Subj: Issues from Job Monitoring MIB, version 0.6, dated 1/23/97
From: Tom Hastings
Date: 2/17/97
File: issues.doc

I've updated the issues with the agreements reached at the JMP meeting, 2/7/97 and the reasons behind the resolutions.

~~The issue numbers in the body of the PDF file do not agree with those in the table of contents in the PDF file. I've updated the issue numbers, so that you can see both. Those of you who printed the file from WORD got the same issue numbers in the body of the text as in the table of contents and as listed below, but you get different page numbers. I must have produced the PDF file without updating fields, or something. So lets all agree to use the .pdf file with its line numbers and page numbers for discussion. For the issue numbers, I'm sorry that we have two sets of numbers. Just indicate which you are using.~~

~~At the Job Monitoring MIB telecon, we made some proposed decisions while comparing Job Monitoring implementations (some MIB and some other) that also answer some issues. I've indicated the proposed disposition of the issues below. The disposition of the issues will be handled, as with all decisions by being sent to the jmp DL and by putting it on the agenda for the JMP meeting.~~

If you object to any of the proposed resolutions to the issues, please send e-mail.

Issue 1 - Should we add a standard SNMP RowStatus object to the jmJobTable and jmResourceTable?..... 3

No. We decided to go with simplicity. Also customers have had experience with printers that stop because some software isn't installed or running properly and so prevents the printer from working. Finally, see issue 9 resolution in which no ojbects are read-write, but implementors can augment this MIB with objects that allow any object in this MIB to be changed by duly authorized users. We can produce another MIB that augments this MIB in the future, if there is interest and a solution to standard means to write objects (and delete rows).

Issue 2 - If we add RowStatus to the jmJobTable, should we add a jmGeneralTableOverflowPolicy object to the jmGeneralGroup? 3

No, because we did not agree to add RowStatus and we are also concerned about the printer stopping for some configuration reason. Customers that care about accounting should make sure that the accounting applications are running properly, perhaps even with a daemon program that monitors the accounting programs.

Issue 3 - If we add jmGeneralTableOverflowPolicy object should it be read-write? 3

No, see issues 1, 2, and 9.

Issue 4 - Need to re-draw the job state transition diagram to add the needsAttention state 9

Tom H will make a table of all possible state transitions, so that it will meen the IETF requirements for plain text in RFCs.

'Issue 5 - Restore NMS having to access both the server and printer agents (Configuration 2b)? 13

Yes, with the following understandings: Configuration 2b will show a monitoring application, a server, and a printer. The MIB will be only in the printer, but the monitoring application is also monitoring the server by some other means than the Job Monitoring MIB. The Job Monitoring MIB in the Printer shall have enough information in it for the monitoring application to find the job in the Printer's Job Monitoring MIB that it found in the server (by other means). In such cases, the server usually deletes its copy of the job, but need not. This configuration covers the configuration supported by the HP 5si Mopier private job monitoring MIB when driven from a Novell server.

ACTION ITEM (Tom Hastings, Bob Pentacost): Tom draw up a new configuration 2b and show to Bob before distributing it to the group.

Issue 6 - If Configuration 2b is added to the spec, how does the monitor relate a job in the server and the copy that is in the printer? 14

The new Configuration 2b does NOT have a Job Monitoring MIB in both the server and printer; only in the printer.

Issue 7 - If Configuration 2b is added to the spec, add a Boolean General object that says whether this Job Set requires the NMS to contact the printer's agent too? 14

No need, since the configuration won't have a Job Monitoring MIB in the server.

Issue 8 - Should we make a new jmServerGroup for objects needed by the serverOnly(4) and bothPrinterAndServer(5) configurations? 14

No, we haven't identified any that are server only that can't be put into the jmResourceTable, so that non-server's need not implement.

Issue 9 - What objects should be read-write, so that the system administrator can set policy? 18

No, for simplicity. Also implementors can augment the Job Monitoring MIB with means to write any object. Add a paragraph that indicates that implementors could allow monitoring applications to modify objects, by adding a private table that contains an encrypted password, with date and time mixed in and set in the clear. In addition, the OID of the object to be written and the new value is contained in the table.

Issue 10 - Should we add an object to specify the policy for SNMP Gets for other user's jobs? 18

No, authorization and authentication are beyond SNMP and this Job Monitoring MIB.

Issue 11 - Should the policy object for SNMP Gets for other user's jobs be writeable? ... 18
No, we didn't agree to add such an object in Issue 10 and if we had, it wouldn't have been writeable (see answer to issue 9).

Issue 12 - What is the SNMPv1 and SNMPv2 error that an agent shall return if there is no instrumentation for an object? ... 19
There is no such SNMP error. ALL uninstrumented objects in mandatory groups of any MIB should always correctly return 'read-only' static values specified in 'DEFVAL' clauses. 'DEFVAL' is a perfectly good SMIv2 feature intended to cover this situation. Returning ANY SNMP error for ANY object in a mandatory group with a legal instance qualifier (ie, set of indices) is NOT legal in a literal reading of the SNMPv2 Protocol spec (RFC 1905, page 10, in 'Get-Request PDU' handling). That's what 'shall implement ALL the objects in this group' means! So add DEFVAL clauses to all objects.

Issue 13 - Why didn't the Printer MIB use this SNMP error instead of returning unknown(2) enums? ... 19
The Printer MIB was correct to use these unknown(2) enums, instead of an SNMP error.

Issue 14 - How do we add traps without adding too much network traffic? ... 19
For simplicity and to avoid the design problem of registering and unregistering for traps, we decided not to add traps. The HP 5si Mopier private job monitoring MIB has only one trap: when a job is added to the table. However, no application is using the trap. Polling seems sufficient and not a problem.

Issue 15 - Should jmGeneralQueuingAlgorithm be writeable, so that the system administrator using an NMS can change the scheduling algorithm? ... 25
No, we agreed to delete this object, since no implementations of job monitoring with any protocol have such an object. Even Printxchange did not implement this attribute, even though ISO DPA has this Printer attribute.

Issue 16 - Add passThrough(6) to jmGeneralQueuingAlgorithm for servers that just pass jobs through without queuing? ... 25
No, none of the implementations even had the jmGeneralQueuingAlgorithm object, so we decided to delete the entire object. So we don't need to even decide whether to add a new enum value to it.

Issue 20 - OK to have added fileName(3) to jmResourceType? ... 40
Yes, some implementations have both file names and document names, so we need both.

Issue 21 - Change physicalDevice(11) to a text string, so it can be used with servers that don't have the Printer MIB? ... 42

Have both **physicalDeviceName** and **deviceIndex** as resources in the **jmResourceTable**, so that neither, one, or the other or both can be implemented.

Issue 22 - Why not require the agent to always return FAX numbers in ASCII, since it is easy to convert from Unicode to ASCII?..... 42

We decided to remove the fax number resource entirely, since it doesn't relate to printing. When a FAX job monitoring MIB is developed to augment this Job Monitoring MIB, it will need other objects, besides the FAX phone numbers. The FAX phone numbers enum can be registerd at that time as a type 2 enum for use with the jmResourceType object. (Had we kept this enum, and when it is registered, the data type will be ASCII, rather than the coded character set of the implementation), in order to fit into 63 octets. Two-octet Unicode would exceed the space since numbers with password, and extensions, etc., could exceed 31 digits.

Issue 23 - Add resource item to indicate the output-bins that the job requests/uses?..... 43

Yes, it was in several implementations. So add outputBin as a resource enum which can have multiple entries, since some jobs may actually use more than one output bin.

We also agreed to add colorantsConsumed as a resource enum and mediaConsumed where the jmResourceName object would be the name of the actual colorant or medium consumed, with one row per different colorant and medium.

Issue 24 - Move any resource items to the jmJobGroup, because monitoring applications needs to access the resource frequently without having to read the entire jmResourceTable?..... 43

No, don't move any. In fact see issue 30, where we agreed to add a fourth index to the jmResourceTable, which makes all resources directly addressable by jmResourceType as the third index.

Issue 26 - Which indexes shall be persistent across power off and which need not be?.... 47

No decision yet. ACTION ITEM (Tom Hastings): send this issue and the proposal for making the jmJobIndex and jmJobSetIndex persistent across power off.

Issue 27 - Should jmGeneralJobCompletedPolicy be writeable, so that the system administrator using an NMS can change the length of time that completed jobs are kept? 49

No, see answer to issue 9.

Issue 28 - Should jmGeneralQueuingAlgorithm be writeable, so that the system administrator using an NMS can change the scheduling algorithm?..... 49

No, none of the implementations even had the jmGeneralQueuingAlgorithm object, so we decided to delete the entire object. So we don't need to even decide whether to make the object writeable.

Issue 29 - OK to require that jmCompletedIndex be monatonically increasing? 55
Yes. Also jmQueueIndex.

Issue 30 - Should we move any jmJobGroup objects to the jmResourceGroup? 56
We agreed to add a fourth index to **jmResourceTable**. That index is **jmResourceType** enum, which will actually be the third index. The **jmResourceIndex** will be moved from third to fourth position. See move8obj.doc in the contributions sub-direction.

This makes each resource in the **jmResourceTable** directly addressable by **jmResourceType**. making it as efficient to find an resource in the **jmResourceTable** as to get an object in the **jmJobTable**.

Consequently, we agreed to move the following 8 objects to the jmResourcesTable:

1. **jmDeviceIndex**
2. **jmJobSourceChannel - see Issue 37**
3. **jmJobSubmissionTime**
4. **jmJobComment**
5. **jmJobTotalKOctets**
6. **jmJobKOctetsCompleted**
7. **jmJobStartedProcessingTime**
8. **jmJobCompletionTime**
9. **jmJobAccountName**

Issue 31 - Should we re-introduce **jmJobDeviceId** to handle configuration 2b?..... 57
~~While~~ We agreed to bring back configuration 2b in which the NMS has to query the server by means outside the Job Monitoring MIB and the printer using the Job Monitoring MIB. However, in this scenario, there is no Job Monitoring MIB in the server, so there is no need to add back jmJobDeviceId for the job id assigned by the Printer for use in a server's Job Monitoring MIB.~~the server does not retain the job while the job is printing. Therefore, there is not need for an object in the server job that indicates the job-id assigned by the printer, because by the time such an object would be useful in the server, the server would have deleted the job from the server.~~

Issue 32 - Shouldn't we require any numeric portion of the client-side identifiers to always be in the jmJobIdNumber object? 59
ACTION ITEM (Tom Hastings): Send e-mail on this proposal.

Issue 33 - Why have two client-side identifier objects?..... 59
Some job submission protocols, such as BSD require two.

Issue 34 - What is the SNMPv1 and SNMPv2 error that an agent shall return if there is no instrumentation for an object? 59
There is no such SNMP error. See the answer to Issue 12.

Issue 37 - Change the jmJobSourceChannel from an index in the Printer MIB to the enum, since the server need not implement the Printer MIB? 61

No, spoolers typically know the job source channel. So keep as an index into the Printer MIB for use in Printers. Since we are moving this to the Resource Table, make the enum name reflect the index: jobSourceChannelIndex.

Issue 38 - Do we need to add the jmJobChannelInformation object to the new jmServerGroup for servers that don't have a corresponding Printer MIB?..... 62

No, since we agreed to keep the Job Source Channel as an index into the Printer MIB, the monitoring appication can access the jmJobChannelInformation object in the Printer MIB. see issue 37.

Issue 39 - ISSUE - Why not return the SNMP error ???, instead of -2, if the total K octets is unknown?..... 63

There is no such error. Return unknown(-2) if not known.

Issue 41 - Is it worth rounding down jmJobKOctetsCompleted until the job completes and then round up?..... 65

No, lets round up to the next higher K as with jmJobTotalOctets. The only time rounding down could make a difference is for a 1K job and that short a job will happen so quickly that the difference between rounding up versus rounding down can not be seen by people.

Issue 42 - Are interpreters(10), sheetsCompleted(14), processingTime(20) the right resource items to require agents to implement? 68

We agreed only to make sheetsComplete(14) mandatory, since the Printer MIB requires it. All other resource items are conditionally mandatory.

Issue 43 - How can jmResourceName be a union of OCTET STRING, Integer32, and Counter32?..... 69

We agree to replace **jmResourceName** by two objects: **jmResourceNameAsText** and **jmResourceNameAsType**. See res-type.doc in contributions sub-directory. We also agreed that each resource fills in either **jmResourceNameAsText** or **jmResourceNameAsType**, but not both. Also, except for **mediaConsumed**, no resource item that fills in a **jmResourceAmount** with a count, also fills in **jmResourceNameAsText** or **jmResourceNameAsType**.

1. New Issues

Issue 44 - There was agreement that the Job Monitoring MIB needs a primary index that can separate jobs into disjoint sets for purposes of scheduling. This primary index serves the same purpose for the Job Monitoring MIB as the hrDeviceIndex does for the Printer MIB, except that the Job Monitoring MIB did not want to require the Host Resources MIB. What is the definition of Job Set? How do job sets relate to queues? Can a Printer have more than one job set without having queuing? For a printer that is fed from multiple external queues, are all the jobs from all those queues in a single job set in the Printer?

Issue 45 - After fully agreeing on what a Job Set is, should the name remain Job Set, or be changes to queue, or job pool or job group?

Issue 46 - Do we need to add a **jmJobSetName** object so that an operator can determine which job set he/she is looking at. The **jmJobSetName** is administratively assigned and could be the queue name, the server name if the server has only one job set or the printer name if the printer has only one job set. We definitely need jmQueueName (which I added to the jmQueueGroup). So is jmJobSetName a different object, at least in some configurations supported by the Job Monitoring MIB?