

**1394 PWG Meeting**  
**14-15 May 1997**  
**San Diego, CA**

**NOTE: These are revised minutes to reflect any corrections or comments to the original minutes. 27 May 1997**

Greg LeClair- Chair  
Larry Stein- Vice-chair, Secretary  
Brian Batchelder- Editor

**Agenda:**

1- 1394 PWG Meetings

Japan	6/11-12	Microsoft KK
Nashua, NH	6/23-24	Sheraton Tara
	ping Jay Martin	jkm@underscore.com
San Jose, CA	7/31 or 8/1	at 1394TA meeting Fairmont Hotel
	TA presentation and review meeting only	
	ping Greg LeClair	greg@erc.epson.com
Seattle, WA	8/4-5	Details to follow

2- Eindhoven 1394TA summary

3- Presentation

Nob Shinoda, Canon  
Atsushi Nakamura, Canon  
Alan Berkema, HP  
Greg LeClair, Epson

4- Proposal Review

5- Discussions

6- Action Items:

- Define contact person for Japan meeting - yasushin@microsoft.com
- Define liaison for various related projects
  - IP over 1394
  - 1394.x efforts
  - Trade Association
  
- How to proceed as the 1394PWG
  - IEEE PAR decision
  - Sub-group/Task force
  - Draft Specification (what will it include)
  - Schedule: Draft Spec due by June

## Meeting Minutes

Meeting started at 8:53 AM

Reviewed the proposed agenda. No changes

1- Eindhoven TA meeting summary

Greg LeClair attended and presented the status of the 1394PWG to the Architecture group.

Proposal by Sony to the Steering Committee to form a printer working group -Digital Still Image Working Group (DSI). The TA SC did not act on this at the TA meeting.

The 1394PWG will be linked to the 1394TA web site.

There is an ISO proposal to form a still image format and command set. Tom Jones, Intel is heading that effort.

### **Presentations:**

#### **2- Nob Shinoda, Canon**

PWG-C Status and 1394 TA review.

Reflector: pp1394@cpdc.canon.co.jp **(revised 5/27/97)**  
send message to get onto list

Monthly meetings

Participation in 1394TA

Technical Discussion

White box: A common base function between all platforms

List of functions

Relationship between functions and Service Discovery and management

Peer to Peer Printing Proposals:

-Fuji Film inbound only iso color dumb printer

-Epson: Multi-channel below transport protocol

-Canon: Direct Print Protocol (and Login)

-Sharp: A Digital Still Image Data Transfer Protocol

-Sony: AV/C protocol based printer protocol

Please refer to the full presentation available on the pwg web site. [www.pwg.org](http://www.pwg.org)

White box

Service Discovery

Re-connection

printer control model

June 11-12 joint meeting

Peer to Peer printing will be main topic.

Drafts will be available soon.

If the TA approves DSI then that will be the marketing liaison into the TA. There still may remain both the PWG-C and DSI. This will not effect the activities of the 1394PWG.

### **3- Atsushi Nakamura, Canon**

Basic Framework and Canon's Login Protocol

Please refer to the full presentation available on the pwg web site. [www.pwg.org](http://www.pwg.org)

“Basic Framework” Intersection of multiple 1394 printing protocols.

- Basic Protocol Selection

- Service Discovery

- Direct Status Retrieval

  - lock status

  - printer status (simple on/offline, error, PE...)

- Reconnection – What happens on 1394 bus reset?

- Device Discovery

Canon's Login Protocol V0.2

Available at the PWG web site

Two parts:

- Login Protocol

- Direct Print Protocol

Login Protocol

Can be expanded to PC printing stack, Vendor specific protocol, and peer to peer.

Uses Command  $\leftrightarrow$  Response windows

Direct Print Protocol (DPP)

A common protocol for any DPP compliant image source to print to any DPP supporting printer.

Raw data formats:

- RGB, YUV, YCbCr

High Level Formats

- EXIF(TIFF/JPEG)

- TIFF

Data Flow Models:

- Isochronous push model

- Async Block-burst

- Async Large buffer

- Async Pull Model

- Vendor specific model

Issues:

- Data flow model

  - minimum requirements

  - optional

Data formats

#### **4- Alan Berkema, HP**

IEEE 1284.4 over SBP2

Please refer to the full presentation available on the pwg web site. [www.pwg.org](http://www.pwg.org)

Concept Proposal

Overview

- Login

- Fetch Agent

- 1394 Transactions

- Status

Summary

1284.4 over SBP2 and Microsoft

SBP2 is being developed by X3T10 group. This will be an ANSI standard and then ISO.

Issues:

Is SBP2 too heavy for consumer devices?

Do you need to implement all of SB2, or is there a subset that is usable?

#### **5- Greg LeClair, Epson**

Please refer to the full presentation available on the pwg web site. [www.pwg.org](http://www.pwg.org)

CSR and Config ROM

Basic Framework

- Standard method of device discovery

- Standard method of service discovery

- Vendor unique solutions

- Leveraging use of existing solutions

The Basic Framework consists of:

- CSR and Config ROM definition

- Device Discovery protocol

- Service Discovery protocol

Issues to be resolved:

A- CSR and Config ROM defines how we identify the device node.

B- Device Discovery reads CSR and Config ROM to implement automatic installation options.

C- Service Discovery reads CSR and Config ROM to implement protocol selection.

D- A device node may contain one or more functional Units.

D1- A simple printer and a scanner (separate physical devices) are two separate device nodes. In this example each device node contains one functional Unit. Each Unit will have all of the device node bandwidth.

D2- A MFP device comprised of a printer and scanner is a single node with two functional Units. In this example each Unit will share the device node bandwidth.

D3- A MFP may be a single device but may need to operate with one or more protocols simultaneously.

E- IEEE Std. 1284-1994 provides legacy device ID string which is used by the existing Printer Class installer code on Windows. This could be an appropriate model for 1394.

F- Each device node must meet IEEE 1212 and IEEE 1394 requirements. What are the minimum requirements that must be defined?

Therefore, the Config ROM basic structure:

- 1212 CSR
- 1394 CSR
- Printer/Imaging Device Class
  - Device (functional unit)
    - 1284 Device ID
      - Unit - Unit ID (Printer)
      - Services
      - :
      - Unit - Unit ID (Scanner)
      - Services

## **6- Action Items:**

-Define contact person for Japan meeting:

- yasushin@microsoft.com

-

-Define liaison for various related projects

- IP over 1394

- ISO TC42/WG18 [Item 212]

- Randy Turner, Sharp

- 1394.x efforts

- Danny Mitchell ?

- Trade Association

- Architecture - Greg LeClair

- AV/C

- SBP-2

-How to proceed as the 1394PWG

- IEEE PAR decision

Reviewed April 1394PWG charter.

The consumer side of the TA has worked on device discovery. They have the FCP (IEC1883) standard.

Motion-

Larry Stein made a motion to "Request to the IEEE MSC that the 1394PWG be formed as a formal IEEE Working Group. The April, 1997, 1394PWG Charter will be the basis for the PAR."

Seconded by Brian Batchelder

Discussion ensued as to how the WG would coordinate with the PWG-C. The PWG-C would be welcome to participate in the IEEE WG.

Motion passed with no objections, one abstention.

The PAR will be developed between the now and the Japan PWG meeting for presentation there.

-Sub-group/Task force

-Draft Specification (what will it include)

-Schedule: Draft Spec due by June

### **Other items:**

DSI - Digital Still Image

Nob Shinoda, Canon, reviewed the status of the DSI WG and its relationship to the 1394TA and the 1394PWG. At Eindhoven, there was a proposal to make DSI an official TA working group.

Their charter is to develop and promote standardized image data format and printing protocols.

The 1394TA SC will vote on the DSI status on 5/14.

(NOTE: Since the PWG meeting the 1394TA SC has approved the DSI as a TA working group.)

June Japan PWG meeting agenda will focus on:

PAR

Peer to Peer (thin transport)

June PWG:

PAR

Full bodied transport

### **Terminology**

This discussion is an attempt to define some of the terms used in describing the functionality of the services. Since everyone seems to have a different concept of what Device Discovery and Service Discovery are, we need to have a common concept for the purposes of this committee.

### **Device Discovery**

Items which pertain to the entire functional unit defined as the device connected to a unique 1394 node address.

- Physical Device - Manufacturer, Model, Version
- Unique ID
- Class(es)
  - Printer

- Scanner
- Fax
- Camera
- etc.....
- Mechanism
  - Broadcast
  - Poll
  - Location
    - ROM
    - RAM
    - Info
- Datalink(s)
  - ? Should the datalink be paired with each individual Unit or refer to the group of Units that are supported or managed by that DL.
- MFP devices identify individual Units that can be managed and accessed as a unique function. Units that cross class boundaries and must be managed as a composite whole would be identified as a Vendor specific Unit.

### **Service Discovery**

Services provided by the particular Unit for the printer class. A functional unit may consist of multiple Units, each providing some set of services.

- Transport protocols
- Data transfer protocols
  - Push
  - Pull
  - Remote initiated
- Control protocol
  - Login(?)
  - Job Submission
  - Job Management
  - 1284.1
- Device Attributes
  - Feature set
- Data formats
  - Raw24
  - Postscript
  - PCL
  - etc.
- Security and authentication

**Login:** This is whatever the process is that allows a device to initiate communication or submit a job. A session initialization. OR... is this the connection to the next layer 'above' your layer. Granting of access to this layer of communication. This needs to be finalized.

Japan meeting: 6/11-12  
Recommended hotel- Tokyo Hilton in Shinjuku

Meeting adjourned at 5:49PM.

## **Day two: Meeting at Warp Nine Engineering:**

Larry Stein  
Greg LeClair  
Bill Russell  
Shigeru Ueda  
Alan Berkema  
Atsushi Nakamura  
Nobuhiko Shinoda  
Greg Shue

### **Agenda:**

Japan meeting: Items that the 1394PWG wants to be added to the agenda-  
(casual dress)

Status of the 1394PWG (Larry Stein)  
Scope and Purpose  
IEEE PAR  
Coordination with 1394TA and PWG-C  
Meeting Schedule

Terminology of Device Discovery/Service Discovery (Brian Batchelder)  
Proposal for initial Config ROM for Device Discovery (Brian Batchelder)  
1284.4 over SBP-2 (Alan)  
Status of IP over 1394 (ask Randy Turner if this is ready to talk about this)

(current 1394PWG attendee list for Japan: Larry Stein, Brian Batchelder, Randy Turner, Lee Farrell, Don Wright, Alan Berkema, Greg Shue (??))

**Device Discovery:** This occurs under the following circumstances;

- 1- When service is needed → discover your world
- 2- If a service is in use and a bus reset occurs → re-validate your world

“Your world” is whatever the operational environment is that your device needs in order to operate.

For example: If a camera needs a printer to send a file to then the camera would only Discover functional units that have a Unit ID class of “Printer”.

After the camera establishes a “connection” (to be defined) to a particular printer unit, if a bus reset should occur then that camera would need to re-validate that the printer it was connected to is still there and then determine how to handle any interruption of service.

### **Hierarchy of Discovery:**

This is the order in which discovery occurs. A device in search of a service need only look as far as necessary in order to determine if that functional unit can satisfy its’ needs.

Function			1394.x
Unit ID 0	Class		Printer
Unit ID 1	Class		Scanner
:			
Unit ID n	Class		MFP
EOL			
	Service 0	Protocol	FCP, SPB-2, DL or TP
	Service 1	Protocol	
	:		
	Service n	Protocol	

Device discovery will be implemented by using the CSR to indicate the following information. This will create a simple linked list that can provide quick access to minimal implementations as well as provide an extensible method to indicate more complex resources.

(See IEEE Std. 1212)

Use Command\_Set\_Spec\_ID entry to identify 1394.x family

This is a unique numeric value that will indicate that this device supports part or all of this standard. The exact meaning of this is TBD.

(need IEEE/RAC number)

Command\_Set entry to indicate how to interpret the next layer of information:

- Use Command/Response using FCP or other defined
- Use read transactions to access a linked list (1394PWG)

Command\_Set\_Revision for something

Management\_Agent entry to point to the linked list or the address of the command/response window.

End of Meeting

Submitted by Larry Stein

Changes, Corrections and Additions:

5/27/97

**From Atsushi Nakamura:**

3)TERMINOLOGY.....,my understanding of the definition of "device discovery" was more clearly defined as the following functions;

- 1:device class identification(printer,scanner,....)
- 2:manufacture, model name
- 3:availability of lowest layer right above 1394 transport
- 4:unique ID

4)TERMINOLOGY.....I thought the word "datalink" was defined for the layer right above the 1394 transaction layer.

(No relationship with the same word used in OSI)

5)TERMINOLOGY.....I thought the word "transport" was defined for the (whole) set of layer(s) above the 1394 transaction layer. Slim(Thin) transport and Thick transport were defined as well. (No relationship with the same word used in OSI) Under this definition, a monolithic "transport" will be the "datalink" itself.