELECTRICAL AND
COMPUTER ENGINEERING TECHNOLOGY

"THE CLUSTER CHALLENGE REPRESENTS A
CONDUIT FOR OUR TEAM MEMBERS TO
DEMONSTRATE THEIR SKILLS WHILE NETWORKING
WITH AND LEARNING FROM SOME OF THE
PIONEERS AND LEADERS IN THIS FIELD. IT IS
TRULY A REMARKABLE OPPORTUNITY FOR THEM
AND FOR PURDUE."



PRESTON SMITH

SYSTEMS RESEARCH ENGINEER

"THOUGH PURDUE IS A LEADER IN SCIENCE AND
TECHNOLOGY, MANY UNDERGRADUATES DON'T GET TO
SEE THE ENGINEERING AND TECHNOLOGY WORK THAT
THEY DO IN CLASS APPLIED SO VIVIDLY AS THEY DO
WORKING WITH HIGH-PERFORMANCE COMPUTING."



ANDREW HOWARD

JUNIOR, ELECTRICAL AND COMPUTER ENGINEERING
TECHNOLOGY
WEST LAFAYETTE, INDIANA

ANDY HOWARD LENDS EXPERIENCE IN HIGH-PERFORMANCE COMPUTING AND LEADERSHIP TO THE TEAM. "I HOPE TO GAIN A BETTER UNDERSTANDING OF THE APPLIED ASPECTS OF HIGH-PERFORMANCE COMPUTING ... AND SHOW EVERYONE WHAT PURDUE IS MADE OF!"



DAVID MATTHEWS

SENIOR, ELECTRICAL AND COMPUTER
ENGINEERING TECHNOLOGY
FORT WAYNE, INDIANA

DAVID MATTHEWS BRINGS PROJECT MANAGEMENT SKILLS TO THE TEAM EFFORT. HE'S EXCITED ABOUT COMPETING IN THE BRAND-NEW CHALLENGE. "I'M HERE TO GAIN MORE KNOWLEDGE OF HOW TO MANAGE, INSTALL, AND RUN A CLUSTER COMPUTER."



RICHARD MILLER III

SENIOR, ELECTRICAL AND COMPUTER
ENGINEERING TECHNOLOGY
LAFAYETTE, INDIANA

GAINING EXPERIENCE IN PUSHING COMPUTING TO ITS LIMITS, MILLER SAYS, "I'M EXCITED THAT WE HAVE A CHANCE TO MAKE A NAME FOR PURDUE IN THE CLUSTER COMMUNITY."



TRENT NELSON

SENIOR, COMPUTER ENGINEERING
COLUMBIA CITY, INDIANA

TRENT NELSON LENDS HIS BACKGROUND IN UNIX, LINUX, AND COMPILERS TO THE CHALLENGE. "THIS IS A CHANCE TO USE MY EDUCATION TO HELP PURDUE GAIN RECOGNITION IN THE PARALLEL COMPUTING COMMUNITY," HE SAYS.



DONGHAN RYU

SENIOR, ELECTRICAL AND COMPUTER
ENGINEERING
SEOUL, SOUTH KOREA

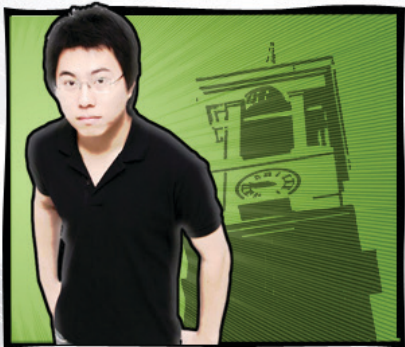
DONGHAN "SCOTT" RYU LENDS HIS EXPERTISE IN HARDWARE AND ASSEMBLY. HE SAYS, "IT IS VERY UNUSUAL FOR MOST STUDENTS TO ACCESS POWERFUL COMPUTERS LIKE WE HAVE HERE. JUST GETTING ACCESS TO OUR HP MACHINE IS AN EXCITING EXPERIENCE FOR ME."



JOSH WILDEY

SENIOR IN ELECTRICAL ENGINEERING FROM
CLEVELAND HEIGHTS, OHIO

"I'M LEARNING EVERYTHING I CAN, AND I'M EXCITED ABOUT SEEING HOW WE MATCH UP AGAINST OTHER TEAMS AT THE COMPETITION," WILDEY SAYS. HE IS FOCUSED ON NETWORKING THE CLUSTER.



TAESUK YOON

SENIOR, COMPUTER SCIENCE
SOUTH KOREA

THE TEAM EFFORT GIVES TAESUK YOON HANDS-ON EXPERIENCE WITH SUPERCOMPUTING. HE IS EXCITED TO "LEARN MORE ABOUT THE COMPUTER HARDWARE AND ITS SPECIAL CHARACTERISTICS OF COMPUTER ARCHITECTURE."



ALEX YOUNTS

FRESHMAN, COMPUTER SCIENCE
LAFAYETTE, INDIANA

WITH AN UNDERSTANDING OF LINUX AND CLUSTERING, ALEX YOUNTS ANTICIPATES LEARNING FROM THE EXPERIENCES OF OPPONENTS IN RENO. "I'M EXCITED TO SEE WHAT EVERYONE ELSE WAS ABLE TO ACCOMPLISH FOR THE EVENT."

BANDWIDTH CHALLENGE



A FORMIDABLE, EMERGING TALENT - **RYAN PEDELA** - WILL PUSH THE LIMITS OF TODAY'S NETWORK CAPABILITIES ...

CONFIGURING...

TROUBLESHOOTING ...

TUNING ...

SHOWCASING MULTI-GIGABIT-PER-SECOND APPLICATIONS ...

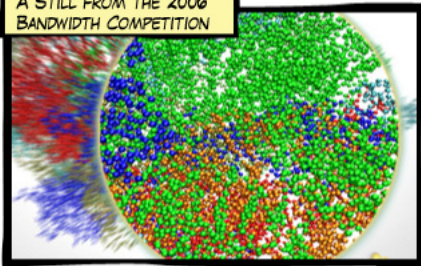
IN WAYS NEVER THOUGHT POSSIBLE.

THE CHALLENGE WILL RUN ACROSS **SCINET**. COMPETITORS FROM AROUND THE WORLD WILL COMPETE.

THE WINNER WILL MOST FULLY UTILIZE A **10 GIG PATH**, END-TO-END, DISK-TO-DISK, FROM THE **SC07** LOCATION IN **RENO** TO A HOME INSTITUTION, SERVING AS A MODEL FOR OTHERS TO FOLLOW.



A STILL FROM THE 2006 BANDWIDTH COMPETITION





SCOTT BALLEW

SENIOR NETWORK ARCHITECT
PURDUE UNIVERSITY

"OUR EFFORTS IN THE BANDWIDTH CHALLENGE ARE ABOUT MORE THAN JUST MOVING HUGE AMOUNTS OF DATA. WE WANT TO SHOW THAT IT CAN BE DONE AFFORDABLY AND NOT JUST BY THOSE WITH HEAPS OF CASH."



DAVID BRAUN

RESEARCH PROGRAMMER
PURDUE UNIVERSITY

"THE MOVIE FOR THE BANDWIDTH CHALLENGE IS BEING RENDERED ON TERADRE, A GRID-AWARE, EXTREME RENDERING FARM. WE HAVE MORE THAN 7,500 MACHINES AT OUR DISPOSAL."



PATRICK FINNEGAN

LINUX SYSTEM/WEB ADMINISTRATOR
PURDUE UNIVERSITY



RYAN PEDELA

GRADUATE STUDENT, COMPUTER
GRAPHICS TECHNOLOGY
WEST CHESTER, OHIO

PRIMARYLY INTERESTED IN PROGRAMMING,
PEDELA SAYS, "I'M WORKING TO IMPROVE THE
SYSTEM FROM LAST YEAR." THAT'S WHEN
PURDUE STREAMED AN ANIMATED VIDEO AT A
RATE OF 7.5 GIGABITS PER SECOND WITH A PEAK
TRANSFER RATE OF 8.4 GIGABITS PER SECOND.

SPONSORS

THE ROSEN CENTER FOR ADVANCED
COMPUTING AT PURDUE THANKS THE
FOLLOWING SPONSORS FOR THEIR
SUPPORT OF THE 2007
SUPERCOMPUTING CHALLENGE
TEAMS

PURDUE
UNIVERSITY

COLLEGE OF
ENGINEERING

COLLEGE OF
SCIENCE

COLLEGE OF
TECHNOLOGY



MATRIX
INTEGRATION

International provider of voice & data solutions

"We make it work."

The
Cyber Center

AMD



TO BE CONTINUED...

PURDUE
UNIVERSITY



WWW.RCAC.PURDUE.EDU/SC07/CHALLENGE
EA/EOL