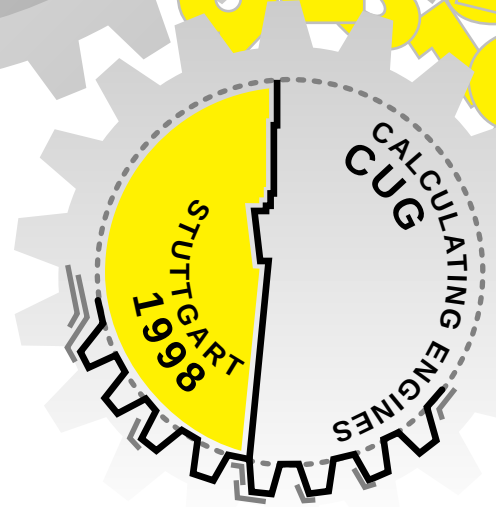
40th Cray User Group Conference



June 15–19, 1998

Preliminary Program

Stuttgart, Germany

Welcome

Dear CUG members and friends,

It is with great pleasure that we invite you to attend the 40th Cray User Group Conference in Stuttgart, Germany; June 15-19, 1998. CUG 98 will provide you with the opportunity to hear the latest information about what's "hot" in High Performance Computing and Communication on SGI and Cray systems. debis Systemhaus, the Computer Center of the University of Stuttgart (RUS) and SGI Germany are pleased to jointly host this conference. The conference site, Kultur und Kongresszentrum Liederhalle (KKL), is nicely located in downtown Stuttgart within walking distance of many attractive places.

Our theme, "Calculating Engines," spans the days of Wilhelm Schickard who in 1623 designed in nearby Tübingen the first mechanical calculating engine (on display at the conference) through the famous Cray-2 at RUS, first outside the US, to today's High-Performance Computing Center, jointly operated by RUS and Daimler-Benz InterServices (debis) AG, the services company of the Daimler-Benz Group.

Come to CUG 98 and meet many people with interests similar to yours. Visit beautiful Baden-Württemberg in the South of Germany in the early summertime. Stroll through the city of Stuttgart, the capital of Baden-Württemberg, surrounded by more hills than the seven of Rome, where you will find interesting and beautiful museums, theaters, and estates to visit—and have the chance to do some shopping in a modern city with exciting shops. Take a tour to the famous old university towns of Heidelberg and Tübingen not far away. See Lake Constance and the Black Forest. Drive the Baroque Route of the Upper Swabia. Visit the birthplaces of Schiller, Hegel, Mörike, Daimler, or Bosch to name only a few famous persons from our region. Throughout your stay and travels, you will certainly enjoy our regional cuisine, in addition to that inspired by our French neighbors. You will find our famous wines to be a pleasure. Come see and feel the old culture of Europe.

RUS

debis Systemhaus

To make the most of your stay with us, we have prepared this brochure which provides information about:

- *Conference program*
- *Conference registration*
- *Conference hotels and reservation*
- *Tourist information as well as prepared tours*

To register for the conference and for the fastest service, please complete the electronic registration form at www.cug.org. If the electronic form is not available or if you prefer using hard copy, use the registration form at the back of this booklet. Please note the following deadlines:

- *Early conference registration* — *April 20, 1998*
- *Pre-registration deadline* — *May 20, 1998*
- *Hotel registration* — *April 20, 1998*
- *Cancellation with full refund* — *May 20, 1998*

The conference promises to be a memorable event, so plan to join us for CUG 98 and don't forget to check the CUG home page (www.cug.org) frequently to get the latest news.

We do look forward to welcoming you in June.

Grüß Gott! in Stuttgart, the site of "Calculating Engines"!

Prof. Dr.-Ing. Roland Rühle
Director
Computer Center University of Stuttgart (RUS)

Karl-Heinz Streibich
Member of the Board
debis Systemhaus GmbH

Dipl.-Ing. Walter Wehinger
RUS
Local Arrangements Chair

Message from Sam Milosevich, CUG Vice-President and from the CUG Program Committee

To the members of CUG:

Welcome! You are invited to the 40th Cray Users Group meeting in Stuttgart from June 15th to 19th. This is your best chance in 1998 to exchange professional information and enjoy personal interactions with your fellow SGI/Cray Research supercomputing users.

You must come to the fabled capital of Baden-Württemberg, nestled in the south of Germany, and discover how CUG—your SGI/Cray user forum for high performance communications and computing—can give you up-to-the-minute information and insight for that competitive edge you need.

Please take a look at the preliminary copy of the technical program in the following pages. Here, you will find a wealth of great opportunities on the CUG theme of "Calculating Engines"—from the SGI/Cray kind during the day to the Mercedes-Benz kind for our traditional conference "CUG Night Out" event.

The CUG Program Committee has assembled for you a diverse array of detail-packed presentations in Tutorials, Keynote and General Sessions, Special Interest Technical presentations, and spontaneous Birds of a Feather (BOF) discussions.

- *Tutorial Sessions on Monday morning—available to you at no additional charge—are a great opportunity for you to update your technical skills with the help of selected technical experts from SGI/ Cray Research and CUG sites.*

- *The Welcome and Keynote Session, Monday afternoon, will be the Initial Program Load of "Calculating Engines" for CUG in Stuttgart, hosted by the Computer Center of the University of Stuttgart (RUS) and by Daimler-Benz InterServices (debis) AG.*

- *Parallel Technical Sessions each day will give you the opportunity to focus on the specific knowledge domains of the Special Interest Groups (SIGs). Presentations in these sessions have been reviewed and selected by the SIG chairpersons.*

- *Birds of a Feather (BOF) Sessions, the most dynamic aspect of a CUG conference, are scheduled as needed, and notices of BOF meetings will be posted near the Message Board. You are welcome to organize a BOF session at the conference.*

- *Formal receptions and informal luncheons are among the countless occasions you will have to exchange information with your colleagues from other CUG sites and to collaborate with representatives from SGI/Cray Research.*

You can see how the Stuttgart CUG offers something for everyone during an exciting, educational, and entertaining week of "Calculating Engines."

We invite you to register now for CUG—your SGI/Cray HPCC users forum!

CRAY USER GROUP INCORPORATED

Dr. Sam Milosevich
CUG Vice-President and Program Chair
Eli Lilly and Company

Program Notes

Contents

Special Interest Forums

The Special Interest Groups (SIGs) hold meetings that are open to all interested CUG attendees. Depending on the SIG, these meetings take place on Monday or Thursday. They provide a forum to discuss the future direction of the SIG, important issues, and talks of special interest. You are encouraged to attend any of these open meetings.

Program Committee Meeting

The Program Committee needs your ideas! Come to the Open Program Committee meeting on Thursday to hear about the next CUG conference and to share your suggestions of how to make each CUG the best one to date. All conference attendees are invited and encouraged to attend this open meeting. The CUG Conference Program is the net result of the combined efforts of all interested CUG sites. Come to the Program Committee meeting and make your unique contribution to the next CUG conference!

Video Theater

Supercomputers generate data that, via scientific visualization, can be transformed into pictures that provide a way for scientists to understand the information more fully and quickly. Although the primary purpose of visualization is to facilitate the discovery process, scientists are increasingly coming to rely on it also to present their research conclusions. This Friday morning session showcases the latest in scientific/engineering visualization.

Conference Program Updates

We anticipate that there may be continuing changes to this Program schedule. You should plan to check the Bulletin Boards on site at CUG each day for schedule changes. Thank you for your patience and cooperation.

AM Monday, June 15, 1998

Room A

Tutorial I

8:30 UNICOS/IRIX Differences in DMF
Paul Ernst, SGI/Cray

Room B

Tutorial II

8:30 Scheduling and Configuration for Origin 2000
Jim Harrell, SGI/Cray

Room C

Tutorial III

8:30 TBA

Room D

10:30–11:00 Break

Tutorial IV

11:00 Contemporary Issues in Network Security
Jay McCauley, SGI

Tutorial V

11:00 Performance Optimization for the Origin 2000
Jeff Brooks, SGI/Cray

Tutorial VI

11:00 Mathematical Libraries
Bill Harrod, SGI/Cray

Tutorial VII

11:00 Visualization: from Theory To Practice
L. Eric Greenwade, INEEL

12:30–2:00 Newcomers Luncheon

TBA

I General Session

Chair: Walter Wehinger, RUS

2:00 Welcome —University of Stuttgart

2:20 Keynote Address—debis

3:05 CUG Report
Gary Jensen, CUG President, UIUCNCSA
Sam Milosevich, CUG Vice President, ELILILLY

3:30–4:00 Break

TBA	TBA	TBA	TBA
2A Open Meetings	**2B** Open Meetings	**2C** Open Meetings	**2D** Open Meetings

4:00–6:00 Please plan to attend the **Open Meetings** to discuss topics of interest to each Special Interest Group. Check the Final Program for details.

SGI/Cray Research Reception 7:00 p.m.–10:00 p.m.

TBA

3A The Engine's Core: Operating Systems

Chair: Ingeborg Weidl, MPG

9:00 PVP UNICOS Status and Update
Patti Langer, SGI/CRAY

9:30 T3E and UNICOS/mk Status and Update, *Jim Grindle, SGI/CRAY*

10:00 Advancing with UNICOS Toward IRIX
Barry Sharp, BCS

TBA

3B Performance and Evaluation

Chair: Jeffery A. Kuehn, NCAR

9:00 Parallel Job Performance in a Time Sharing Environment
Dave McWilliams, UIUCNCSA

9:30 Cray T90 versus Tera MTA
Jay Boisseau, SDSC

10:00 Performance Co-Pilot and Large Systems Performance
Ken McDonell, SGI/Cray

TBA

3C Operating Heterogeneous Sites

Chair: Mike Brown, EPCC

9:00 SGI/Cray Monitoring Tools
Randy Lambertus, SGI/Cray

9:30 Industry Directions in Storage
Mike Anderson, SGI/Cray

10:00 (cont.)

10:30–11:00 Break

TBA

4 General Session

Chair: Barbara Horner-Miller, ARSC

11:00 SGI/Cray Research Corporate Vision
Bob Ewald, COO, SGI introducing Rick Belluzzo, CEO, SGI

11:30 SGI/Cray Research Corporate Operations Report
Irene Qualters, President, Cray Research

12:30–2:00 Lunch

TBA

5A IRIX: Origin Software Road Maps

Chair: Nicholas Cardo, SS-SSD

2:00 IRIX on High End Origins: Plans & Status
Jim Harrell, SGI/Cray

2:30 Update of Cluster Software for Origin and Unicos, *Daryl Coulthart, SGI/Cray*

3:00 Update of System Management Software for Large Origin Systems
Daryl Coulthart, SGI/Cray

TBA

5B Exploiting Parallelism

Chair: Richard Shaginaw, Bristol-Myers Squibb

2:00 OpenMP Programming Model
Ramesh Menon, SGI/Cray

2:30 OpenMP: a Multitasking and Autotasking Perspective, *Neal Gaarder, SGI/Cray*

3:00 Expressing Fine-Grained Parallelism Using Fortran Bindings to Posix Threads, *Henry Gabb, Army WES*

TBA

5C User Services

Chair: Denise Brown, ARL

2:00 Recycling Instructor-led Training on the WWW, *Leslie Southern, OSC*

2:30 Design Your Own Webzine: A Practical Guide, *Lynda Lester, NCAR*

3:00 (cont.)

3:30–4:00 Break

TBA

6A GigaRings, Fill-ups & Tune-ups

Chair: Hartmut Fichtel, DKRZ

4:00 GigaRing Mass Storage Update
Michael Langer, SGI/Cray

4:30 Performance Tips for GigaRing Disk IO
Kent Koeninger, SGI/Cray

5:00 Cray Data Migration Facility & Tape Management Facility Update
Neil Bannister, SGI/Cray

TBA

6B Programming Environments and Models

Chair: Hans-Hermann Frese, ZIB

4:00 Programming Environment Status and Update, *Sylvia Crain, SGI/Cray*

4:30 IRIX Programming Tools Update
Bill Cullen, SGI/Cray

5:00 Cray Product Installation and Configuration, *Scott Grabow, SGI/Cray*

TBA

6C SGI/Cray Operations Tools and Storage Technologies

Chair: Mike Brown, EPCC

4:00 Operations at USARL
Albert G. Edwards IV, USARL

4:30 Monitoring at NCSA
Tom Roney, NCSA

5:00 A Common Operating Environment
Bill Middlecamp, SGI/Cray

TBA

7A Networking the Engines

Chair: Hans Mandt, Boeing

9:00 Scalability and Performance of Distributed I/O on Massively Parallel Processors, *Peter W. Haas, RUS*

9:30 The UNICORE Project: Uniform Access to Supercomputing over the Web
Jim Almond, ECMWF England

10:00 Cray Networking Update
Michael Langer, SGI/Cray

TBA

7B Parallel and Distributed Computing

Chair: Hans-Hermann Frese, ZIB

9:00 MPI Regression Testing and Migration to Origin 2000, *Terry Nelson, SS-SSD*

9:30 Distributed Supercomputing Services in a Heterogeneous Environment
Peter Morreale, NCAR

10:00 High Performance Fortran for the T3E and Origin
Douglas Miles, Portland Group

TBA

7C Visualization

Chair: L. Eric Greenwade, INEEL

9:00 Visualization of Astrophysical Data with AVS/Express, *Jean Favre, ETHZ*

9:30 Interactive Direct Volume Rendering on the O2K, *John Clyne, NCAR*

10:00 VRML for Visualization
Jim Johnson, SGI/Cray

10:30–11:00 Break

TBA

8 General Session

Chair: Eric Greenwade, INEEL

11:00 CUG Elections

11:40 Parallel Numerical Simulations of Environmental Phenomena
Prof. Dr. rer. nat. Gabriel Wittum, Director, Institute for Computer Applications, University of Stuttgart

12:25 CUG Election Results

12:30–2:00 Lunch

TBA

9A High Speed Data!

Chair: Robert Silvia, NCSC

2:00 High Performance Network Backup & Restore with HYPERtape
Aindrias Wall, MultiStream Systems Inc.

2:30 Functional Comparison of DMF and HPSS, *Gerhard Rentschler, RUS*

3:00 TBA

TBA

9B Powering Science

Chair: Richard Shaginaw, Bristol-Myers Squibb

2:00 Material Science on Parallel Computers (T3E/900), *Andrew Canning, NERSC*

2:30 Clustering T3Es for Metacomputing Applications, *Michael Resch, HLRS*

3:00 Synchronization Using Cray T3E Virtual Shared Memory
Miltos Grammatikakis, Juelich

TBA

9C SGI/Cray Service Plans and Q & A Panel

Chair: Dan Drobnis, SDSC

2:00 SGI/Cray Service Report
Bob Brooks, SGI/Cray

2:30 SGI/Cray Q&A Panel
Moderator: Charlie Clark, SGI/Cray

3:00 (cont.)

3:30–4:00 Break

10A IRIX: The Long Road Ahead

Chair: Nicholas Cardo, SS-SSD

4:00 Cellular IRIX: Plans & Status
Gabriel Broner, SGI/Cray

4:30 The Rebirth of DMF on IRIX
Alan Powers, NAS

10B Performance and Evaluation

Chair: Michael Resch, RUS

4:00 High-Performance I/O on Cray T3E
Ulrich Detert, KFA

4:30 Performance of Optimized Fortran 90 and HPF Codes, *Jay Boisseau, SDSC*

10C User Services

Chair: Barbara Horner-Miller

4:00 How CUG Members Support Their Users *Barbara Horner-Miller, ARSC*

4:30 (cont.)

CUG Night Out, 7:00 p.m.

TBA

IIA The Power of the Engine: Users and the O/S

Chair: Terry Jones, Northrop Grumman

9:00 The Age-Old Question of How to Balance Batch and Interactive
Barry Sharp, BCS

9:30 MISER: User Level Job Scheduler
Ben Fathi, SGI

10:00 Serving a Demanding Client While Short on Resources, *Manfred Stolle, ZIB*

TBA

IIB Applications and Algorithms

Chair: Richard Shaginaw, Bristol-Myers Squibb

9:00 Mathematical Methods for Mining in Massive Data Sets
Helene E. Kulsrud, CCR-P/IDA

9:30 (cont.)

10:00 Application Roadmap
Greg Clifford, SGI/Cray

TBA

IIC GigaRing Operations

Chair: Mike Brown, EPCC

9:00 GigaRing Configuring
Michael Langer, SGI/Cray

9:30 GigaRing Systems Monitoring
Birgit Naun, Thomas Plaga, KFA; Ralph Krotz, SGI/Cray

10:00 Supercomputing and Applications in German Research and Industry
L. Fred Geiger, HLRS

10:30–11:00 Break

TBA

I2 General Session

Chair:

11:00 SGI/Cray Service Report
Ken Coleman, SGI

11:30 SGI/Cray Joint Software Report
Mike Booth, SGI, Denise Gibson, SGI

12:30–2:00 Lunch

TBA

I3A Hauling Big Data

Chair: Hartmut Fichtel, DKRZ

2:00 Mass Storage at the NCSA: DMF and Convex UniTree
Michelle Butler, NCSA

2:30 Towards Petabytes of High Performance Storage at Los Alamos
Gary Lee, LANL

3:00 Storage and Data Management—Big Data Solutions
Ken Hibbard, SGI/Cray

TBA

I3B Secure & Controlled Computing Engines

Chair: Bonnie Hall, LANL

2:00 Securing the User's Work Environment
Nick Cardo, SS-SSD

2:30 The State of Security for UNICOS & IRIX, *Jay McCauley, SGI/Cray*

3:00 IRIX Accounting Limits and UDB Functionality, *Diane Wengelski, SGI/Cray*

TBA

I3C User Services

Chair: Leslie Southern, OSC

2:00 NPACI User Services
Jay Boisseau, SDSC

2:30 Applying for Cray Accounts via the WWW, *Gregory R. McArthur, NCAR*

3:00 Pushing/Dragging Users
Guy Robinson, ARSC

3:30–4:00 Break

TBA

I4A Open Meetings

TBA

I4B Open Meetings

TBA

I4C Open Meetings

4:00–5:30 Please plan to attend the **Open Meetings** to discuss topics of interest to each Special Interest Group.

6:00 Also plan to attend the **Program Steering Committee Meeting** and help us prepare the program for our next conference.

Check the Final Program for details.

TBA

I5A IRIX: From Plans to Reality

Chair: Nick Cardo, SS-SSD

9:00 Getting It All Together
Cheryl Wampler, LANL

9:30 Integrating an Origin2000 into a Cray Data Center, *Chuck Keagle, BCS*

10:00 Getting the Best Mileage out of Your Origin System, *Jeff McDonald, SGI*

TBA

I5B Applications and Algorithms

Chair: Richard Shaginaw, Bristol-Myers Squibb

9:00 XVM–Extended Volume Management
Colin Ngam, SGI/Cray

9:30 The Good, the Bad, and the Ugly Aspects of Installing New OS Releases
Barry Sharp, BCS

10:00 Origin Craylink Partitioning
Steve Whitney, SGI/Cray

TBA

I5C Visualization

Chair: L. Eric Greenwade, INEEL

9:00 CUG Video Theatre

9:30 (cont.)

10:00 Visualization of 3 Dimensional Material Science Applications
L. Eric Greenwade, INEEL

10:30–11:00 Break

TBA

I6 General Session

Chair: CUG Vice-President

11:00 CUG SIG Reports: *CUG Vice-President*

11:10 Parallel and Distributed Development and Simulation of Atmospheric Models
V. Mastrangelo, I. Mehilli, CNAM-Université Paris 6
F. Schmidt, M. Weigele, J. Kaltenbach, A. Grohmann, R. Kopetzky, IKE and GKPVS, University of Stuttgart

11:40 SGI/Cray Hardware Report and Hardware Futures
Steve Oberlin, SGI

12:40 CUG Next Steps: CUG 99 in Minneapolis, MN
John Sell, MSC

12:50 Closing Remarks *CUG President*

1:00 *End*

Abstracts

Monday June 15, 1998

Tutorial I

8:30

UNICOS/IRIX Differences in DMF

Paul Ernst, SIG/Cray

This tutorial presents the differences between the UNICOS and IRIX implementations of the Data Migration Facility. Topics covered will include feature differences, installation and configuration changes, DMF tape interface information (TMF and OpenVault), and conversion assistance for sites considering changing platforms from UNICOS to IRIX.

Tutorial II

8:30

Scheduling and Configuration for Origin 2000

Jim Harrell, SGI/Cray

This talk will provide an understanding of large (64 processor and above) Origin configuration and tuning. The basics of Origin configuration and tuning will be explained. SGI/Cray's understanding and experience running large Origins will be used to provide guidance for customers on these large systems.

Tutorial III

8:30

TBA

Tutorial IV

11:00

Contemporary Issues in Network Security

Jay McCauley, SGI

This tutorial reviews the current state of the art in security for networked computer systems. The material covered will include: an introduction to firewalls and proxies, internet authentication technologies, encryption based solutions including SSL and ssh, and security screening and monitoring tools. Some of the new security features found in the IRIX™ 6.5 Operating System and related products will be discussed including capabilities, access control lists, and the new System Security Scanner found in WebForce™ product. While no formal text is required, Bellovin and Cheswick's "Firewalls and Internet Security: Repelling the Wily Hacker" (new edition soon to be published) is an excellent overview of some the topics covered.

Tutorial V

11:00

Performance Optimization for the Origin 2000

Jeff Brooks, SGI/Cray

This tutorial will describe the Origin 2000 architecture and the resulting programming concepts. Topics include: Features of the Origin 2000 Hardware, MIPS f90 compiler and its command line options, performance tools, single processor tuning and multi-processor tuning. The tutorial assumes "Cray-centric" programming expertise.

Tutorial VI

11:00

Mathematical Libraries

Bill Harrod, SGI/Cray

This tutorial will discuss a variety of scientific libraries routines for solving linear algebra and signal processing problems. The LAPACK package and SGI/Cray FFT routines will be highlighted. LAPACK provides a choice of algorithms mainly for dense matrix problems that are efficient and portable on a variety of high performance computers. Examples will be provided for converting LINPACK or EISPACK subroutine usage to the appropriate LAPACK subroutine. We will also discuss other migration issues such as porting LIBSCI

based application codes to the new Origin 2000 scientific library called SCSL. The tutorial will also address the challenge facing designers of mathematical software in view of the development of highly parallel computer systems. We shall discuss ScaLAPACK, a project to develop and provide high performance scaleable algorithms suitable for highly parallel computers.

Tutorial VII

11:00

Visualization from Theory to Practice

L. Eric Greenwade, INEEL

The aim of this tutorial is to provide a greater understanding of the process and products of visualization. After a brief overview of the what, why and when of visualization, a detailed example will be presented. Starting from the problem statement, gaining new insight in a complex data set, each step of the process will be detailed with the pitfalls and intermediate stages described. The end result will then be analyzed as to the effectiveness of the output.

2A, B, C and D OPEN MEETINGS

4:00–5:30

Please plan to attend the Open Meetings to discuss topics of interest to each Special Interest Group. Check the conference Final Program for details.

Tuesday, June 16, 1998

3A The Engine's Core: Operating Systems

Chair: Ingeborg Weidl, Max Planck Institute

9:00

PVP UNICOS Status and Update

Patti Langer, SGI/CRAY

This talk will cover current status of system issues and their progress. We will specifically cover scheduling, GRM, and resiliency issues in UNICOS/mk on the T3E, along with a project update with release and support plans.

9:30

T3E and UNICOS/mk Status and Update

Jim Grindle, SGI/CRAY

This talk will cover current release and support plans, reliability/stability efforts, future plans as well as T90P and J90++ updates.

10:00

Advancing with UNICOS Toward IRIX

Barry Sharp, BCS

During the past seven years of running UNICOS at Boeing on X-MP YMP and T90 systems many enhancements to the OS and System Admin, and User-Level facilities have been made. This paper will outline the rationale for these and provide brief descriptions on their implementation. The intent is to share the inventory with other UNICOS member sites and discuss those that might be applicable or of interest to the Origin 2000 IRIX system.

3B Performance and Evaluation

Chair: Jeffery A. Kuehn, NCAR

9:00

Performance of Thread-Parallel and Message-Passing Jobs in a Time-Sharing Environment on Origin 2000 Systems

Dave McWilliams, UIUCNCSA

At NCSA, we discovered that thread-parallel, gang-scheduled Origin 2000 jobs can use as much as 5 times as much CPU time when the load average on a system is high (e.g., 96 on a 64-processor system). We have been working with SGI as they make changes in the IRIX process scheduler to fix the problem. Although the work is still in progress, we have already seen improvements in job performance. We are planning to explore the performance of MPI jobs on a heavily loaded system in the near future. We will also discuss efforts to limit the load average on IRIX systems.

9:30

Cray T90 versus Tera MTA: The Old Champ Faces a New Challenger

Jay Boisseau, SDSC

The T90 represents the latest in CRI's line of parallel-vector supercomputers and still reigns as the champion in terms of performance on many production codes (for which parallel versions have not and perhaps will not be developed). Tera has recently delivered their first Multi-Threaded Architecture (MTA) to SDSC and hopes to provide a truly scaleable shared-memory parallel platform that will compete favorably in performance and ease of programming against the T90. We present the results of running several efficient T90 user codes on the MTA without and with optimization and compare to their T90 performance, with detailed analysis of the reasons for performance differences.

10:00

Performance Co-Pilot and Large Systems Performance

Ken McDonell, SGI/Cray

Brief Overview of PCP features, scope of performance issues it is trying to address, canned demos, availability. Addressing Large System Performance

Tuesday, June 16, 1998, continued

- getting performance data out of the application and into PCB
- libpcp_trace
- PMDA construction and libpcp_pmda
- customization (leverage the PCP building blocks to enhance the tools for performance management of your application)
- pmchart, pmview,mpgadgets
- pmlogger
- pmie
- scaleable performance visualizations
- extensibility
- correlating resource demands across the hardware, operating system, service and application layers
- measuring quality of service
- Case Study—building an MPI Performance Monitoring Toolkit from PCP parts

3C Operating Heterogeneous Sites

Chair: Mike Brown, EPCC

9:00

J90, T90, C90, T3, GigaRing, Origin2000 Monitoring Tools

Randy Lambertus, SGI/Cray

The presentation includes product description, application implementation, system monitoring, problem notification, service response actions and real-life examples, and concentrates on the present products Watchstream, Watchlog and Availmon and the related interface for each application sub-function.

Ideas for future development efforts, such as site system metric gathering and expanded notification options, will be opened for general discussion with the audience.

9:30

A Look at Disk and Tape Futures from the SGI/Cray Perspective

Mike Anderson, SGI/Cray

The disk drive industry continues to undergo changes at an ever increasing pace. Competition and technology advances continue to change the products produced and shorten the product life cycles. The tape drive industry is also undergoing big changes. An overview of these changes and the impact on SGI/Cray disk and tape products will be presented

5A IRIX: Origin Software Road Maps

Chair: Nicholas Cardo, SS-SSD

2:00

IRIX on High End Origins: Plans & Status

Jim Harrell, SGI/Cray

This is an update of the plans and status for IRIX OS support of the high end systems. The primary focus will be the status of current system software releases and the plans for future releases and upgrades. The status and scalability of IRIX on more than 64 processors will be discussed.

2:30

Update of Cluster Software for Origin and Unicos

Daryl Coulthart, SGI/Cray

IRIX customer software has been evolving and will continue to add customer capabilities. This paper describes their use as well as plans for expanding the capabilities of MPT, Array services, Failsafe, NQE and IRIX console.

Tuesday, June 16, 1998, continued

3:00

Update of System Management Software for Large Origin Systems

Daryl Coulthart, SGI/Cray

Support for large Origin systems has dramatically improved in the last year. This paper describes the use of IRIX systems software to improve management of large Origin systems. The software is IRIX 6.4, MPI, Array services, checkpoint, NQE jobs limits, MISER and AXMAN for interactive limits. There will be additional improvements in 1998. UNICOS jobs limits, the UDB, job notion and extended accounting will be added to IRIX.

5B Exploiting Parallelism

Chair: Richard Shaginaw, Bristol-Myers Squibb

2:00

OpenMP Programming Model

Ramesh Menon, SGI/Cray

OpenMP is an application program interface (API) for shared-memory parallel programming. Pioneered by SGI, it is fast becoming a de facto industry standard, as evidenced by the large number of hardware and software vendors endorsing the standard. The functionality is designed to enable programmers to write coarse grain, scaleable, shared-memory parallel programs. This talk will present the why, what, and how of OpenMP.

2:30

OpenMP: a Multitasking and Autotasking Perspective

Neal Gaarder, SGI/Cray

The new OpenMP standard for shared-memory parallelism is a collection of standard compiler directives, library routines, and environment variables for shared memory parallelism. This paper discusses OpenMP and compares it with current PVP autotasking and multitasking capabilities.

3:00

Expressing Fine-Grained Parallelism Using Fortran Bindings to Posix Threads

Henry Gabb, Army WES

In dynamics simulations, the through-space interactions between particles, which must be calculated every time step, consume the bulk of computational time. These calculations typically occur in a single, large loop containing many data dependencies. However, the iterations are often independent, so fine-grained parallelism should confer a significant performance gain. Pthreads have significant advantages over compiler directives, which often create separate UNIX processes. Multiple threads exist in a single process and require less system overhead. Also, threads are not linked to physical processors as is often the case for compiler directives. Multiple threads residing on a single processor give better resource utilization (e.g., separate threads doing computation and I/O operations). Performance and programming issues that arise when expressing fine-grained parallelism on SGI SMP and Cray T3E architectures will be discussed.

5C User Services

Chair: Denice Brown, ARL

2:00

Recycling Instructor-Led Training on the WWW

Leslie Southern, OSC

Web-based formats have great potential for broadening the reach of traditional instructor-based training courses. To enhance training materials on the WWW, the Ohio Supercomputer Center is experimenting with audio and slide combinations on the WWW. The objective is to re-use these courses to reach a larger audience at any time and any place. In addition to case studies, descriptions of experiences, hardware, software, and tools will be included. Evaluation methods and available user feedback will also be presented.

Tuesday, June 16, 1998, continued

2:30

Design Your Own Webzine: A Practical Guide

Lynda Lester, NCAR

This paper gives concrete examples of what to do and what not to do in creating a newsletter (Webzine) for users on the WWW. We discuss navigation aids; methods of information retrieval (search engine, index, contents); principles of typography and page design; use of graphics and animations; cross-platform "gotchas"; writing for the Web; review cycles; URLs and file structure; and user notification procedures. What does "interactive" mean? Do readers still want hardcopy? How far will people click? We will cover all these points and more in an entertaining and pragmatic talk on the basic concepts of Web design.

6A GigaRings, Fill-ups & Tune-ups

Chair: Hartmut Fichtel, DKRZ

4:00

GigaRing Mass Storage Update

Michael Langer, SGI/Cray

This talk will focus on the GigaRing systems Mass storage plans, including release plans, support plans, stability and performance.

4:30

Performance Tips for GigaRing Disk IO

Kent Koeninger, SGI/Cray

This talk will present techniques on CRAY T90, CRAY J90 and CRAY T3E systems to maximize this GigaRing disk performance, including FCN RAID disks, pcache on T3Es, SSD-T90 caching on T90s, memory caching on J90 systems user-memory caching (FFIO), disk configuration tips, and other UNICOS features for fast IO. The recent FCN RAID performance improvements enabled measurements and characterization of these important I/O techniques.

5:00

Cray Data Migration Facility & Tape Management Facility Update

Neil Bannister, SGI/Cray

This paper will review status and plans for both Cray and SGI platforms. Since the last CUG meeting DMF was released. This has presented the DMF team with new challenges which will be covered in this paper. The paper will also report progress and release plans for the TMF and CRL products.

6B Programming Environments and Models

Chair: Hans-Hermann Frese, ZIB

4:00

Programming Environment Status and Update

Sylvia Crain, SGI/Cray

This talk will cover current release and support plans for the Programming Environment for the MPP and PVP platforms. It will also discuss future plans in this area including migration efforts.

4:30

IRIX Programming Tools Update

Bill Cullen, SGI/Cray

In November 1997, the IRIX programming tools changed direction. This talk will cover the current status and road map for Workshop, Speedshop, MPF, RapidApp and CosmoCode.

Tuesday, June 16, 1998, continued

5:00

Cray Product Installation and Configuration

Scott Grabow, SGI/Cray

The intent of this talk is to provide insight into how the Common Installation Tool (CIT) is being used to make installation of software follow a similar process, and address common problems that have been seen in the migration to CIT and CD-ROMs for media distribution. In addition, examples of how these process changes affected various manuals will be shown, and how the goal is to follow a task oriented approach, and to separate installation and system configuration issues into different manuals.

6C Cray/SGI Operations Tools and Storage Technologies

Chair: Mike Brown, EPCC

4:00

Integration of Origin 2000s, T90s & J90's at USARL

Albert G. Edwards IV, USARL

The ARL MSRC has an environment where the Origin 2000, T90 and the J90 have been integrated into a common computing environment. This experience has not been without its challenges. The ARL MSRC has had to migrate many users and codes from an 8 node Power Challenge Array and a Cray-2 to the Origin 2000, T916, J932 and the J916. The J916 is functioning as the fileserver for the Origins and T90's. This talk will focus on the experiences and lessons learned in the installation and integration of these computing platforms.

4:30

Toward an Integrated Monitoring Scheme

Tom Roney, NCSA

The National Center for Supercomputing Applications (NCSA) employs a virtual operator (Voper) on UNIX operating systems. Voper detects potential system and application problems, and displays warning messages for administrative attention. Voper is being further developed for interactive use, to provide automated implementation of counter measures against reported problems. Voper and all other tools used to monitor NCSA systems are being collected to run under a single software package, the Computer Associates' Unicenter. NCSA effectively pilots a production environment, and is progressing toward an integrated monitoring scheme.

5:00

SGI/Cray Plans for Operations Commonality across MPP, Vector, and Scaleable Node Environments

Bill Middlecamp, SGI/Cray

Cray plans to offer a Common Operating Environment across traditional Cray MPP, parallel vector, and scaleable node product families. The Common Operating Environment, along with the Common Supercomputing API, are intended to provide interoperability and ease customer transition among the product families. A Common Operating Environment API specification will be available to customers at this CUG.

Wednesday, June 17, 1998

7A The Network & Computing Engines

Chair: Hans Mandt, Boeing

9:00

Scalability and Performance of Distributed I/O on Massively Parallel Processors

Peter W. Haas, RUS

Supercomputer network configurations, both internal and external, have developed over several orders of magnitude in performance in recent years. At the same time, the scope of networks has been broadened to accept not only the traditional vector supercomputer but also massively parallel systems of various types, file servers, workstation clusters, visualization laboratories and multimedia technology.

Networking and file system I/O on MPPs have been confined to a limited number of system level processors in the past leading to well known bottlenecks, especially with the execution of network protocols. There are elegant ways, however, to co-locate server processes on user nodes, which will enable truly distributed I/O.

The High Performance Storage System (HPSS) testbed at RUS is taken as an example to illustrate the basic principles. This testbed covers all major computing platforms.

9:30

The UNICORE Project: Uniform Access to Supercomputing over the Web

Jim Almond, ECMWF England

Supercomputers are becoming more powerful, but also more centralized in fewer centers. To fully utilize the potential of such facilities, more uniform, secure, and user friendly access via the Internet is needed. In addition to these generalities, this talk will describe the UNICORE project, a large collaboration dedicated to the implementation of a prototype addressing the above goals.

10:00

Cray Networking Update

Michael Langer, SGI/Cray

This talk will cover future Cray/SGI networking plans, including release plans, support plans, stability and performance

7B Parallel and Distributed Computing

Chair: Hans-Hermann Frese, ZIB

9:00

MPI Regression Testing and Migration to Origin 2000

Terry Nelson, SS-SSD

The computing industry, for economic and technical reasons, is moving inexorably towards an increasingly parallel environment. One of the major paradigms to accomplish this is message passing, and one of the major tools in this area is MPI. This paper will describe a set of Fortran and C regression tests which test MPI functionality and performance. A series of runs on a C90, J90, and Origin 2000, as well as tests with production sized jobs, will be described. Particular attention will be given to the migration of programs from the C90 and J90 environments to the Origins.

9:30

Distributed Supercomputing Services in a Heterogeneous Environment

Peter Morreale, NCAR

The NCAR Distributed Computing Services (DCS) project is a five year effort aimed at pro-

viding NCAR supercomputing services on local users desktops. The initial effort has focused on providing NCAR Mass Storage System (MSS) services to major compute servers including Cray, SGI, IBM, and Sun systems. The DCS system is designed around OSF's DCE software. DCS makes liberal use of the DCE Remote Procedure Call (RPC) mechanism, as well as the Cell Directory Service (CDS). This paper discusses the design of the NCAR DCS system as currently implemented as well as future directions.

10:00

High Performance Fortran for the T3E and Origin

Douglas Miles, Portland Group

Abstract: TBA

7C Visualization

Chair: L. Eric Greenwade, INEEL

9:00

Visualization of Astrophysical Data with AVS/Express

Jean Favre, ETHZ

In the frame of astrophysical applications Euler equations including source terms are solved numerically in two and three dimensions. The data are computed on a J90-cluster by an adaptive mesh code with a high degree of vectorization and parallelization. The output data are stored in a multi-level hierarchy with solutions at different levels of spatial resolution.

These time-dependent simulations impose very high visualization constraints. We use AVS/Express to integrate custom developments required for memory, CPU, graphics resources and remote data access imposed by the application. We present the implementation of the visualization environment on SGI workstations with our 512-Tbyte storage facility.

9:30

Interactive Direct Volume Rendering of Time-Varying Data on the Origin 2000

John Clyne, NCAR

Direct Volume Rendering (DVR) is a powerful volume visualization technique for exploring complex three and four dimensional scalar data sets. Unlike traditional surface fitting approaches to volume visualization, which map volume data into geometric primitives and can benefit greatly from widely-available commercial graphics hardware, computationally-expensive DVR is performed, with rare exception, exclusively on the CPU. Fortunately DVR algorithms tend to parallelize readily. Much prior work has been done to produce parallel volume renderers capable of visualizing static data sets in real-time. Our contribution to the field is the development of parallel software that takes advantage of high-bandwidth networking and storage to deliver volume rendering of time-varying data sets at interactive rates. We discuss our experiences with the software on the Origin 2000 class of supercomputers.

10:00

VRML for Visualization

Jim Johnson, SGI/Cray

VRML, the Virtual Reality Modeling Language, is heading for a browser near you. VRML promises a write once, use everywhere, capability for visualizing the results of engineering and scientific calculations. The same results may be visualized on a multitude of platforms, locally or over the web, using familiar web browsers. The format and functionality are unchanged, only the performance and capacity vary. Simulation results can be packaged in a VRML format file to be loaded by a browser. Alternatively, a Java applet can read an existing data format and inject the data into a running VRML-capable browser.

Wednesday, June 17, 1998, continued

9A High Speed Data!

Chair: Robert Silvia, NCSC

2:00

High Performance Network Back-up & Restore with HYPERtape

Aindrias Wall, MultiStream Systems Inc.

The fastest backup & restore for heterogeneous platforms, including Cray UNICOS and SGI IRIX as server platforms. It takes full advantage of their outstanding I/O performance. Overall, HYPERtape covers the most various client platforms and is highly scaleable.

2:30

Functional Comparison of DMF and HPSS

Gerhard Rentschler, RUS

RUS is looking for a new data management solution for its supercomputing area. Different solutions are being evaluated. Among them are HPSS and DMF for IRIX. This talk will compare both products and point out the strengths and weaknesses.

Experiences in a real life environment are also presented.

3:00

TBA

9B Powering Science

Chair: Richard Shaginaw, Bristol-Myers Squibb

2:00

Material Science on Parallel Computers (T3E/900)

Andrew Canning, NERSC

Three of the most heavily used quantum methods in material science (Plane Wave, Density Functional Theory, and the Tight Binding approach) will be discussed, along with their implementation on a variety of different parallel machines, including the 544-processor Cray T3E at NERSC. The new parallel algorithms developed to run these codes efficiently on parallel machines will be presented. Applications to large problems in material science will also be presented.

2:30

Clustering T3Es for Metacomputing Applications

Michael Resch, HLRS

Having developed a library that allows running MPI applications on a cluster of MPPs, we have done some experiments with several applications. So far we have good results for a CFD application; but even more promising are the results for Monte Carlo simulations.

3:00

Synchronization Using Cray T3E Virtual Shared Memory

Miltos Grammatikakis, Juelich

We consider mutual exclusion on the Cray T3E shared memory using various atomic operations and algorithms. Our current implementations, when compared to the Cray shmem_lock functions, indicate time improvements of at least 2 orders of magnitude for a 64-processor T3E/900. Our comparisons are based on both synthetic and actual code for concurrent priority queues. Software barrier performance is also briefly examined.

Wednesday, June 17, 1998, continued

9C SGI/Cray Service Plans and Q & A Panel

Chair: Dan Drobnis, SDSC

2:00

SGI/Cray World-Wide Customer Service Plans

Bob Brooks, SGI/Cray

World-Wide Service at SGI has undergone many changes since the merger with Cray. This talk will describe those changes, provide a description of current service delivery strategies, and define plans and initiatives that will affect the delivery of service in the future.

2:30

SGI/Cray Q&A Panel

Moderator: Charlie Clark, SGI/Cray

Representatives of SGI/Cray Service, Development, and Support organizations will discuss issues and questions raised by the CUG Survey and at the OpsSIG Business Meeting, and field questions and comments from the floor. This is a traditional wrap-up to OpsSIG sessions, and often a lively dialog.

10A IRIX: The Long Road Ahead

Chair: Nicholas Cardo, SS-SSD

4:00

Cellular IRIX: Plans & Status

Gabriel Broner, SGI/Cray

Future operating systems developed by Cray and SGI for the supercomputer and server spaces will be based on Cellular IRIX technology. Cellular IRIX is an evolution of IRIX which incorporates supercomputer features existing on UNICOS and UNICOS/mk. Key features of Cellular IRIX are its increased fault containment and its scalability to thousands of processors. This talk will cover the architecture of Cellular IRIX and the contents and status of the first operating system releases using this technology.

4:30

The Rebirth of DMF on IRIX

Alan Powers, NAS

The Numerical Aerodynamic Simulation Facility (NAS) at NASA Ames Research Center (AMES) is in the process of testing DMF 2.6 on a Power Challenge and an Origin 2000. These systems are connected to a STK 4400 silo using SCSI STK 9490 tape drives. A list of new features and differences will be covered. A simple benchmark will be used to compare the performance of IRIX DMF and UNICOS DMF.

10B Performance and Evaluation

Chair: Michael Resch, RUS

4:00

Experiences with High-Performance I/O on Cray T3E

Ulrich Detert, KFA

Abstract: TBA

4:30

Comparing T90 and T3E Performance on Optimized Fortran 90 and HPF Codes

Jay Boisseau, SDSC

The National Partnership for Advanced Computational Infrastructure (NPACI) provides access to a CRAY T90 and two CRAY T3Es (and other parallel computing platforms). As the reasons (and pressures) to migrate codes to parallel platforms increase, some users are interested in converting production Fortran codes to HPF to minimize development time. We compare single- and multi-CPU performance results for several optimized T90 codes to their HPF versions optimized for the T3E to illustrate the performance one might expect in migrating to HPF. We also provide information on tuning HPF codes for maximum performance on the CRAY T3E.

10C User Services

Chair: Barbara Horner-Miller, ARSC

4:00

How CUG Members Support Their Users

Barbara Horner-Miller, ARSC

In April a survey was sent to all CUG member sites concerning how the site performs the User Services task. The results of this survey will be presented.

Thursday, June 18, 1998

11A The Power of the Engine: Users and the O/S

Chair: Terry Jones, Northrop Grumman

9:00

The Age-Old Question of How to Balance Batch and Interactive

Barry Sharp, BCS

The UNICOS system is designed with both batch and interactive workload requirements in mind. However, in practice, the vanilla UNICOS system memory scheduler struggles to adequately balance these two distinct workloads, even with its wealth of scheduler tuning parameters. This paper presents a simple modification to the kernel-level memory scheduler that works harmoniously with the vanilla system to simplify the process.

9:30

MISER: User Level Job Scheduler

Ben Fathi, SGI

Miser is a user level program that generates a non-conflicting schedule of jobs with known time and space requirements. Miser, given a set of jobs, searches through time/space to find an allocation that best fits the job requests given a policy. Miser has an extensive administrative interface that allows for modification of most parameters without requiring a restart.

10:00

Serving a Demanding Client While Short on Resources

Manfred Stolle, ZIB

DMF on UNICOS, UNICOS/MK and IRIX is well suited to handle a local file system but it gets rather poor in a distributed environment with files larger than the DMF controlled file system. Using a small DMF controlled file system a "file system full" error is not supposed to occur due to poor migration performance or too large external files. A DMF controlled file system with a long history shows problems concerning the fast and safe restoration of data located on damaged tapes. Old style file attributes are disturbing in these situations. Solutions of these problems are shown.

11B Applications and Algorithms

Chair: Richard Shaginaw, Bristol-Myers Squibb

9:00

Mathematical Methods for Mining in Massive Data Sets

Helene E. Kulsrud, CCR-P/IDA

With the advent of higher bandwidth and faster computers, distributed data sets in the petabyte range are being collected. The problem of obtaining information quickly from such data bases requires new and improved mathematical methods. Parallel computation and scaling issues are important areas of research. Techniques such as decision trees, vector-space methods, bayesian and neural nets have been applied. A short description of some successful methods and the problems to which they have been applied will be presented. Methods which work effectively on PVP machines will be emphasized.

10:00

Application Roadmap

Greg Clifford, SGI/Cray

The SGI HPC computing environment will be advancing very rapidly in the next few years. This presentation will focus on how the SGI application environment will evolve and transition. The emphasis will be on solution areas (e.g., crash, external CFD) rather than on specific applications (e.g. MSC/NASTRAN, FLUENT).

Thursday, June 18, 1998, continued

11C GigaRing Operations

Chair: Mike Brown, EPCC

9:00

GigaRing Configuring and Dumping

Michael Langer, SGI/Cray

A technical interchange regarding system configuration with multiple mainframes on the same GigaRing. The discussion would include SWS configuration options and administration issues. Single SWS support discussion will be included as well as a discussion on dumping GigaRing based systems.

9:30

Monitoring and Automatic Reboot of Cray GigaRing Systems

Birgit Naun, Thomas Plaga, KFA; Ralph Krotz, SGI/Cray

In the operatorless environment of a modern computer center the automatic reboot of production systems in trouble is an urgent requirement.

This paper describes the distributed monitoring mechanism on the Cray mainframes, the corresponding system workstations (SWS) and the computer center's problem management database server. If this monitoring detects a malfunction (could be any hardware or software problem) a set of utilities implemented on the SWS gathers as much information as possible for later problem analysis, reboots the failing component or the complete system if required, sends out e-mail messages and communicates status changes to the central database.

The automatic rebooting mechanism is designed to run on top of the Cray supplied basic system operation commands and supports all GigaRing based Cray systems (including T3E, T90 and J90se) and can be adapted easily to local information handling requirements.

10:00

Supercomputing and Applications in German Research and Industry

L. Fred Geiger, HLRS

High Performance Computing in Germany is moving from tens of moderate-performance centers to predominantly four high-end centers. Two are already established: The Research-Center in Juelich and the High-Performance Computing-Center in Stuttgart. Juelich, with roots in nuclear research tends to focus on applications from high-energy physics, whereas Stuttgart is traditionally oriented towards engineering. A collaboration was therefore a natural step as a joint venture between government and industry, enabling synergy in acquisition, operation and usage of supercomputers.

Principal applications at Stuttgart are CFD, reacting flows, structural mechanics and electromagnetics, where it appears that large-scale engineering simulations can scale very well to hundreds of nodes on scalar as well as on vector-based parallel systems. Examples of such simulations are:

- Reentry of space vehicles
- Combustion simulation in coal-fired power plants
- Crashworthiness simulations
- Radar cross-section
- Internal combustion engines

For industrial users, embedding HPC into the development process is becoming essential. Companies have development groups all over the world, making HPC environments crucial in reducing time to market. Examples of EC-funded projects in this area are presented.

Problems that cannot be simulated on even the largest supercomputers in the world make Metacomputing collaborations, though not very efficient, the only approach in some cases. The results and techniques used by a project between Sandia National Laboratories, Pittsburgh Supercomputing Center and the High-Performance Computing-Center in Stuttgart will be presented.

Thursday, June 18, 1998, continued

13A Hauling Big Data

Chair: Hartmut Fichtel, DKRZ

2:00

Mass Storage at the NCSA: DMF and Convex UniTree

Michelle Butler, NCSA

The NCSA has been using UniTree since 1993 as the primary mass storage system for user's files and enterprise wide backups. The rapid evolution and growth of the NCSA production supercomputing environment, currently 512 Origin 2000 processors, a Power Challenge Array and an HP/Convex Exemplar, is putting increasingly critical requirements on the mass storage system. To meet this challenge, we are creating an environment which consists of a high performance mass storage system using DMF running on an Origin 2000 and an enterprise wide backup UniTree system on a recently installed HP/Convex Exemplar SPP-2000. This requires a transition from UniTree to DMF for our users and their data, approximately 15 TB. We will describe our experiences with this process using SGI/Cray tools for the migration as well as providing some comparison of the capabilities of the two systems.

2:30

Towards Petabytes of High Performance Storage at Los Alamos

Gary Lee, LANL

The High Performance Storage System (HPSS) is currently deployed in the open and secure networks at Los Alamos National Laboratory. Users of the Accelerated Strategic Computing Initiative (ASCI) Blue Mountain MPP system and the Advanced Computing Laboratory's MPP system, both from SGI/Cray, access HPSS for their storage. We discuss our current HPSS configurations, how our MPP users access HPSS, and the performance between HPSS and the MPP systems. We will also discuss our projected storage and storage performance requirements for the next five to seven years.

3:00

Storage and Data Management—Big Data Solutions

Ken Hibbard, SGI/Cray

This talk summarizes the storage road map for the Origin series of systems. In addition to describing existing and new hardware and software capabilities, we will highlight fiber channel solutions, file system support for new topologies, and data management solutions that are necessary for managing terabyte and petabyte stores. We will conclude with a summary of recent performance achievements.

13B Secure & Controlled Computing Engines

Chair: Bonnie Hall, LANL

2:00

Securing the User's Work Environment

Nick Cardo, SS-SSD

High performance computing at the Numerical Aerospace Simulation Facility at NASA Ames Research Center includes C90's, J90's and Origin 2000's. Not only is it necessary to protect these systems from outside attacks, but also to provide a safe working environment on the systems. With the right tools, security anomalies in the user's work environment can be detected and corrected. Validating proper ownership of files against user's permissions, will reduce the risk of inadvertent data compromise. The detection of extraneous directories and files hidden among user home directories is important for identifying potential compromises. The first runs of these utilities detected over 350,000 files with problems. With periodic scans, automated correction of problems takes only minutes. Tools for detecting these types of problems as well as their development techniques will be discussed with emphasis on consistency, portability and efficiency for both UNICOS and IRIX.

Thursday, June 18, 1998, continued

2:30

The State of Security for UNICOS & IRIX

Jay McCauley, SGI/Cray

I will review general security administration available for the UNICOS & IRIX operating systems. A review of the latest methods of breaking into systems and networks will be identified and discussed. A detailed analysis of password file security and password protection methods will be covered. Resources available both in printed form and "on the net" will be listed. Examples will be provided. Recommendations for increasing site security will be discussed in a short Question and Answer session after the presentation of the paper.

3:00

IRIX Accounting Limits and UDB Functionality

Diane Wengelski, SGI/Cray

This talk will discuss how IRIX is being extended in the areas of accounting and limits to enable it to perform effectively in a data center environment.

13C User Services

Chair: Leslie Southern, OSC

2:00

Coordinating User Support Across a Partnership: NPACI User Services

Jay Boisseau, SDSC

The National Partnership for Advanced Computational Infrastructure (NPACI) includes 5 resource partners that provide computing resources (including CRAY PVPs and T3Es) for over 4000 users. NPACI is striving to provide the highest caliber of user services by combining and leveraging the staff expertise of the resource partners. Coordinating the efforts of different sites to develop synergy and not suffer from increased overhead demands careful planning, flexible procedures, and effective tools. We present the plans, procedures and tools developed by the NPACI Resources Working Group to offer consulting, training, documentation, and other user services to enable computational scientists to excel.

2:30

Applying for Cray Computing Resources via the WWW: Interactive Application and Review at NCAR

Gregory R. McArthur, NCAR

Historically, the application and review process for scientists needing high-performance computing resources at NCAR has been a laborious, paper-intensive, and time consuming ordeal. Given the nature of the process (confidential peer review of requests, assessment of scientific value of the research, etc.) inordinate amounts of time and effort were spent on simply managing the paper work surrounding each individual request. Inefficiencies and errors plagued both the administrative and accounting staff who were required to enter information manually after it was received.

SCD began in mid-1997 to create a WWW-based application and review site. The site was designed to facilitate a seamless, on-line, interactive process for users applying for computing resources at NCAR.

This presentation highlights the design and development issues involved in the creation of this site, and describes how SCD implemented this aspect of the WWW for our users. Issues relating to how users were transitioned to use the site are also discussed.

Thursday, June 18, 1998, continued

3:00

Pushing/Dragging Users Towards Better Utilization

Guy Robinson, ARSC

This talk will describe ARSC experiences in the operation of MPP Cray systems. In particular issues of user/center interaction will be considered with regard to:

- education in and use of the latest software tools and hardware features
- dealing with parallel experts and novices
- system configuration issues
- how to ensure the best use is made of the available resources by all users
- what to change in the system configuration and what/how to change users' practices
- ensuring users make full use of advanced computational methods, both in terms of system hardware/software developments and by exploiting suitable algorithms.

It is hoped that the talk will promote discussion of the need for centers to become more involved with users and how this can be achieved.

14A, B, C, and D OPEN MEETINGS

4:00–5:30

Please plan to attend the Open Meetings to discuss topics of interest to each Special Interest Group. Check the conference Final Program for details.

Friday, June 19, 1998

15A IRIX: From Plans to Reality

Chair: Nick Cardo, SS-SSD

9:00

Getting It All Together

Cheryl Wampler, LANL

At Los Alamos National Laboratory we have been operating two 256 processor clusters of Origin 2000's for over a year, recently expanding to 1280 processors. The primary programming model is by SGI/MPI, with job sizes ranging up to 512 processors and routinely spanning machines. DFS is used for primary local storage, with HPSS targeted for archival storage. Free access to the nodes is restricted, and use of the resources is managed by Load Sharing Facility (Platform Computing). We have been active in pushing ahead the latest releases of the operating system, and currently have early experiences with IRIX 6.5 to report. The purpose of this paper will be to share the challenges, trials, and successes in getting it all to work together.

9:30

Integrating an Origin 2000 into a Cray Data Center

Chuck Keagle, BCS

This paper will present an overview of the Data Center configuration and discuss the application mix for an Origin 2000/Cray T916-256 Data Center. Major Topics will include:

- Hardware Configuration—Origin 2000, Cray T916-256, Connectivity
- Configuration Control—OS Versions, Patches, Local Code
- User Maintenance—UID Management, User Account Management
- Operations—Remote console operation using IRIS console
- Performance Tuning—Interactive vs. Batch limits, Performance Co-Pilot
- File System Structure—SCSI, Fiber RAID, DMF, mkfs/mount options
- Application Mix—Scalar codes, Vector codes, CPU availability

10:00

Getting the Best Mileage out of Your Origin System

Jeff McDonald, SGI

How to turn various kernel knobs, allocate node-local data properly and use system profiling tools to get the best performance out of your Origin System.

15B Applications and Algorithms

Chair: Richard Shaginaw, Bristol-Myers Squibb

9:00

XVM–Extended Volume Management

Colin Ngam, SGI/Cray

Xtended Volume Management (XVM) is the next generation product to XLV. XVM provides extended functionalities in the IRIX and Cellular IRIX Operating System environment. XVM manages the following logical objects: Volumes, Subvolumes, Concats, Mirrors, Stripes and Physical Slices. XVM provides transparent distributed access to all XVM objects in both the Enterprise (cluster) and HPC (Cellular) environment. This paper provides a discussion on the differences between XVM and XLV, XVM and UNICOS/UNICOSmk Logical Device Drivers and the full set of XVM functionalities.

9:30

The Good, the Bad, and the Ugly Aspects of Installing New OS Releases

Barry Sharp, BCS

Many SGI/Cray sites do not have the luxury of having multiple like systems, one of which to serve the needs of validating a new OS release

prior to installing it as their production system. The difficulty of doing this on a single system without endangering the running production system is explored along with how Boeing has developed its processes over time to safeguard production while still being able to adequately QA the new OS release.

10:00

Origin Craylink Partitioning

Steve Whitney, SGI/Cray

Partitioning a machine involves dividing a single large machine into multiple machines, each with their own IP address, root disk, etc. with a very fast interconnect between them. A single partition can be brought down (S/W and H/W failures, controlled shutdown, etc.) without affecting the rest of the machines, thus providing higher availability for a partition than a single large machine.

15C Visualization

Chair: L. Eric Greenwade, INEEL

9:00

Video Theater

Supercomputers generate data that, via scientific visualization, can be transformed into pictures that provide a way for scientists to understand the information more fully and quickly. Although the primary purpose of visualization is to facilitate the discovery process, scientists are increasingly coming to rely on it to also present their research conclusions. This session showcases the latest in scientific/engineering visualization. It promises to be both educational and entertaining.

10:00

Visualization of 3 Dimensional Material Science Applications

L. Eric Greenwade, INEEL

The INEEL has a number of programs investigating the properties of materials under demanding environmental conditions. These are related to a number of problems in environmental, military and industrial processing and reliability areas. This presentation will illustrated the results of some of these investigations and the new approaches used to convey the computational results to the researchers.

16 GENERAL SESSION

Parallel and Distributed Development and Simulation of Atmospheric Models

V. Mastrangelo, I. Mehilli,
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Parallel and distributed computing is a way to meet the increasing demand for engineering and computing power of scientific and technical simulation applications. To utilize these new paradigms the authors of this paper are developing a service based simulation environment which is operating on various computers at different European locations in Europe. In this paper we intend to discuss possibilities and difficulties of this approach by referring to the example of the dispersion of air carried particles. This example consists of different parts, where the air stream simulation (wind simulation) and the simulation of air carried particle transport (transport simulation) form the computationally expensive core of the application. This is run on a CRAY-T3E near Paris. To provide distributed calculation modules as a service various actions have to be taken. They include:

- Modularisation of the overall problem,
- Developing a strategy for distribution,

Friday, June 19, 1998, continued

- Parallelisation and optimization of the computationally expensive
- Encapsulation of modules as independent processes,
- Developing a strategy for the integration of competing services into a simulation system,
- Performing a set of parallel simulations by providing the services of the system with consistent data and managing the distribution of the results.

Solutions to most of the problems will be proposed. A hierarchy of parallelisation steps will be discussed in connection with a corresponding strategy for distribution. Communication of parts with high granularity takes place on the basis of CORBA mechanisms. A special Service Agent Layer (SAL) provides methods to convert, modules or objects (with functionalities) into services available in a multi-user environment. Experiences with this architecture and the implementation of parts of it will be reported. Special emphasis is put on experiences including Cray computers into such a scenario.

Local Arrangements

How to Contact Us

Until June 12, 1998

(Note: June 11 is Corpus Christi Day and a public holiday in Baden-Württemberg)

Stuttgart CUG Conference
Grethe Knapp Christiansen
Institut für Computeranwendungen II
Universität Stuttgart
Pfaffenwaldring 27
D-70569 Stuttgart
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From June 13-19, 1998

Stuttgart CUG Conference
Grethe Knapp Christiansen
KKL
Berliner Platz 1-3
D-70174 Stuttgart
Germany

From June 15:
Tel.: +49-(0) 711-2027.800
and -2027.801
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Conference Information

Conference Site

KKL Stuttgart
Kultur- und Kongresszentrum Liederhalle
Berliner Platz 1-3
D-70174 Stuttgart
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Fax: + 49-(0)711-2027.860
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In cooperation with: **Hotel Maritim**
Seidenstr. 34
D-70174 Stuttgart
Tel.: + 49-(0)711-942.0
Fax: + 49-(0)711-942.1000

All sessions take place in the KKL. Lunches will be served in Saal Maritim on the ground floor in the adjacent Hotel Maritim.

Conference Registration

Register for the Stuttgart CUG Conference 1998 as soon as possible. The early registration deadline is April 20, 1998 ($700.00) and the pre-registration deadline is May 20, 1998 ($750.00). All conference registrations, with payment in US dollars only, must be postmarked before May 20, 1998, using Airmail or First Class postage. Confirmation will be sent within five days of receipt of registration.

The registration fee is payable by check, money order, electronic funds transfer, Visa, MasterCard, or Discover. Make checks payable to "Cray User Group." See the Reg-

istration Form at www.cug.org and at the back of this booklet.

Conference Cancellation

Cancellations received by the CUG Office on or before May 20, 1998 will be refunded in full. Requests for refunds can be made by Email, fax, or regular First Class mail. Email confirmation of cancellation will be sent within five days of receipt of request. Those who cancel after May 20 will not receive refunds.

Who May Attend?

CUG bylaws specify that employees of a CUG member (usually a facility or company using a Cray computer, identified by its CUG site code) and users of computing services provided by a CUG member, may attend a CUG meeting (see Site Codes). Visitors are also eligible to attend a CUG meeting, provided they have formal approval from a member of the CUG Board of Directors. The members of the Board of Directors are listed later in this booklet.

Conference Registration Location/Hours

Location: First floor "Ebene 2" in KKL.

Office Hours:

Sun, June 14	3:00–5:00 p.m.
Mon–Thu, June 15–18	8:00 a.m.–6:00 p.m.
Fri, June 19	8:00 a.m.–1:00 p.m.

Badges and registration material may be obtained at these scheduled times. Note that ALL attendees must wear a conference badge when attending Stuttgart CUG Conference activities.

Program and Call for Papers

The Final Program will be included with your registration packet at the Conference.

There is a Call for Papers at the end of this brochure. To submit a paper for the Spring 1999 Cray User Group Conference in Minneapolis, USA, please complete and return the form as directed. All questions regarding the program should be directed to the Program Chair.

On Site Facilities

Throughout the conference, our staff at the CUG Conference Office will be glad to assist you with any special requirements.

Messages

During the conference (June 15-19) incoming telephone calls will be received at the CUG Conference Office Telphone: + 49-(0)711-2027.800 and -2027.801; Fax: + 49-(0)711-2027.860, Email: stuttgart@cug.org. Messages will be posted near the registration desk. Private telephone calls may be made in the downstairs entrance hall of the KKL using coins or telephone cards.

Faxes

A fax machine will be available at the CUG Conference Office for conference-related business.

Fax machines are available at the participating hotels for guests should you need to send or receive a fax for non-conference business. Please check with your hotel for prices for national and international fax transmissions.

Email and Personal Computers

An Email room will be available for the conference attendees. For last minute editing of papers and transparencies a Macintosh and a PC will be provided.

Photocopying

A copy machine will be available for making a limited number of copies. If you plan to distribute copies of your presentation materials, please bring sufficient copies with you. For nearby copy services (to be paid in cash only), please see the KKL Conference Office.

Dining Services

The conference fee includes refreshments during breaks and luncheons Tuesday through Thursday at the Hotel Maritim. Breaks will also be provided on Friday. Breakfast is included in the hotel price. Lunch will be served in the Hotel Maritim in Saal Maritim on the ground floor. On Monday, Newcomers are invited to a Newcomers' Lunch in the Hotel Maritim. Please sign up for this on the Conference Registration Form. On Monday evening, SGI/Cray

Research will host a reception for all CUG attendees. On Wednesday evening, conference attendees are cordially invited by debis Systemhaus GmbH to a magnificent evening in the wonderful Mercedes-Benz Museum in Stuttgart.

Special accommodations and/or dietary requirements should be noted on the Conference Registration Form and/or on the Hotel Reservation Form under "Special requirements."

Hotel Information

Reservations

Hotel reservations are handled by Stuttgart-Marketing GmbH, the local tourist office. Please complete and mail or fax the enclosed Hotel Reservation Form by April 20, 1998 directly to Stuttgart-Marketing GmbH using the address on the form. Confirmation will be sent to you by fax.

Note: Reservations are required in writing and must be guaranteed with a major credit card (American Express, Master Card, Visa). For reservations made after April 20, 1998, accommodations at the special rates cannot be guaranteed.

Conference Hotel

Maritim Hotel Stuttgart
Seidenstr. 34
70174 Stuttgart
Phone: +49-711-942.0
Fax: +49-711-942.1000

Hotel Maritim is situated adjacent to the Conference center, KKL.

Other Hotel Options

In addition to the Maritim Hotel, a number of rooms have been reserved for CUG Conference attendees at the Best Western Hotel Ketterer and the Hotel Royal.

A limited number of rooms have been reserved at these two hotels at a special weekend rate for the Saturday prior to the conference and the Friday after the conference in case you should wish to extend your visit in Stuttgart. Rooms are available on a first come first served basis. Special arrangements for families and students are available directly from Stuttgart-Marketing GmbH.

Best Western Hotel Ketterer
Marienstr. 3
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Phone: +49-711-2039.0
Fax: +49-711-2039.600

Hotel Royal
Sophienstr. 35
70178 Stuttgart
Phone: +49-711-62505.0
Fax: +49-711-628809

Travel and Shipping Information

Passports

A valid passport is required for travel to Europe and between countries once here. Please check with your travel agent or your local German consulate to determine if you need a visa and for information on how to obtain one. For E.C. residents a national ID is sufficient.

Transportation

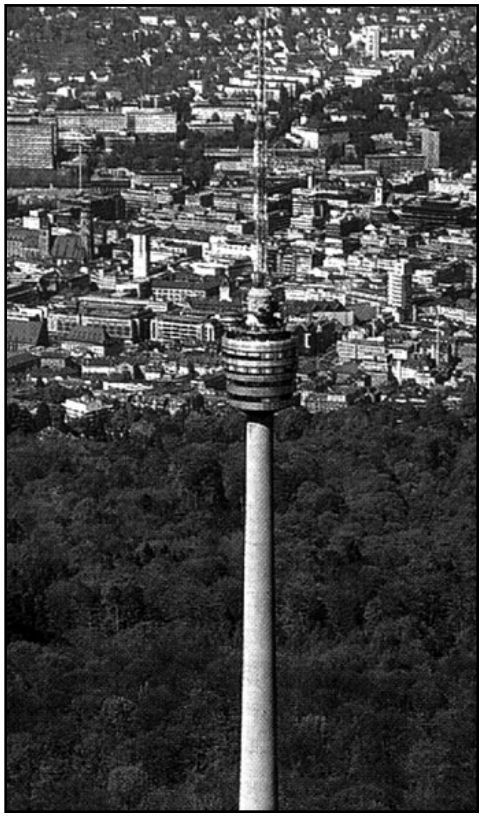
Most of the attendees will arrive at the Stuttgart International Airport. Delta Air Lines flies non stop from Atlanta and New York to Stuttgart. Other airlines connect through London, Amsterdam, or Frankfurt.

From the Stuttgart Airport, we recommend taking the suburban railways (S2 and S3) which bring passengers to and from the main railway station (Hauptbahnhof) in Stuttgart. Trains leave the airport approximately every 15 minutes and the trip takes approximately 27 minutes. You buy your ticket at an automatic ticket machine in the airport for your trip to the Hauptbahnhof. It costs DM 4,60. On arriving at the Stuttgart Hauptbahnhof, we suggest that you take a

Local Arrangements, continued

taxi to your hotel. All three hotels are downtown and are a short distance from the railway station. The taxi fare from the airport to downtown Stuttgart costs approximately DM 50,00.

While we recommend using the suburban railway to get to Stuttgart from the airport, rental cars are also available at the airport. Two of several car rental companies at the Stuttgart Airport are:



Avis Autovermietung,
Tel. +49-(0)711-948.4451

Herz Autovermietung,
Tel. +49-(0)711-948.4339

Stuttgart is well equipped with official transport services. In the City, these are underground city railways, trams, and buses. Your conference registration packet will include a three day ticket for the Stuttgarter Straßenbahn and buses–VVS. This ticket is valid for one person for three consecutive days, including the first day of use. You may buy additional tickets in your hotel. Additonal information about the VVS will be included in your conference registration packet.

Currency

German currency is the Deutsche Mark (DM). Currency can be changed and traveler's checks can be cashed in banks which are generally open Monday to Friday from 9:00 a.m. to 12:00 p.m. and 2:00 p.m. to 4:00 p.m. and on Thursday to 5:30 p.m. Exchange offices are open every day at all major railway stations, at airports, and at border crossing points.

Voltage

The standard voltage in Germany is 230 volts, 50 cycles. Bring an adapter plug for use in electrical outlets.

Smoking

Smoking is not allowed in conference locations (except outside).

Special Assistance

Session rooms for the Stuttgart CUG Conference are located on several floors in the KKL and are accessible by stairs or elevators. If you need special assistance, please provide details on the Conference Registration Form under the "Special requirements" section.

Climate

Stuttgart is situated in the south of Germany and the climate is semicontinental, making it hard to tell what the weather will be like. Although the month of June is usually a nice summer month with sunny weather and comfortable temperature 18 to 24° C (65°–75°F), it may also be rainy and "chilly." To be safe, we suggest that you bring an umbrella.

Shipping Information

Because of limited storage space at the KKL, please send shipments as close as possible to program dates to:

KKL Stuttgart
Kultur- und Kongresszentrum Liederhalle
Berliner Platz 1-3
D-70174 Stuttgart
Hold for: [your name]
Cray User Group Conference
Mrs. G. Knapp Christiansen

Social Events

Monday, June 15

Newcomers' Luncheon

First-time CUG participants are invited to the Newcomers' Luncheon. At this event, newcomers can meet the CUG Board of Directors, the Special Interest Group Chairs, and executives from SGI/ Cray Research. This will also be a chance to hear a very brief presentation of "What Is CUG?." Please be sure to sign up for this luncheon on the conference registration form.

SGI/Cray Research Reception

All conference participants and their guests are invited by SGI/Cray Research to attend a reception on Monday, June 15, from 7:00–10:00 p.m.

Wednesday, June 17

CUG Night Out

The traditional CUG night out will be held Wednesday, June 17, 1998. Our conference partner, debis Systemhaus GmbH, has invited all participants and their guests to the Mercedes-Benz Museum in Untertürkheim, the traditional place of the Mercedes-Benz factory. Here we shall dine and stroll around the Mercedes Benz Old-timers in admiration of the "good old days." We are very happy for this invitation which will be a highlight of the Stuttgart CUG Conference. Transportation will be provided to and from the museum by debis.

Additional guests must be noted on your Conference Registration Form for this event.

Site Tours

Tours of the Cray computer facilities at RUS can be arranged on short notice during the Conference. Please come to the Conference Office to make arrangements.

Accompanying Persons Program

Within the registration area at KKL, a counter with tourist information will be arranged where you may collect information about Stuttgart and Baden-Würrtemberg.

For persons accompanying attendees,The travel agency **Euro Lloyd Breuninger Reisebüro** will be pleased to arrange the following tours for you.

Monday, June 15, 1998:

This day is at your own disposal, and we would like to suggest a visit to places of particular interest, such as:

- The **State Gallery** in the center of Stuttgart with its impressive Picasso collection and a stroll through the city just to get accquainted.
- The **Wilhelma**, Germany's only zoological and botanical garden, is situated near the river Neckar also not far from the city.
- The city of **Ludwigsburg** with its castle known as the **"Swabian Versailles"** and the famous **"Blooming Baroque,"** the castle's park (20 min. by public transportation).
- The city of **Esslingen**, with its well preserved medieval city center and its old town hall with an impressive renaissance facade and delightful carillon (20 min. by public transportation).

Tours

Important: It is mandatory to book these tours before April 20, 1998. Bookings will not be possible after April 20, 1998.

Tour 1:

Tuesday, June 16, 1998

Starting from Hotel Maritim at 8:00 a.m.

Tübingen and Hohenzollern Castle

This full-day tour southwards on the old post road leads you to the 500 year old university city of Tübingen at Neckar via the beautiful Monastery Bebenhausen. Tübingen is a wonderful medieval town with beautiful half-timbered houses in crooked alleys, old taverns and trees, and presents unusual scenery in which you will be invited to explore. Afterwards, you may take a punting tour on the river Neckar in the midst of the town. After lunch, the journey goes to the family castle of the Prussian Kaisers and Kings (Hohenzollern Castle) situated on a hill (ca. 10 min. walk). A guide will show you the castle. After a "gemütlichen" journey, you will return to Stuttgart around 7:00 p.m.

Price per person:

DM 90,00, including English speaking guide in Tübingen, punting tour on the river Neckar, entry fee and guide at the Castle Hohenzollern.

Minimum number of participants:

20 persons

In case you should be prevented from taking part in the "punting party," please deduct DM 15,00.

Tour 2:

Wednesday, June 17, 1998

Starting from Hotel Maritim at 9:00 a.m.

Half day (4 hrs) Stuttgart City tour by coach.

This city tour presents the most important sights of the city such as the famous Staatsgalerie (State Gallery of Art), the beautiful Staatstheater and Landtagsgebäude (State Theatre and Parliament of Baden-Württenberg), Neues and Altes Schloß (the new and old castle of Stuttgart) including a visit to the TV-Tower with a marvellous view of the city and its surroundings. Afterwards you will take a small historical walk through the old part of the town and end up with a nice CUG surprise in the attractive Market Hall. The coach will take you back to Hotel Maritim if you do not prefer a stroll on your own in the city.

Price per person:

DM 55,00 including English speaking guide and entrance fee for TV-Tower.

Minimum number of participants:

20 persons

STUTTGART

Tour 3:

Thursday, June 18, 1998

Starting from Hotel Maritim at 8:00 a.m.

Heidelberg

This full-day tour takes you to the world famous University City of Heidelberg through the romantic valley on the banks of the river Neckar. During a guided walk you will get an impressive view of the city and see how the old castle rises above the old part of the town. After lunch you will visit the castle—built in wonderful German Renaissance architecture—and its 220,000 litre wine barrel. You will arrive in Stuttgart with beautiful memories around 7:30 p.m.

Price per person:

DM 85,00 including whole day English speaking guide and entry fee and guide in the castle of Heidelberg.

Minimum number of participants:

20 persons

Registration forms for all tours are at the back of this booklet.

Cray User Group Conference–Post Conference Tour

June 19–21, 1998

A wonderful three day Post Conference Tour to the

Lake of Constance and Black Forest

Booking deadline: April 20, 1998

Program:

1st day, Friday, June 19, 1998

2:00 p.m. departure from Stuttgart in coach via the national park Schönbuch, Tübingen, Reutlingen and Castle Lichtenstein. At Zwiefalten we will get to the Oberschwäbischen Barockstraße. The tour goes further via Riedlingen, Bad Buchau, Bad Schussenried, Bad Waldsee, Weingarten, Ravensburg, and finally we will arrive at the pretty city Friedrichshafen on Lake of Constance. If there is enough time left, it would be very interesting–especially for technical skilled people–to visit the Zeppelinmuseum in Friedrichshafen (entrance is not included).

Overnight stay in Hotel Krone in Friedrichshafen, a good mid-category hotel with comfortable rooms, close to the city center and only 100 meters to the shore of Lake of Constance, Zeppelinmuseum and yacht habor. After check-in, dinner at the City Hotel Krone.

2nd day, Saturday, June 20, 1998

After breakfast travel along Lake of Constance to the wonderful town of Meersburg. There you will take a guided walking tour through this old place. After lunch, a 2 hour cruise on the Lake of Constance to Überlingen where the bus will be awaiting you for a trip to the beautiful Baroque Church Birnau. After this visit, drive along the Lake of Constance via Stockach, Singen and Stein am Rhein, one of the most famous medieval Swiss cities. After a short walk or a coffee-break, your trip will continue via the Black Forest to Schluchsee. You will stay overnight in a traditional Black Forset house, the lovely Hotel Schiff. After check-in, dinner at the hotel.

3rd day, Sunday, June 21, 1998

After breakfast the journey goes via Furtwangen to Triberg, the famous Triberger Waterfalls. After lunch, you will visit the Freilichtmuseum Vogtsbauernhof (open air museum) in Gutach, where you can see typical original old Black Forest houses and the way of living of these people in the old days.

Then we will drive leisurely through the Black Forest with some stops, for instance in Wolfach, romantic Kinzigtal, Alpirsbach, Freudenstadt, Altensteig, Herrenberg before returning to Stuttgart.

Price per person:

Double room	DM	498,00
Single supplement	DM	130,00

Service included:

- Transportation in a modern ac-coach
- 2 nights accommodation in good mid-category hotels
- 2 x halfboard (breakfast + dinner)
- Guided tour at Meersburg
- 2-hour cruise on the Lake of Constance
- Services of an English-speaking guide throughout the tour

Insurance against insolvency of organizer

Position at: December 97 /AU

Subject to: Changes, price increases, exchange rate increases and availability

Minimum participation: 20 persons

Booking deadline: April 20, 1998.

Organizer:

Euro Lloyd Breuninger Travel Agency
Torstrasse 20
D- 70173 Stuttgart
Tel. 0049-711-23731.80
Fax. 0049-711-23731.79

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Operations

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Security

Chair: Bonnie Hall

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SILICON GRAPHICS DEUTSCHLAND

Software Tools

Chair: Hans-Hermann Frese

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Site Codes

Organization Name	Site Code
Advanced High Performance Computing Applications	AHPCA
Aerospatiale	AEROTOUL
Aerospatiale Les Mureaux	AEROMUR
AGIP SPA	AGIP
Alabama Supercomputer Network	ALASUPNW
Allied Signal Aerospace Company	ASKCD
Amoco Canada Exploration	AMOCOCAN
Amt fuer Militaerkunde	ZFCH
Ansaldo Sistemi Informatici	ASIGE
Arctic Region Supercomputing Center	ARSC
Asahi Chemical Industry Co., Ltd.	ASAHI
Atomic Weapons Establishment	AWE
Australian Bureau of Meteorology	AUSTBOM
Bayer AG, Leverkusen	BAYER
Bear, Stearns & Co.	BEAR
Bettis Atomic Power Laboratory	BETTIS
BHP Research - Newcastle Laboratories	BMP-NL
Boeing Advanced Systems Laboratory	BCS-ASL
Boeing Information and Support Services	BCS
Bristol-Myers Squibb Pharmaceutical Research Institute	BMSPRI
British Aerospace	BAE
Brussels Free University	BFU
Canon Supercomputing S. I., Inc.	CANON
Center for High Performance Computing, University of Utah	CHPCUTAH
Center for Scientific Computing	CSC
Centre d'Etudes et de Recherches de Toulouse	CERT
Centre de Supercomputacio de Catalunya	CESCA
Centre National d'Etudes des Telecommunications	CNET
Centre National d'Etudes Spatiales	CNES
Centro Nacional de Supercomputacao–UFRGS	UFRGS
Centro Supercalcolo Piemonte	CSP
Chiba University	CHIBA
Chrysler Motors Corporation	CHRYSLER
CIEMAT	CIEMAT
CINECA	CINECA
Citroen Automobiles	CITROEN
COADOD	COADOD
Commissariat a l'Energie Atomique	CEA-CGCV
Commissariat a l'Energie Atomique/Ile de France	CEA-IDF
Communications Security Establishment	CSE
Compagnie General de Geophysique (London)	CGGUK
Computer Sciences Corporation	LFWC-CSC
Computer Technology Integrator Co., Ltd.	CTI
Construcciones Aeronauticas, S.A.	CASA
Continental AG	CONTI
Cranfield University	CRAN
CRC Research Institute	CRC
CSIRO	CSIRO
Czech Academy of Sciences	CZECH-IP
DCIX	DCIX
Defence Research Agency, Dunfermline	DRA-D
Defence Research Agency, Farnborough	DRA-F
Delft University of Technology	DELFTU
Deutsche Forschungsanstalt fuer Luft-und Raumfahrt	DLR
Deutscher Wetterdienst	DWD
Deutsches Klimarechenzentrum GmbH	DKRZ
Dow Chemical Co., The	DOW
E. I. DuPont de Nemours Inc.	DUPONT
E-Systems, Inc.	ESYSTEMS
Ecole Nationale Superieure de Techniques Avancees	ENSTA
Ecole Polytechnique Federale de Lausanne	EPFL
Edinburgh Parallel Computing Centre	EPCC
EDS (Deutschland) GmbH	EDS-D
Electricite de France	EDF
Eli Lilly and Company	ELILILLY
Empresa Nacional del Uranio	ENUSA
ETH Zuerich	ETHZ
European Centre for Medium Range Weather Forecasts	ECMWF
Exxon Upstream Technical Computing Company	EUTEC
Fiat Auto	FIAT
Fleet Numerical Meteorology and Oceanography Center	FNOC
Ford Motor Company	FORD
Forschungszentrum Karlsruhe/Abteilung HIK	FZK
Framatome	FRAM
GE Aircraft Engines	GE-AE
General Motors/Electronic Data Systems	GM
Geophysical Fluid Dynamics Laboratory	GFDL
Government Communications Headquarters	GCHQ
Hampton University	HAMPU
Harvard University	HARVARD
Höchstleisfungsrechner für Wissenschaft und Wirtschaft Betriebsgesellschaft mbH	DB
Hydro-Quebec	HYQUEBEC
Hyundai Motor Company	HYUNDAI
IDRIS-CNRS	IDRIS
INEEL-Lockheed Martin Idaho Technologies Co.	INEEL
Institute for Defense Analyses	IDA
Institute for Defense Analyses-SRC	SRC
Instituto Nacional de Meteorologia	INMET-E
Jet Propulsion Laboratory	JPL
Joint Research Center	JRC
KFA Jülich	KFA
Kia Motors Corp.	KIA
Knolls Atomic Power Lab	KAPL
Konrad Zuse-Zentrum für Informationstechnik Berlin	ZIB
Korea Inst. of Science & Technology/SERI	KIST
Korea/ADD	KOREAADD
Lawrence Livermore National Laboratory	LLNL
Leibniz-Rechenzentrum	LRZ
Lockheed Information Technology Company	LITC
Los Alamos National Laboratory	LANL
Marion Merrell Dow	MMD
Max Planck Institut fuer Plasmaphysik	MPG
Mazda Motor Corporation	MAZDA
Merck & Co., Inc.	MERCK
Meteo-France	METEO-F
Ministere de la Defense	MDF
Ministerio de Defensa	MDD-E
Minnesota Supercomputer Center	MINN
Mississippi Center for Supercomputing Research	MCSR
Mitsubishi Electric Corporation	MITSUBIS
Mitsubishi Research Institute, Inc.	MIRI

Site Codes, continued

Organization Name	Site Code
Mobil Exploration & Producing Services, Inc.	MEPSI
NAS Systems Division	NAS
NASA/Goddard Space Flight Center	NASAGSFC
NASA/Johnson Space Center	NASAJSC
NASA/Langley Research Center	NASALARC
National Cancer Institute	FCRF
National Center for Atmospheric Research	NCAR
National Center for Supercomputing Applications	UIUCNCSA
National Centre for Medium Range Weather Forecasting	NCMRWF
National Energy Research Supercomputer Computer Center	NERSC
National Institute of Standards and Technology	NIST
National Meteorological Center	NWS-NMC
National Meteorological Center-China	NMC-China
National Supercomputer Center	NSC-SAAB
National Supercomputing Center for Energy and the Environment	NSCEE
National Supercomputing Research Centre	NSRC
National Test Bed Program	NTB
National University of Singapore-Computer Centre	NUSC
Naval Oceanographic Office	NAVO
Naval Surface Warfare Center Dahlgren Division	NSWCDD
Naval Undersea Warfare Center	NUWC
Nihon SiliconGraphics-Cray K.K.	CRAY-J
Nippon Telegraph and Telephone Corporation	NTT
North Carolina Supercomputing Center	NCSC
Northrop Grumman Data Systems and Services Division	GRUMMAN
Norwegian University of Science and Technology	NTNU
Ohio Supercomputer Center	OSC
ONERA—Calculateur Aeronautique	ONERA
Ove Arup & Partners	ARUPUK
Pacific Northwest National Laboratory	PNNL
Pennsylvania State University	U/PENNSTATE
Phillips Petroleum Company	PPC
Pittsburgh Supercomputing Center	PITTSCC
Proudman Oceanographic Laboratory	PROUDO
Rechenzentrum der Universitaet Regensburg	RZUR
Rechenzentrum der Universitaet Stuttgart	RUS
Regionales Hochschulrechenzentrum Kaiserslautern	RHRK
Renault	RENAULT
Royal Melbourne Institute of Technology	RMIT
Rutherford Appleton Laboratory	RAL
Samsung Advanced Institute of Technology	SAIT
San Diego Supercomputer Center	SDSC
Sandia National LaboratoriesA	SNLA
Saudi Arabian Oil Company	ARAMCO
Scripps Research Institute	SCRIPPS
SEP-DPPC	SEP
Shell U.K.	SHELLUK
SGI/Cray Research	CRI
Silicon Graphics, Inc.	SGI
SNCF-Direction du Materiel	SNCF-MAT
Sterling Software, Inc.	SS-SSD
Stichting Academisch Rekencentrum Amsterdam	SARA
Texas A&M University	TX-A&M
Toray Industries, Shiga Plant	TORAY-SH
Toshiba Corporation	TOSHIBA
UNI-C	UNI-C
United Kingdom Meteorological Office	UKMET
United States Air Force Supercomputer Center-Eglin	AFSCC-E
United States Air Force Supercomputer Center-WPAFB	AFSCC-W
United States Army Corps of Engineers	ARMY/WES
United States Army Research Laboratory	USARL
United States Army SSDC	USASSDC
United States Environmental Protection Agency	EPA-NESC
United States Government	DOD
United States Government-Central Intelligence Agency	CIA
United States Navy-Naval Research Laboratory	NRL
Universidad Nacional Autonoma de Mexico	UNAM
Universität Magdeburg	UNI-MD
Universitat Rovira i Virgili	TARRAGON
Universite de Marne La Vallée	UMLV
University of Delaware	UDEL
University of Kiel	UNIKIEL
University of Manchester	MCC
University of Melbourne, The	UMELB
University of Texas at Austin	UTHPCF
University of Trieste	UTRIESTE
University of Tübingen	ZDV
University of Western Ontario	UWO
Warsaw University	WARSAWU
Warsaw University of Technology	WSWUTECH
Weizmann Institute of Science	WIS
Western Geophysical	WESTGEO
Westinghouse Savannah River Company	WSRC

Conference Registration Form

Please use the on line version of this form at www.cug.org and submit **separate registration forms for each attendee.** If you cannot access this form on line, then please print clearly and mail or fax the registration form with check, credit card, or electronic funds transfer information by April 20, 1998 to:

CUG Office,
2911 Knoll Road
Shepherdstown, WV 25443 USA
Telephone: (1-304) 263–1756, Fax: (1-304) 263–4841.

First Name _____ Last Name _____

Organization _____ CUG Site Code _____

If you are a user at a CUG site, name of Installation Delegate: _____

If you are a visitor (no Site Code), name of CUG Director approving attendance: _____

Address _____

City, State-Province, Mail/Zip Code, Country _____

Daytime phone _____ Fax _____
(Country code-city/area code) number (Country code-city/area code) number

Electronic Mail Address _____

I want my name/address omitted from the official CUG documentation. ❑

I am a first time attendee and would like to register for the Newcomers' Lunch on Monday, June 15. ❑

Special requirements (e.g. dietary, hearing, vision)? _____

My site has the following CRAY machine(s):
XMP ❑ YMP ❑ J90 ❑ C90 ❑ T90 ❑ T3D ❑ T3E ❑ Origin 2000 ❑ Other _____

Fees (all indicated prices include taxes and are in US dollars)

Registration fee:	Early registration (by April 20, 1998)	$ 700.00	_____
	Pre-registration (by May 20, 1998)	$ 750.00	_____
Additional copies of the *Proceedings* (CD-ROM at $20 each)		Quantity_____x $20 =	_____
		Total due, in U.S. funds only	_____

Please provide the name(s) of guest(s) for the night out, June 17, at the Mercedes-Benz Museum. (There is no additional fee for guests at the night out.) _____

Payment by check or purchase order: Please make your check or purchase order payable to: Cray User Group and mail it to the address above together with this form.

Payment by credit card: We accept Visa, MasterCard, and Discover. We do not accept American Express.

Credit Card Number _____ Credit Card Expiration Date _____ Name of Card Holder _____

Signature _____

Payment by electronic funds transfer:** Remittance (in $US) may be made by electronic funds transfer (wire transfer/swift transfer) to:

Account name: Cray User Group, Incorporated
Account Number: 3971363908
Bank: Norwest Bank, Eagan, Minnesota, USA
Bank Routing Information: 091000019

** Please include "CUG Stuttgart" and the **full name of the person for whom the fee is being paid** on the electronic funds transfer document. Electronic funds transfer fees are the responsibility of the registrant and should be made without any additional charges to the Cray User Group.

Cancellation/refund policy—Conference registration cancellations must be received by the CUG Office at the address above before May 20, 1998. All registration fees will be refunded if the cancellation is received before this date.

Hotel Reservation Form
Stuttgart Cray User Group Conference
June 14-19, 1998

Please complete the following reservation form (one form for each room you want to reserve). Mail or fax the completed form with your payment, to:

Stuttgart-Marketing GmbH
Hotel Reservations
Postfach 10 44 36
D-70039 Stuttgart, Germany
Phone: (49-711) 2228.233
Fax: (49-711) 2228.251

To guarantee your hotel reservation, the completed forms must be received no later than **April 20, 1998**.

First Name: **Last Name:**

Organization:

Address:

City: State/Province: Mail/Zipcode Country:

Phone (Country code-city/area code) number:

Fax (Country code-city/area code) number:

Electronic Mail Address

Hotel (Please check one**)**: ❑ Maritim Hotel ❑ Best Western Hotel Ketterer
❑ Hotel Royal ❑ Other, please specify:_____

I need (Please check one)
❑ Single occupancy ❑ Double occupancy (1 bed) ❑ Double occupancy (2 beds)
❑ Smoker ❑ Non-smoker

Special requirements?

Date of arrival: Time of arrival: Date of Departure:

Method of payment (Please check one):
❑ Eurocheque ❑ Traveler's Cheque ❑ Cash
❑ Visa ❑ MasterCard ❑ American Express ❑ Diner's Club

Note: Reservations must be guaranteed with a major credit card (Visa, MasterCard, American Express, or Diner's Club)

Card number: Expiration date:

Card holder name: Signature:

Hotel choices:

Hotel name	**Maritim Hotel***	**Best Western Hotel Ketterer**	**Hotel Royal**
Address	Seidenstraße 34 D-70174 Stuttgart	Marienstraße 3 D-70178 Stuttgart	Sophienstraße 35 D-70178 Stuttgart
Phone:	(49-711) 942.0	(49-711) 2039.0	(49-711) 62505.0
Fax:	(49-711) 942.1000	(49-711) 2039.600	(49-711) 628809
Category:	Luxurious	First Class	First Class
Distance to KKL:	1 minute walk	10 minute walk	10 minute walk
Room rates** (in Deutsche M.):			
Single occupancy	DM 245.–	DM 198.–	DM 170.–
Double occupancy (1 bed)	DM 300.–	DM 258.–	DM 230.–
Double occupancy (2 beds)	DM 300.–	DM 258.–	DM 230.–

* The reservation code for the Maritim Hotel is "CUG Stuttgart".
** Prices include breakfast.

Call for Papers

Spring 1999 CUG

May 1999, Minneapolis, MN USA

Deadline: November 15, 1998

Title of Paper _____

Abstract (two or three sentences)

Name _____

Organization _____ CUG Site Code(Mandatory) _____

Address _____

_____

City State/Province Mail/Zip Code Country

Daytime Phone _____ Fax _____

(Country code-city/area code) number (Country code-city/area code) number

Electronic Mail Address _____ Person submitting paper's Email address _____

Audio/Visual Requirements

- ❑ Video 1/2"
- ❑ 35-mm slide projector
- ❑ Video Projector to attach to your laptop
- ❑ Video 3/4"
- ❑ Overhead projector
- ❑ Other? _____

Suggested Session

- ❑ General Session
- ❑ Applications and Algorithms
- ❑ Graphics
- ❑ IRIX
- ❑ J90
- ❑ Mass Storage Systems
- ❑ Networking
- ❑ Operating Systems
- ❑ Operations
- ❑ Performance and Evaluation
- ❑ Security
- ❑ Software Tools
- ❑ User Services
- ❑ Tutorial
- ❑ Joint Session (list suggested sessions)_____
- ❑ Other_____

Please list any co-authors' names and Email addresses _____

Please check the CUG home page for guidelines for preparing and submitting your paper: **www.cug.org**
You will be contacted by your Session Organizer to notify you of acceptance or rejection of your paper. If you do not hear from your Session Organizer by January 15, 1999, then please contact Sam Milosevich, Program Steering Committee Chair, at the address below.

Return Address:

Sam Milosevich
Eli Lilly and Company
Computational Science Apps, MC499
Lilly Corporate Center, Drop 0715
Indianapolis, IN 46285-1513 USA
Phone: (1-317) 276-9118 Fax: (1-317) 277-3565
sam@lilly.com

Cray User Group Conference: Accompanying Persons Program

Registration Form

Booking deadline: April 20, 1998

Herewith I / we register for the following tour(s):

Tour 1. Tuesday, June 16, 1998 **Tübingen and Hohenzollern Castle**

Starting at 8:00 a.m. from Hotel Maritim. Price per person DM 90,00. Minimum no. of participants: 20

Name of participant(s): 1. _____ 2. _____

Invoicing address: _____

Fax: _____ Telephone: _____

Remarks: _____

Tour 2. Wednesday, June 17, 1998 **Stuttgart City tour by coach**

Starting at 9:00 a.m. from Hotel Maritim. Price per person DM 55,00. Minimum no. of participants: 20

Name of participant(s): 1. _____ 2. _____

Invoicing address: _____

Fax: _____ Telephone: _____

Remarks: _____

Tour 3. Thursday, June 18, 1998 **Heidelberg**

Starting at 8:00 a.m. from Hotel Maritim. Price per person DM 85,00. Minimum no. of participants: 20

Name of participant(s): 1. _____ 2. _____

Invoicing address: _____

Fax: _____ Telephone: _____

Remarks: _____

General Conditions of Contract: **Reservations**, **changes** and **cancellations MUST** be sent to the organizer by fax or letter:

EURO LLOYD BREUNINGER TRAVEL AGENCY, Torstr. 20, D- 70173 Stuttgart, Germany

Fax. 0049-711-237.31- 79 or .78 Tel. 0049-711-23731.80

Persons in charge: Nicole AUCH and Claudia GREGORI

Upon cancellation after receipt of confirmation, Euro Lloyd Breuninger Stuttgart is entitled to charge the following indemnification depending on the date of cancellation: from booking until May 20, 1998 DM 40,- per person.

PAYMENT: You will receive your invoice from Euro Lloyd Breuninger Travel Agency eight weeks ahead of the tour. Upon receipt of payment, voucher(s) will be forwarded to you by fax.

Herewith I / we place a binding order with the organizer, Euro Lloyd Breuninger Stuttgart, for booking the above tour(s). I confirm that I have read, understood and agree to the complete booking conditions and accept them on behalf of myself and all other participants named on this form.

Date: _____ Name: _____ Signature: _____

Cray User Group Conference–Post Conference Tour
Lake of Constance and Black Forest
June 19–21, 1998

Registration Form

Booking deadline: April 20, 1998

Name of participant(s): 1. _____ 2. _____

Invoicing address: _____

Fax: _____ Telephone: _____

Binding registration for: ❑ Double room ❑ Single room

Remarks:_____

Price per person: DM 498,00 Supplement for single person: DM 130,00

Additional stay overnight June 21–22, 1998:

Hotel Comfort Inn Stuttgart–Airport: The Stuttgart International Airport is approximately 5 minutes from the hotel by car .

❑ Double room DM 70,00 /person including breakfast ❑ Single room DM 105,00 including breakfast

General Conditions of Contract:

Reservations, **changes,** and **cancellations** are to be sent by fax or letter to:

EURO LLOYD BREUNINGER TRAVEL AGENCY
Torstr. 20,D- 70173 Stuttgart
Fax. 0049-711-23731.79 or .78 Tel. 0049-711-23731.80
Persons in charge: Nicole AUCH and Claudia GREGORI

Upon cancellation after receipt of confirmation, Euro Lloyd Breuninger Stuttgart is entitled to charge the following indemnification depending on the date of cancellation:

Cancellation fee (per person): from booking

until March 20	DM 100,00
until April 20	DM 200,00
until May 20	DM 300,00
later	DM 450,00

Travel documents will be issued by Euro Lloyd Breuninger Reisebüro in Stuttgart and sent to you!

PAYMENT:

You will receive your invoice from Euro Lloyd Breuninger Travel Agency eight weeks ahead of the tour. Upon receipt of your payment we will send you your travel documents without further request.

Herewith I / we place a binding order with the organizer, Euro Lloyd Breuninger Stuttgart, for booking the above program for the Cray User Group Conference—Post Conference Tour. I confirm that I have read, understood and agree to the complete booking conditions and accept them on behalf of myself and all other participants named on this form.

Date: _____Name:_____Signature:_____