

Accredited Standards Committee\*

**InterNational Committee for Information Technology Standards (INCITS)**

**Doc. No.:** T10/07-213r0

**Date:** May 14, 2007

**Reply to:** John Lohmeyer

To: T10 Membership  
From: Ralph Weber / John Lohmeyer  
Subject: Minutes of T10 Plenary Meeting #79 -- May 10, 2007  
Bellevue, WA

## Agenda

1. Opening Remarks
2. Approval of Agenda
3. Attendance and Membership
4. Approval of Minutes - March 2007 - Memphis, TN (T10/07-117r0)
5. Document Distribution
6. Call for Patents
7. Review of Old Action Items
8. Project Status Reports
  - 8.1 Project Status Summary and INCITS Liaison [Lohmeyer]
    - 8.1.1 INCITS Antitrust Guidelines
  - 8.2 Bridge Controller Commands (BCC) Project 1528-D [Elliott]
  - 8.3 SCSI Enclosure Services - 2 (SES-2) Project 1559-D [Elliott]
  - 8.4 SCSI Stream Commands - 3 (SSC-3) Project 1611-D [Peterson]
  - 8.5 MultiMedia Command Set - 5 (MMC-5) Project 1675-D [McFerrin]
  - 8.6 SCSI Architecture Model - 4 (SAM-4) Project 1683-D [Penokie]
  - 8.7 SCSI / ATA Translation (SAT) Project 1711-D [Sheffield]
  - 8.8 Object-Based Storage Devices - 2 (OSD-2) Project 1729-D [Weber]
  - 8.9 SCSI Media Changer Command Set - 3 (SMC-3) Project 1730-D [Banther]
  - 8.10 SCSI Primary Commands - 4 (SPC-4) Project 1731-D [Weber]
  - 8.11 Serial Attached SCSI Driver Interface (SDI) Project 1740-D [Elliott]
  - 8.12 Automation/Drive Interface - Commands - 2 (ADC-2) Project 1741-D [Suhler]
  - 8.13 Automation/Drive Interface - Transport Protocol - 2 (ADT-2) Project 1742-D [Suhler]
  - 8.14 Serial Attached SCSI - 2 (SAS-2) Project 1760-D [Elliott]
  - 8.15 SCSI Block Commands - 3 (SBC-3) Project 1799-D [Penokie]
  - 8.16 SCSI / ATA Translation - 2 (SAT-2) Project 1826-D [Overby]
  - 8.17 Fibre Channel Protocol - 4 (FCP-4) Project 1828-D [Peterson]
  - 8.18 MultiMedia Command Set - 6 (MMC-6) Project 1836-D [McFerrin]
9. Old Business
  - 9.1 More Zone Groups (07-017r2) [Johnson]
  - 9.2 Task Tag Length and FCP (07-139r1) [Peterson]
10. New Business
  - 10.1 2007 Five-Year Maintenance Review of INCITS/T10 Standards (07-195) [Bennett]
  - 10.2 Actions on SAS Protocol Working Group Recommendations
  - 10.3 Actions on SAS PHY Working Group Recommendations

\*Operating under the procedures of The American National Standards Institute.

**INCITS Secretariat, Information Technology Industry Council (ITI)**

1250 Eye Street NW, Suite 200, Washington, DC 20005-3922

Email: [incits@itic.org](mailto:incits@itic.org) Telephone: 202-737-8888 FAX: 202-638-4922

- 10.4 Actions on SAT Working Group Recommendations
- 10.5 Actions on CAP Working Group Recommendations
- 10.6 Actions on Other Working Group Recommendations
- 11. ISO/IEC
  - 11.1 ISO/IEC Report [Robinson]
  - 11.2 ISO/IEC Business [Robinson]
- 12. Liaison Reports
  - 12.1 T11 Liaison Report [Snively]
  - 12.2 T13 Liaison Report [Colegrove]
  - 12.3 SFF Industry Group [Allan]
  - 12.4 SCSI Trade Association (STA) [Czekalski]
  - 12.5 IETF SCSI over IP [Black]
  - 12.6 SNIA [open]
  - 12.7 Trusted Computing Group [Fitzpatrick]
  - 12.8 MIPI Alliance [Shimor]
  - 12.9 IEEE P1619 [Ball]
- 13. Review of Action Items
- 14. Meeting Schedule
  - 14.1 Authorization of Working Group Meetings
- 15. Adjournment

## Results of Meeting

### 1. Opening Remarks

John Lohmeyer, the T10 Chair, called the meeting to order at 1:30 p.m., Thursday May 10, 2007. He thanked Bob Griswold and Mark Benedikt of Microsoft for hosting the meeting.

John said that INCITS subgroup membership forms and the T10 document subscription forms are available on the meeting web site. He said that people should use these forms to ensure the INCITS Secretariat has the latest membership information. These forms should be mailed directly to the INCITS Secretariat.

As is customary, the people attending introduced themselves. Attendance was taken electronically via the meeting web site.

### 2. Approval of Agenda

No additions/changes were made to the draft agenda.

John Lohmeyer moved and Ralph Weber seconded that the agenda be approved. In the absence of any objections, the motion passed unanimously.

No items were added or modified in the agenda during the course of the meeting.

### 3. Attendance and Membership

The membership requirements were reviewed. INCITS rules permit one vote per organization. An individual from a new organization must attend two out of three consecutive plenary meetings. He/she may apply for voting membership the second meeting via a letter to the Chair of T10. The individual may begin voting at the beginning of his/her second meeting. People who continue to attend T10 meetings are expected to join T10 and to pay INCITS Service Fees.

To maintain membership, organizations must pay the INCITS Service Fee (\$800 per year).

John briefly discussed the mailing fees. Complete pricing information is contained in the 2007 membership form (available at [http://www.t10.org/ftp/t10/mem\\_form.txt](http://www.t10.org/ftp/t10/mem_form.txt)).

There are also minimum attendance requirements to maintain voting membership on T10. If a member organization fails to attend two of the last three T10 meetings, they are warned that failing to attend the next T10 meeting would result in their membership being terminated.

The Chair said he had sent emails to 7 people from 4 organizations informing them that their membership was in jeopardy due to non-attendance (see 07-152r1) and that their membership would be terminated if they did not attend this meeting. The following organizations were in attendance jeopardy:

- Foxconn Electronics
- General Dynamics
- Hitachi Cable Manchester
- Iomega Corp.

All organizations in attendance jeopardy were present except:

- Hitachi Cable Manchester

Their representatives were changed to Advisory (non-voting) status.

John noted that NeoScale Systems Inc. joined T10 as a voting member since the last T10 meeting with Faisal Faruqi as Principal and Landon Noll as Alternate.

John called for requests to join the committee. No organizations joined at this meeting.

The T10 membership during the meeting was 40 organizations, down from the 41 member organizations extant at the time the meeting was convened. Enclosure (1) is the list of the people present at the meeting and enclosure (3) is the current T10 membership list.

John Lohmeyer reminded members that failure to vote on two out of the last three letter ballots also would result in membership jeopardy. The current letter ballot jeopardy status is as shown:

T10 Letter Ballot Jeopardy Report -- 2006/11/03

|                       | Ballot: 06-080r0 | 06-184r0 | 06-446r0 |
|-----------------------|------------------|----------|----------|
|                       | Report: 06-081r0 | 06-185r0 | 06-447r0 |
| Organization          | Acronym: SAT     | MMC-5    | ADC-2    |
| Iomega Corp.          | Yes              | Yes      | DNV      |
| Nvidia Corp.          | No               | Yes      | DNV      |
| Vitesse Semiconductor | Abs              | Abs      | DNV      |

Key:

- Yes Organization voted Yes
- No Organization voted No
- Abs Organization voted Abstain
- DNV Organization failed to return letter ballot
- Organization was not a voting member for the letter ballot
- (\*) Organization is in letter ballot jeopardy

#### **4. Approval of Minutes - March 2007 - Memphis, TN (T10/07-117r0)**

John Lohmeyer moved and Ralph Weber seconded that the minutes be approved as written. In the absence of any objections, the motion passed unanimously.

#### **5. Document Distribution**

Members who have any problems with their mailing subscription should deal directly with Barbara Bennett (bbennett@itic.org) (202) 626-5743. A subscription form is included on the meeting disk.

John Lohmeyer requested that all documents for the next mailing be uploaded to the T10 web site by 10:30 a.m. on Thursday May 17, 2007. Documents received after this time may go into a subsequent mailing.

John reminded the committee of the requirements for document submission. Since T10 meets its document retention requirements by preparing mailings, documents included in the mailing must be suitable for archiving. This means that Portable Document Format (PDF) and/or native-format electronic originals with proper identification must be submitted.

People can obtain T10 document numbers for new and revised T10 documents by filling out a web form at <http://www.t10.org/members/>. The assigned T10 document number will be sent to the requestor by e-mail. The requestor may then reply to this email, including the document to be posted as an attachment. The document will be automatically posted on the T10 web site.

T10 members can complete this entire process using their personal T10 password. John explained that members who do not know their password should surf to the above URL and click on the "forgot password" link to have their password sent to them via e-mail.

John noted that non-members can also use the above document number process, but their requests will require approval by an administrator.

Minutes are available on the T10 World Wide Web page (see below), and are distributed to the T10 Reflector.

To be added to the T10 Reflector, send an e-mail to [majordomo@t10.org](mailto:majordomo@t10.org) with the line 'subscribe t10' in the message body.

The INCITS Secretariat maintains a World Wide Web page at:

<http://www.incits.org/>.

LSI Logic maintains a web site on behalf of T10 on a server donated by the SCSI Trade Association at:

<http://www.t10.org/>

There is also a mirror site at:

<http://www.t11.org/t10/>

The T10 document register is available at:

<ftp://ftp.t10.org/t10/dr.txt>

#### **6. Call for Patents**

John Lohmeyer explained that this is a regular agenda item to identify any potential patent issues with developing standards and technical reports.

For additional information on ANSI procedures and the ANSI patent policy, please see the INCITS web page at <http://www.incits.org/call.htm>. The contact for INCITS patent issues is Lynn Barra (lbarra at itic dot org) or (202)

626-5739. Gene Milligan prepared a useful "Handy dandy Technical Committee's Patents Guide", which is available at <ftp://ftp.t10.org/t10/document.99/99-291r0.pdf>.

John Lohmeyer presented a summary of the ANSI patent policy prepared by Gary Robinson. The summary is also included on the Rules and Procedures (plus Patent Information) page on the T10 web site.

Bob Sheffield reminded the committee that a statement of the Intel patent policy can be found in T10/01-041r0.

John asked that anyone who knows of other applicable patents to contact him.

There were no other responses to the call for patents other than those mentioned above.

## 7. Review of Old Action Items

- 651 Bob Nixon will coordinate bi-directional read/write issues between FCP and OSD-2. *Complete.*
- 655 John Lohmeyer will forward the nomination Bill Ham as an Emeritus Member to INCITS for their approval. *Complete and approved by INCITS EB.*
- 656 John Lohmeyer will report the addition of the IEEE P1619 Liaison to INCITS. *Complete.*
- 657 John Lohmeyer will forward 07-086r1 to INCITS for their approval as the new T10 policy for T10 plenary meetings and accompanying meeting weeks. *Complete.*

## 8. Project Status Reports

### 8.1 Project Status Summary and INCITS Liaison [Lohmeyer]

John Lohmeyer said that the current T10 project status summary was included on the meeting web site and will be included in the mailing as usual.

Gary Robinson reported on the new fee structure that will take effect in 2008. The new fees are \$1,200/year for the TC and/or the first TG, plus \$400 for each additional TG.

#### 8.1.1 INCITS Antitrust Guidelines

All T10 members should be aware of the INCITS antitrust guidelines available at <http://www.incits.org/natrust.htm>.

John reminded committee members that all persons present at a T10 meeting are responsible for identifying potential violations of the antitrust guidelines and reporting them to the chair. Discussions of the following topics are considered sensitive:

- Any company's prices or pricing policies;
- Specific R&D, sales and marketing plans;
- Any company's confidential product, product development or production strategies;
- Whether certain suppliers or customers will be served;
- Prices paid to input sources; or
- Complaints about individual firms or other actions that might tend to hinder a competitor in any market.

### 8.2 Bridge Controller Commands (BCC) Project 1528-D [Elliott]

Rob Elliott reported that there has been no activity on BCC.

### 8.3 SCSI Enclosure Services - 2 (SES-2) Project 1559-D [Elliott]

Rob Elliott reported that SES-2 r17 containing all approved proposals will be uploaded in time for the mailing.

**8.4 SCSI Stream Commands - 3 (SSC-3) Project 1611-D [Peterson]**

In the absence of Dave Peterson, Paul Suhler reported on the activities of the SSC-3 working group (minutes in 07-238) by reviewing the electronic report Dave provided in 07-247r0.

**8.5 MultiMedia Command Set - 5 (MMC-5) Project 1675-D [McFerrin]**

John Lohmeyer reported that MMC-5 (INCITS 430-200x) finishes the seven-day management review on Friday May 11th. It then goes to the 30-day INCITS Executive Board approval letter ballot. It should go to ANSI shortly thereafter for approval and publication.

**8.6 SCSI Architecture Model - 4 (SAM-4) Project 1683-D [Penokie]**

George Penokie reported that a new revision of SAM-4 will be posted, hopefully in time for the mailing.

He reminded the committee of plans to conduct a forwarding Letter Ballot on SAM-4 after the July plenary. Any proposals related security will be placed in SAM-5. Any other SAM proposals should be brought to the committee's attention before July.

**8.7 SCSI / ATA Translation (SAT) Project 1711-D [Sheffield]**

John Lohmeyer reported that SAT (INCITS 431-200x) finishes the seven-day management review on Friday May 11th. It then goes to the 30-day INCITS Executive Board approval letter ballot. It should go to ANSI shortly thereafter for approval and publication.

**8.8 Object-Based Storage Devices - 2 (OSD-2) Project 1729-D [Weber]**

Ralph Weber reported that no new proposals have been approved for inclusion in OSD-2 so r02 will remain the current revision until at least July.

**8.9 SCSI Media Changer Command Set - 3 (SMC-3) Project 1730-D [Banther]**

In the absence of Michael Banther, Paul Suhler reported on the activities of the SMC-3 working group (minutes in 07-239) and reviewed the electronic report (07-245r0) provided by Michael.

**8.10 SCSI Primary Commands - 4 (SPC-4) Project 1731-D [Weber]**

Ralph Weber reported that SPC-4 r10 incorporating all approved proposals from the March meeting week was posted in April. SPC-4 r11 will be posted prior to the July meeting but not in time for the mailing. SPC-4 r11 will incorporate all approved proposals.

**8.11 Serial Attached SCSI Driver Interface (SDI) Project 1740-D [Elliott]**

Rob Elliott noted that there has been no activity on this project. He asked if there is still any interest in SDI. Mark Overby asked that the project be kept open at least until July.

**8.12 Automation/Drive Interface - Commands - 2 (ADC-2) Project 1741-D [Suhler]**

Paul Suhler reported on the activities of the ADI working group (minutes in 07-206) and provided an electronic report in 07-234r0. He noted that the group is planning to complete ADC-2 Letter Ballot comment resolution during the July meeting week. He asked that those who voted no on the Letter Ballot review the comments resolution in 06-475r3 and prepare to change their votes during the July meeting week.

Paul also noted that a new project proposal for ADC-3 is planned for processing in July.

John Lohmeyer was given an action item to add the ADC-3 project proposal to the July T10 agenda.

**8.13 Automation/Drive Interface - Transport Protocol - 2 (ADT-2) Project 1742-D [Suhler]**

Paul Suhler reported on the activities of the ADI working group (minutes in 07-206) and provided an electronic report in 07-234r0.

**8.14 Serial Attached SCSI - 2 (SAS-2) Project 1760-D [Elliott]**

Rob Elliott reported that several SAS-2 protocol proposals have been recommended (minutes in 07-183 and 07-210). The SAS-2 physical working group (minutes in 07-198 and 07-243) recommendation some SAS-2 changes too. See agenda items 10.2 and 10.3.

SAS-2 revision 10 will be posted containing all approved proposals in time for the mailing.

**8.15 SCSI Block Commands - 3 (SBC-3) Project 1799-D [Penokie]**

George Penokie reported that a new revision of SBC-3 containing the proposal approved by this meeting will be uploaded but maybe not in time for the mailing.

**8.16 SCSI / ATA Translation - 2 (SAT-2) Project 1826-D [Overby]**

Mark Overby reported that work is progressing well on SAT-2 (minutes in 07-211). SAT-2 revision 1 will be available in time for the July meeting, but maybe not in time for the mailing.

**8.17 Fibre Channel Protocol - 4 (FCP-4) Project 1828-D [Peterson]**

In the absence of Dave Peterson, Bob Nixon reported on the activities of the FCP-4 working group (minutes in 07-240) and reviewed an electronic report in 07-248r0 provided by Dave.

**8.18 MultiMedia Command Set - 6 (MMC-6) Project 1836-D [McFerrin]**

Bill McFerrin reported that the Mt. Fuji group and MMC WG are meeting jointly. This meeting week the primary topic was DVD dual layer. Bill noted that MMC-6 still needs an editor.

**9. Old Business****9.1 More Zone Groups (07-017r2) [Johnson]**

John Lohmeyer stated that 07-017r2 had been recommended by the March SAS working group, but not processed by T10 in March because the Two-Week rule was invoked.

John Lohmeyer moved that 07-017r2 be approved for inclusion in SAS-2. Chris Fore seconded the motion. The motion passed 15:0:18:8=40.

**9.2 Task Tag Length and FCP (07-139r1) [Peterson]**

Rob Elliott asked that discussion of this topic be remanded to the FCP-4 working group. George Penokie asked that this topic be removed from future T10 agendas until the FCP-4 working group addresses it.

**10. New Business****10.1 2007 Five-Year Maintenance Review of INCITS/T10 Standards (07-195) [Bennett]**

John Lohmeyer reported that INCITS is seeking T10's recommendation regarding reaffirmation, revision, or withdrawal of GPP.

George Penokie moved that T10 recommend withdrawal of GPP (INCITS TR-16). Bob Nixon seconded the motion. The motion passed 30:0:2:8=40.

John Lohmeyer took an action item inform INCITS that T10 recommends withdrawal of GPP (INCITS TR-16).

## 10.2 Actions on SAS Protocol Working Group Recommendations

George Penokie and Rob Elliott reviewed the following proposals recommended for inclusion in SAS-2 (from April 18-19 meeting):

- 07-124r0 (Remove Messages Between State Machines annex) [Elliott]
- 07-128r0 (Target handling of retransmit write DATA frames) [Sheffield]
- 07-154r1 (ATTACHED SAS ADDRESS for virtual phys) [Sheffield]
- 07-176r0 (SMP function result for incomplete descriptor lists) [Elliott]
- 07-178r0 (Connection request livelock avoidance) [Elliott]
- 07-167r0 (Add SNTT timer to SP\_27:SAS\_Settings) [Sheffield]
- 07-155r0 (Add expander reduced functionality to REASON field) [Elliott]

George Penokie reviewed the following proposals recommended for inclusion in SAS-2:

- 07-166r2 (Clarify scope of retransmitted XFER\_RDY & RESPONSE) [Sheffield]
- 07-177r2 (Port layer wide port ordering) [Elliott]
- 07-090r1 (Transmit IDENTIFY three times) [Elliott]
- 07-228r0 (ResetStatus port selector fixxes) [Day]
- 06-476r2 (WWN-based Attached Device Name for SATA) [Elliott]
- 06-373r3 (Zone manager password) [Elliott]
- 07-233r0 (Function result for 256 zone support) [Symons]
- 07-094r2 (UML changes for logical phys) [Penokie]

Rob Elliott moved that 07-124r0, 07-128r0, 07-154r1, 07-176r0, 07-178r0, 07-167r0, 07-155r0, 07-166r2, 07-228r0, 06-476r2, 07-233r0, and 07-094r2 be approved for inclusion in SAS-2. Bob Sheffield seconded the motion. The motion passed on a vote of 25:0:5:10=40.

Rob Elliott moved that 07-177r2 be approved for inclusion in SAS-2. Jim Scott seconded the motion. The motion passed on a vote of 11:0:19:10=40.

Rob Elliott moved that 07-090r1 be approved for inclusion in SAS-2. Mark Overby seconded the motion. Gerry Houlder stated that he would be voting against the proposal because his hardware cannot tolerate consecutive Identify frames unless there is at least one Dword between them. Steve Finch stated that he was not against the proposal, but he expressed concerns that no timing is specified for the send-three definition. The motion failed on a vote of 4:5:21:10=40.

Rob Elliott moved that 06-373r3 be approved for inclusion in SAS-2. Tim Symons seconded the motion. The motion passed on a vote of 6:1:25:8=40.

## 10.3 Actions on SAS PHY Working Group Recommendations

George Penokie reviewed 07-209r0 (Mini SAS 4x cable plug pull tab color) [Elliott and Neer] a proposal recommended for inclusion in SAS-2.

Rob Elliott moved that 07-209r0 be approved for inclusion in SAS-2. Bob Nixon seconded the motion. The motion passed on a vote of 20:2:10:8=40.



#### 10.4 Actions on SAT Working Group Recommendations

George Penokie and Mark Overby reviewed the following proposals recommended for inclusion in SAT-2:

- 07-074r2 (Translation of SECURITY PROTOCOL IN/OUT) [Hatfield]
- 07-146r0 (Fix command summary for SEND DIAGNOSTIC) [Sheffield]
- 07-148r0 (Use something other than 'comprises') [Sheffield]

Bob Sheffield moved that 07-074r2, 07-146r0, and 07-148r0 be approved for inclusion in SAT-2. Mark Overby seconded the motion. The motion passed on a vote of 17:0:14:9=40.

#### 10.5 Actions on CAP Working Group Recommendations

George Penokie reviewed 07-224r1 (Include deferred errors in QUERY UNIT ATTENTION) [Elliott] a proposal recommended for inclusion in SAM-4.

George Penokie reviewed the following proposals recommended for inclusion in SPC-4:

- 07-216r1 (NAA Locally Assigned designator format) [Elliott]
- 07-196r0 (LOG SELECT CDB page/subpage field usage) [Weber]
- 07-184r0 (Request for security protocol) [Ballard]
- 07-172r1 (Target Port Group membership clarification) [Knight]
- 07-159r1 (Add QTSS and QUAS bits to REPORT SUPPORTED TMF) [Elliott]

George Penokie reviewed 07-208r0 (Rename field in READ CAPACITY(16) parameter data) [Houlder] a proposal recommended for inclusion in SBC-3.

George Penokie reviewed 07-203r0 (Block Device Characteristics VPD page and medium rotation rate field) [Elliott] a proposal recommended for inclusion in SPC-4 and SBC-3.

George Penokie reviewed the following proposals recommended for inclusion in SES-2:

- 07-163r0 (New element status code) [Penokie]
- 07-202r1 (Indication if element may be hot swapped) [Penokie]

Rob Elliott moved that 07-224r1 be approved for inclusion in SAM-4; that 07-216r1, 07-196r0, 07-184r0, 07-172r1, and 07-159r1 be approved for inclusion in SPC-4; that 07-208r0 be approved for inclusion in SBC-3; that 07-203r0 as amended by the CAP working group (minutes in 07-212) be approved for inclusion in SPC-4 and SBC-3; that 07-163r0 and 07-202r1 be approved for inclusion in SES-2. Fred Knight seconded the motion. The motion passed on a vote of 28:0:2:10=40.

#### 10.6 Actions on Other Working Group Recommendations

No recommendations were made by other working groups.

### 11. ISO/IEC

#### 11.1 ISO/IEC Report [Robinson]

Gary Robinson presented the ISO/IEC report (see enclosure (2)).

**11.2 ISO/IEC Business [Robinson]****11.2.1 Approval of 25N1319, CD ISO/IEC 14776-151, SAS-1.1 [Robinson]**

Gary Robinson moved that T10 recommends that the SC25 TAG vote to approve 25N1319, CD ISO/IEC 14776-151 Information technology Small Computer System Interface Part 151: Serial Attached SCSI - 1.1 (SAS-1.1). Curtis Stevens seconded the motion. The motion passed as follows:

| Organization                 | Voter             | Vote          |
|------------------------------|-------------------|---------------|
| Adaptec, Inc.                | Chris Fore        | Yes           |
| AMCC                         | Paul von Stamwitz | Yes           |
| Amphenol Interconnect        | Gregory McSorley  | Yes           |
| Brocade                      |                   | (not present) |
| Dallas Semiconductor         | Steve Robalino    | Yes           |
| Dell, Inc.                   |                   | (not present) |
| EMC Corp.                    | Gary S. Robinson  | Yes           |
| Emulex                       | Robert H. Nixon   | Yes           |
| ENDL                         | Ralph O. Weber    | Yes           |
| FCI                          | Douglas Wagner    | Yes           |
| Foxconn Electronics          | Elwood Parsons    | Yes           |
| Fujitsu                      |                   | (not present) |
| General Dynamics             | Nathan Hastad     | Yes           |
| Hewlett Packard Co.          | Rob Elliott       | Yes           |
| Hitachi Global Storage Tech. | Dan Colegrove     | Yes           |
| IBM Corp.                    | George O. Penokie | Yes           |
| Intel Corp.                  |                   | (not present) |
| Iomega Corp.                 | Robert Payne      | Yes           |
| Kawasaki Microelectronics Am | Joel Silverman    | Yes           |
| KnowledgeTek, Inc.           | Dennis Moore      | Yes           |
| Lexar Media, Inc.            | John Geldman      | Yes           |
| LSI Corp.                    | John Lohmeyer     | Yes           |
| Marvell Semiconductor, Inc.  |                   | (not present) |
| Microsoft Corp.              | Mark Benedikt     | Yes           |
| Molex Inc.                   |                   | (not present) |
| NeoScale Systems Inc.        |                   | (not present) |
| Network Appliance            | Frederick Knight  | Yes           |
| Nvidia Corp.                 | Mark Overby       | Yes           |
| Panasonic Technologies, Inc  | Takaharu Ai       | Yes           |
| PMC-Sierra                   | Tim Symons        | Yes           |
| Quantum Corp.                | Paul Suhler       | Yes           |
| Samsung                      | Michael Rogers    | Yes           |
| SanDisk Corporation          | Avraham Shimor    | Yes           |
| Seagate Technology           | Gerald Houlder    | Yes           |
| STMicroelectronics, Inc.     | Stephen Finch     | Yes           |
| Sun Microsystems, Inc.       | Erich Oetting     | Yes           |
| Symantec                     | Roger Cummings    | Yes           |
| TycoElectronics              | Dan Gorenc        | Yes           |
| Vitesse Semiconductor        | Jim Scott         | Yes           |
| Western Digital              | Mark Evans        | Yes           |

This two-thirds international roll call vote passed (33:0:0:7=40).

Gary Robinson took an action item to recommend that the SC25 TAG vote to approve 25N1319, CD ISO/IEC 14776-151 Information technology Small Computer System Interface Part 151: Serial Attached SCSI - 1.1 (SAS-1.1).

## **12. Liaison Reports**

### **12.1 T11 Liaison Report [Snively]**

In the absence of Bob Snively, John Lohmeyer summarized the T11 electronic liaison report (07-225r0).

### **12.2 T13 Liaison Report [Colegrove]**

Dan Colegrove provided an oral report to the committee on the activities of T13. For details regarding T13 activities see [www.t13.org](http://www.t13.org).

### **12.3 SFF Industry Group [Allan]**

In the absence of Dal Allan, no SFF Industry Group liaison report was available.

### **12.4 SCSI Trade Association (STA) [Czekalski]**

In the absence of Marty Czekalski, John Lohmeyer reviewed an electronic report (07-246r0) on the activities of the SCSI Trade Association.

### **12.5 IETF SCSI over IP [Black]**

David Black reported that the IPS working group has basically the same status as reported in March.

### **12.6 SNIA [open]**

No report was made.

### **12.7 Trusted Computing Group [Fitzpatrick]**

In the absence of Mike Fitzpatrick, no report was presented.

### **12.8 MIPI Alliance [Shimor]**

Avraham reported that no new status was available from the MIPI Alliance.

### **12.9 IEEE P1619 [Ball]**

Matt Ball prepared an electronic report (07-241r0), which Gideon Avida presented.

## **13. Review of Action Items**

- 658 John Lohmeyer will add the ADC-3 project proposal to the July T10 agenda.
- 659 John Lohmeyer will inform INCITS that T10 recommends withdrawal of GPP (INCITS TR-16).
- 660 Gary Robinson will recommend that the SC25 TAG vote to approve 25N1319, CD ISO/IEC 14776-151 Information technology Small Computer System Interface Part 151: Serial Attached SCSI - 1.1 (SAS-1.1).

## **14. Meeting Schedule**

The next plenary meeting of T10 will be Thursday July 12, 2007 in Colorado Springs, CO at the Antlers Hilton Hotel (Reservations: [http://www.hilton.com/en/hi/groups/personalized/coscshf\\_lsi07/index.jhtml](http://www.hilton.com/en/hi/groups/personalized/coscshf_lsi07/index.jhtml)) hosted by LSI Corp. The meeting will begin at 9:00 a.m. on Thursday.

The meeting list for the next plenary week is:

July 2007 Meeting Map  
(2007/05/10 Version)

|                |                                |                      |    |    |          |                      |   |     |   |   |   |   |         |
|----------------|--------------------------------|----------------------|----|----|----------|----------------------|---|-----|---|---|---|---|---------|
| Monday 7/9     | 9                              | 10                   | 11 | 12 | 1        | 2                    | 3 | 4   | 5 | 6 | 7 | 8 |         |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | ADI-2 WG             |    |    | /        | SMC-3 WG             |   |     |   |   |   |   | (15)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | SAS Protocol WG      |    |    |          |                      |   |     |   |   |   |   | (40)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | IEEE P1619.3/        |    |    | P1619.1  |                      |   |     |   |   |   |   | (20)    |
|                | +-----+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
| Tuesday 7/10   | 9                              | 10                   | 11 | 12 | 1        | 2                    | 3 | 4   | 5 | 6 | 7 | 8 |         |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | SAS Physical WG      |    |    |          |                      |   |     |   |   |   |   | (45)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | SAT WG               |    |    |          | STA Marcom *         |   |     |   |   |   |   | (20)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | TCG KMSS *           |    |    |          | TCG SIIF *           |   |     |   |   |   |   | (20)    |
|                | +-----+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | FCP-4 /              |    |    | SSC-3 WG |                      |   |     |   |   |   |   | (25)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | Mt Fuji              |    |    |          |                      |   |     |   |   |   |   | (25)    |
|                | +-----+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
| Wednesday 7/11 | 9                              | 10                   | 11 | 12 | 1        | 2                    | 3 | 4   | 5 | 6 | 7 | 8 |         |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | CAP WG               |    |    |          |                      |   |     |   |   |   |   | (45)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                |                      |    |    |          |                      |   | SFF |   |   |   |   | (25)    |
|                | +-----+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | MMC WG               |    |    | /        | Mt Fuji              |   |     |   |   |   |   | (25)    |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | STA Plenary * / TCC* |    |    |          |                      |   |     |   |   |   |   | (20)    |
|                | +-----+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
| Thursday 7/12  | 9                              | 10                   | 11 | 12 | 1        | 2                    | 3 | 4   | 5 | 6 | 7 | 8 |         |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
|                |                                | CAP WG               |    |    | ////     | T10 Plenary/SAM Edit |   |     |   |   |   |   | (50/10) |
|                | +=====+                        |                      |    |    |          |                      |   |     |   |   |   |   |         |
| Friday 7/13    | 9                              | 10                   | 11 | 12 | 1        | 2                    | 3 | 4   | 5 | 6 | 7 | 8 |         |
|                | No meetings planned for Friday |                      |    |    |          |                      |   |     |   |   |   |   |         |

/ means the next meeting starts when the previous meeting concludes  
 Meetings marked with == are T10-authorized meetings.  
 Meetings marked with -- are other groups and may change without notice.  
 Meetings marked with (\*) are closed meetings of other groups.

## Other T10-authorized meetings:

| Meeting              | Date               | Location / Contact              |
|----------------------|--------------------|---------------------------------|
| SAS Protocol Call(s) | TBA                | TBA via T10 reflector / Elliott |
| SAS PHY Calls        | Weekly Thu 10a CDT | TBA via T10 reflector / Cox     |
| ADC-2 Call           | May 30 8a-10a PDT  | TBA via T10 reflector / Banther |
| Security Calls       | TBA                | TBA via T10 reflector / Penokie |
| SMC-3 Call           | Jun 13 8a-10a PDT  | TBA via T10 reflector / Banther |
| ADC-2 Call           | Jun 20 8a-10a PDT  | TBA via T10 reflector / Banther |
| Security Call        | TBA                | TBA via T10 reflector / Penokie |

## Map Abbreviation Key:

ad hoc: a.k.a., working group  
 ADI: Automation Drive Interface (tape library interface)  
 Amnd: Amendment  
 CAP: Commands, Architecture, and Protocols  
 FC: Fibre Channel  
 FCP-4: Fibre Channel Protocol - 4  
 IEEE P1619: IEEE Security in Storage Working Group  
 I/F: Interface  
 IETF: Internet Engineering Task Force (the group that sets Internet standards)  
 iFC: Internet Fibre Channel  
 IPS: Internet Protocol SCSI  
 iSCSI: Internet SCSI  
 LB: Letter Ballot  
 MMC: Multimedia Commands (CD-ROM, DVD, etc.)  
 OSD: Object-based Storage Device  
 PH or PHY: Physical (Connectors, Cables, Transceivers, etc.)  
 Prot: Protocol  
 Plenary: Full Committee Meeting  
 Res: Resolution  
 SAS: Serial Attached SCSI  
 SAT-2: SCSI / ATA Translation - 2  
 SBC-3: SCSI Block Commands - 3  
 SCSI: Small Computer System Interface  
 SES: SCSI Enclosure Services  
 SFF: SFF Industry Group (not an INCITS activity)  
 SG: Study Group  
 SMC-3: SCSI Medium Changer - 3 Commands  
 SPC-4: SCSI Primary Commands - 4 (4th generation)  
 SSC-3: SCSI Stream Commands - 2 (includes Tape)  
 STA: SCSI Trade Association (Closed meeting -- not an INCITS activity)  
 STA Marcom: STA Marketing Communications (Closed meeting -- not an INCITS activity)  
 T10: SCSI Storage Interfaces Technical Committee  
 T11: Fibre Channel Interfaces Technical Committee  
 T13: ATA Storage Interface  
 TCG: Trusted Computing Group  
 TCG SIIF: Trusted Computing Group Storage Interface Interactions Forum  
 WG: Working Group (same as Ad Hoc Group)

For more information about T10 activities, please contact the following people:

| Activity                                  | Contact         | Telephone/Email                                |
|---|-----------------|--|
| ADT, ADC, ADT-2, ADC-2                    | Paul Entzel     | (720) 406-5782<br>paul.entzel@quantum.com      |
| SBC-2, SES-2, SAS-1.1, SAS-2,<br>BCC, SDI | Rob Elliott     | (281) 518-5037<br>Elliott@hp.com               |
| MMC-5, MMC-6                              | Bill McFerrin   | (325) 423-1560<br>billmc37@ctesc.net           |
| SBP-3                                     | Peter Johansson | (510) 527-3926<br>PJohansson@ACM.org           |
| SAM-4, SBC-3                              | George Penokie  | (507) 253-5208<br>gop@us.ibm.com               |
| SAT                                       | Bob Sheffield   | (480) 554-8597<br>robert.l.sheffield@intel.com |
| SAT-2                                     | Mark Overby     | (425) 417-9412<br>moverby@nvidia.com           |
| SMC-2                                     | Erich Oetting   | (303) 673-2178<br>Erich_Oetting@Stortek.com    |
| SMC-3                                     | Noud Snelder    | +31408446108<br>Noud.snelder@bdt.de            |
| SPC-3, SAM-3, SPC-4, OSD-2                | Ralph Weber     | (214) 912-1373<br>roweber@acm.org              |
| SSC-3, FCP-3, FCP-4                       | Dave Peterson   | (763) 268-6139<br>david.peterson@mcddata.com   |
| Other Activities                          | John Lohmeyer   | (719) 533-7560<br>lohmeier@t10.org             |

The long-term T10 meeting week schedule is:

| Date   | Location             | Host/Comments     |
|--|----------------------|-------------------|
| Approved dates and locations for 2007:                     |                      |                   |
| Jul 9-13, 2007   | Colorado Springs, CO | LSI               |
| Sep 17-21, 2007  | Vancouver, BC Canada | PMC-Sierra        |
| Nov 5-9, 2007  | Las Vegas, NV        | Hitachi GST       |
| Approved dates, locations, and hosts for 2008:             |                      |                   |
| Jan 14-18, 2008  | Santa Ana, CA        | Western Digital   |
| Mar 10-14, 2008  | Raleigh, NC          | Network Appliance |
| May 5-9, 2008  | Santa Clara, CA      | Nvidia            |
| Jul 14-18, 2008  | Anchorage, AK        | Emulex            |
| Sep 8-12, 2008   | Colorado Springs, CO | LSI               |
| Nov 3-7, 2008  | Orlando, FL          | Symantec          |
| Proposed dates and tentative locations and hosts for 2009: |                      |                   |
| Jan 12-16, 2009  |                      |                   |
| Mar 9-13, 2009   |                      |                   |
| May 4-8, 2009  | Seattle, WA          | Microsoft         |
| Jul 13-17, 2009  | Colorado Springs, CO | LSI               |
| Sep 7-11, 2009   |                      |                   |
| Nov 9-13, 2009   | Las Vegas, NV        | Hitachi GST       |

John Lohmeyer moved and Bob Nixon seconded that T10 approve Emulex hosting the July 2008 T10 meeting week in Anchorage, AK and move the Colorado Springs meeting hosted by LSI to September 2008. John Lohmeyer noted that this motion requires a two-thirds vote per the T10 policy 07-086r1. The motion passed 24:0:5:11=40.

John Lohmeyer moved and Erich Oetting seconded that T10 approve the 2009 meeting dates and the November 2009 location and host. In the absence of any objections, the motion passed unanimously.

John Lohmeyer asked people interested hosting one of the above meetings to contact him.

#### **14.1 Authorization of Working Group Meetings**

John noted that the working group meetings are required to operate under the same voting procedures as does T10 (that is, one vote per organization) and the results of a working group are not binding on the parent committee. Working groups should strive to achieve consensus prior to bringing issues to T10.

Erich Oetting moved that T10 authorize the T10-related meetings and events in the list above that had not previously been approved through the end of June 2007. Roger Cummings seconded the motion. In the absence of any objections, the motion passed unanimously.

#### **15. Adjournment**

John Lohmeyer moved and Ralph Weber seconded that the meeting be adjourned. In the absence of any objections, the motion passed unanimously. The meeting was adjourned at 3:30 p.m. on Thursday May 10, 2007.

**Enclosure(1) -- Meeting Attendees**

| Name                  | S  | Organization                 |
|-----------------------|----|------------------------------|
| Mr. Chris Fore        | P  | Adaptec, Inc.                |
| Mr. Paul von Stamwitz | P  | AMCC                         |
| Mr. Gregory McSorley  | P  | Amphenol Interconnect        |
| Mr. Jaremy Flake      | AV | ATL Technology               |
| Mr. David Peterson    | P  | Brocade                      |
| Mr. Steve Robalino    | A  | Dallas Semiconductor         |
| Mr. Gideon Avida      | P  | Decru                        |
| Mr. David Black       | A  | EMC Corp.                    |
| Mr. Gary S. Robinson  | P  | EMC Corp.                    |
| Mr. William Martin    | P  | Emulex                       |
| Mr. Robert H. Nixon   | A  | Emulex                       |
| Mr. Ralph O. Weber    | P  | ENDL Texas                   |
| Mr. Douglas Wagner    | P  | FCI                          |
| Mr. Elwood Parsons    | P  | Foxconn Electronics          |
| Mr. Nathan Hastad     | P  | General Dynamics             |
| Mr. Rob Elliott       | P  | Hewlett Packard Co.          |
| Mr. Dan Colegrove     | P  | Hitachi Global Storage Tech. |
| Mr. George O. Penokie | P  | IBM Corp.                    |
| Mr. Sivan Tal         | V  | IBM Corp.                    |
| Mr. Robert Sheffield  | P  | Intel Corp.                  |
| Mr. Robert Payne      | P  | Iomega Corp.                 |
| Mr. Joel Silverman    | P  | Kawasaki Microelectronics Am |
| Mr. Dennis Moore      | P  | KnowledgeTek, Inc.           |
| Mr. John Geldman      | P  | Lexar Media, Inc.            |
| Mr. John Lohmeyer     | P  | LSI Corp.                    |
| Mr. Paul Wassenberg   | A  | Marvell Semiconductor, Inc.  |
| Mr. Mark Benedikt     | P  | Microsoft Corp.              |
| Mr. Robert Griswold   | A  | Microsoft Corp.              |
| Mr. Landon Noll       | A  | NeoScale Systems Inc.        |
| Mr. Frederick Knight  | A  | Network Appliance            |
| Mr. Mark Overby       | P  | Nvidia Corp.                 |
| Mr. Takaharu Ai       | A  | Panasonic AVC Networks Co.   |
| Mr. Tim Symons        | P  | PMC-Sierra                   |
| Dr. Paul Suhler       | A  | Quantum Corp.                |
| Mr. Michael Rogers    | A  | Samsung                      |
| Mr. Avraham Shimor    | P  | SanDisk Corporation          |
| Mr. Alvin Cox         | A  | Seagate Technology           |
| Mr. Gerald Houlder    | P  | Seagate Technology           |
| Mr. Stephen Finch     | P  | STMicroelectronics, Inc.     |
| Mr. Erich Oetting     | P  | Sun Microsystems, Inc.       |
| Mr. Roger Cummings    | P  | Symantec                     |
| Ms. Ashlie Fan        | P  | TycoElectronics              |
| Mr. Dan Gorenc        | A  | TycoElectronics              |
| Mr. Scott Shuey       | A# | TycoElectronics              |
| Mr. Jim Scott         | P  | Vitesse Semiconductor        |
| Mr. Mark Evans        | P  | Western Digital              |
| Mr. Curtis Stevens    | A  | Western Digital              |

47 People Present



Status Key: P - Principal                    L - Liaison  
              A,A# - Alternate                E - Emeritus  
              AV - Advisory Member        V - Visitor

**Enclosure(2) -- ISO Status****T10 ISO Status Report - 05/10/2007**

| <b>ISO Proj.</b> | <b>Acronym</b> | <b>Part Num.</b> | <b>Last Step Completed</b>               | <b>Comments</b>   |
|------------------|----------------|------------------|--|---|
| 1.25.13.10.14    | RL             | 24740            | S3: FCD Ballot completed                 | FCD Approved, 25n1257, Japan needs to supply FDIS text                      |
| 1.25.13.11.13    | SMC            | 14776-351        | S7: IS Published                         |   |
| 1.25.13.11.19    | SAM-2          | 14776-412        | S7: IS Published                         | Published   |
| 1.25.13.11.22    | SES-2          | 14776-372        | S2: NWIP Approved                        | Waiting for FCD text  |
| 1.25.13.11.28    | SPI-4          | 14776-114        | S8: WITHDRAWAL, INCITS as JTC1 TAG votes | INCITS Approved Withdrawal  |
| 1.25.13.11.31    | SBC-2          | 14776-322        | S7: IS Published                         |   |
| 1.25.13.11.33    | SPC-3          | 14776-453        | S1: SC25 started ballot on NWIP          | NWIP in ballot, SC25 N1247, US voted YES, FCD text available                |
| 1.25.13.11.37    | SSM-2          | 14776-132        | S8: WITHDRAWAL, SC25 Resolution          | Voted to remove from SC25 Program of Work., Resolution BL-WG4-11            |
| 1.25.13.11.38    | PIP            | 14776-121        | S3: FCD Ballot completed                 | FCD Approved, SC25n1226, Editor changing to FDIS text                       |
| 1.25.13.11.39    | SBP-3          | 14776-233        | S8: WITHDRAWAL, SC25 Resolution          | Voted to remove from SC25 Program of Work, Resolution BL-WG4-13             |
| 1.25.13.11.45    | SAM-3          | 14776-413        | S5: INCITS votes on FDIS in JTC1         | US approved FDIS, responded to pre-publishing questions 01/05/2007          |
| 1.25.13.11.46    | SAS-1.1        | 14776-151        | S3: TC motion on FCD                     | Is out for CD ballot before FCD. (Comment should be CD not FCD) NEED Motion |
| 1.25.13.11.47    | FCP-3          | 14776-223        | S2: NWIP Approved                        | NWIP approved, need text  |
| 1.25.13.18-1     | ATAPI-7-1      | 24739-1          | S3: FCD Ballot completed                 | FCD Approved. , 25n1260, Need FDIS text. This is volume 1 of 3.             |

**T10 ISO Status Report - 05/10/2007**

| <b>ISO Proj.</b>  | <b>Acronym</b> | <b>Part Num.</b>  | <b>Last Step Completed</b>                     | <b>Comments</b>            |
|-------------------|----------------|-------------------|--|----------------------------|
| 1.25.13.18-2      | ATAPI-7-2      | 24739-2           | S2: SC25 TAG sent FCD to SC25                  | FCD text ready for ballot  |
| 1.25.13.18-3      | ATAPI-7-3      | 24739-3           | S2: SC25 TAG sent FCD to SC25                  | FCD text ready for ballot  |
| 1.25.13.____<br>- | SPC            | 14776-<br>311/451 | S8: WITHDRAWAL,<br>INCITS as JTC1 TAG<br>votes | INCITS Approved Withdrawal |

**Enclosure(3) -- T10 Attendance Database**

Generated on 2007/05/14 at 10:11:41

Dr. William Ham (E) Phone: (978) 828-9102  
Fax: (978) 470-0321  
92 Wildwood Road Email: bill\_ham at ix dot netcom dot com  
Andover, MA 01810

Mr. Chris Fore (P) Phone: (919) 287-2024  
Fax: (919) 287-2099  
Adaptec, Inc. Email: chris\_fore at adaptec dot com  
523 Davis Drive, Suite 500  
Durham, NC 27713

Mr. Tom Treadway (A) Phone: 321-207-1267  
Fax:  
Adaptec, Inc. Email: tom\_treadway at adaptec dot com  
2602 Challenger Tech Court  
Suite 190  
Orlando, FL 32826

Mr. Paul von Stamwitz (P) Phone: (408) 542-8767  
Fax: (408) 542-8605  
AMCC Email: pvstamwitz at amcc dot com  
215 Moffett Park Drive  
Sunnyvale, CA 95089

Mr. Gregory McSorley (P) Phone: 508-829-6523  
Fax: 508-829-6523  
Amphenol Interconnect Email: greg dot mcsorley at aipce dot com  
66 Mixer Rd.  
Holden, MA 01520

Mr. Michael Wingard (A) Phone: (607) 786-4241  
Fax: (607) 786-4311  
Amphenol Interconnect Email: mike dot wingard at aipce dot com  
20 Valley St.  
Endicott, NY 13760

Mr. Jaremy Flake (AV) Phone: (801) 853-4009  
Fax: (801) 491-6364  
ATL Technology Email: jaremyf at atlconnect dot com  
1335 W. 1650 N.  
Springville, UT 84663

Mr. David Peterson (P) Phone: (763) 268-6139  
Fax:  
Brocade Email: david dot peterson at brocade dot  
6000 Nathan Lane North com  
Minneapolis, MN 55442

Mr. Robert Snively (A) Phone: (408) 333-8135  
Fax:

1745 Technology Drive  
San Jose, CA 95110

Email: rsnively at brocade dot com

Mr. John Tyndall (AV)  
Crossroads Systems, Inc.  
8300 North Mopac Expressway  
Austin, TX 78749

Phone: (512) 928-7282  
Fax:  
Email: jtyndall at crossroads dot com

Mr. Gregory Tabor (P)  
Dallas Semiconductor  
4747 Centennial Blvd.  
Colorado Springs, CO 80919

Phone: 719-278-2063  
Fax:  
Email: greg dot tabor at dalsemi dot com

Mr. Steve Robalino (A)  
Dallas Semiconductor

Phone: (512) 423-6198  
Fax:  
Email: Steven dot robalino at dalsemi dot com

Mr. Gideon Avida (P)  
Decru  
275 Shoreline Dr.  
Suite 450  
Redwood City, CA 94065

Phone: (650)413-6700  
Fax: (650)413-6790  
Email: gideon at decru dot com

Mr. Kevin Marks (P)  
Dell, Inc.  
One Dell Way - MS 8540  
Round Rock, TX 78682

Phone: (512) 723-9173  
Fax: (512) 723-6657  
Email: kevin\_marks at dell dot com

Mr. Gary S. Robinson (P)  
EMC Corp.  
85 East India Row  
Apt 18C  
Boston, MA, 02110

Phone: (617) 512-8859  
Fax:  
Email: g dot robinson at computer dot org

Mr. David Black (A)  
EMC Corp.  
176 South St.  
Hopkinton, MA 01748

Phone: (508) 293-7953  
Fax: (508) 293-7786  
Email: black\_david at emc dot com

Mr. Mickey Felton (A#)  
EMC Corp.  
21 coslin Drive  
Southboro, MA 01772

Phone: 508 382 7206  
Fax:  
Email: felton\_mickey at emc dot com

Mr. William Martin (P)

Phone: (916) 772-3658

Emulex  
7213 Marblethorpe Dr  
Roseville, CA 95747  
Fax: (916) 771-5416  
Email: bill dot martin at emulex dot com

Mr. Robert H. Nixon (A)  
Emulex  
3333 Susan St.  
Costa Mesa, CA 92626  
Phone: (714) 885-3525  
Fax: (714) 885-3794  
Email: bob dot nixon at emulex dot com

Mr. I. Dal Allan (A)  
ENDL  
14426 Black Walnut Ct.  
Saratoga, CA 95070  
Phone: (408) 867-6630  
Fax: (408) 867-2115  
Email: endlcom at acm dot org

Mr. Ralph O. Weber (P)  
ENDL Texas  
Suite 102#178  
18484 Preston Rd.  
Dallas, TX 75252  
Phone: (214) 912-1373  
Fax: (972) 596-2775  
Email: roweber at ieee dot org

Mr. Douglas Wagner (P)  
FCI  
472 Delwood Ct.  
Newbury Park, CA 91320-4819  
Phone: (805) 498-0325  
Fax:  
Email: dwagner at fciconnect dot com

Mr. Elwood Parsons (P)  
Foxconn Electronics  
100 S. 38th St.  
Harrisburg, PA 17105  
Phone: (717) 558-7518 x141  
Fax: (717) 558-9306  
Email: elwood dot parsons at foxconn dot com

Mr. Mike Fitzpatrick (P)  
Fujitsu  
1255 East Arques Ave.  
Sunnyvale, CA 94085  
Phone: (405) 820-5809  
Fax: (405) 755-8073  
Email: mfitzpatrick at us dot fujitsu dot com

Mr. Ben-Koon Lin (A)  
Fujitsu  
2904 Orchard Pkwy.  
San Jose, CA 95134  
Phone: (408) 894-3979  
Fax: (408) 894-3908  
Email: blin at fcpa dot fujitsu dot com

Mr. Erhard Weiss (AV)  
Fujitsu Siemens Comp. GmbH  
Department: FSC VP CC TEC  
Burgermeister Ulrich Str 100  
Phone: 49-821-804-3602  
Fax: 49-821-804-3662  
Email: erhard dot weiss at fujitsu-siemens dot com

D-86199 Augsburg, Germany

Mr. Nathan Hastad (P) Phone: (952) 921-6237  
General Dynamics Fax: (952) 956-5445  
8800 Queen Avenue South Email: nathan dot hastad at gd-ais dot com  
Bloomington, MN 55431

Mr. Tim Mackley (A) Phone: (952) 921-6866  
General Dynamics Fax:  
8800 Queen Ave. S. Email: timothy dot mackley at gd-ais dot  
com  
Bloomington, MN 55431

Ms. Liza Hunt (XO) Phone:  
Global Engineering Documents Fax:  
15 Inverness Way East Email:  
Englewood, CO 80112-5704

Mr. Rob Elliott (P) Phone: (281) 518-5037  
Hewlett Packard Co. Fax: (281) 518-7135  
MC140801 Email: Elliott at hp dot com  
PO Box 692000  
Houston, TX 77269-2000

Mr. Michael Banther (A) Phone: (44 117) 312-9503  
Hewlett Packard Co. Fax: (44 117) 312-9978  
Filton Road Email: michael\_banther at hp dot com  
Stoke Gifford  
Bristol BS34 8QZ England

Mr. Zane Daggett (AV) Phone: (603) 669-4347 x236  
Hitachi Cable Manchester Fax: (603) 669-9621  
900 Holt Ave. Email: zdaggett at hcm dot hitachi dot com  
Manchester, NH 03109

Mr. Mike Guzman (AV) Phone: (603) 669-4347  
Hitachi Cable Manchester Fax: (603) 669-9621  
900 Holt Ave. Email: mguzman at hcm dot hitachi dot com  
Manchester, NH 03109

Mr. Dan Colegrove (P) Phone: (702) 614-6119  
Hitachi Global Storage Tech. Fax: (702) 614-7955  
2903 Carmelo Dr. Email: daniel dot colegrove at hgst dot com  
Henderson, NV 89052

Ms. Sally Castillo (A) Phone: (507) 322-2316  
Hitachi Global Storage Tech. Fax: (507) 322-2413  
3055 41st Street NW Email: Sally dot Castillo at hgst dot com

Rochester, MN, 55901

Mr. George O. Penokie (P) Phone: (507) 253-5208  
IBM Corp. Fax: (507) 253-2880  
MS 2C6 Email: gop at us dot ibm dot com  
3605 Highway 52 N.  
Rochester, MN 55901

Mr. Kevin Butt (A) Phone: (520) 799-5280  
IBM Corp. Fax:  
M/S 9032-2 6TY Email: kdbutt at us dot ibm dot com  
9000 S. Rita Rd.  
Tucson, AZ 85744

Mr. Robert Sheffield (P) Phone: (480) 554-8597  
Intel Corp. Fax: (480) 554-7347  
5000 W. Chandler Blvd. Email: robert dot l dot sheffield at intel  
dot com  
Chandler, AZ 85226-3699

Dr. Mark Seidel (A) Phone: (480) 554-9755  
Intel Corp. Fax:  
5000 W. Chandler Blvd. Email: mark dot n dot seidel at intel dot  
com  
Chandler, AZ 85226

Mr. Robert Payne (P) Phone: (801) 332-4438  
Iomega Corp. Fax: (801) 778-4170  
1821 Iomega Way Email: PayneR at iomega dot com  
Roy, UT 84067

Mr. Joel Silverman (P) Phone: (408) 570-0555 x405  
Kawasaki Microelectronics Am Fax:  
2570 North 1st Street #301 Email: joel at k-micro dot us  
San Jose, CA 95131

Mr. Hugh Curley (AV) Phone: 303-682-1886  
KnowledgeTek Fax:  
3405 Larkspur Drive Email: hcurley at indra dot com  
Longmont, Co 80503

Mr. Dennis Moore (P) Phone: (303) 465-1800  
KnowledgeTek, Inc. Fax: (303) 426-2600  
8620 Wolff Ct., Suite 108 Email: dmoore at ix dot netcom dot com  
Westminster, CO 80031

Mr. John Geldman (P) Phone: (510) 580 8715



Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Fax: (510) 580 0504  
Email: jgeldman at lexar dot com

Mr. Martin Furuhjelm (A)  
Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Phone: (510) 580-2368  
Fax: (510) 580-0478  
Email: mfuluhjelm at lexar dot com

Mr. Pat LaVarre (A#)  
Lexar Media, Inc.  
47300 Bayside Parkway  
Fremont, CA 94538

Phone: (510) 743 4533  
Fax: (510) 580 0504  
Email: p dot lavarre at ieee dot org

Mr. John Lohmeyer (P)  
LSI Corp.  
4420 ArrowsWest Dr.  
Colorado Springs, CO 80907

Phone: (719) 533-7560  
Fax: (719) 533-7183  
Email: lohmeier at t10 dot org

Mr. Keith Holt (A)  
LSI Corp.  
3718 N. Rock Rd.  
Wichita, KS 67226-1397

Phone: (316) 636-8665  
Fax:  
Email: keith dot holt at lsi dot com

Mr. Bernhard Laschinsky (A#)  
LSI Corp.  
Room 12B-202  
  
1110 American Parkway NE  
Allentown, PA 18109

Phone: (610) 712-7937  
Fax:  
Email: Bernhard dot Laschinsky at lsi dot com

Mr. David Geddes (P)  
Marvell Semiconductor, Inc.  
5488 Marvell Lane  
E-203  
Santa Clara CA 95054

Phone: (408) 222-3307  
Fax: (408) 988-0136  
Email: dgeddes at marvell dot com

Mr. Paul Wassenberg (A)  
Marvell Semiconductor, Inc.  
26880 Aliso Viejo Pkwy, #100  
Aliso Viejo, CA 92656

Phone: 949-614-7714  
Fax: 949-614-7780  
Email: paulw at marvell dot com

Mr. Tim Brackett (AV)  
Meritec  
1382 West Jackson Street  
Painesville, OH 44077

Phone: (707) 836-7883  
Fax: (707) 836-7959  
Email: tbrackett at meritec dot com

Mr. Edward Cady (AV) Phone: (503) 359-4556  
Meritec Fax: (503) 359-9273  
1382 West Jackson Street Email: ecady at meritec dot com  
Painesville, OH 44077

Mr. Mark Benedikt (P) Phone: (425) 704-9998  
Microsoft Corp. Fax: (425) 936-7329  
One Microsoft Way Email: markben at microsoft dot com  
Redmond, WA 98052

Mr. Robert Griswold (A) Phone: (425) 707-0271  
Microsoft Corp. Fax: (425) 936-7329  
One Microsoft Way. Email: rogris at microsoft dot com  
Redmond, WA 98052

Mr. Jay Neer (P) Phone: (561) 447-2907 x3889  
Molex Inc. Fax: (561) 447-2908  
399 W. Camino Gardens Blvd. Email: jay dot neer at molex dot com  
Suite 103  
Boca Raton, FL 33432

Mr. Jerry Kachlic (A) Phone: (630) 718-5991  
Molex Inc. Fax: (630) 512-8622  
2216 Wellington Court Email: jerry dot kachlic at molex dot com  
Lisle, IL 60532

Mr. Faisal Faruqui (P) Phone: (408) 473-1370  
NeoScale Systems Inc. Fax: (408) 473-1307  
1655 McCarthy Boulevard Email: ffaruqui at neoscale dot com  
Milpitas, CA 95035-8000

Mr. Landon Noll (A) Phone: (408) 473-1300  
NeoScale Systems Inc. Fax:  
1655 McCarthy Boulevard Email: lnoll at neoscale dot com  
Milpitas, CA 95035-8000

Mr. Frederick Knight (A) Phone: (919) 476-5362  
Network Appliance Fax:  
7301 Kit Creek Road Email: Frederick dot Knight at netapp dot  
com  
P.O. Box 13917  
RTP, NC 27709

Mr. Mark Overby (P) Phone: (425) 417-9412  
Nvidia Corp. Fax:  
2701 San Thomas Expy Email: moverby at nvidia dot com  
Santa Clara, CA 95050

Mr. Andrew Currid (A)  
Nvidia Corp.  
2701 San Thomas Expy  
Santa Clara, CA 95051  
Phone: (408) 486-2000  
Fax:  
Email: acurrid at nvidia dot com

Mr. Takaharu Ai (A)  
Panasonic AVC Networks Co.  
1-15, Matsuo-choy  
Kadoma, Osaka  
Japan 571-8504  
Phone: +81-6-6906-2706  
Fax: +81-6-6905-4697  
Email: ai dot takaharu at jp dot panasonic dot com

Dr. Terence J. Nelson (P)  
Panasonic Technologies, Inc  
167 Maple St.  
New Providence, NJ 07974  
Phone: (908) 464-1652  
Fax: (908) 464-0149  
Email: terry at tjnelson dot com

Mr. Tim Symons (P)  
PMC-Sierra  
100-2700 Production Way  
Burnaby,  
BC, V5A 4X1. Canada  
Phone: (604) 415 6000 x2264  
Fax:  
Email: Tim\_Symons at pmc-sierra dot com

Mr. Craig W. Carlson (AV)  
QLogic Corp.  
6321 Bury Drive  
Eden Prairie, MN 55346  
Phone: (952) 932-4064  
Fax:  
Email: craig dot carlson at qlogic dot com

Mr. Skip Jones (AV)  
QLogic Corp.  
26600 Laguna Hills Dr.  
Aliso Viejo, CA 92656  
Phone: (949) 389-6368  
Fax: (949) 389-6114  
Email: skip dot jones at qlogic dot com

Mr. Paul Entzel (P)  
Quantum Corp.  
4001 Discovery Dr.  
Boulder, CO 80303  
Phone: (720) 406-5782  
Fax: (720) 406-5762  
Email: paul dot entzel at quantum dot com

Dr. Paul Suhler (A)  
Quantum Corp.  
1650 Sunflower Ave.  
Costa Mesa, CA 97626  
Phone: (714) 641-2485  
Fax: (714) 966-7328  
Email: paul dot suhler at quantum dot com

Mr. Joseph Chen (P)  
Samsung  
75 W. Plumeria Dr.  
San Jose, CA 95134  
Phone: (408) 544-5766  
Fax:  
Email: joseph dot chen at samsung dot com

Mr. Michael Rogers (A)                      Phone: (408) 544-5838  
Samsung    Fax:  
75 W. Plumeria Dr.                              Email: m dot rogers at samsung dot com  
San Jose, CA 95134

Mr. Avraham Shimor (P)                      Phone: +972528444610  
SanDisk Corporation                              Fax: +97235466888  
7 Atir Yeda Str                                      Email: avraham dot shimor at sandisk dot  
com  
Kfar Saba 44425  
Israel

Mr. Donald Rich (A#)                              Phone: +972 54 922 2188  
SanDisk Corporation                              Fax: +972 3 548 8666  
7 Atir Yeda St.                                      Email: donald dot rich at sandisk dot com  
Kfar Saba Israel 44425

Mr. Ariel Sobelman (A)                              Phone: +972-52-4444104  
SanDisk Corporation                              Fax:  
7 Atir Yeda St                                      Email: ariel dot sobelman at sandisk dot  
com  
Kfar Saba, 44425  
Israel

Mr. Gerald Houlder (P)                              Phone: (952) 402-2869  
Seagate Technology                              Fax: (952) 402-3471  
Mailstop SHK231                                      Email: gerry dot houlder at seagate dot com  
1280 Disc Drive  
Shakopee, MN 55379-1863

Mr. Alvin Cox (A)                                      Phone: (405) 350-7424  
Seagate Technology                              Fax:  
1849 Ridgeway Drive                              Email: Alvin dot Cox at seagate dot com  
Yukon, OK 73099

Mr. James T. Lie (AV)                              Phone: (510) 490-7795  
SiliconStor Inc.                                      Fax:  
48430 Lakeview Blvd.                              Email: jlie at siliconstor dot com  
Fremont, CA 94538

Mr. Stephen Finch (P)                              Phone: (303) 381-3587  
STMicroelectronics, Inc.                              Fax: (303) 381-3660  
1625 S Fordham St, Suite 500                      Email: steve dot finch at st dot com  
Longmont, CO 80503

Mr. Erich Oetting (P)                              Phone: (303) 673-2178  
Sun Microsystems, Inc.                              Fax:

One Storagetek Drive  
Louisville, CO 80028-4272

Email: erich dot oetting at sun dot com

Mr. Vit Novak (A)  
Sun Microsystems, Inc.  
MS MPK15-103  
15 Network Circle.  
Menlo Park, CA 94025

Phone: (650) 786-6175  
Fax: (650) 786-6515  
Email: vit dot novak at sun dot com

Mr. Scott Painter (A#)  
Sun Microsystems, Inc.  
1 StorageTek Dr.  
Louisville, CO 80028-5209

Phone: 303-673-7806  
Fax:  
Email: scott dot painter at sun dot com

Mr. Roger Cummings (P)  
Symantec  
Post Stop HR03-3  
1001 Heathrow Park Lane  
Heathrow, FL 32746

Phone: (407) 357-7257  
Fax:  
Email: roger\_cummings at symantec dot com

Mr. Raymond Gilson (A)  
Symantec Corporation  
Mail Stop ROS2-3  
2815 Cleveland Avenue  
Roseville, MN 55113

Phone: 651.746.7281  
Fax: 651.746.6713  
Email: raymond\_gilson at symantec dot com

Mr. Kjartan Nesbakken Haugen (AV)  
Tandberg Storage  
PO Box 196 Kjelsaas, N-0411 Oslo  
Norway

Phone:  
Fax:  
Email: kjartan dot haugen at  
tandbergstorage dot com

Mr. Anders Liverud (AV)  
Tandberg Storage  
PO Box 196 Kjelsas  
N-0411 Oslo  
Norway

Phone: +4722189555  
Fax: +4722189257  
Email: anders dot liverud at  
tandbergstorage dot com

Mr. Tom McGoldrick (AV)  
Toshiba America  
9740 Irvine Blvd.  
Irvine, CA 92618

Phone: (949) 462-7575  
Fax: (949) 462-7510  
Email: Tom dot McGoldrick at tais dot  
toshiba dot com

Mr. Scott Wright (AV)  
Toshiba America  
9740 Irvine Blvd.  
Irvine, CA 92618

Phone: (949) 462-7551  
Fax: (949) 581-1170  
Email: Scott dot Wright at tais dot  
toshiba dot com

Ms. Ashlie Fan (P)  
TycoElectronics  
125 Goddard Memorial Drive  
Worcester, MA 01603

Phone: (508) 926-4148  
Fax: (508) 752-4230  
Email: afan at madisoncable dot com

Mr. Dan Gorenc (A)  
TycoElectronics  
M/S 128-053  
  
PO Box 3608  
Harrisburg, PA 17105-3608

Phone: (717) 986-3518  
Fax: (717) 592-2566  
Email: daniel dot gorenc at  
tycoelectronics dot com

Mr. Scott Shuey (A#)  
TycoElectronics  
3101 Fulling Mill Rd  
  
Middletown Pa 17057  
USA

Phone: 717-592-3371  
Fax:  
Email: scott dot shuey at tycoelectronics  
dot com

Mr. Ron Mathews (AV)  
UNISYS Corporation  
N1101  
25725 Jeronimo Road  
Mission Viejo, CA 92691

Phone: (949) 380-5077  
Fax: (949) 380-5858  
Email: ronald dot mathews at unisys dot com

Mr. Phil Shelton (AV)  
UNISYS Corporation  
MV201  
25725 Jeronimo Road  
Mission Viejo, CA 92691

Phone: (949) 380-5111  
Fax: (949) 380-5858  
Email: phil dot shelton at unisys dot com

Mr. Jim Scott (P)  
Vitesse Semiconductor  
4323 ArrowsWest Dr.  
Colorado Springs, CO 80907

Phone: 719 867 6295  
Fax: 719 867 6202  
Email: jims at vitesse dot com

Mr. David Allen (A)  
Vitesse Semiconductor  
4323 ArrowsWest Dr.  
Colorado Springs, CO 80907

Phone: 719-867-6280  
Fax:  
Email: dallen at vitesse dot com

Mr. Mahbubul Bari (A#)  
Vitesse Semiconductor  
4323 ArrowsWest Dr.0 80907  
Colorado Springs, CO 80907

Phone: (719) 867-4419  
Fax:  
Email: bari at vitesse dot com

Mr. Toney Chew (AV)  
Volex, Inc.

Phone: (626) 839-7477  
Fax: (626) 839-6603

2510 Sierra Leone Ave.  
Rowland Heights CA 91748

Email: Toney\_Chew at volex dot com

Mr. Atul Sharma (AV)  
Volex, Inc.  
8011 N. MacArthur Blvd 2037  
Irving, TX 75063

Phone: (682) 433-2031  
Fax:  
Email: Atul\_sharma at volex dot com

Mr. Mark Evans (P)  
Western Digital  
5863 Rue Ferrari  
San Jose, CA 95138

Phone: (408) 363-5257  
Fax: (408) 363-5139  
Email: Mark dot Evans at wdc dot com

Mr. Larry McMillan (A#)  
Western Digital  
20511 Lake Forest Drive  
Lake Forest, California 90720

Phone: 949-672-7687  
Fax: 949-672-5455  
Email: larry dot mcmillan at wdc dot com

Mr. Curtis Stevens (A)  
Western Digital  
20511 Lake Forest Dr.  
Lake Forest, Ca. 92630

Phone: 949-672-7933  
Fax:  
Email: Curtis dot Stevens at wdc dot com

Mr. Jeff Williams (AV)  
Xiotech Corp.  
6455 Flying Cloud Drive  
Eden Prarie, MN 55344

Phone: (952) 983-2445  
Fax: (952) 983-2320  
Email: jeff\_williams at xiotech dot com

Mr. Rich Ramos (AV)  
Xyratex  
860 Embarcadero Dr  
Ste 10  
W. Sacramento CA 95691

Phone: (312) 224-8852  
Fax:  
Email: rich\_ramos at us dot xyratex dot com