SC2001 Proceedings

Welcome to the Proceedings of the ACM / IEEE SC2001 Conference. These proceedings are nearly a direct (albeit more portable) copy of the conference Web site. The final snapshot for this Proceedings CD-ROM was taken on October 8, 2001. All information contained herein was current as of this date.

By mirroring our comprehensive Web site in these Proceedings, we hope to provide you with a result which closely follows the numerous activities of this conference, serves as a complete archive of all related technical material, and accurately represents the spirit of SC2001.

Navigate the contents of this CD-ROM using the navigation bar along the left-hand side of this and the remaining Proceedings pages, or jump directly to a catalog of the technical papers using the following shortcuts.

- shortcut to the Technical Papers - (*sorted by first author*)

- shortcut to the Technical Papers - (*sorted by session*)

- shortcut to the Technical Papers - (*sorted by title*)

To view the technical papers you will need to be able to open Portable Document Format (PDF) files. At the time these papers were formatted for this CD-ROM, version 4 of "Acrobat Reader" from Adobe was the most common and effective reader for PDF files. Additionally, much of the material included in these Proceedings requires a JavaScript-capable Web browser to be viewed as intended.

On behalf of the SC2001 Conference Committee, it is my sincere hope that you find the contents of these Proceedings useful. I encourage you to send in any comments or suggestions you have regarding this CD-ROM to webmaster@sc2001.org. Directions for obtaining additional copies of these Proceedings can be found on the ordering information page. Thank you for your support of the SCXY Conference series.

Warmest Regards,

Greg Johnson
SC2001 Proceedings Chair
Texas Advanced Computing Center
University of Texas

News Releases

Producers Reassure Participants November Conference in Denver Will Exceed Expectations

Los Alamos, September 18, 2001 - Charlie Slocomb, volunteer chairman of the SC2001 Executive Committee, today reassured conference registrants, exhibitors, sponsors and other interested parties that SC2001 will yield all the rewards originally envisioned--and more.

Count on Us for November!

September 18, 2001 - Although the volunteers and professional production staff of the SC2001 have been deeply affected by the recent tragic events, we want to assure SC2001 registrants, exhibitors, sponsors and other interested parties that SC2001 will be held in Denver from November 10-16 as planned. We pledge that SC2001 will be a successful and enriching conference.

Registration Now Open for SC2001, the Conference of High-Performance Computing and Networking

Denver to Host SC2001 Conference Nov. 10-16, 2001

Denver, CO, September 7, 2001 - Registration is now open for SC2001, the annual conference of high performance networking and computing. This year's conference, *Beyond Boundaries*, will be held in Denver, Colorado for seven days of technical programs, technological demonstrations, exhibits, and educational outreach. The conference convenes Nov. 10-16 in the Denver Convention Center.

SC2001 Conference Looking for High Performance Computing Applications to Stretch High Bandwidth Infrastructure – Statements of Interest Due by Wednesday, August 15.

July 31, 2001 - Once again, the annual SC conference on high-performance networking and computing is looking for researchers with high-bandwidth applications to push the network infrastructure's multi-gigabit links to their limits with demonstrations of leading-edge computer applications.

Worldwide Sites Plan SC2001 Participation through SC Global

Project will link Denver conference with the top and bottom of the world — and points in between.

ARGONNE, IL, May 1, 2001 - Sites spanning six continents from the Arctic Region Supercomputing Center in Faribanks, AK, to the NSF Polar Research Center in Antarctica will participate virtually in SC2001, the annual high-performance computing and networking conference scheduled Nov. 10–16 in Denver. This electronic international participation will be part of SC Global. The participants will be called "constellation sites."

Denver Hosts World's High-Performance Network and Computer Events

November 10-16, 2001
DENVER, CO, March 26, 2001 - The largest supercomputer center in Colorado will leave
Denver on November 16 - six days after it sets up!

100 High-School Teachers Sought for Development in Latest Computational Technologies
GREENVILLE, N.C, February 15, 2001 - The National Science Foundation awarded a
$1.03-million grant to a consortium of nine educational institutions to train 200 high school
math and science teachers in the latest computer technologies. One-hundred teachers will
begin the program at SC2001, to be held November 10-16 in Denver.

Access Grid Goes International with SC Global
Organizers seeking participants in international global conference
ARGONNE, IL, January 9, 2001 - The first global technical conference using Grid
technologies to link large groups at multiple sites around the world will be held as part of the
SC2001 conference, the annual high-performance networking and computing conference
held each year in November.

Award Winners Highlight Most Successful SC Conference Ever
DALLAS, Texas, November 9 - SC2000, the conference of high performance networking
and computing, capped one of the most successful programs in the history of the
conference by recognizing outstanding achievements and contributions in the field.

New Logo Captures SC2001 Theme of "Beyond Boundaries"
DALLAS, Texas - SC2001, the conference of high performance networking and computing,
today unveiled its logo that captures the conference theme of "Beyond Boundaries."

Conference At-a-Glance	Saturday 11/10	Sunday 11/11	Monday 11/12	Tuesday 11/13	Wednesday 11/14	Thursday 11/15	Friday 11/16
Tutorials		8:30am-5pm	8:30am-5pm				
Education Program	1-8pm	9am-7pm	8am-7pm	8:30am-9pm	8:00am-9pm	8:00am-2pm	
Keynote Address				8:30-10am J. Craig Venter, Celera Genomics			
Plenaries					8:30am Jim Gray 9:15am Fran Berman	8:30am Chris Johnson 9:15am Alvy Ray Smith	

TECHNICAL SESSIONS — 10:30-12 noon — 8-10:30 am

- **Technical Papers**
- **MasterWorks**
- **Panels**
- **Workshops**
- **Awards**
- **BOFs**

	Saturday 11/10	Sunday 11/11	Monday 11/12	Tuesday 11/13	Wednesday 11/14	Thursday 11/15	Friday 11/16
			Workshops GRID 2001: 2nd Int'l Workshop on Grid Computing	**MasterWorks** Emerging Life Sciences I **Papers** Architectures Software Scalability Communication Structures	**MasterWorks** HPC Computing Infrastructure I **Papers** Sea, Wind, and Fire Reconfigurable Architectures **Panels** Computational Biosciences: The Computational Continuum from Human Genomes to Human Health	**MasterWorks** HPC in Entertainment **Papers** Computational Grid Apps Networking **Panels** The Access Grid: Where the Vision Meets Reality	**Workshops** APART 2001: Automatic Performance Analysis: Resources and Tools	**Master** Virtua Devel with C **Panels** HPC Have Succe in Spi Becau

1:30 pm - 3:30 pm — **10:30-Noo**

	Saturday 11/10	Sunday 11/11	Monday 11/12	Tuesday 11/13	Wednesday 11/14	Thursday 11/15	Friday 11/16
			Workshops GRID 2001: 2nd Int'l Workshop on Grid Computing	**MasterWorks** Emerging Life Sciences II **Papers** Material Science Applications Mesh Methods Computational Grid Portals and Networks	**MasterWorks** HPC Computing Infrastructure II **Papers** Groundbreaking Applications Information Retrieval and Transaction Processing Performance Prediction	**MasterWorks** SCxy as a MasterWork **Papers** Computational Grid Environments and Security Efficient Layouts for Hierarchical Memories Fast I/O	**Workshops** APART 2001: Automatic Performance Analysis: Resources and Tools	**Master** Virtua Produ Devel with C **Panels** Gene Super Best a Ideas

3:30 pm - 5 pm — **10:30-Noo**

	Saturday 11/10	Sunday 11/11	Monday 11/12	Tuesday 11/13	Wednesday 11/14	Thursday 11/15	Friday 11/16
			Workshops GRID 2001: 2nd Int'l Workshop on Grid	**MasterWorks** Emerging Life Sciences III	**Workshops** High-Performance Networking Across Wide	**MasterWorks** Time Migration in the Oil Industry	**Plenary Session** **Awards:** IEEE	**Workshops** APART 2001: Automatic Performance Analysis:

			Computing	**Papers** Computational Grid I/O — Algorithmic Load Balancing	Area Networks	**Papers** Algorithms — Novel Graphics and Grids	Computer Society Seymour Cray Computer Engineering Award	Resources and Tools	
				Panel Supercomputing in a Shoebox: The Convergence of High-Performance Computing and High-Performance Embedded Computing		**Panel** Computational Sciences: Do Undergraduate Faculty Know that Computational Science is the Future?	Gordon Bell Prize Winners SC2001 Best Technical Paper, Best Student Technical Paper, Best Research Poster Network Challenge Awards		

EXHIBITION									
Research Exhibits				10am-6pm		10am-6pm	10am-4pm		
Industry Exhibits			7-9pm	10am-6pm		10am-6pm	10am-4pm		
Exhibitor Forum				10am-6pm		10am-6pm	10am-4pm		
Posters				5-6:30pm					
INFRASTRUCTURE									
SC Global									
Gala Opening			7-9pm						
Reception							6:30-10pm		
Registration & Store Hours	1-6pm	7:30am-6pm	7:30am-8pm	7:30am-5pm		7:30am-5pm	7:30am-5pm		8
Media Room		1-4pm	9am-6pm	9am-6pm	9am-6pm	9am-5pm	9am-6pm		

SC2001 Registration

Please refer to the Tutorials Program page for scheduling changes.

General Conference Registration
Industry Exhibitor Registration (authorized booth coordinators)
Research Exhibitor Registration (authorized booth coordinators)
Minority Serving Institutions (MSI)
Media Registration
GRID Workshop Registration

Registration Fees

Advanced Registration Fees (Late Registration Fees):

Technical Program, Member	$390	($560)
Technical Program, Non-Member	$495	($700)
Technical Program, Student/Retired Member	$100	($150)
Tutorials, One-Day Passport, Member	$375	($525)
Tutorials, One-Day Passport, Non-Member	$485	($660)
Tutorials, One-Day Passport, Student/Retired Member	$100	($150)
Tutorials, Two-Day Passport, Member	$595	($825)
Tutorials, Two-Day Passport, Non-Member	$755	($1,035)
Tutorials, Two-Day Passport, Student/Retired Member	$160	($240)

General Advance Registration

You can register in advance for SC2001 in two ways:

- Use the online registration form linked at the bottom of this page. Carefully review the instructions and form before you respond. Credit card information is required to process all Web registrations. (Transactions using this form are encrypted with Secure Sockets Layer (SSL) technology and can only be read by the IEEE Computer Society.) Once your transaction has been successfully processed, you will see an online confirmation page, which you may print. A hard copy confirmation will follow by mail. Please bring either confirmation to the conference and present it to receive your registration materials.

- Complete the printed registration form linked at the bottom of this page and mail or fax it with your payment to the IEEE Computer Society. You will receive a hard copy confirmation of your registration by mail. Bring this confirmation to the conference and present it to receive your registration materials.

Advance Registration Closes: October 5th
Late Registration Rate Applied: October 6th - 19th

To qualify for advance registration discounts your registration form **and payment** must be **received** by **5:00pm EDT, Friday, October 5, 2001.** Registrations received between October 6th and October 19th will be charged at the late/on-site registration rate; those received after

5:00pm EDT, Friday, October 19, 2001 may not be acknowledged and must be resubmitted for processing at SC2001.

Member, Retired Member and Student Discounts
To qualify for discounted registration rates, include your current ACM, ACM SIGARCH, IEEE, or IEEE Computer Society membership number(s) or a copy of a valid full-time student identification card with the registration form.

International Attendees
International attendees can register in advance and pay by wire transfer for an additional processing fee of $25 per wire transfer. Wire transfers must be received by **October 19, 2001**, and will not be accepted at on-site registration. For wire transfer information or if you require a letter of invitation from the conference, please contact Takiyah Hunter at thunter@computer.org.

Registration Confirmation
Written confirmation of conference registration will be mailed by the IEEE Computer Society within 48 hours of receiving your registration. If you do not receive confirmation, please call 1-202-371-0101.

Payment
Payment must accompany all registration forms and can be made by credit card (MasterCard, VISA, American Express, and Diners Club), company or personal check, and wire transfers (a fee of $25 per wire transfer should be added to the total amount). Checks or money orders must be in U.S. funds, drawn on U.S. banks, and payable to the IEEE Computer Society. You can mail, fax, or submit your registration form on the SC2001 Website. No registrations will be accepted over the phone. **Forms received without payment will not be processed.**

On-site Registration
On-site registrants will pay late registration fees. Forms of payment accepted on-site: credit cards (MasterCard, VISA, American Express, Diners Club), traveler's checks, company and personal checks, and cash. Wire transfers will not be accepted at on-site registration.

Tutorials
Full-day tutorials are being offered on Sunday and Monday, November 11th and 12th. These are not included in the technical program registration and require separate registration.

A special Tutorials Passport for one or two days is available. A one-day passport (either Sunday or Monday) entitles you to attend any tutorials offered on that day, a tutorial luncheon, and your selection of notes for one full-day tutorial. A two-day passport gives you approximately a 20% discount on the price of two one-day passports. *Your selection of tutorial notes must be specified on the registration form.*An additional benefit of the Tutorials Passport is that you can purchase additional tutorial notes at a significantly reduced rate.

Seating at the tutorials is on a first-come, first-served basis. You are welcome to sit in on as many other tutorials as you like for the day(s) you are registered, but you will receive only the notes that you *reserve in advance*.

Tutorial Notes
Tutorial notes can be picked up at the SC2001 Conference Store upon presentation of the notes ticket(s) provided in your registration packet. You will only receive notes for the tutorial(s) you selected on your registration form.

Proceedings
Attendees registered for the technical program will receive one copy of the SC2001 proceedings on CD-ROM. Any extra copies of the proceedings will be on sale at the Conference Store.

Exhibits Only Badges
The exhibit hall is open from 10:00am to 6:00pm Tuesday and Wednesday and 10:00am to 4:00pm on Thursday. Exhibits Only Badges ($80) allow entrance to the exhibit floor for one of the three days of the exhibition: Tuesday, Wednesday, or Thursday. Exhibits Only Badges will go on sale beginning Tuesday morning at 7:30am. SC2001 is offering Exhibits Only registration to children 12-16 who must purchase Exhibits Only Badges and be accompanied by an adult at all times. Children under age 12 are not permitted on the exhibit floor at any time.

Media Registration and Information

Members of the media should review the Media Guidelines and contact the SC2001 Media Coordinator, Jon Bashor (JBashor@lbl.gov) for registration information.

Cancellations and Substitutions

Cancellations and substitutions are allowed. However, full registration fees will be charged unless a cancellation notice is sent in writing, and postmarked, or faxed on or before **October 19, 2001** to:

> IEEE Computer Society
> Attn: SC2001
> Dept. 6006
> Washington, DC 20042-6006 USA
> Fax: 1-202-728-0884

A $50 handling fee will be applied to all canceled registrations. Please allow 10 weeks for processing. Fees cannot be refunded for registrations canceled after the meeting begins. No-shows will be billed.

Contact the IEEE Computer Society for substitutions (allowed at any time). A letter on your company's letterhead is required from the original registrant stating the conditions of the substitution and the name of the replacement.

Special Registration Needs

If you require specific aids or services during your visit, please notify us prior to the registration deadline. We will attempt to accommodate participants' special needs. Please contact:

> Heidi Peterson
> SC01 Registration Chair
> Phone: 925-423-4649
> Fax: 925-424-3786
> hpeterson@llnl.gov

Airline Discount for Conference Attendees

We are pleased to announce that we have been able to secure a special discount agreement with United Airlines, unavailable to the general public.

A 5% discount off the lowest applicable fare will be offered ONLY when you or your travel agent call United's toll-free number, 1-800-521-4041 and refer to the Meeting ID Number 556AQ. A 10% discount off the unrestricted mid-week coach fares is available when purchased 7 days in advance. Discounts apply on United, Shuttle by United and United Express. Dedicated reservationists are on duty 7 days a week, 7:00 am to 12:00 midnight EDT. Book early to take advantage of promotional fares that give you the greatest discount. Mileage Plus members receive full credit for all miles flown to this meeting.

Registration and Store Hours

Saturday	11/10	1:00pm-6:00pm
Sunday	11/11	7:30am-6:00pm
Monday	11/12	7:30am-8:00pm
Tuesday	11/13	7:30am-5:00pm
Wednesday	11/14	7:30am-5:00pm
Thursday	11/15	7:30am-5:00pm
Friday	11/16	8:00am-11:00am

SC2001 Registration Forms:
Online Registration Form
PDF Registration Form

SC2001 Housing Information

Housing Instructions
Reservations, Cancellations, Guarantees, Multiple Room Blocks

Hotels and Rates

Hotel Locations

Online Reservations Book your reservation live and online.
You will know your assigned hotel and rate immediately.
www.pkghlrss.com/events/5087/5087.html

Transportation to and from Hotels
Shuttle Special (PDF)
Shuttle Coupons (PDF)

Housing Form (PDF)
Use this form to mail or fax your reservations. Required for reserving blocks
of four or more rooms.

Individual Housing Reservations must be made using one of the options: (a) on-line, (b)
by mailing or faxing the Conference Housing Form or (c) by phone. Reservations at
conference hotels will be handled on a first-come, first-served basis at the conference rate
through **Monday, October 15**. If you fax your form, please do not duplicate by mailing the
original. You will receive an acknowledgement from the Denver Metro Convention & Visitors
Bureau (SC2001 Housing Bureau) within 7-10 days of receipt of your request. Changes can
be made on-line, by phone, or fax through October 15 with the Housing Bureau.

All reservations require a one-night room plus tax deposit for each room. The hotel will
charge your credit card for this deposit. Checks must be sent directly to your assigned hotel
after you receive your acknowledgement. **DO <u>NOT</u> SEND ANY CHECK OR MONEY WITH
YOUR HOUSING FORM.**

Cancellations after Monday, October 15, 2001 will incur an automatic $25 charge (this
also applies to each room reserved in a block). Reservations processed after October 15,
which are subsequently cancelled, will also be charged this fee. Hotels may charge one
nightÍs room plus tax if your reservation is not cancelled at least 72 hours prior to the
scheduled arrival date.

Guaranteed Reservations are typically held until 11:59 PM of your scheduled arrival date

at which time the reservation and deposit are forfeited and a "no show" charge may be applied. If you are going to arrive after midnight, notify the hotel to ensure your reservation and avoid any "no show" fees. At time of check-in, verify your departure date and make any date adjustments. Lack of notification may result in an additional nightÍs room charge plus tax.

Multiple Room Blocks of 4 or more rooms must be requested directly with the SC2001 Housing Bureau by fax. Enter the contact personÍs information on the Housing Form and clearly indicate the number of rooms. A credit card number on the form is required. **Friday, October 5, 2001** is the deadline for the rooming list, which must include names, arrival/departure dates, credit card numbers, type of accommodations and the primary contact personÍs name, address, phone, fax and email. **If your rooming list is not received by October 5, 2001, your room block will be automatically cancelled.**

Please book online or return this form by mail or fax to:

> SC2001 Housing Bureau-Denver
> 1555 California Street, Suite 300
> Denver, CO 80202-4264
> Fax (303) 571-9435

Or call Monday-Friday 9am-5pm MDT:

> (800) 880-9046 USA/Canada
> (303) 892-1112 ext. 601 International

Blocks of four or more rooms will not be accepted by phone.

SC2001 Conference Hotels and Rates

1. Adamâs Mark Denver
    1550 Court Place
    $149/single
    $164/double

2. Embassy Suites Denver Downtown
    1881 Curtis Street
    $159/single
    $169/double

3. Holiday Inn Denver Downtown
    1450 Glenarm Street
    $99/single
    $109/double

4. Hyatt Regency Denver
    1750 Welton Street
    $145/single
    $165/double

5. Marriott City Center
    1701 California Street
    $151/single or double

Transportation to and from Hotels
The conference hotels are located within 6 blocks of the Denver Convention Center. Conference. Bussing will be provided to all Conference Hotels beginning at noon on Saturday, November 10.

SuperShuttle provides transportation services to and from the Denver International airport. Their rate is currently $17 one-way or $30 round trip. Bus service is available via RTD, the Regional Transportation District to/from Denver International Airport, currently $7 one-way. Taxi service and private town car services are approximately $45 one-way from the airport to the Conference Hotels.

Denver Area Information

Come to Denver for SC2001 and enjoy the fun and excitement of the conference and the city! Located in a spectacular setting at the foot of the Rocky Mountains, Denver is one of Americas fastest growing cities, and one of its most exciting. The Mile High City entertains over 8.8 million visitors a year with people coming to enjoy the citys outstanding cultural attractions, museums, shopping, dining, and nightlife.

www.denver.org

Current Denver Weather

Denver Weather provided by 9NEWS.com W*USA-TV

www.9news.com/weather
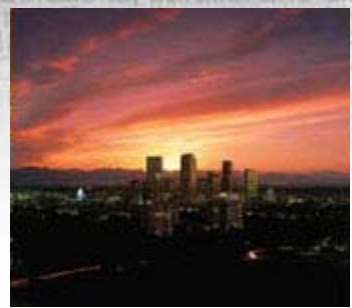
©2001 SC2001 | Web Feedback | SC2001 Info
SC2001 is sponsored by the IEEE Computer Society and ACM

Education Program

SC2001 offers high school and middle school teachers an opportunity to learn computer modeling and simulation and the application of computational science to the science and mathematics curricula. Through a national competition, a core group of 27 teams with four teachers each has been identified and will participate in an 18-month program that starts at SC2001, continues with monthly videoconference sessions on specific computational science topics through the winter, and includes a two-week Summer Institute in July 2002. The following Education Program sponsors fund these teams:
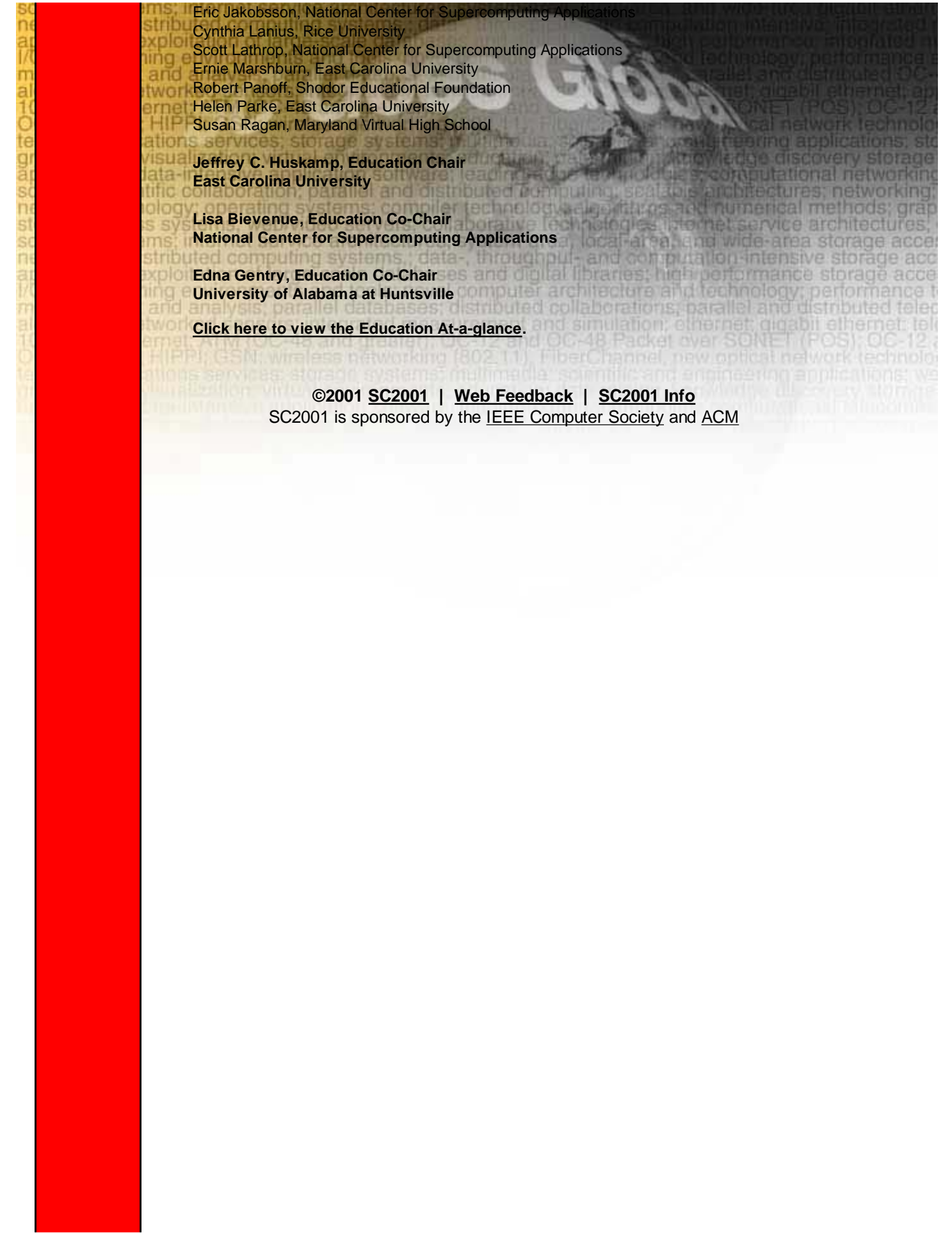
- **National Science Foundation**
- **Association of Computing Machinery**
- **IEEE Computer Society**
- **IEEE Foundation**
- **Cisco Systems, Inc.**
- **Compaq Computer Corporation**
- **High Performance Systems**
- **Microsoft Corporation**
- **National Aeronautics and Space Administration**
- **SBC DataComm**
- **SC2001 Conference**
- **Shodor Education Foundation, Inc.**
- **Wolfram Research, Inc.**

At the conclusion of this program, the selected teachers will become leaders in their school systems and region, providing inspiration for a wider adoption of modeling and simulation by classroom teachers. Each team will learn state-of-the-art modeling software tools that will enable them to create new classroom modules that adhere to the national science and mathematics standards. These modules will then be placed in a repository and made publicly available.

Additional teams or individual teachers can participate in the SC2001 Conference along with the selected teams by registering for the SC2001 Education Program and attending the Education Program sessions. Full participation in the hands-on sessions will require additional participants to bring wireless laptops. These participants will learn the fundamentals of the computational science curriculum development tools and will learn how to select appropriate topics for computational science modules for classroom instruction through interaction with modeling experts and practicing computational scientists. Interested teachers can receive additional information by sending email to education@sc2001.org or by visiting the SC2001 website at http://www.sc2001.org.

Education Program Speakers

Richard Allen, Albuquerque High Performance Computing Center
Lisa Bievenue, National Center for Supercomputing Applications
Edna Gentry, University of Alabama in Huntsville
Bob Gotwals, Shodor Educational Foundation
Barbara Helland, Krell Institute
Jeff Huskamp, East Carolina University

Eric Jakobsson, National Center for Supercomputing Applications
Cynthia Lanius, Rice University
Scott Lathrop, National Center for Supercomputing Applications
Ernie Marshburn, East Carolina University
Robert Panoff, Shodor Educational Foundation
Helen Parke, East Carolina University
Susan Ragan, Maryland Virtual High School

Jeffrey C. Huskamp, Education Chair
East Carolina University

Lisa Bievenue, Education Co-Chair
National Center for Supercomputing Applications

Edna Gentry, Education Co-Chair
University of Alabama at Huntsville

Click here to view the Education At-a-glance.

Overview of the Technical Program

The Origin

For nearly 2 years, the SC2001 technical program team has contributed time for planning behind the scenes, enlisting our industry's leaders, brainstorming ideas, and soliciting technical content. It has certainly been a busy time, but it has also been rewarding —even fun sometimes!

The Results

We believe we have crafted a stimulating, engaging program which is in concert with the timely challenges of our industry. By leveraging the strengths of past SC programs, we offer a stable foundation of technical content. But we also offer some experiments to add to the excitement and controversy! We hope you will always find something of particular interest throughout our program.

A Quick Summary

- At the core, 60 strongly refereed Papers chosen from 240 submissions by an exceptional committee of diverse, well-known professionals throughout our industry.

- For your education, 28 informative Tutorials from which to choose each offered by leaders in their topic areas. These are high-quality tutorials selected from 52 submissions.

- Stellar Plenary Sessions featuring well-known leaders who will offer visions of the state of their fields of expertise. Don't miss these opportunities!

- For your active engagement, 6 hand-crafted Panels that will offer information and stimulate discussion and, quite likely, a bit of controversy.

- The return of MasterWorks, with 20 invited speakers who will star in the second annual performance of this speaking series. These sessions showcase novel, innovative practices in solving challenging, real-world problems in areas of interest from the biosciences to Hollywood.

- For your participation, 3 timely Workshops held in conjunction with SC2001 (2 full-day and 1 half-day). These are quality productions, and we will be interested in knowing if you want this type of venue to continue and grow within the SC series.

- And much more -- award winners, birds-of-a-feather sessions, video proceedings, global participation...

More Details

For the important details within each of the program components listed in this overview, please click on the specific items on the sidebar to see topics, speakers, and times.

Acknowledgements

I would like to offer my sincere thanks to all members of the SC2001 Program Committee for their exceptional dedication to quality and excellence in creating this program. Clearly, my most significant contribution to the program was enlisting these professionals to be on

our team.

The Judgment
This would be you! Come to Denver and see for yourself. Please be vocal about what works for you and what does not. We promise to listen and pass along your input to improve the SC conference series.

Sally D. Haerer, Technical Program Chair
Oregon State University

Tutorials Program

This year's tutorials program includes exciting new offerings presented by some of the world's leading experts in high performance computing. The SC2001 tutorials program will span a wide range of current topics, including HPC clusters, Java for parallel computing, MPI-2, OpenMP, network security, data mining, computer architectures, and parallel programming tools, libraries, and methodologies. Several new topics will be offered based upon feedback and requests provided by SC2000 tutorials attendees. Some of the most requested presenters from prior years, with new and updated materials, will be offering tutorials.

SC2001 conference will be offering full-day tutorials and half-day tutorials. We have a total of 13 full-day and 14 half-day tutorials covering over 20 topics. Separate registration is required for tutorials; tutorial notes and luncheons will be provided on site (additional tutorial notes will be sold on site). A One- or Two-day Tutorial Passport allows attendees the flexibility to attend multiple tutorials.

See the Tutorials-at-a-Glance table below for a list of this year's tutorials. Questions: tutorials@sc2001.org

John Grosh, Tutorials Coordinator
Department of Defense

Jeff Kuehn, Deputy Tutorials Coordinator
National Center for Atmospheric Research

Tutorials Committee

Click on each Tutorial for more details or
Click here to view the entire Tutorials Program.

SUNDAY, FULL DAY	
S1	Introduction to Clusters: Build Yourself a PC Cluster NOW!
S2	Introduction to Effective Parallel Computing
S3	Practical Automatic Performance Analysis
S4	Java for High Performance computing: Performance and Parallelisation
S5	High-Performance Numerical Linear Algebra: Fast and Robust Kernels for Scientific Computing
S6	Sharable and Scalable I/O Solutions for High Performance Computing Applications
SUNDAY, HALF DAY, AM	
S7	Introduction to Parallel Programming with OpenMP
S8	Understanding Network Performance
S9	The Emerging Grid: Introduction, Tools, Applications
S10	Mixed-Mode Programming Introduction
SUNDAY, HALF DAY, PM	
S11	Advanced Parallel Programming With OpenMP
S12	Achieving Network Performance
S13	Data Grids: Drivers, Technologies, Opportunities

S14	An Introduction to the TotalView Debugger

MONDAY, FULL DAY

M1	Advanced Topics in HPC Linux Cluster Design and Administration
M2	High Performance Computing: What Role for the Individual Microprocessor, if Any
M3	Securing Your Network
M4	Using MPI-2: Advanced Features of the Message-Passing Interface
M5	Extreme! Scientific Parallel Computing
M6	Programming With the Distributed Shared-Memory Model
M7	Data Mining for Scientific and Engineering Application

MONDAY, HALF DAY, AM

M8	Performance Tuning Using Hardware Counter Data
M9	Benchmarks, Results, and Tricks the Vendors Don't Tell You
M10	Parallel Partitioning Software for Static, Adaptive, and Multi-phase Computations

MONDAY, HALF DAY, PM

M11	Performance Technology for Complex Parallel Systems
M12	InfiniBand Architecture and What Does it Bring to High Performance Computing?
M13	Cache-based Iterative Algorithms

Technical Papers

The technical papers component of the SC2001 program is especially strong and vibrant. Sixty papers were selected from a pool of 240 submissions covering a broad technical scope and offering a truly international perspective on high performance networking and computing. Eighty-four of the papers were student submissions, of which seventeen were accepted and six nominated for the best student paper award.

In my view, SC has come into its own with this year's program. Several of the papers represent the unique combination of real science, novel computational methods, and in-depth performance analysis on leading-edge platforms that only comes together at SC. You will find sessions such as "Sea, Wind, and Fire," "Groundbreaking Applications," and "Material Science" tackling computational modeling of the ocean, atmosphere, combustion, and structures. Several of these are finalists for the Gordon Bell Prize. Clusters and Grids are well represented from hardware and software viewpoints, reflecting the emergence of these important platforms. In-depth design studies explore leading commericial architectures, novel hardware devices, and emerging interconnects. Theoretical and empirical studies investigate new parallel numerical methods, algorithms, and performance-analysis techniques. Networking and storage are explored from unusual angles, and eScience emerges in the context of new modes of interacting with computational processes and high performance architectures.

Together, these papers provide a rich treatment of the latest technical work over the broad scope of high performance networking and computing. They are complemented with workshops on selected topics and a leading Masterworks track of invited speakers.

I would like to thank the members of the Technical Papers Committee and the Program Committee, who worked so hard to bring it all together and the authors from around the world who have built such a strong program. I think you too will find it exciting.

David Culler, Technical Papers and Workshops Coordinator
University of California, Berkeley

Technical Papers Committee

Access the full text of the Technical Papers through the following three catalogs:

- catalog of Technical Papers - (*sorted by first author*)

- catalog of Technical Papers - (*sorted by session*)

- catalog of Technical Papers - (*sorted by title*)

Browse abstracts of the Technical Papers, organized by session:

Sessions Chronologically	Sessions Alphabetically
Architectures	Algorithmic Load Balancing
Software Scalability	Algorithms
Communication Structures	Architectures

Material Science Applications	Communication Structures
Mesh Methods	Computational Grid Applications
Computational Grid Portals and Networks	Computational Grid Environments and Security
Computational Grid I/O	Computational Grid I/O
Algorithmic Load Balancing	Computational Grid Portals and Networks
Sea, Wind, and Fire	Efficient Layouts for Hierarchical Memories
Reconfigurable Architectures	Fast I/O
Groundbreaking Applications	Groundbreaking Applications
Information Retrieval and Transaction Processing	Information Retrieval and Transaction Processing
Performance Prediction	Material Science Applications
Algorithms	Mesh Methods
Novel Graphics and Grids	Networking
Computational Grid Applications	Novel Graphics and Grids
Networking	Performance Prediction
Computational Grid Environments and Security	Reconfigurable Architectures
Efficient Layouts for Hierarchical Memories	Sea, Wind, and Fire
Fast I/O	Software Scalability

Plenaries

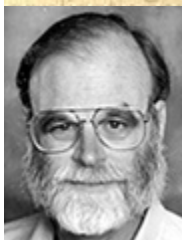**Tuesday, November 13**
8:30-10:00 am
Keynote Address
Ballroom 1/2/3/4

J. Craig Venter, Ph.D.
President and Chief Scientific Officer, Celera Genomics
"Accelerating Discovery through Supercomputing"

Wednesday, November 14
8:30-9:15 am Ballroom 2/3/4

Jim Gray
Microsoft Research
"The World Wide Telescope: Mining the Sky"

Wednesday, November 14
9:15-10:30 am
Ballroom 2/3/4

Fran Berman
Director of SDSC and NPACI, Professor of CSE, UCSD
"Grid Computing in the Terascale Age"

Thursday, November 15
8:30-9:15 am
Ballroom 2/3/4

Chris Johnson
University of Utah
"Scientific Visualization: Bridging the Complexity Threshold"

Thursday, November 15
9:15-10:30 am
Ballroom 2/3/4

Alvy Ray Smith
Digital Photography Artist
"Will Digital Actors Replace Human Ones?"

MasterWorks

Invited Speakers emphasize novel and innovative uses of high-performance networking and computing (HPNC) for solving challenging problems in the real world. This track highlights research-quality results that serve practical priorities. This year the MasterWorks track features Computational Biology, Computer-Aided Engineering, Computing Infrastructure, Time Migration in the Oil Industry and High Performance Computing in Hollywood. We hope that you find this track stimulating and that it expands your understanding of just how HPNC technology can benefit the larger scientific community and the general public.

Barbara Horner-Miller, MasterWorks Coordinator
Arctic Region Supercomputing Center

Click on each topic for details or click here to view the entire MasterWorks list.

Tuesday, November 13		
10:30-Noon	**Emerging Life Sciences I**	Applications in Computational Biology and Computational Chemistry: Similarities and Differences
		Computing Requirements for the Bioinformatics Revolution: Genomics, Proteomics and Cellular Machinery
1:30 -3:00 pm	**Emerging Life Sciences II**	The Computational Impact of Genomics on Biotechnology R&D
		New Wine in Old Bottles: The Use of Vector Processors and Fine-Grained Parallelism in Genomic Analysis
3:30-5:00 pm	**Emerging Life Sciences III**	Computing Challenges for Structure-based Drug Design on a Genomic Scale
		National Digital Mammography Archive
Wednesday, November 14		
10:30-Noon	**HPC Computing Infrastructure I**	StarLIght: Optical Switching for the Global Grid
		Evolution of Supercomputing Networks—From Kilobits to Terabits
1:30-3:00 pm	**HPC Computing Infrastructure II**	Bringing I/O Scalability and Availability to Linux and AIX Clusters
		Bringing Linux Clusters into the Enterprise
3:30-5:00 pm	**Time Migration in the Oil Industry**	Scalability Analysis of Distributed 3D Prestack Time Migration
		The Saga of Pre Stack Time Migration at Saudi Aramco
Thursday, November 15		
10:30-12 Noon	**HPC in Entertainment**	Computational Challenges in Computer Animation at Blue Sky Studios
		Computational Challenges in Creating Volume Rendered Galactic Animations
1:30-3:00 pm	**SCxy as a MasterWork**	SC Global: Celebrating Global Science
		SCinet: The Annual Convergence of Advanced Networking and High Performance Computing
Friday, November 16		
8:30-10:00 am	**Virtual Product Development with CAE I**	Modeling Approaches in FLUENT for the Solution of Industrial CFD Applications on High-Performance Computing Systems
		High-Performance Simulation and Visualization in Engineering Systems
10:30-Noon	**Virtual Product Development with CAE II**	Accuracy and Precision of Distributed Memory Crash Simulation

Panels

Many fine panel proposals were submitted this year and for this we thank the proposers. As a result, however, it was difficult to select just six panels. We hope you will be as pleased with the selection as we anticipate you will be. The selected panels span a variety of topics, e.g., computational biosciences, high-performance embedded computing, undergraduate computational science curricula, the access grid, and HPC software, and offer SC2001 attendees access to experts in each of the topic areas. We invite you to attend these panel sessions to learn, question, and, along with the panelists, offer opinions and create controversy.

Pat Teller, Panels Coordinator
University of Texas, El Paso

Click on each to see details or click <u>here</u> to view the entire Panels list.

Tuesday, November 13	
3:30 - 5:00pm	Supercomputing in a Shoebox: The Convergence of High-Performance computing (HPC) and High-Performance Embedded Computing (HPEC)
Wednesday, November 14	
10:30am - Noon	Computational Biosciences: The Computational Continuum from Human Genomes to Human Health
3:30 - 5:00pm	Computational Science: Do Undergraduate Faculty Know That Computational Science is the Future?
Thursday, November 15	
10:30am - Noon	The Access Grid: Where the Vision Meets Reality
Friday, November 16	
8:30 - 10:0 am	HPC Software: Have We Succeeded in Spite of It or Because of It?
10:30am - Noon	General: Supercomputing's Best and Worst Ideas

Workshops

During SC2001, we are bringing back "workshops" as a formal part of the conference. Here is just a brief summary of the three independently-organized workshops that will be performing this year:

- GRID 2001: bringing together the Grid community of researchers, developers, practitioners, and users. (Full-Day)

- End-to-End High-Performance Networking: addressing the performance issues of working across wide area networks. (Half-Day)

- APART 2001 (Automatic Performance Analysis—Resources and Tools): providing a forum for discussing the automation of performance analysis for performance-critical applications. (Full-Day)

You are invited to check the important details of these well-organized workshops —times, topics, agendas, and speakers. This type of venue is designed to offer much more interaction and depth than can be accomplished in our shorter, more traditional technical sessions.

To understand the best method to facilitate this form of information sharing within our future SC conference series, we will be very interested in your feedback and suggestions. Please let us know what you think!

Sally Haerer, Technical Program Chair
Oregon State University

Click on each Workshop for details or
Click here to view the entire Workshops list.

Monday, November 12	
Full Day	GRID 2001 2nd International Workshop on Grid Computing
Wednesday, November 14	
Half Day, pm	End-to-End High-Performance Networking
Friday, November 16	
Full Day	APART 2001: Automatic Performance Analysis: Resources and Tools

Awards

3:30 - 5:00pm
Room: Ballroom 2/3/5

A variety of achievements will be recognized and honored at SC2001. We are expecting the third annual **IEEE Computer Society Seymour Cray Computer Engineering Award** to be presented in recognition of innovative contributions to high performance computing systems that best exemplify Seymour Cray's creative spirit. This award includes a $10,000 honorarium and is funded from an endowment provided by SGI. SC2001 will also host the **IEEE Computer Society Sidney Fernbach Memorial Award** given for an outstanding contribution in the application of high performance computers using innovative approaches.

For more information on IEEE Computer Society Awards, please see:
http://computer.org/awards

The **Gordon Bell Prizes** were established to reward practical uses of parallel processing and are given for the best performance improvement in an application. These awards are made in several categories relating to hardware and software advancement. Cash prizes accompany these recognitions and are funded by the award founder, Gordon Bell.

In addition, the SC2001 Conference will select several outstanding award winners. Special recognition will be given for the **best technical paper** of the conference ($1000), the **best student technical paper** ($500), the **best research poster** ($250), and the **Network Challenge Awards** funded by Qwest.

Horst Simon, Awards Coordinator
Lawrence Berkeley National Laboratory

Birds of a Feather Sessions

SC2001 will, as always, host many Birds of a Feather Sessions (BOFs). The final BOF schedule will be printed on a flyer in your registration packet, so be sure to check this when you pick up your packet. BOFs offer lively conversation between people with a common interest. Here's a sample of some of the BOFs you can count on for this year:

- Linux Cluster Management

- OpenMP and its further development

- Component based software development in high-performance computing

- Is US climate modeling in trouble?

- Grid access by everyone

- Cluster computing on Intel for production use

- And many more timely, interesting BOFs for your participation

Please check the schedule on the list in your packet or on the Web. Birds of a Feather sessions will be held from 5:30-7:30 pm on Tuesday, Wednesday and Thursday of the conference.

Mary Kay Bunde, Birds of a Feather Coordinator
Etnus

Overview of the Exhibitions

The SC conference series is unique in its combination of a state-of-the-art technical program and premier industry and research exhibition. This year's exhibition is showcased on 195,000 square feet of exhibit space. Survey results repeatedly point to exhibits as one of the top reasons to attend SC. Here, attendees can see new products and learn about new developments, as well as make contacts with the world's leading computing experts in industry, academia, and government. This year's exhibit floor extends beyond its physical boundary to link with constellation sites across the U.S. and the world.

Dona Crawford, Exhibits Chair
Lawrence Livermore National Laboratory

David Cooper, Exhibits Co-chair
Lawrence Livermore National Laboratory

Research Exhibits

SC2001 offers an exceptional opportunity to learn about the latest research results in high-performance computing and communications. This year's research exhibits include a larger and more varied collection of universities, labs, and centers than at any previous event. The major research centers will present demonstrations and provide opportunities for in-depth discussions with research staff. In keeping with the Beyond Boundaries theme, the research exhibits include both a European Research Village and an Asian Research Village, providing a focus on international research activities.

Jim Pool, Research Exhibits Coordinator
California Institute of Technology

What Research Exhibitors Should Know—A Summary for the Research Exhibitor

Industry Exhibits

The SC2001 Industry Exhibits complement the technical program and feature industry leaders in high-performance networking and computing and associated software, visualization, tools, storage, applications and services. This exhibition is one you will not want to miss! It begins with an Opening Reception on Monday night and continues through Thursday of SC2001.

Virginia To, Industry Exhibits Coordinator
High Performance Technologies, Inc.

Don Collier, Exhibition Management
DC Expositions, Inc.

DENVER CONVENTION COMPLEX

Floor Plan
Click image to enlarge.

Location
Colorado Convention Center, Currigan Exhibition Halls, Denver, CO

Facilities
195,000 square feet of exhibit space
Utilities on 30-ft. centers
On-site visitor and business centers

Space Fee
$29 per square foot, in 10-ft. x 10-ft. multiples

Maximum Booth Height
22-ft., 6 in.

Your SC2001 Exhibit Space Rental Includes:

- A once-a-year opportunity to meet potential customers from companies and organizations around the world.

- Regular updates from the SC2001 committee on plans for this years conference (trends, speakers, announcements.)

- Direct links from the SC2001 Web pages to your company's home page.

- Publication of your companys information in the SC2001 Advance Program, Final Program, and Exhibits Guide.

- Industry Exhibitor badges, five for each 100 square feet of exhibit space.

- Fifty complimentary industry exhibition guest passes for you to distribute to customers and potential customers for each 100 square feet of exhibit space.

- One complimentary technical program registration per industry exhibitor.

- Free admission to technical sessions.

- Keynote session on Tuesday morning. Each year, an invited keynote address is given by a leader in HPCC.

- Exhibitor Forum presentations on Tuesday, Wednesday, and Thursday. This is your opportunity to listen to industry leaders, hear new product announcements, and meet with colleagues.

- All Friday technical sessions. In past years, these sessions have been standing-room-only because of their popularity and relevance to HPCC.

- The opportunity for your company's representative to describe your R&D directions in the Exhibitor Forum.

- The Exhibitor Forum runs concurrently with exhibition hours, and is open to all attendees.

- The opportunity to sponsor an educator.

- Admission to the exhibitors-only Exhibitor Reception on Sunday, November 11 from 6-10 pm.

- Priority access to meeting space and suites in Denver hotels.

- Access to the network, SCinet2001 (some connections may involve additional fees.)

- A complimentary exhibitor lounge during exhibition hours.

- Standard booth equipment (if desired), including 8-ft. back-wall drapes and 3-ft. side-wall drapes.

- A copy of the follow-up audience survey conducted after SC2001.

- Priority points that will apply toward space selection at future SC conferences.

Don Collier, Exhibition Management
DC Expositions, Inc.
One East First Street, Suite 809, Reno, NV 89501
888-980-5488 (Toll Free) or 775-322-5881, (Fax) 775-322-0924
dc@dcexpo.com

Industry Exhibits

The SC2001 Industry Exhibits complement the technical program and feature industry leaders in high performance networking and computing and associated software, visualization, tools, storage, applications, and services. This exhibition is one you will not want to miss! It begins with an opening reception, the Gala Opening, on Monday night and continues through Thursday of SC2001.

SC2001 Industry Exhibit Hours

Monday, November 12, 7:009:00pm *GALA OPENING*
Tuesday, November 13, 10:00am6:00pm
Wednesday, November 14, 10:00am6:00pm
Thursday, November 15, 10:00am4:00pm

Industry	Booth	Address
ACM (Association for Computing Machinery)	Booth Lobby Area	www.acm.org
ADIC	1120	www.adic.com
AMD	105	www.amd.com
Apple Computer, Inc.	955	www.apple.com/scitech
Aspen Systems, Inc.	421	www.aspys.com
Atipa Technologies	559	www.atipatechnologies.com
AVAKI Corporation	1216	www.avaki.com
Cambridge University Press	638	us.cambridge.org
Cleanscape Software International	422	www.cleanscape.net
ClusterSolutions (CS) S.A.	1200	www.clustersolutions.com
Compaq Computer Corporation	1005	www.compaq.com/hpc
Cray Inc.	305	www.cray.com
CSC	533	www.csc.com
DataDirect Networks, Inc.	418	www.datadirectnet.com
Dell Computer Corporation	213	www.dell.com
Dolphin Interconnect	113	www.dolphinics.com
Elsevier Science	828	www.elsevier.com
Essential Communications	1116	www.esscom.com
Etnus	733	www.etnus.com
Extreme Networks	961	www.extremenetworks.com
Fakespace Systems, Inc.	1133	www.fakespacesystems.com
The Fortran Company	522	www.fortran.com
Foundry Networks, Inc.	665	www.foundrynetworks.com
Fujitsu	519	www.fujitsu.com
GenomeWeb	1100	www.genomeweb.com
GENROCO, Inc.	1035	www.genroco.com
Hewlett-Packard	719	www.hp.com/go/techservers
High Performance Storage Systems	639	www.hpti.com
Hitachi, Ltd.	919	www.global.hitachi.com
HNF	1033	www.hnf.org
HPC wire	827	www.tgc.com/hpcwire
IBM Corporation	507	www.ibm.com
IEEE Computer Society	Booth Registration/Lobby	www.computer.org
INLINE Corporation	932	www.inlinecorp.com
INRANGE Technologies	1032	www.inrange.com
Instrumental, Inc.	839	www.instrumental.com
Intel Corporation	1139	www.kai.com
Juniper Networks	938	www.juniper.net
Lahey Computer Systems, Inc	967	www.lahey.com
Linux NetworX	205	www.linuxnetworx.com
LinuxLabs	539	www.linuxlabs.com
LSI Logic Storage Systems	555	www.lsilogicstorage.com
Marconi Communications	549	www.marconi.com
Microway, Inc.	317	www.microway.com
The MIT Press	834	mitpress.mit.edu/computerscience
Morgan Kaufmann	833	www.mkp.com
MPI Software Technology, Inc.	541	www.mpi-softtech.com
Myricom, Inc.	219	www.myri.com

NAG (Numerical Algorithms Group)	516	www.nag.com
NEC	905	www.nec.com
NET Source, Inc.	844	www.netsource.cc
Northrop Grumman Information Technology	845	www.logicon.com
Numerical Objects	557	www.nobjects.com
Pallas GmbH	832	www.pallas.com
Parabon Computation, Inc.	1127	www.parabon.com
Paralogic	300	www.plogic.com
Platform Computing Inc.	1027	www.platform.com
The Portland Group, Inc. (PGI)	633	www.pgroup.com
Prometeus GmbH	520	www.prometeus.de/
Quadrics	851	www.quadrics.com
Qwest Communications	851	www.qwest.com
RackSaver, Inc.	926	www.racksaver.com
RAIDZONE Corp.	654	www.consensys.com
Raytheon	627	www.raytheon.com/igs
SC Global Showcase (Access Grid)	R978	www-fp.mcs.anl.gov/scglobal
SC2001 Netcast	569	www.sc2001.org/netcast.htm
Scientific Computing Associates	826	www.LindaSpaces.com
Scientific Computing & Instrumentation	835	www.scimag.com
SCinet 2001	655	scinet.supercomp.org
SGDL Systems Inc.	321	www.sgdl-sys.com
SGI	707	www.sgi.com
SIAM (Society for Industrial and Applied Mathematics)	Booth Registration/ Lobby	www.siam.org
Silicon Logic Engineering, Inc.	930	www.siliconlogic.com
Spirent	658	www.spirentcom.com
StorageTek	527	www.storagetek.com
Sun Microsystems, Inc.	645	www.sun.com/hpc
SysKonnect	323	www.syskonnect.com
TECSys Development, Inc.	1034	www.tditx.com
Teleportec, Inc.	R358	www.teleportec.com
Texas Memory Systems	727	www.superSSD.com
TGS	933	www.tgs.com
TurboGenomics, Inc.	826	www.turbogenomics.com
UniTree Software	1001	www.unitree.com
Veridian	739	www.veridian.com
Veritas Software, Inc	935	www.veritas.com
ViON Corporation	927	www.vion.com
YottaYotta	949	www.yottayotta.com

Research Exhibits

SC2001 offers an exceptional opportunity to learn about the latest research results in high-performance computing and communications. This year's research exhibits include a larger and more varied collection of universities, labs, and centers than at any previous event. The major research centers will present demonstrations and provide opportunities for in-depth discussions with research staff. In keeping with the Beyond Boundaries theme, the research exhibits include both a European Research Village and an Asian Research Village, providing a focus on international research activities.

Jim Pool, Research Exhibits Coordinator
California Institute of Technology

SC2001 Research Exhibit Hours

Monday, November 12, 7 - 9:00pm *GALA OPENING*
Tuesday, November 13, 10:00am - 6:00pm
Wednesday, November 14, 10:00am - 6:00pm
Thursday, November 15, 10:00am - 4:00pm

Click each title for details or click here to view the entire Research Exhibitors list.

Exhibit Institution	Booth	Address	Exhibit Title
Adventure Project (Graduate School of Frontier Sci)	R565	adventure.q.t.u-tokyo.ac.jp	Adventure Project
Albuquerque High Performance Computing Center	R0127	www.mhpcc.edu, www.ahpcc.unm.edu	Today's Discoveries Benefit Huma
Ames Laboratory, Scalable Computing Lab (DOE)	R337	www.scl.ameslab.gov	High Performance Cluster Comput
Arctic Region Supercomputing Center	R101	www.arsc.edu	Arctic Region Supercomputing Ce
Argonne National Laboratory	R352	www.mcs.anl.gov	Tools & Tech for HP & Collaborativ
ASCI DOE Tri-Lab Exhibit	R375	www.asci.doe.gov	ASCI DOE Tri-Lab Exhibit
Asia Pacific Grid (ApGrid) / Electrotechnical Labo	R665	www.apgrid.org	R&D Activities on the Asia Pacific
Boston University	R201	scv.bu.edu	Boston University
Brigham Young University	R1152	www.byu.edu	Brigham Young University
Brookhaven National Laboratory	R749	www.bnl.gov	HP Scientific Computing at Brookh
Caltech Center for Advanced Computing Research	R340	www.cacr.caltech.edu	Caltech Center for Advanced Com
CCSE of Japan Atomic Energy Research Institute	R471	ccse.koma.jaeri.go.jp	Research Activities in CCSE
CEA/DEN	R779	www.cea.fr	NESNEX: Nuclear Energy Simulati
Center for Computational Physics, U of Tsukuba	R0684	www.rccp.tsukuba.ac.jp	Center for Computational Physics,
Center for Supercomputing Research and Development	R508	www.csrd.uiuc.edu	PROMIS Compiler System
CLRC Daresbury Laboratory	R861	www.cse.clrc.ac.uk	Computational Science & Enginee
Cornell Theory Center (CTC)	R1059	www.tc.cornell.edu	Large-scale Windows Computing
Cybermedia Center, Osaka University, JAPAN	R567	www.cmc.osaka-u.ac.jp	Grid-enabled MEG Data Analysis S
Department of Defense HPC Modernization	R309	www.hpcmo.hpc.mil	DOD High Performance Computing
Digital Worlds Institute - University of Florida	R1070	www.digitalworlds.ufl.edu	Dancing Beyond Boundaries
Doshisha University, Afiis Project	R581	www.afiis.doshisha.ac.jp	High Performance Computation of
Embedded High Performance Computing Project	R680		Platform Architectures for Embedd
EPCC: Edinburgh Parallel Computing Centre	R865	www.epcc.ed.ac.uk	EPCC: Edinburgh Parallel Comput
ETH-CSCS	R773	www.cscs.ch	Swiss HPCN Grid
EUROGRID Project	R871	www.eurogrid.org	Applications Testbed for European
European Center For Parallelism Of Barcelona	R765	www.cepba.upc.es	European Center for Parallelism of
George Washington University	R547	upc.gmu.edu	UPC: Unified Parallel C
High Performance Computing Center Stuttgart (HLRS)	R761	www.hlrs.de	The Grid is Not Enough
Indiana University - Purdue University - Universit	R1161	www.indiana.edu	Research@Indiana
INRIA: Institut National de Recherche en Information	R868	www.inria.fr/index.en.html	INRIA: Institut Nat'l de Recherche
Institute of Fluid Science, Tohoku University	R583	www.ifs.tohoku.ac.jp	Advanced Fluid Information Resea
Institute of Statistical Mathematics	R463	www.ism.ac.jp/index-e.html	Special-Purpose Hardwares for Lin
Internet2	R849	www.internet2.edu	Internet2
Japan Marine Science and Tech Center (JAMSTEC)	R475	www.jamstec.go.jp	The Earth Simulator Project
Japan Science and Technology Corp (JST)	R574	www.jst.go.jp	Japan Science and Technology Co
John von Neumann Institute for Computing	R769	www.fz-juelich.de/nic	Making Supercomputers Global
Krell Institute	R855	www.krellinst.org	Computational Science Research a
Lawrence Berkeley National Laboratory	R1171	www.lbl.gov	Cool Tools for the Third Modality
Leibniz Computing Center (Leibniz-Rechenzentrum, L)	R869	www.lrz.de	Leibniz Computing Center (LRZ)
Los Alamos National Laboratory	R451	www.lanl.gov	High Performance Scientific Comp
Maui Supercomputing Center	R1052	www.mauisupercomputer.org	Maui Supercomputing Center
National Aeronautics and Space Administration	R317	www.nasa.gov	National Aeronautics and Space A
National Aerospace Laboratory of Japan	R465	www.nal.go.jp	National Aerospace Laboratory of
Nat'l Center for Data Mining/Nat'l Scalable Cluster Proj.	R443	www.ncdm.uic.edu	DataSpace—An Infrastructure for
Nat'l Center for High Performance Computing, Taiwan	R561	www.nchc.gov.tw	HP Comp & Net in Nat'l Center for
National Computational Science Alliance (Alliance)	R216	alliance.ncsa.uiuc.edu	National Computational Science Al
National Coordination Office for Information Tech.	R551	www.itrd.gov	Federally Funded IT R&D Program
Nat'l Partnership for Adv. Computational Infrastructure	R0206	www.npaci.edu	Nat'l Partnership for Adv. Comp. In

NCAR Scientific Computing Division	R119	www.scd.ucar.edu	The Virtual Earth System
Oak Ridge National Laboratory	R429	www.ornl.gov, www.csm.ornl.gov/SC2001	High Performance Computing at O
Ohio Supercomputer Center	R1046	www.osc.edu	The State of Computing and Beyor
Pacific Northwest National Laboratory	R437	www.pnl.gov	Share the Excitement of Science
Paradyn Project - University of Wisconsin and Univ	R502	www.paradyn.org	The Paradyn Parallel Tools Project
Pittsburgh Supercomputing Center	R301	www.psc.edu	Pittsburgh Supercomputing Center
Real World Computing Partnership	R670	www.rwcp.or.jp	Seamless Parallel and Distributed
Research Org. for Information Science & Technology	R560	www.tokyo.rist.or.jp	Research Org. for Info Science &
RIKEN (The Inst. of Physical and Chemical Research)	R570	www.riken.go.jp/engn/index.html	75 Tflops Special-Purpose Comp.
Saitama University	R661	www.cent.saitama-u.ac.jp/index-e.html	Comp. Sci. and 3D Vis. in Ed. and
Standard Peformance Evaluation Corporation (SPEC)	R1139	www.spec.org	Benchmarking High-Performance
Stanford Linear Accelerator Center and Fermi Nat'l	R1060	www.slac.stanford.edu, www.fnal.gov	Extreme Sci.: Picoseconds & Peta
The Aggregate	R227	aggregate.org	The Aggregate
The MITRE Corporation	R335	www.mitre.org	The MITRE Corporation
Universidade de Sao Paulo	R361	www.lsi.usp.br	High Performance Computing and
University of Houston	R512	www.cs.uh.edu/~chapman	EZ-Grid Resource Broker / Couga
University of Manchester, Manchester Computing	R873	www.man.ac.uk	University of Manchester, Manches
University of Tennessee	R343	icl.cs.utk.edu	University of Tennessee
University of Utah, CHPC	R329	www.chpc.utah.edu	High Performance Computing at th

Poster Exhibits

Posters allow presentation of late-breaking research results in a casual setting, with the chance for in-depth, one-on-one dialogue that can proceed at its own pace and offer the opportunity for more direct feedback to presenters. The 46 posters presented this year were selected from a field of 155 submissions. This year's poster reception will take place on Tuesday, November 13, from 5:00 until 6:30 PM. The location is Lower Lobby "B" in the Denver Convention Complex. For more information contact posters@sc2001.org.

Click here for full Posters Details.

Harvey Wasserman, Posters Exhibits Coordinator
Los Alamos National Laboratory

Exhibitor Forum

The exhibitor forum provides industry exhibitors the opportunity to describe recent company breakthroughs or new technical plans. The presentations, which are noncommercial in nature, will be organized by topic, such as clusters and supercomputers, communications and networking, data storage and management, and software.

Sally Howe, Exhibitor Forum Coordinator
National Coordination Office for Information Technology Research and Development

David Halstead, Exhibitor Forum Coordinator
Ames Laboratory

Click here for the Exhibitor Forum at-a-glance.

©2001 SC2001 | Web Feedback | SC2001 Info
SC2001 is sponsored by the IEEE Computer Society and ACM

HPC (Fun &) Games

CANCELLED

This time honored contest is designed to test the mettle of high-performance computing (HPC) teams. Entries are solicited for demonstrations of virtuosity in high-performance computation. Each entry must document it's approach to solving a well defined problem and describe the hardware and software to be used. Each entrant is given one hour to solve their problem live and describe their computation to the audience. At the conference, a panel judges entries in speed, distance, and style.

SCinet

The SC internet (SCinet) is the collection of networks designed and built annually for the SCxy Conference. SCinet features a commodity Internet services network (ISnet), a high-performance, production-quality exhibit-floor network, and an extremely high-performance experimental network (Xnet).

SCinet is designed and built by a volunteer staff comprised of highly skilled professionals from high-performance computing sites, network equipment vendors, research networks, and telecommunications carriers. Industry vendors donate much of the hardware and software required to build the SCinet infrastructure while telecommunications providers and the National Research and Agency Networks provide the wide area network circuits that allow SCinet to communicate with the Internet and other Agency networks.

Planning begins more than a year in advance of each Conference and culminates the week preceding the show each year. SCinet consists of three logically separate, but inter-connected, networks. They are the experimental network Xnet, the high-performance exhibit-floor network, and the commodity Internet services network that supports the rest of

the Denver Convention Complex. The SCinet exhibit-floor network is a robust, high-performance, production-quality network that Exhibitors, users, and attendees depend on for reliable local-area, wide-area, and commodity network service. This network provides access to high performance Agency networks including Abilene, ATDnet, DREN, ESnet, HSCC, NTON, SuperNet, and vBNS+. In addition, Xnet provides a venue to showcase bleeding-edge technology in which fragility is understood, thus providing vendors and researcher exhibitors an opportunity to demonstrate emerging network gear or capabilities prior to their general commercial availability. This year, Xnet anticipates demonstrating emerging applications that effectively utilize channelized 10 gigabits per second Ethernet and Dense Wave-Division Multiplexed (DWDM) networking. More information on SCinet can be found at . Exhibitors must request connections to the production network using the Exhibitor Connection Request Form, available from the main SCinet web page. All attendees to the SC2001 Conference will also have free access to the commercial Internet via an IEEE 802.11b wireless network that will provide coverage within most of the public areas within the Denver Convention Complex. The wireless network is described more fully at . SCinet will again be hosting the Bandwidth Challenge, designed to measure how well developers utilize high bandwidth, low latency wide area connections. The Bandwidth Challenge is described at http://www.scinet.supercomp.org/2001/bandwidth-challenge.

William Wing, SCinet Chair
Oak Ridge National Laboratory

- **Co-Chairs Xnet:** Dave Koester, Xnet Network Architecture; Chuck Fisher, Network Bandwidth
- **Challenge:** Bill Kramer, Performance Monitoring; Greg Goddard, Network Security; Eli Dart
- **Wireless:** Thomas Hutton, San Diego Supercomputer Center

Xnet

Xnet Mission: To provide a venue for showcasing leading-edge, developmental networking technologies and experimental networking applications.

Xnet (eXtreme Net) is the leading edge, network technology development showcase at SCxy-the International Conference for High-Performance Networking and Computing. Every year, the SCinet staff meets the challenge to design and implement the world's leading state-of-the-art production network. The SCinet exhibit floor network has evolved into a robust, high-performance, production-quality network that exhibitors, users, and attendees depend on for reliable local-area, wide-area, and commodity network service. Consequently, it has become increasingly difficult for SCinet to showcase bleeding-edge, potentially fragile technology. Simultaneously, OEMs have at times been reticent about showcasing bleeding-edge hardware in SCinet, as it became a mission-critical, production network.

Xnet provides the solution to this dichotomy by providing a venue that is by definition bleeding-edge, prestandard, and in which fragility is understood. Xnet thus provides vendors and researcher exhibitors an opportunity to showcase emerging network gear or capabilities, before their general commercial availability. Every year, our challenge within SCinet is to raise the bar for network performance. This is especially true of Xnet.

This year Xnet will feature preproduction 10-Gigabit Ethernet technology in a demonstration of the Distributed Terascale Facility (DTF)-the world's first multisite supercomputing system. In August, the National Science Foundation (NSF) announced a $53-million, three-year award to build and operate a virtual machine room or computing facility. The DTF will be developed by a consortium led by the National Center for Supercomputing Applications (NCSA) in Illinois and the San Diego Supercomputer Center (SDSC) in California. Argonne National Laboratory (ANL) in suburban Chicago and the California Institute of Technology (Caltech) in Pasadena are also participating in the DTF project. The DTF will perform 13.6-trillion calculations per second and store more than 450 trillion bytes of data, with a comprehensive infrastructure called the "TeraGrid" to link computers, visualization systems, and data at the four sites through a 40-billion bits-per-second optical network.

The Xnet DTF demonstration will build a prototype of the larger distributed capability on the SC2001 showfloor. Separate clusters in the four partners' booths will be connected by 10-Gigabit Ethernet and dense wavelength division multiplex (DWDM) technology. As part of the Xnet demonstration of 10 Gigabit Ethernet, the network monitoring team will

investigate the use of commercial network monitoring equipment that subscribes to the current draft standard IEEE 802.3ae. A proposed architecture for the SC2001 Xnet DTF demonstration is provided in the diagram below.

Network Bandwidth Challenge

Continuing the tradition started at SC2000, the SCinet team, in cooperation with Qwest, is sponsoring the SC Network Bandwidth Challenge to challenge the research community to demonstrate how the unique network SCinet creates can be used to for exciting applications at the maximum possible speed. Last year, at SC 2000, two applications broke the Gigabit per second limit, with one sustaining almost 100% of the available bandwidth.

This year the challenge is to propose ideas for meaningful applications that fully use the SCinet network infrastructure and capacity and deliver innovative application value on an OC-48 or higher interconnect. In turn, SCinet facilitates access to the networks and might provide space and equipment for demonstrations. Qwest Communications is again contributing prize(s) for the application(s) that the judges believe make the most effective and/or courageous use of SCinet resources. The primary measure of performance will be the verifiable throughput measured from the contestants booth through the SCinet switches and routers to external connections. SCinet network monitor systems will be used for this measurements. Ten (and maybe more) applications are attempting to both fully utilize (and some claim overwhelm!) the SCinet network infrastructure and deliver innovative application value. Examples of challenging efforts are:

- A multi-gigabit/s transfer of larger imagery data sets, with dynamic interactive remote Terabyte imagery access, and remote access to high-definition motion imagery data sets (HDTV) using GSN-to-ATM interface
- A multi-gigabit/s visualization application drawing data from widely distributed resources
- "Dynamic Right-Sizing" that transparently provides about an order of magnitude more bandwidth than a stock TCP over the WIDE-area network. The Terra Mining Testbed is a globally distributed, wide area data mining testbed
- Demonstrations of these applications will occur during exhibit hours and the awards will be announced at the Awards session.

Network Performance Monitoring

SCinet is again incorporating a network monitoring infrastructure into the design of this year's network.

Each of the wide-area connections will be passively monitored and statistics collected using multiple Adtech AX/4000s provided by Spirent Communications. These statistics will include total aggregate traffic counts on each of the connections and also total instantaneous traffic counts for use in judging this year's high-bandwidth challenge.

NetFlow data will be collected on supported platforms and visualized using FlowScan, a tool developed by Dave Plonka at the University of Wisconsin at Madison.

Active monitoring technology developed by the National Laboratory for Applied Network Research (NLANR) Measurement and Analysis Team (MOAT) (an "AMP monitor") and Advanced Network & Services, Inc. (a "Surveyor monitor") will also be deployed.

Cichlid, a 3-D visualization software toolkit developed by Jeff Brown at NLANR, will be set up to facilitate a real-time visualization of network performance data collected from the SCinet NOC and a map Internet2's Abilene network.

NPACI's Network Weather Service sensor nodes will be placed at strategic locations in the SCinet network to provide network feedback to a variety of Distributed Computing applications. Internet2(R) will provide a "weather map" showing current use of all SCinet external links, based on the technology used for the Abilene NOC weather map, developed by the Abilene NOC at Indiana University.

Finally, as part of the Xnet demonstration of 10 Gigabit Ethernet, the network monitoring team will investigate the use of commercial network monitoring equipment that subscribes to the current draft standard IEEE 802.3ae.

Network Security

The characteristics that define the SCinet production network include high bandwidth, low latency, resiliency, and scalability. SCinet peers with the Internet, agency, and national networks through a series of very high speed connections. To maximize performance across these interfaces, there are no firewalls. The SCinet network is a logical, albeit temporary, extension of the open Internet, and exhibitors and attendees are reminded that, in this potentially hostile environment, security is a collective responsibility.

The SCinet wireless network, available to all attendees at no cost, is particularly vulnerable by its very nature. Wireless networks are open to snooping by anyone within range of an access point. The use of insecure applications such as TELNET, POP or FTP is very strongly discouraged. These applications are subject to compromise because they send passwords to remote hosts in human readable cleartext. Each attendee is responsible for ensuring that their communication sessions be protected in accordance with their security requirements. Attendees are encouraged to protect their sessions through a mechanism such as Secure Shell (SSH), where all communication is encrypted. SSH implementations are widely available for little or no cost and are straightforward to install and use.

SCinet will passively monitor traffic on most external network connections as part of their network monitoring activities. In addition, SCinet has a restricted capability to monitor exhibit floor and external network traffic for evidence of security-related activity including compromise or abuse. However, by no means should this be considered a substitute for safe security practives. Please do your part by being cognizant of network security risks and protecting your systems and sessions.

Wireless

Working with Cisco Systems, SCinet is creating a large 11 Mbps wireless network at the Denver Convention Complex including the exhibit floor, the Education Program area, and other locations covering the entire SC2001 conference area. In addition we plan on supporting wireless networking in the area immediately surrounding the Denver Convention Complex. This wireless network will support the Education Program among other things.

The wireless network is connected to the SCinet commodity network (and the Internet), the high-performance show floor network, and several national Agency networks. There is no connectivity between the wireless network and XNET.

This wireless network is available for use by all conference attendees. This network will utilize standards-based 802.11b network with DHCP service. Attendees with laptops equipped with standards-compliant wireless EtherNet cards, and an operating system which will configure network services as a client of DHCP should have immediate connectivity. A selection of cards and operating systems known to work are listed on the SCinet web page along with links to vendors, drivers, and instructions. SCinet personnel will not be able to provide direct support to attendees who have trouble connecting. All Conference attendees may take advantage of the wireless service. There is no charge for its use. All wireless services are provided on an as-is basis unless otherwise noted.

SCinet hopes to have wireless cards available for purchase at the SC2001 store. SCinet will not be providing wireless cards for individual systems. SCinet does not support setup, configuration and/or diagnosis of individual systems, but will provide links to information about these subjects at the web site.
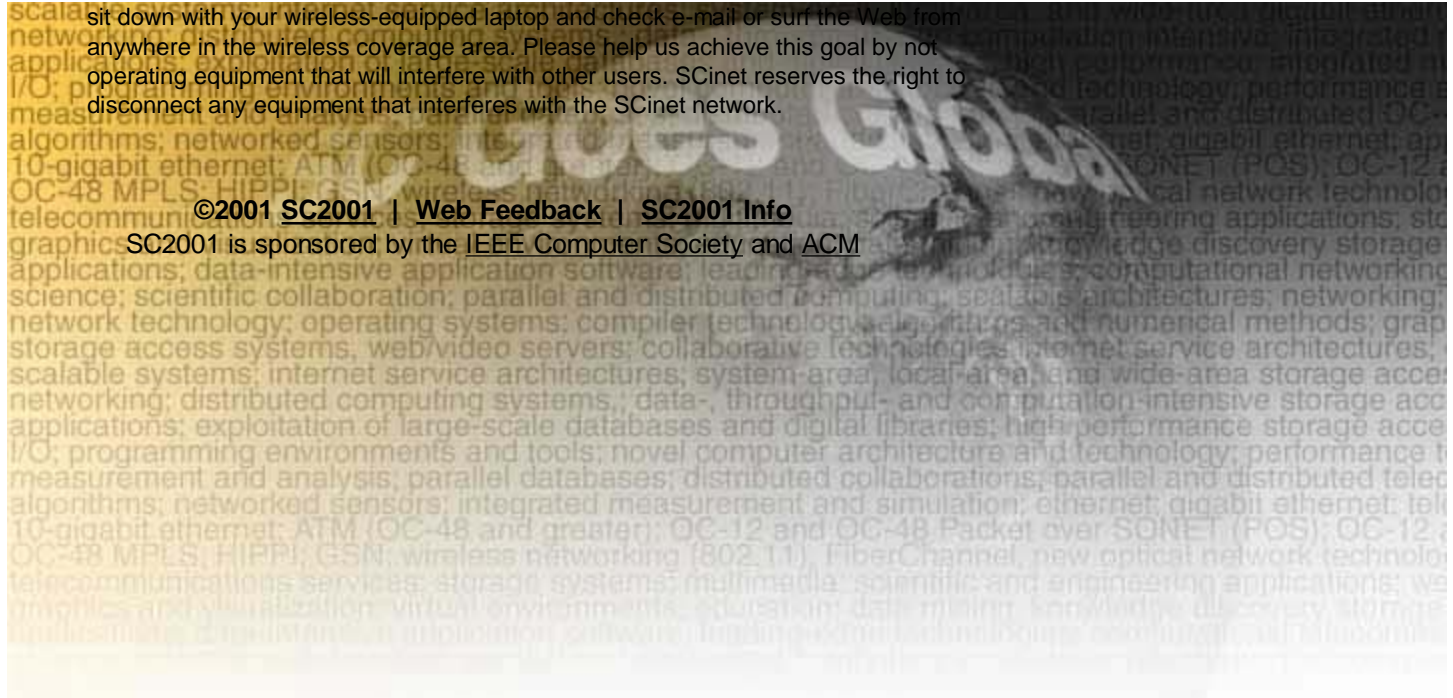
The priority areas supported for wireless are the exhibit areas, education area, convention complex lobby, meeting rooms, and other spaces. If limits are necessary, we will attempt to indicate range and limits with signage. SCinet will monitor the health of the wireless network and maintain this information for exhibitors and attendees. SCinet control of the 2.4GHz frequency radio spectrum: In order to provide as robust a wireless service as possible, SCinet must control the entire 2.4GHz frequency radio spectrum (2.412GHz to 2.482 GHz) within the Denver Convention Complex. This has important implications for both Exhibitors and attendees:

- Exhibitors and attendees may not operate their own wireless EtherNet access points anywhere within the Colorado Convention Center, including within their own booth.
- Exhibitors and attendees may not operate 2.4GHz cordless phones. Exhibitors and attendees may not operate 2.4GHz wireless video or security cameras, or any other equipment transmitting in the 2.4GHz spectrum.
- Successful wireless operation is a community responsibility. SCinet wants you to have a successful, pleasant experience at SC2001. This should include the ability to

sit down with your wireless-equipped laptop and check e-mail or surf the Web from anywhere in the wireless coverage area. Please help us achieve this goal by not operating equipment that will interfere with other users. SCinet reserves the right to disconnect any equipment that interferes with the SCinet network.

SC Global Constellation Sites

The SC Global infrastructure links the Denver Convention Complex with Constellation Sites across the U.S. and worldwide (for example, in Australia, Brazil, and Germany), using Access Grid technology to support multinational and multistate participation in distributed panels, workshops, and BOFs as well as to receive SC2001 technical content. We welcome inquiries from sites interested in participating as SC Global Constellation Sites.

Ian Foster, SC Global Chair
Argonne National Laboratory

For more information about SC Global see:

   • SC Global Web site

Access Grid, Argonne National Laboratory SC2001 Dallas, TX

At the SC2001 conference, join us on the Inaugural Voyage of SC Global—the first global Grid initiative to bring the world to the premiere technical and industrial meeting for high-end networking and computing and computational science, SC2001.

The goal of SC Global is to provide a multi-national and multi-cultural meeting place for communication and discussion of ideas relating to high-end computing and communications and its impacts on science and society.The SC Global event will use Access Grid technology (www.accessgrid.org) and advanced network infrastructure to link the core of SC2001 activities at the Denver Convention Complex (USA) with dozens of SC Global Constellation Sites (sites contributing content to SC Global program) distributed across North America and throughout the world including Australia, Italy, Germany, UK, China, and Japan.

By joining SC Global's Inaugural Voyage, it will be uniquely possible to experience any or all of the following:

- A rich set of panel discussions involving panelists distributed across different geographic sites

- Stimulating, educational workshops led by scholars located in other parts of the world (including local audience involvement where the content is originating)

- Dynamic birds-of-a-feather (BOF) sessions focused on critical research issues (interactive group discussions involving numerous SC Global Constellation sites)

- Selected invited talks by industry and research luminaries.

All the SC Global sessions will exploit an advanced network infrastructure (provided in conjunction with SCinet), along with Access Grid technology (including remote site and local AG Node Operators to facilitate the SC Global sessions), to enable real-time interaction and collaboration among the international speakers, panelists and participants. SC Global Constellation sites have been involved in over eight months of preparation and training including a series of SC Global nanocruises (testing the AG technology and the network infrastructure), an SC Global Production Institute (working on developing collaborative session skills and capabilities), and the SC Global Mega Cruise week (SC Global's version of a "dress rehearsal").

Here's how you can participate in SC Global's Inaugural Voyage at SC2001 from the Denver Convention Complex:

- Visit the SC Global Showcase Node on the Exhibit Floor to get an SC Global Program

- Visit the SC Global website (www.scglobal.org) to view the program and background information on SC Global

- Select any one of three concurrent SC Global sessions and proceed to the appropriate SC Global room (located near the Technical Program rooms)

- Choose one of the exciting featured programs at the SC Global Showcase Node and remain at the booth

Contact Information

SC2001 General Information
http://www.sc2001.org/
info@sc2001.org

SC2001 Conference Chair
Charles Slocomb, Los Alamos National Laboratory

SC2001 Technical Program Chair
Sally Haerer, Oregon State University

SC2001 Conference Infrastructure Chair
Ginger Caldwell, National Center for Atmospheric Research

SC2001 Education Chair
Jeff Huskamp, East Carolina University
http://www.sc2001.org/educatio.htm
education@sc2001.org

SC2001 Exhibit Chairs
Dona Crawford, Lawrence Livermore National Laboratory
David Cooper, Lawrence Livermore National Laboratory
exhibits@sc2001.org

SC2001 Public Relations Chair
David Schwoegler, Lawrence Livermore National Laboratory
newsguy@llnl.gov

SC2001 SC Global Chair
Ian Foster, Argonne National Laboratory
http://www.sc2001.org/scglobal.htm
scglobal@sc2001.org

SC2001 SCinet Chair
William Wing, Oakridge National Laboratory
http://www.sc2001.org/scinet.htm

SC2001 Birds-of-a-Feather Coordinator
Mary Kay Bunde, ETNUS
http://www.sc2001.org/bof.htm
bofs@sc2001.org

SC2001 Exhibitor Forum Coordinator

Sally Howe, National Coordination Office for Computing, Information and Communications
http://www.sc2001.org/forum.htm
forums@sc2001.org

SC2001 Panels Coordinator
Pat Teller, University of Texas, El Paso
http://www.sc2001.org/panel.htm
panels@sc2001.org

SC2001 Technical Papers Coordinator
David Culler, University of California, Berkeley
http://www.sc2001.org/techpapr.htm
techpapers@sc2001.org

SC2001 Tutorials Coordinator
John Grosh, DOD Modernization
http://www.sc2001.org/tutorial.htm
tutorials@sc2001.org

SC2001 Exhibitor Information
http://www.sc2001.org/space.htm
industry@sc2001.org

SC2001 Exhibition Management
Don Collier, DC Expositions, Inc.
One East First Street, Suite 809, Reno, NV 89501
888-980-5488 (Toll Free) or 775-322-5881, (Fax) 755-322-0924
dc@dcexpo.com

SC2001 Conference Chairs and Committees

Conference Chair: Charles Slocomb, Los Alamos National Laboratory

Executive Director: Debby Thompson, Los Alamos National Laboratory
Regional Outreach Coordinator: Gayle Elliott
Conference Office Manager: Christie Salazar, Los Alamos National Laboratory
Committee Web Pages: Ken Ferschweiler, Oregon State University

Conference Vice-Chair: Cherri Pancake, Oregon State University
Conference Deputy-Chair: Roscoe Giles, Boston University
Conference Vice-Chair for Industry: Ty Rabe, Compaq
Finance Chair: Ray Elliott

Registration Coordinator: Heidi Peterson, Lawrence Livermore National Laboratory
Conference Store Coordinator: Gloria Montoya-Rivera, Los Alamos National Laboratory

Technical Program Chair: Sally Haerer, Oregon State University

Technical Papers & Workshops Coordinator: David Culler, UC, Berkeley
Technical Papers Committee Members
Tutorials Coordinator: John Grosh, Department of Defense
Tutorials Committee Members
Awards Coordinator: Horst Simon, NERSC
MasterWorks Coordinator: Barbara Horner-Miller, Arctic Region Supercomputing Center
Invited Speakers Coordinator: Chuck Koebel, National Science Foundation
Invited Panels Coordinator: Pat Teller, University of Texas, El Paso
Proceedings Coordinator: Greg Johnson, San Diego Supercomputer Center
BOFs Coordinator: Mary Kay Bunde, ETNUS
Program/Exhibits Coordination: Rod Oldehoeft, Los Alamos National Laboratory

SC Global Chair: Ian Foster, Argonne National Laboratory
SC Global Vice Chair: Terry Disz, Argonne National Laboratory

SC Global Coordinator: Julie Wulf, Argonne National Laboratory
SC Global/SC2001 Program Liaison: Fede Bassetti, Los Alamos National Laboratory
Constellation Site Representative: Lisa Childers, Argonne National Laboratory

Constellation Site Coordinators:
Barbara Kucera, NCSA
Terry Disz, Argonne National Laboratory
Heather Boyles, Internet2
Linda Winkler, Argonne National Laboratory

International Networking Coordinator: Linda Winkler, Argonne National Laboratory
Show Floor Coordination: LaJoyce Bullock, Argonne National Laboratory; Elaine Lauerman, Internet2
Showcase Node Manager: Barbara Kucera, NCSA
Technical Operations/AG NOC: Bob Olson, Argonne National Laboratory
Networking Monitoring Coordinator: Greg Goddard, University of Florida
Staffing and Volunteer Coordinator: Bruce Loftis, NCSA
Sponsorship: Mary Spada, Argonne National Laboratory
Publicity: Karen Green, NCSA, Mary Spada, Laura Wolf, EVL
Human Factors Coordinator: Lisa Childers, Argonne
Production Manager: Jeffifer Tieg von Hoffman, Boston University
Industrial Partners Liaison: Mary Spada
Education Program Liaison: Scott Lathrop, NCSA
Test Cruise Director: Mary Fritsch, Argonne National Laboratory

Industry and Research Exhibits Committee Chair: Dona Crawford, Lawrence Livermore National Laboratory
Deputy Chair: Dave Cooper, Lawrence Livermore National Laboratory

Research Exhibits Coordinator: Jim Pool, CalTech
Industry Exhibits Coordinator: Virginia To, High Performance Technologies, Inc.
Exhibitors' Forum Coordinators:
   Sally Howe, National Coordination Office for Information Technology Research and Development
   David Halstead, Ames Lab

Proceedings Coordinator: Greg Johnson, University of Texas, Austin
Exhibition Management: Don Collier, DC Expositions, Inc.
Show Management/Special Effects: Darryl Monahan, Freeman Decorating
Poster Exhibits Coordinator: Harvey Wasserman, Los Alamos National Laboratory
Security Coordinator: Libby Bogard, Hewlett-Packard
Education Committee Chair: Jeff Huskamp, East Carolina University

Publications Coordinator: Becky Verasteui, Oak Ridge National Laboratory
Systems Integration Coordinator: Barbara Helland, Krell Institute
Tech Coordinator: Richard Bach, Merck
Program Co-Chair: Lisa Bievenue, NCSA
Program Co-Chair: Edna Gentry, University of Alabama in Huntsville
Education Coordinator: Cathie Burke Dager, Stanford Linear Accelerator Center
Education Outreach Coordinator: Bruce Loftis, NCSA
Education Outreach Co-Chair: Cathie Dager, Stanford Linear Accelerator Center
Computational Science Education Advisor: Ken Flurchick, Ohio Supercomputer Center
Computational Science Education Advisor: Robert Gotwals, The Shodor Education Foundation, Inc.
Computational Science Education Advisor: Robert Panoff, The Shodor Education Foundation, Inc.
Education Coordinator: Ernest G. Marshburn, East Carolina University
Education Coordinator: Helen Parke, East Carolina University
Education Coordinator: Ann Redelfs, NPACI/San Diego Supercomputer Center
Education Coordinator: Betsy Schermerhorn
Education Coordinator: Sandra W. Huskamp, East Carolina University
Advisory Committee: Norma Boakes, Jason Painter, Kris Stewart, Paul Tisdel, Charles Swanson
Staff: Wendy Creasey, Peyton Crump, Jennifer Farris, Kevin Johnson, Trevor Burnette

Networking Committee Chair: Bill Wing, Oak Ridge National Laboratory
Deputy Chair: Jim Rogers, Computer Sciences Corporation

Hardware Architecture: Chuck Fisher, Oak Ridge National Laboratory
Fiber Infrastructure: Jeff Mauth, Pacific Northwest National Laboratory
Software Monitoring: Martin Swany, University of Tennessee/Knoxville
Network Security: Eli Dart, NERSC
Routing Architecture: Bill Nickless, Argonne
Wireless: Tim Toole, Sandia National Laboratory
Xnet: David Koester, MITRE
Management Software: Jon Dugan, NCSA
Bandwidth Challenge: Bill Kramer, Lawrence Berkeley Lab
Hardware Monitoring: Greg Goddard, University of Florida
Denver Fiber: Kevin Oberman,
WAN Connectivity: Steve Corbato, Internet2
Denver POP Connections: Debbie Montano, Qwest Communications
SC Global Connectivity: Linda Winkler, Argonne National Laboratory

Conference Infrastructure Committee Chair: Ginger Caldwell, NCAR
Deputy-Chair: Ginny Clark, Sandia National Laboratory/Albuquerque

Conference Arrangements: Mary Amiot, Northstar Events Management
Catering: Jan Hull, Los Alamos Technical Associates, Inc.
Housing Coordinator: Dolores Roybal, Los Alamos National Laboratory
Signage: Barry Hess, Sandia National Laboratory/California
A/V: Jim Mahoney, Honeywell FM&T
Computers: Philip Papadopoulos, San Diego Supercomputer Center
Email Coordinator: Peter Wilson, Sandia National Laboratories, Albuquerque
Student Volunteers: Eleanor Schroeder, NAVO MSRC

Public Relations Committee Chair: David Schwoegler, Lawrence Livermore National Laboratory
Advisory Vice-Chair: Ann Redelfs, NPACI/San Diego Supercomputer Center

Web Communications: Greg Wood, Internet2
Webmaster/Web Design/Graphic Design: Zizi Kolshorn, Moose Pond Arts
Media Room: Jon Basher, Lawrence Berkeley Laboratory
Publications: Alice Chapman, Los Alamos National Laboratory
SC2001 Booth: Barbara Kucera, National Center for Supercomputing Applications
Publicity: Betsy Riley, Oak Ridge National Laboratory
Graphic Designer: Mo Viele, Mo Viele, Inc.
Administrative Support: Ruth Camara, Lawrence Livermore National Laboratory

ACM Society Liaison: Alisa Rivkin
IEEE Liason: Mary Kate Rada

SC2001 Acknowledgements

Sponsors

The IEEE Computer Society is your resource for information on computing. Celebrating its 55th anniversary in 2001, it is the oldest and largest association of computer professionals in the world. It offers over 100,000 members a comprehensive program of publications, meetings, and technical and educational activities, fostering an active exchange of information, ideas, and innovation. The society is the world's leading publisher of technical material in the computing field. Headquartered in Washington, DC, the society serves its members from offices in Los Alamitos, CA; Tokyo, Japan; and Brussels, Belgium. The society is the largest technical society within the Institute of Electrical and Electronics Engineers (IEEE). For more information, please contact:

IEEE Computer Society
Membership Services
10662 Los Vaqueros Circle
Los Alamitos, CA 90720-1264
Tel: 1 800 272 6657 (USA and Canada)
Tel: +1 714 821 8380 (Worldwide)
Fax: +1 714 821 4010
Email: membership@computer.org

The Association for Computing Machinery (ACM), the First Society in Computing, is a major force in advancing the skills and knowledge of information technology professionals and students throughout the world. ACM serves as an umbrella organization offering its 90,000 members a variety of forums in order to fulfill its members' needs--the delivery of cutting-edge technical information, the transfer of ideas from theory to practice, and opportunities for information exchange. Providing high-quality products and services-- world-class journals and magazines, dynamic special interest groups, numerous "main event" conferences, tutorials, workshops, local special interest groups and chapters, and electronic forums--ACM is the resource for lifelong learning in the rapidly changing field of information technology. *For membership information, please contact:*

ACM Member Services Department
1515 Broadway
New York, NY 10036, USA
Tel: 1 800 342 6626 (USA and Canada)
Tel: +1 212 626 0500 (metro NY and outside the USA)
Fax: +1 212 944 1318
Email: acmhelp@acm.org

Special Interest Group on Computer Architecture (SIGARCH) serves a unique

community of computer professionals working on the forefront of computer design in both industry and academia. It is ACM's primary forum for interchange of ideas about tomorrow's hardware and its interactions with compilers and operating systems. The SIG's focus area is the architecture of computer systems, including all aspects of their organization, structure, design, and engineering. Special interest areas include: physical structure of computer systems, organization of processors (superscalar, multithreaded), memory hierarchies, disks and I/O organizations, control and sequencing (dynamic and static scheduling, speculative execution), shared-memory multiprocessors, multicomputers, distributed shared memory systems. URL: www.acm.org/sigarch/

Student Volunteer Information

Undergraduate and graduate student volunteers are needed for SC2001. Students help with the administration of the conference in exchange for free conference registration, housing, most meals, conference goodies, and more!

A student volunteer usually work 20-25 hours during the conference. You interact with conference organizers and presenters, and have the opportunity to meet other students from all over the world. A student volunteer see the latest in high-performance networking and computing technology. You meet leading researchers from around the world while greatly contributing to the success of this annual event. No special skills or experience is necessary for most of the volunteer positions.

Interested in participating in SC2001 as a student volunteer? We can promise you a busy work week, but one that will also be interesting and rewarding. Read the information below, and then consider if you want to **register** to become an SC2001 student volunteer!

So, what is an SC2001?

SC2001 is the current event of an annual conference series that focuses on the development and application of high-performance computing and communications technologies. This year's conference will be Sunday, November 11 thru Friday, November 16, 2001 in Denver.

What is a student volunteer?

A student volunteer helps out with the administration of the conference in exchange for free conference registration, housing, most meals, conference goodies, and more. We ask for a total of 20-25 hours of work. You will interact with the conference organizers and presenters, and meet other students from all over the world. It's an opportunity to get involved with a great conference and reduce expenses at the same time. It's also not a bad item to have on your resume.

Student volunteers have the opportunity to see and discuss the latest high-performance networking and computing technology and meet leading researchers from around the world while contributing to the success of this annual event. No special skills or experience are necessary for most volunteer positions; however, some familiarity with computing platforms, audio/visual aids, and office equipment is helpful.

Who is eligible to be a student volunteer?

Any full time college student may become a student volunteer at SC2001. Both undergraduate and graduate students are welcome. You will need a recommendation from one of your professors.

High school students are not encouraged to apply, but local (Denver area) high school students might be considered under special (as yet undefined) circumstances.

When are student volunteers needed?

Official conference activities will start on Sunday 11 November and last through Friday morning 16 November. This is when most of the student volunteers will be needed.

You will need to arrive at the conference on Saturday afternoon 10 November. We will have our first group meeting Saturday evening.

Conference setup and especially deployment of the conference network takes place the week before the conference begins. A few students with an interest in networking could volunteer for these network deployment activities.

What do I get by being a student volunteer?

The conference provides students with:

- Registration to the conference including technical sessions and keynote addresses

- Access to the Exhibit floor (and enough time to see the exhibits)

- Hotel accommodations at one of the conference hotels

- Conference proceedings on CD-Rom

- Admission to special events on Monday and Thursday evenings

- Meals during conference hours

- New wardrobe (cool vest)

What don't I get as a student volunteer?

There are some important considerations for you to be aware of.

- You must have a faculty member recommend you.

- We do not have a travel budget for student volunteers. You or your college will have to pay travel costs.

- There are a few meals that are not provided (Saturday, Sunday, Tuesday, and Wednesday dinner, for example).

What kinds of work will I do as a volunteer?

We use students to distribute and collect evaluation forms in each of the tutorials and technical sessions. You might assist speakers with handouts or A/V equipment. You might help in registration. You might supervise/assist in the e-mail room. You might help with media relations. You might be working with the SCInet group in helping to keep the network up and running. And SCGlobal has already requested help from student volunteers!

Hmmm...doesn't sound like much fun. Why would I want to do this?

In general, you are only committed to 20-25 hours of volunteer duties. The rest of the time you can attend the technical sessions. The real fun is cruising the exhibit floor where hardware and software vendors and many research institutions all have very interesting exhibits and demonstrations. And you can schmooze with thousands of people in the

high-performance computing and communications community. Some of them might be interested in hiring you in a year or two.

Do I have a say in what work I do as a volunteer?

You will be asked for your preference - certain areas need student volunteers who will be committed to work with them the whole time. Other than that, we will do what we can. There are often fewer volunteers than tasks. Unanticipated tasks can and usually pop up all the time. If you have special skills, we want to know so that we can place you appropriately.

Do I have to be there for the whole conference to be a volunteer?

No. We realize that other commitments (like school) exist. We hope that students local to the Denver area will be able to be flexible. You will need to be able to devote enough time to work 20-25 hours during the conference.

Where will I stay during the conference?

Rooms will be available at each of the conference hotels at no cost to student volunteers. Assignments will be made as we get closer to the conference.

The rooms are all double occupancy. You are encouraged to apply with a classmate (of a similar gender) and plan to share a room.

Are there any students with special skills or other characteristics that you encourage to apply?

Glad you asked!

- Students with an interest in networking and who can help the week before the conference are encouraged to apply.

- We need students who can speak Japanese or Korean to assist at registration.

- This year (as in previous years) the conference is focusing on diversifying the student volunteer population. So, students from under-represented groups are especially encouraged to apply— preferably, two or more from one institution.

- International students are also encouraged to apply.

Wow! How do I register?

Register on the **registration page**.

You will need to provide basic information about yourself and why you want to attend SC2001 as a student volunteer. And you need to provide the name and e-address of a professor who will recommend you.

When will I find out if you have selected me?

The registration pages will stay open until Friday, September 7. We hope to have decisions made and volunteers notified within a week following the close of registration.

Will I have any other questions?

Possibly. If you do, you may contact Eleanor Schroeder who coordinates the Student Volunteer Committee. She (and the rest of the Student Volunteer Committee) can be reached at students@sc2001.org

SC2001 Netcast

SC2001 will use the unique capabilites of SCinet 2001 to provide live, high-quality audio and video netcasts of select presentations from the Technical Program, SC Global, as well as every keynote and plenary presentations. The SC2001 netcast program will also include select industry and research demonstrations from the exhibition hall.

The complete SC2001 netcast program will be available in several formats, including Real and IPTV. Also, SC2001 will again suport a robotic camera to allows viewers to pan the exhibit hall and zoom in on exhibit floor booths.

In an effort to help solve any problems viewers may encounter, we are providing a virtual netcast help desk. All viewers are encouraged to provide feedback on the quality, scope and effectiveness of the SC2001 netcast.

A complete netcast program, instructions for accessing the netcast, information about how to configure your computer to view the netcasts, links to free downloadable player software, and sample video clips to test your configuration, will be available shortly.

For more information, contact: netcast@sc2001.org