Printer Working Group
Denver, Colorado
March 13/14, 1996

Attendees:

Jay Martin - Underscore
Don Wright - Lexmark
Tom Hastings - Xerox
Harry Lewis - IBM Pennant
Steve Zilles - Adobe
Randy Turner - Sharp
Ron Bergman - Dataproducts
Binnur Al-Kazily - HP
Bob Pentecost - HP
Luis Cubero - HP
Lee Farrell - Canon
Jay R. Cummings - Novell
Bob Setterbo, Adobe
Rick Landau, DEC
Atsushi Yuki, Kyocera
Howard Kranther, Rainbow Technologies
Gale Nelson, IBM Printing Systems

Binnur opened the meeting at 8:35AM.

The group reviewed the schedule for the next two days and the plans for the future meetings:

April 17-19: Washington DC
May 22-23: Chicago
June 27-28: Montreal
July 25-26: Seattle

Based on a survey, many participants wanted to try to have meetings in more accessible locations and to have some meetings scheduled adjacent to the weekends to reduce travel expenses.

The group reviewed its objectives for future work:

- Become a printing advocate group:
    - to the IETF (security, host resources, V2, etc.)
    - related groups (MFPA, DMTF, etc.)
    - platform vendors (NMS, O/S, etc.)
    - and other groups.
- Advocacy group to the Press, Consultants and customers.
- Interpretation of
    - the MIB/MIF
    - other standards relating to printings
- Revise printer MIB/MIF as necessary
- Manage type 2 enums
- Spawn sub-groups (eg SENSE)

Beliefs/Philosophy

- Identify problems related to printing
    - don't have to necessarily solve them.
    - identify other groups to potentially solve the problems
- Identify problems that we won't handle
    - we can change our minds
    - record/post to ftp site/Web site
    - cross platform problems
    - we aren't aligned with any specific standards body or other group
- Function as a continuing organization
- PWG limits its power and decisions to administrative and high level coordinative functions eg. schedule, charter, etc.
- The group believes that we should avoid patented technology. Any proposals made to the group that are covered under an existing or pending patent should be clearly identified as such at the time of presentation. The group will then decide whether to hear and consider any such proprietary solutions. Any patented material can only be considered if the patent holder agrees to license in a reasonable and non-discriminatory way. This strategy is consistent with the IEEE, ANSI, etc.

The group discussed a new organizational philosophy that would create a high level entity that would manage the projects under its control. For example, the SENSE group, the MIB/MIF group, etc. would "report" into the high level group.

By a vote 13 to 2 the group decided to organize with the "PWG" as the top entity and initially with the following projects/working groups under it:
- Printer MIB/MIF (MIB editor=previous+Randy Turner, MIF editor = Harry Lewis)
- SENSE (Chair=Jay Martin, Editor=Rick Landau, Sec.=?)
- Job Monitoring

Each of the lower level groups will be called a "Project" and would have a charter, a set of officers and a schedule.

"The IETF is a very noisy, bullying customer (NBC) of the working groups," as per Steve Zilles.

The chair of a project will work directly with both the PWG as well as the associated standards development organization.

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                 Printer Working Group
                         PMG
                          |
                          |
  +-----------------------+-----------+------------+
  |                       |           |            |
Printer                 SENSE         |           Job
MIB/MIF                Project       New       Monitoring
Project                  (SP)      Project?     Project
(PMP)                                            (JMP)
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Harry Lewis raised the issue of intellectual property for future projects. Generally the group felt that it should avoid patented means.

Proposed Officers:

PWG
- Don Wright, Chair
- Jay Martin, Secretary

PMP
- Open, Chair
- Open, Secretary
- Harry Lewis, MIF Editor
- Randy Turner, MIB Editor

SP
- Jay Martin, Chair
- Rick Landau., Editor/Secretary

JMP
-Tom Hastings, Chair
- Ron Bergman, Editor
- Open, Secretary

Any additional nominees for any positions should be forwarded to Binnur. A vote will be taken at the April meeting for these positions as well as final confirmation of the new organization.

Binnur reviewed the open issues with the MIB which will be discussed in the afternoon session..

Randy Turner talked to Dietre ? (the IETF Area Director) at the last IETF Plenary. Randy was unable to get a definitive answer as to what minimum compliance was necessary to move RFC1759 forward.

The group broke for Lunch from 11:50AM until 1:10PM.

The following items were discussed:

1) CHANNEL

Additional Channel enumerations:

chIrDA - added (35)
chPrintxchange - added (36)
chPortTCP - no

There was a significant discussion on whether the "channel" should include a binding to a lower level protocol. Some members of the group felt that different enums should be listed to differentiate "LPR over TCP/IP" versus "LPR over SPX." The whole implementation of channels and how they relate to interfaces and other underlying layers continues to be a frustration for the group. The group recommendations a major re-write of these object be done in a future print MIB. Randy Turner will develop a proposal to attempt to solve these problems.

The group needed more information on the chPortTCP before it could be included as an enum. (Bill Wagner & Ron Bergman)

The description of the Channel Group as found in the MIB was reviewed and several changes were made. The name of the group was changed to Print Job Delivery Channel group. This name change will be reflected throughout the MIB by the editor (Randy Turner).

Binnur showed the clarifications to the Channel enumerations.

2) Enumerations

The group reviewed Steve Zilles' proposed changes to the 2.4.1 in the area of the various types of enumerations.

The group decided to designated the enums 29 and below in the prtAlertGroup to be type 1 and those above it will be type 2.

Randy Turner will incorporate this proposal with corrections into the MIB.

Appropriate enums will be converted to textual conventions and distribute appropriately in the document by the editor.

3) Default Values for objects - we will not add defval values to the MIB

4) Should we limit the range of some integers for example table indices. Tom Hastings will summarize which objects might be appropriate to be "ranged."

5) Interpreter table erroneously references the Marker's addressability; however the marker addressability is a table which makes it difficult to determine which marker's addressability units to use. By consensus, the group decided that for the purpose of this MIB, the interpreter's units will be based on the addressability units of the first marker in the marker table. If a second generation of the MIB is done, this area would be a candidate to further clarification by perhaps providing an object to indicate which marker and interpreters is tied to.

6) How are impressions counted for color printers that make 4 impressions for each page. One implementation would be to have 4 virtual markers and to count impressions on each separately. On the other hand, a single marker could be presented that is a color marker and when a color page is printed, the impression count would be bumped by 4. Harry Lewis will propose a non-binding clarification/recommendation as to how to implement this.

7) Alerts

- Request to add markerTonerCartridgeMissing alert code (1115) by IBM: Approved
- The group recommends the use of generic alert codes but to meet the needs of implementors the specific alerts will be retained for now. Randy Turner to add this recommendation to the MIB.
- Tom Hastings reviewed his document "Approved Clarifications and Additions to Printer MIB Alerts and Trapping (alrtspec.doc).
- A discussion on several interpreter alerts was discussed:
    - interpreterUnavailable (1508) was rejected
    - interpreterComplexPageEncountered (1509) was accepted
    - interpreterPageProtectionOn (1510) was rejected
    - interpreterPageProtectionOff (1511) was rejected
    - interpreterContextSavingOn (1512) was accepted and deprecated
    - interpreterContextSavingOff (1513) was accepted and deprecated

- interpreterMemoryExceeded (1514) was changed to a generic subunitMemoryExhausted (34)

MIB pass 2 might look into making memory/resource errors into a counter.

- Unary/Binary alerts
  - prtAlertSeverityLevel was changed, crticalUnaryChangeEvent was removed and warningBinaryChange Event will now be #5.
- An agent will not report both a generic and a specific alert code for a single event.

- Enum 18 for prtMarkerSuppliesType will be changed back to "Cleaner Unit." Descriptions will be added for these enums.

- A discussion of adding trailing edge alerts back into the MIB started again. The group decided to include Tom Hasting's alternative 1 for an "Alert" alert. This will be an optional alert to gain implementation experience for perhaps making this mandatory for a future printer MIB pass 2.

The group adjourned at 7:15 PM until Thursday.
The meeting resumed at 8:35 AM on Thursday.

Steve Zilles started off the morning with a presentation of DMI version 2. According to the DMTF press release, the spec will be available early in April 1996.

Changes in version 2 over 1 include
1) Enums can now be outside of group (Textual Conventions)
2) Addition of PRAGMA to MIF syntax
   - OIDs
   - group status (required, optional. obsolete, etc)
   - dependent groups
   - Microsoft Registry Key
3) Operations to Add/Delete component, group, row, language
4) Version 2.0 is "RPC" friendly in that it replaced block oriented interface w al call interface. It is synchronous and remoteable with:
   - DCE
   - ONC
   - TI
5) Language localization MIF files and messages

A new indication/event model was added to the DMI including a means for a management application to register for specific events. This addition includes some SENSE-like contents such as subscriptions, etc.

Some enhancements and additions were made in the event notification area. Many of the concepts are very similar to what was implemented in the printer MIF.

OS Vendor Presentations

(IBM, Microsoft, SCO, Sun, and Novell)

All these vendors stated they will be supporting SNMP and will be providing mappings. Some will be doing CMIP mapping because of Telephone Companies.

Sun, SCO and Novell's presentation were high level directions presentations.

IBM

Now have service layers for OS/2, AIX, and will have WIN95 and NT
Highlighted LMO

MICROSOFT

They were talking about Win 95
No commitment to doing DMI on NT
Microsoft still intends to use to registry not a MIF database
Microsoft will provide access to SNMP through the registry.
Microsoft will provide support for the static MIF data for some standard MIFs.
Dynamic data would require a DLL or VxD to be retrievable.
Limited support for events/alerts

Implementors are required to provide support for DMI V1 for the next year. After that products could support only V2.

The new version provides a way to map MIB OIDs to MIF object but it appears that the DMTF wants to use its own enterprise space in the OID space. That is inconsistent with the way the PWG has worked in creating parallel MIF s and MIBs.

Harry Lewis will begin creating a V2 MIF that:

-pulls enums out of groups to be textual conventions
- add the PRAGMA with the MIB matching OIDs

A sub-committee will be formed to assess the impact of DMI V2 to the MIF.

- Harry Lewis
- Steve Zilles
- Bob Setterbo
- Jay Cummings
- Mike Timperman

Jay Martin reviewed the current status of the SENSE work.

Many of the enhancements made to the DMI V2 overlap the SENSE content. Jay went back through Steve Zilles' charts and pointed out the overlap.

Jay and the other members of the SENSE sub-committee will be reviewing the new DMTF material and make a determination as to how SENSE should continue.

Rick Landau and Jay Martin answered a number of questions about the current SENSE architecture. There are a number of areas that need work in SENSE including an administrative framework.

Afternoon Session:

Job Monitoring
- What problems are to be solved for the end user?
    - When is my job fully in the output bin?
    - What is the status of Job (before, during, after)?
    - Which printer is the least busy printer?
    - How long will it take for my job to print?
    - Notification of job complete
    - Where did my job printer?
    - How many pages were/are in my job (before and after printing)
    - Did my job print OK, if not why not?
    - How many jobs are in front of my job?
- What problems are to be solved for the administrator?
    - What path did the job take to get to the printer?
    - What resources did the job use?
    - What resources does each printer have?
- What problems are to be solved for the operator?
    - What media do the pending jobs need?
    - Where (which channel) are the jobs coming from?
    - When will I have to add paper?
    - What jobs for which users are at what point in the print system?
    - What candidate physical printers exist for each job?
        - help end user
        - load balancing
        - baby sit jobs
    - Help operator who schedules jobs, resources needed by jobs
    - How many jobs failed and why? Who submitted it?
    - How long will any specified job take?
    - How long since last page was output?
- What problems are to be solved for the technician?
    - What job errors are occurring.?
    - Who will be affected if I take the printer down for PM? (Operator also)
    - When is this printer least busy (time of day)
- What problems are to be solved for the administrator/capacity planner?
    - What resources are being downloaded by the jobs?
        - to help decide what should be resident

- Which applications are jobs coming from
- How long do user's jobs wait in the queue before starting?
- How busy are the printers?
- How long are the jobs (distribution of size: pages, time, etc.)?
- daytime versus nighttime printing amount? ratio?
- Who used how much of each resource?
- Measure of n-up and duplex printing usage
- History of why the printer stopped
    - who?
    - when?
    - why?
    - how long?
- Tons of accounting information

1. What are the problems the Job Monitor MIB will solve ?

Problem	Role	Priority
Is my job completed ?	User	H
What is the current status of my job ?	User	H
Which printer is the 'least busy' ?	User	M
What time will the job be complete ?	User	M
What path will the job take to get to the printer ?	Admin	L
Where did the job print ?	User	M
How many pages in the job (while and after printing)	User	L
How much did the job cost ?	User	?
Will the job print ?	User	M
Was the job printed successfully? If not, why not ?	User	H
How many jobs are ahead of my job ?	User	M
What resources did the job use ?	User	L
What resources does each printer have ?	User	M
When will I have to add paper or other consumable to the printer ? (Based on jobs ?)	Operator	L
What media do the pending jobs require ?	Operator	H
What channel are the jobs using ?	Operator	L

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What jobs for what users are in the queue ?         Operator H

Which phys printers are a candidate for each job?   Operator M

What jobs for what users are in which system states ?
    (To help end users.
     To balance loads.
     To ensure all jobs are progressing .)          Operator H

How can print jobs be scheduled more efficiently ?  Operator M

How many jobs failed ?  Why and who submitted ?     Operator L

How long will any specified job require to print ?  Operator M

How long since the last page printed ?               Operator L

What resources are being downloaded by jobs ?  (To
  help decided which resources should be resident.) Admin     M

What job errors are occurring ?
    (Memory insufficient for job.
      Too many pages printed)                        Tech     L

What users will be affected if the printer is down
   for maintenance ?                                 Tech     M

What is the job usage of the prtr vs time of day?   Cap Plan   M

Which applications are jobs running from ?
    (S/W licensing, planning, upgrades)              Sys Adm  L

How busy are printers ?                              Cap Plan H

How long do users wait before the job starts?       Cap Plan M

What is the size distribution of jobs ?
  (Do I need a larger printer ?)                    Cap Plan L

Day time/night time job utilization ?
  (When can I turn off printers ?)                  Cap Plan M

What resources are used by whom? (paper, toner, etc) Account  H

Is N-up and duplex printing used ?                  Account  M

Why was printer stopped when it was stopped ?
  How long was it stopped ?  Whose job was printing ? Admin    M

Additional accounting data                           Account  H
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There are three different applications of the Job Monitor MIB - Printer, spooler, print manager.

"The end user rarely communicates directly to the printer" - Steve Zilles. Is this true?

Common elements of the Job MIB:

User: Status of the job.
printer used.

Operator: Resources needed.

Accounting: Resources used.

Items for discussion at the next meeting:

2. How will the job Monitor MIB solve these issues ?
3. Terminology
   spooled vs. queuing
   NMS
   Printer states
4. Who will use the Job Monitor MIB
5. Platform support

The meeting adjourned at 3:40PM.