Subj: Usage Scenarios for the Printer/Spooling Job Monitoring MIB
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This paper is an attempt to answer the PWG question, how and where in the system will/could a job monitoring MIB be used? I call these "scenarios". Each scenario takes place on a configuration. I've included three generic configurations. More that one scenarios can take place on a configuration. I've included the spooling and printer (basic) configurations, since some PWG members have requested that we not exclude spooling considerations.

1. Summary of Configurations

The configurations are ordered from simplest to most complex:

1. **client-printer** - client submits jobs directly to the printer
2. **client-server-printer** - client submits jobs to a server which in turn submits the jobs to the printer(s), perhaps after performing spooling services
3. **client-spooler-supervisor-printe**r - client submits jobs to a spooler which in turn submits the jobs to a supervisor(s) which in turn controls the printer(s)

1.1 Terminology

For this paper the following terms are used with the indicated meaning:

client - the software that End Users use to submit jobs to **spoolers**, **servers**, or **printers**, depending on the configuration, using any job submission protocol. The **client** may or may not also use SNMP and the Job Monitoring MIB to monitor jobs, depending on implementation.

monitor - the software that End Users, System Operators, Accountants, Asset Managers, and Capacity Planners use to monitor jobs. The **monitor** is separate from the **client.**

agent - the software that accepts SNMP requests and implements the Job Monitoring MIB.

There are two approaches that implementers may use to address the problems of the end-user (see minutes of last meeting) using the Job Monitoring MIB:

1. The **client** also supports SNMP and the Job Monitoring MIB for status/notification to the submitting user
2. The **monitor** supports SNMP and the Job Monitoring MIB for status/notification to *any* user, including the job-submitting end user; for example, the Windows Print Manager.

1.2 Platforms and protocols

I have not attempted to identify which existing operating system print systems fall into which configurations. The Job Monitoring Project (JMP) may wish to assign existing systems to the various configurations which will also serve to see if the three configurations cover all situations or not.

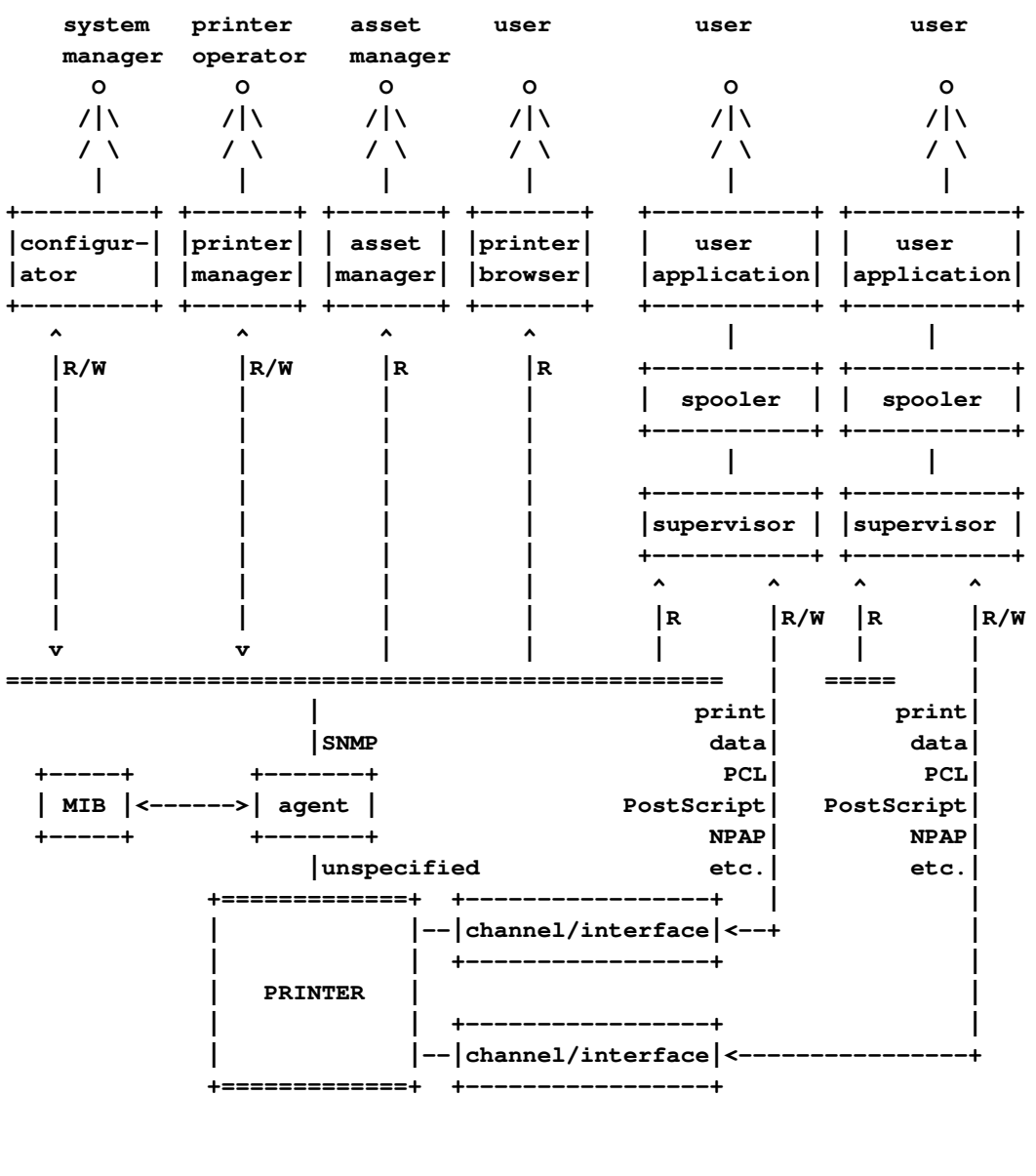
From Ron Bergman's list of existing platforms and protocols, we have:

Windows: Windows 3.1
Windows for Workgroups
Windows '95
Windows NT
NetWare: 3.1X
4.X
UNIX: LPR/LPD (RFC 1179)
BSD Unix (SunOS, Ultrix, Digital Unix, others)
System 5 Unix (Solaris, HP-UX, SCO, IRIX, others)
AIX (3.25, 4.1, ...)
LAN Server
OS/2: (3.0, 4.0 beta)
WARP Server
Macintosh
VMS
NDPS
Printxchange
PSM

1.3 One Printer's View of the Network - from RFC 1759

For reference, I've included Figure 1 from the Printer MIB, RFC 1759:

Figure 1 - One Printer's View of the Network

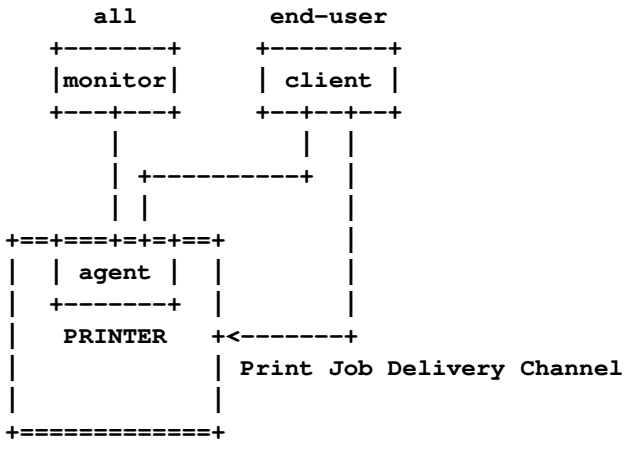


2. Configuration 1 - client-printer

In the **client-printer** configuration, the **client**(s) submit jobs directly to the printer, either by some direct connect, or by network connection. The **client-printer** configuration can accommodate multiple job submitting **clients** in either of two ways:

1. if each **client** relinquishes control of the Print Job Delivery Channel after each job (or after a number of jobs)
2. if the printer supports more than one Print Job Delivery Channel

The job submitting **client** and/or **monitor** communicates directly with an agent that is either part of the printer or is a front for the **printer** using some printer-specific management protocol between the agent and the **printer** (for example the management commands in the TIPSI protocol). Since the means of communication between an agent implementation and the **printer** is of no concern to us, I've shown the agent as part of the **printer** in all of the configurations.



3. Configuration 2 - client-server-printer

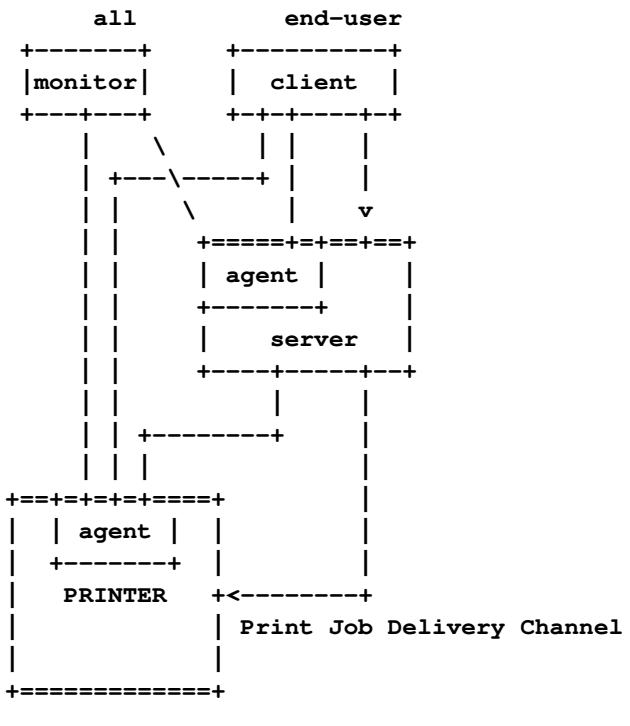
In the **client-server-printer** configuration, the **client**(s) submit jobs to an intermediate **server** by some network connection, *not* directly to the **printer**.

The job submitting **client** and/or **monitor** communicates directly with, in order of decreasing likelihood:

1. an agent that is part of the **server** (or a front for the server), or
2. an agent that is part of the **printer** (or a front for the printer)
3. both agents, one in the **server** and one in the **printer**

The **server** may communicate with:

1. the agent in the **printer** in order to monitor the jobs in the printer for the server's own purposes and/or to be a proxy agent to the **client** for the agent in the **printer**.



4. Configuration 3 - client-spooler-supervisor-printer

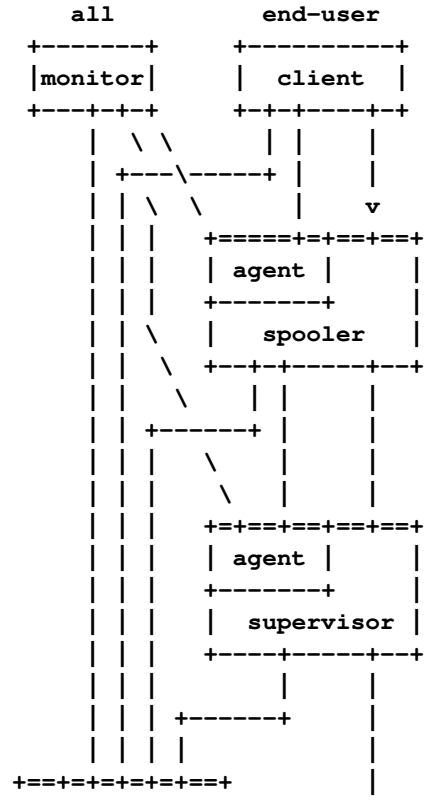
In the **client-spooler-supervisor-printer** configuration, the **client**(s) submit jobs to an intermediate **spooler**, which in turn communicates with one or more **supervisors** which each control one or more **printers**.

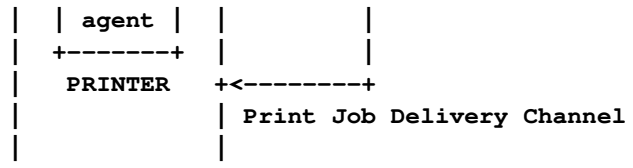
The job submitting **client** and/or **monitor** communicates directly with, in order of decreasing likelihood:

1. an agent that is part of the **spooler** (or a front for the spooler), or
2. an agent that is part of the **supervisor** (or a front for the supervisor), or
3. an agent that is part of the **printer** (or a front for the printer)
4. any combination of agents, one in the **spooler**, one in the **supervisor**, and one in the **printer**

The **spooler** may communicate with, in order of decreasing likelihood:

1. the agent in the **supervisor** in order to monitor the jobs in the supervisor for the spooler's own purposes and/or to be a proxy agent to the **client** for the agent in the **supervisor** and/or **printer**.
2. the agent in the **printer** in order to monitor the jobs in the **printer** for the spooler's own purposes and/or to be a proxy agent to the **client** for the agent in the **printer**.




| agent |
PRINTER
Print Job Delivery Channel