# TT&D
Technical Training and Documentation

Training is key to making the best use of your Cray Inc. computer system. This presentation covers the courses and content offered by the Technical Training and Documentation department. It provides a calendar of scheduled training sessions and a glimpse of the training facilities in Chippewa Falls.

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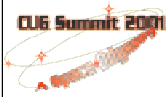
This presentation will introduce you to:

- The Technical Training and Documentation department (TTD) and what we do
- A little about our methods
- Our course catalog and content
- New courses in development
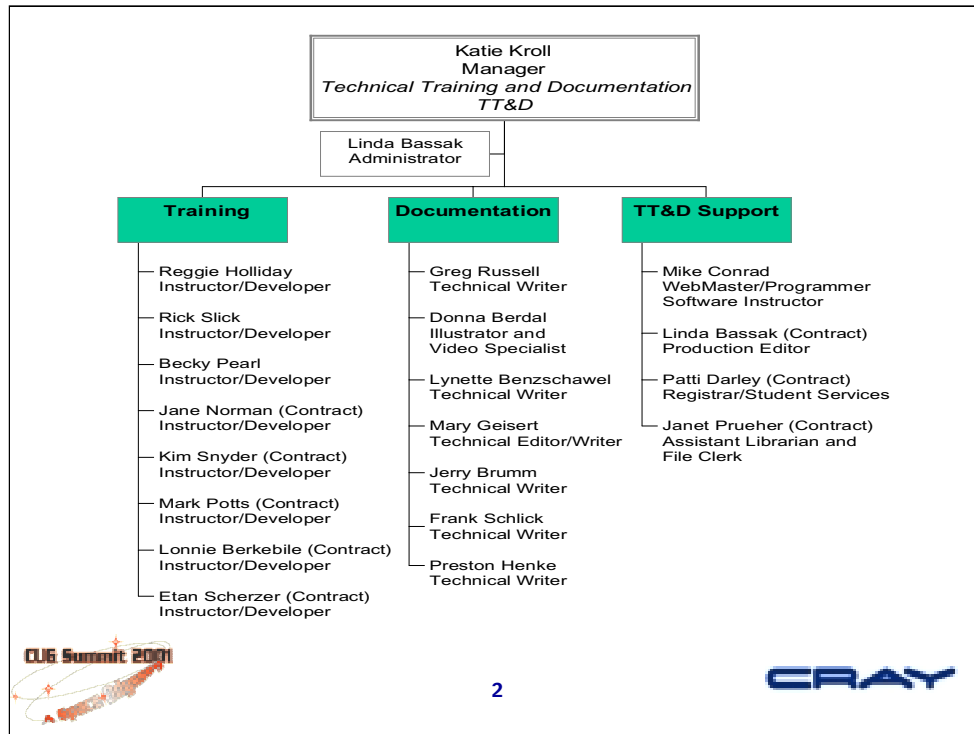
TTD is part of Central Service Operations, which is part of Worldwide Service. We perform all facets of documentation and training – from classroom to web sites.

TTD functions:

- Writing
- Editing
- Instruction
- Video production
- Registration
- Illustration
- Programming

Most of the TTD staff have many years of experience with Cray. The instructor contractors are former Cray employees.

Our writers and instructors develop TTD products based on the most current information from Cray product developers.

TTD Products

- **Service-oriented customer documentation**
- **Internal service documentation and videotapes**
- **Internal service training**
- **Customer training**

Service-oriented customer documentation includes site planning, installation, and overview information that is also published on our public web site. We also publish the Cray Service Bulletin, available from Crinform, which contains descriptions of software problems, information about service procedures or agreements, and references to future products for the private use of customers of Cray Inc. under the terms of their maintenance contract.

We produce a complete service documentation set for each Cray product, as well as overview and how-to videotapes for maintenance activities.

And of course, we handle all hardware and software training for Cray Inc. at our specially equipped facility in Chippewa Falls, WI. Some of those courses are covered in more detail later in this presentation.

Delivery is centralized to maximize our resources and limit administrative burden.

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We have three well equipped training rooms in Chippewa Falls: workstations for every student, ergonomic desks and chairs, presentation projectors, monitors and VCRs, etc.

Our staff provides complete registration and class setup services, expert system support for the equipment, and real-time interaction with our own Cray computer systems.

Classroom workstations are networked with our own SV1 and T3E, and we have access to a J90 and J90ses, T90, C90s (916, 94), and a YMP -- all the equipment currently represented at customer sites throughout the world. In Chippewa Falls, we are fortunate to have access to prototypes of machines in development.

The classroom setting with internal and external students from various sites enhances the learning opportunities through leveraging the real-life experiences of each individual.

Our training is skills based. We examine the user tasks and base the learning objectives on that task analysis.
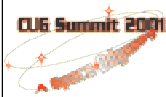
We develop the course presentation, materials, and activities around the competencies identified in the task analysis.

Our goal is to bridge the gap between the skills you already have and those you need to perform your job successfully.

Lab activities ensure transfer of learning to your environment.

Course structure is lecture, practice, lecture, application, … to ensure that students retain and transfer their learning to your environment.

Current Course List

- **DMFU - Data Migration Facility for UNICOS**
- **KSH - Korn Shell Programming**
- **NQE - Network Queuing Environment Basics & Troubleshooting**
- **PVPA - Cray PVP System Administration**
- **PVPOPT - Cray PVP Application Optimization**
- **SIOM - Cray Scalable Input/Output Maintenance**
- **SV1MC - Cray SV1 Maintenance Course**

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Brief descriptions of each of these courses are provided below, but you may also peruse these at your leisure at www.cray.com.

DMFU - This course covers configuration, customization, and troubleshooting, as well as the internal workings of DMF and failure recovery techniques.

NQE - This course explains the fundamentals of using, administering, configuring, and troubleshooting NQS and the features NQE offers, such as the Network Load Balancer and the NQE database. Students also will learn NQS protocol and how to read an NQS log file.

PVPA – This course covers the fundamentals of monitoring and maintaining Cray PVP systems that are equipped with one or more GigaRing channels connecting I/O nodes and operated from a system workstation (SWS). Examples of course topics include shutting down and rebooting the system, creating and managing user accounts, creating and backing up user file systems, monitoring system activity, and an overview of how to upgrade/re-install SWS/ION and UNICOS system software.

PVPOPT - This course describes how to optimize Fortran and C++ programs on Cray parallel vector processing systems. It provides practical experience to implement techniques that enhance CPU, I/O, and memory management performance. This course provides experience in using the performance analysis tools, debugging tools, and multitasking principles and tools.

SIOM - This course covers the skills necessary for diagnostic troubleshooting, repair and maintenance, and configuring or reconfiguring the system for additional devices, as well as how to run the system in degraded operation.

SV1MC – This course consists of a processor module and memory overview, an introduction to the diagnostic tools, and an overview of the field replacement procedures. Additional topics include system workstation (SWS) procedures, a mainframe simulator, and troubleshooting processes.

Current Course List

- **T3EAPOP - Cray T3E Application Programming & Optimization**
- **T3ESSS - Cray T3E System Support Skills**
- **UASA - UNICOS Advanced System Administration**
- **UFO - UNICOS Functional Overview**
- **UPT - UNICOS Performance Evaluation & Tuning**
- **UTAPE - UNICOS Tape Workshop**
- **UTNA - UNICOS TCP/IP Network Administration**

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T3EAPOP – This course provides practical experience in developing, debugging, and analyzing performance of massively parallel programs using the Cray parallel programming paradigms and tools. This course also covers low-level hardware and software components, communications, single-processor efficiency, and I/O optimization.

T3ESSS - This course focuses on the skills that are required to use and administer UNICOS/mk on a Cray T3E system with supporting system workstation (SWS) and GigaRing channel. Topics include hardware and software system architecture overview, operation and administration, analyst commands and procedures, UNICOS/mk system overview, application preparation, and "first level" problem detection and resolution.

UASA - This advanced course provides UNICOS system administrators with information about UNICOS architectures and hardware system monitoring tools, system troubleshooting, kernel reconfiguring and analysis, process management, memory management, disk performance, and hardware configurations.

UFO - This course provides a basic understanding of the major functions of the UNICOS operating system. Students will gain knowledge of the services that the UNICOS operating system provides to users. Brief overviews also will be included for some selected UNICOS daemons. Course information is presented primarily in a lecture and discussion format, without programming exercises or code reading.

UPT - This task-oriented course addresses configuring for optimum throughput, maximizing system efficiency, balancing the use of system resources to obtain optimal site performance, determining the effect of applications and other processes on system performance, and balancing desired workload and available system capacity.

UTAPE - This workshop is for Cray personnel and customers who support tapes on the UNICOS or UNICOS/mk operating systems. It explains the operation of the tape subsystem. It also describes how to install, configure, and customize these subsystems, as well as troubleshooting and failure recovery techniques.

UTNA – The skills addressed in this course include installing, configuring, and troubleshooting TCP/IP network software products in the UNICOS environment, including network file system (NFS), network information service, and domain name system (DNS). This course covers general network administration concepts and tools, and emphasizes practical knowledge of the interactions between network components and the diagnostic tools available.

Current Schedule
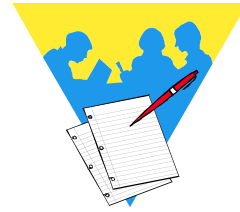
I have brochures with me today that include this schedule. You'll also find this schedule at www.cray.com under Products and Services.

Course Code and Title	Length	Schedule
SIOM - SIO Maintenance	5 days	July 9 - 13
SV1MC - SV1 Maintenance	3 days	July 16 - 18
UFO - UNICOS Functional Overview	3.5 days	July 23 - 26
T3ESSS - T3E System Support Skills	4.5 days	July 23 - 27
PVPA - PVP System Administration	4.5 days	July 30 - Aug 3
UPT - UNICOS Perf Eval and Tuning	4.5 days	July 30 - Aug 3
UTNA - UNICOS TCP/IP Net Admin	4.5 days	August 6 - 10
UASA - UNICOS Advanced Sys Admin	4.5 days	August 13 - 17
NQE - Network Queuing Environment	3 days	August 13 - 15

Courses Currently Under Development

Cray MTA2 Courses

- **System Administration - 4 days**
- **Network Administration - 1 day**
- **Programming/Optimization - 5 days**

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The system/network administration courses will include the following topics:

- Hardware and software overview
- Startup and shutdown process
- File system configuration and access
- NQS access
- System accounting
- System logs
- TCP/IP configuration
- Network interfaces and router definitions
- System and network administration tools

The programming and optimization course will include the following topics:

- Overview of multithreaded architecture
- Parallelism on the MTA
- Synchronization variables
- Writing implicitly parallel code
- Thread scheduling
- Writing explicitly parallel code
- Compiling for the MTA
- Debugging
- Performance tuning

Courses Currently Under Development

Cray SV2 Courses

- **System Administration - 5 days**
- **Network Administration - 2 days**
- **Programming/Optimization - 5 days**

The system/network administration courses will include the following topics:

- Hardware and software overview
- I/O system configuration
- System startup
- Scheduling
- Batch services
- Configuring and maintaining file systems
- System accounting
- Managing and interpreting log files
- Software installation
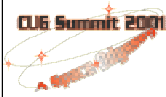- Network services and configuration
- Security

The programming and optimization course will include the following topics:

- Architecture and software overview
- Analysis tools
- Programming models
- Vectorization
- Distributed memory programming
- Shared memory programming
- Performance optimization
- Vectorization techniques
- Code migration

Courses Currently Under Development

SuperCluster Course

- **System/Network Administration**
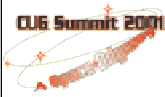
  - 3 days

The system and network administration course includes the following topics:

- Hardware and tools overview
- System configuration
- Job scheduling
- Network services and configuration
- Fibre Channel configuration
- Vendor documentation

900 Lowater Rd., Chippewa Falls, WI

Hope to see you soon for training in sunny Chippewa Falls, WI.