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32	Abstract	
33 34 35 36 37 38 39	This document provides definitions of models and man objects for printing environments. The objects inclu MIB apply to physical, as well as logical entities w printing device. This MIB definition makes explicit the Host Resources MIB (RFC 2790 [28]), as well as t Group of MIB-II (RFC 1213 [14]).	ded in this ithin a references to

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- 1. Introduction
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1.1 Network Printing Environment

5 The management of producing a printed document, in any computer 6 environment, is a complex subject. Basically, the task can be divided into two overlapping pieces, the management of printing 7 8 and the management of the printer. Printing encompasses the entire 9 process of producing a printed document from generation of the 10 file to be printed, selection of a printer, choosing printing 11 properties, routing, queuing, resource management, scheduling, and 12 final printing including notifying the user. Most of the printing 13 process is outside the scope of the model presented here; only the management of the printer is covered. 14 15

1 Figure 1 - One Printer's View of the Network 2 3 system printer asset user user user 4 manager operator manager 5 0 0 0 0 0 0 6 / |/ |/ | $/ | \rangle$ / | $/ | \rangle$ 7 / 8 9 +----+ +----+ +-----+ 10 -+ 11 configur- | printer | asset | printer | user user 12 13 | manager manager browser application ator 14 application 15 +----+ +------16 -+ 17 18 R/W R/W R R 19 -+ 20 spooler spooler 21 22 23 24 25 26 -+ 27 |supervisor | |supervisor 28 29 ____+ 30 -+ 31 32 R R/W R 33 R/W 34 77 35 ==== 36 print print 37 SNMP datal data 38 PCL PCL +---+ 39 MIB |<---->| agent | PostScript PostScript 40 +---+ +---+ NPAP NPAP 41 unspecified etc. etc. 42 ================+ 43 --|channel/interface|<--+ 44 _____+ 45 PRINTER 46 47 -- channel/interface <-----48 49 50 1.2 Printer Device Overview 51 52 A printer is the physical device that takes media from an input 53 source, produces marks on that media according to some page 54 description or page control language and puts the result in some

1 output destination, possibly with finishing applied. Printers are complex devices that consume supplies, produce waste and may have 2 3 mechanical problems. In the management of the physical device the 4 description, status and alert information concerning the printer 5 and its various subparts has to be made available to the 6 management application so that it can be reported to the end user, 7 key operators for the replenishment of supplies or the repair or 8 maintenance of the device. The information needed in the 9 management of the physical printer and the management of a 10 printing job overlap highly and many of the tasks in each 11 management area require the same or similar information. 12

13 1.3 Categories of Printer Information

Information about printers is classified into three basic categories: descriptions, status and alerts.

1.3.1 Descriptions

20 Descriptions convey information about the configuration and 21 capabilities of the printer and its various sub-units. This information is largely static information and does not generally 23 change during the operation of the system but may change as the 24 printer is repaired, reconfigured or upgraded. The descriptions are one part of the visible state of the printer where state means the condition of being of the printer at any point in time.

28 1.3.2 Status

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30 Status is the information regarding the current operating state of 31 the printer and its various sub-units. Status is the rest of the 32 visible state of the printer. As an example of the use of status, 33 a management application must be able to determine if the various 34 sub-units are ready to print or are in some state that prevents 35 printing or may prevent printing in the future. 36

37 1.3.3 Alerts 38

39 An Alert is the representation of a reportable event in the 40 printer. An event is a change in the state of the printer. Some of 41 those state changes are of interest to a management application 42 and are therefore reportable. Typically, these are the events that 43 affect the printer's ability to print. Alerts usually occur 44 asynchronously to the operation of the computer system(s) to which the printer is attached. For convenience below, "alert" will be 45 used for both the event caused by a change in the printer's state 46 47 and for the representation of that event. 48

49 Alerts can be classified into two basic categories, critical and 50 non-critical. A critical alert is one that is triggered by entry 51 into a state in which the printer is stopped and printing can not 52 continue until the condition that caused the critical alert is 53 eliminated. "Out of paper", "toner empty" and "output bin full" 54 are examples of critical alerts. Non-critical alerts are triggered INTERNET DRAFT

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by those events that enter a state in which printing is not stopped. Such a non-critical state may, at some future time, lead to a state in which printing may be stopped. Examples of these kinds of non-critical alerts are "input media low", "toner low" and "output bin nearly full". Or, a non-critical alert may simply provide information, such as signaling a configuration changed in the printer.

9 Description, status and alert information about the printer can be 10 thought of as a database describing the printer. The management 11 application for a printer will want to view the printer data base 12 differently depending on how and for what purposes the information 13 in the database is needed.

15 2. Printer Model

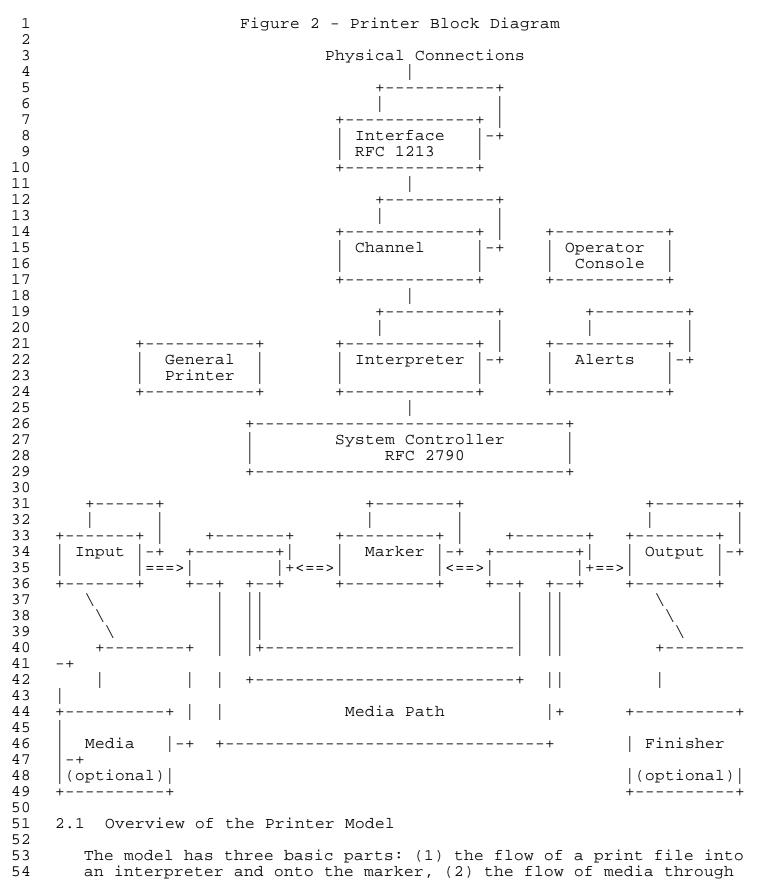
17 In order to accomplish the management of the printer, an abstract 18 model of the printer is needed to represent the sub-units from 19 which the printer is composed. A printer can be described as 20 consisting of 13 types of sub-units. It is important to note that 21 the sub-units of a printer do not necessarily relate directly to 22 any physically identifiable mechanism. Sub-units can also be a set 23 of definable logical processes, such as interpreters for page 24 description languages or command processors that set various 25 operating modes of the printer. 26

Figure 2 shows a block diagram of the printer and its basic 13 sub-units.

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1 the marker and (3) the auxiliary sub-units that control and facilitate the two prior flows. The flow of the print data comes 2 3 through a physical connection on which some form of transport 4 protocol stack is running. The data provided by the transport 5 protocol (interface) appears on a channel, which is the input to 6 an interpreter. The interpreter converts the print data into a 7 form suitable for marking on the media. 8 9 The media resides in Input sub-units from which the media is 10 selected and then transported via a Media Path first to a Marking 11 sub-unit and then onto an Output sub-unit with (optionally) some 12 finishing operations being performed. The auxiliary sub-units 13 facilitate control of the printer, inquiry/control of the operator 14 panel, reporting of alerts and the adaptation of the printer to 15 various natural languages and characters sets. All the software 16 sub-units run on the System Controller that represents the 17 processor, memory and storage systems of the Printer. Each of the 18 sub-units is discussed in more detail below. 19 All of the sub-units other than the Alerts report only state 20 21 information, either a description or a status. The Alerts sub-unit 22 reports event information. 23 24 2.2 Printer Sub-Units 25 A printer is composed of 13 types of sub-units, called groups. 26 27 The following sections describe the different types of sub-units. 28 29 2.2.1 General Printer 30 31 The general printer sub-unit is responsible for the overall 32 control and status of the printer. There is exactly one general 33 printer sub-unit in a printer. The General Printer Group in the 34 model represents the general printer sub-unit. In addition to the 35 providing the status of the whole printer and allowing the printer to be reset, this Group provides information on the status of the 36 37 packaging of the printer, in particular, the covers. The general 38 printer sub-unit is usually implemented on the system controller. 39 40 2.2.1.1 International Considerations 41 42 The localization portion of the general printer sub-unit is 43 responsible for identifying the natural language, country, and 44 character set in which certain character strings are expressed in 45 this MIB. 46 47 There may be one or more localizations supported per printer. The 48 available localizations are specified in the Localization table. 49 Localization SHOULD only be performed on string objects which are 50 named 'xxxDescription' (sub-unit descriptions) or 51 'prtConsoleDisplayBufferText' (local console text). 52 53 The agent SHALL return all other character strings in coded 54 character sets in which code positions 0-127 (decimal) are US-Lewis, Gocek, Turner Expires 19 September 2001 [Page 9]

1 2 3 4 5 6 7	ASCII [6]. The agent SHOULD return all other character strings in the UTF-8 (RFC 2279 [21]) transform of ISO 10646 [8], to conform with the IETF Policy on Character Sets and Languages (RFC 2277 / BCP 18 [19]). Control codes (code positions 0-31 and 127 decimal) SHALL NOT be used unless specifically required in the DESCRIPTION of an object.
8 9 10 11 12 13 14 15 16	The character set portion of the general printer Localization table is responsible for identifying the possible character sets for the operator console, and network management requests for display objects. There may be one or more character sets per printer. Default coded character sets for interpreter unit and output octets are described in the interpreter sub-unit by prtInterpreterDefaultCharSetIn and prtInterpreterDefaultCharSetOut. These input/output character sets may be overridden by commands in the interpreter language itself.
17 18 19	2.2.2 Inputs
20 21 22 23 24 25	Input sub-units are mechanisms that feed media to be marked on into the printer. A printer contains one or more input sub-units. The Input Group in the model represents these. The model does not distinguish fixed input bins from removable trays, except to report when a removable tray has been removed.
26 27 28 29 30 31 32 33	There are as many input sub-units as there are distinctly selectable input "addresses". For example, if one tray has both a manual and auto feeding option, then this is two input sub-units if these two sources can be (must be) separately selected. However, the above would be considered one input sub-unit if putting a sheet in the manual feed slot overrides feeding from the contents of the tray. In the second case there is no way to separately select or address the manual feed slot.
34 35	2.2.3 Media
36 37 38 39 40 41 42 43 44	An input sub-unit can hold one or more instances of the media on which marking is to be done. Typically, there is a large set of possible media that can be associated with an input. The Media Group is an extension of the Input Group, which represents media in an input sub-unit. The Media Group only describes the current contents of each input and not the possible content of the input sub-unit.
45 46	2.2.4 Outputs
47 48 49 50 51	Output sub-units are mechanisms that receive media that has been marked on. A printer contains one or more output mechanisms. The Output Group in the model represents these. The model does not distinguish fixed output bins from removable output bins, except to report when a removable bin has been removed.
52	There are as many output subjunits as there are distinctly

53 There are as many output sub-units as there are distinctly 54 selectable output "addresses". Output sub-units can be addressed 1

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in two different ways: (1) as a set of "mailboxes" which are addressed by a specific mailbox selector such as a bin number or a bin name, or (2) as a set of "slots" into which multiple copies are collated. Sometimes both modes of using the output sub-units can be used on the same printer. All that is important from the viewpoint of the model is that the output units can be separately selected.

2.2.5 Finishers

11 A finisher is a sub-unit that performs some operations on the 12 media other than marking. The Finisher Group in the model 13 represents the finisher sub-units. Some examples of finishing 14 processes are stapling, punching, binding, inserting, or folding. 15 Finishing processes may have supplies associated with the process. 16 Stapling, binding, and punching are examples of processes that 17 have supplies. A printer may have more than one finishing sub-unit 18 and each finishing sub-unit may be associated with one or more 19 output sub-units. Finishers are not described in this MIB.

21 The model does not specify the exact interaction and sequencing 22 between an output device and its associated finisher. It depends 23 on the type of finishing process and the exact implementation of 24 the printer system. This standard allows for the logical 25 association of a finishing process with an output device but does not put any restrictions on the exact sequence or interaction with 26 27 the associated output device. The output and finisher sub-units 28 may or may not be separate identifiable physical mechanisms 29 depending on the exact implementation of a printer. In addition, 30 a single output device may be associated with multiple finishing 31 sub-units and a single finishing sub-unit may be associated with 32 multiple output devices.

34 2.2.6 Markers

36 A marker is the mechanism that produces marks on the print media. 37 The Marker Group in the model represents the marker sub-units and 38 their associated supplies. A printer can contain one or more 39 marking mechanisms. Some examples of multiple marker sub-units 40 are a printer with separate markers for normal and magnetic ink or 41 an imagesetter that can output to both a proofing device and final 42 film. Each marking device can have its own set of characteristics 43 associated with it, such as marking technology and resolution. 44

45 In this model the marker sub-unit is viewed as very generalized 46 and encompasses all aspects of a marking process. For example, in 47 a xerographic process, the marking process as well as the fusing 48 process would be included in the generalized concept of the 49 marker. With the generalized concept of a marking process, the 50 concept of multiple marking supplies associated with a single 51 marking sub-unit results. For example, in the xerographic process, 52 there is not only a supply of toner, but there can also be other 53 supplies such as a fuser supply (e.g., fuser oil) that can be 54 consumed and replaced separately. In addition there can be

multiple supplies of toner for a single marker device, as in a color process.

2.2.7 Media Paths

The media paths encompass the mechanisms in the printer that move the media through the printer and connect all other media related sub-units: inputs, outputs, markers and finishers. A printer contains one or more media paths. The Media Path Group in the model represents these. The Media Path group has some objects that apply to all paths plus a table of the separate media paths.

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13 In general, the design of the media paths determines the maximum 14 speed of the printer as well as the maximum media size that the 15 printer can handle. Media paths are complex mechanisms and can 16 contain many different identifiable sub-mechanisms such as media 17 movement devices, media buffers, duplex units and interlocks. Not 18 all of the various sub-mechanisms reside on every media path. For example, one media path may provide printing only on one surface 19 20 of the media (a simplex path) and another media path may have a 21 sub-mechanism that turns the media over and feeds it a second time 22 through the marker sub-unit (a duplex path). The duplex path may 23 even have a buffer sub-mechanism that allows multiple copies of 24 the obverse side to be held before the reverse side of all the 25 copies is marked.

27 2.2.8 System Controller

29 The System Controller is the sub-unit upon which the software 30 components of the Printer run. The Host Resources MIB represents 31 the System Controller in the model. This MIB allows for the 32 specification of the processor(s), memory, disk storage, file 33 system and other underlying sub-mechanisms of the printer. The 34 controller can range from simple single processor systems to 35 multiprocessor systems. In addition, controllers can have a full 36 range of resources such as hard disks. The printer is modeled to 37 have one system controller even though it may have more than one 38 processor and multiple other resources associated with it.

40 2.2.9 Interfaces 41

42 An interface is the communications port and associated protocols 43 that are responsible for the transport of data to the printer. A 44 printer has one or more interface sub-units. The interfaces are 45 represented by the Interfaces Group of MIB-II (RFC 1213 [14]). 46 Some examples of interfaces are serial ports (with little or no 47 protocol) and Ethernet ports on which one might run Internet IP, 48 Novell IPX, etc.

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- 50 2.2.10 Print Job Delivery Channels
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52 The print job delivery channel sub-units identify the independent 53 sources of print data (here print data is the information that is 54 used to construct printed pages and may have both data and control

1 aspects). A printer may have one or more channels. The channel 2 sub-units are represented by the Print Job Delivery Channel Group 3 in the Model. The electronic path typically identifies each 4 channel and service protocol used to deliver print data to the 5 printer. A channel sub-unit may be independently enabled (allowing 6 print data to flow) or disabled (stopping the flow of print data). 7 It has a current Control Language that can be used to specify 8 which interpreter is to be used for the print data and to query 9 and change environment variables used by the interpreters (and 10 SNMP). There is also a default interpreter that is to be used if 11 an interpreter is not explicitly specified using the Control 12 Language. Print Job Delivery Channel sub-units can, and usually 13 are, based on an underlying interface.

15 2.2.11 Interpreters

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17 The interpreter sub-units are responsible for the conversion of a 18 description of intended print instances into images that are to be 19 marked on the media. A printer may have one or more interpreters. 20 The Interpreter Group in the Model represents the interpreter subunits. Each interpreter is generally implemented with software 21 22 running on the System Controller sub-unit. The Interpreter Table 23 has one entry per interpreter where the interpreters include both 24 Page Description Language (PDL) Interpreters and Control Language 25 Interpreters.

27 2.2.12 Console

29 Many printers have a console on the printer, the operator console 30 that is used to display and modify the state of the printer. The 31 console can be as simple as a few indicators and switches or as 32 complicated as full screen displays and keyboards. There can be at 33 most one such console. The Console Group in the model represents 34 this console sub-unit. Although most of the information displayed 35 there is also available in the state of the printer as represented 36 by the various Groups, it is useful to be able to query and modify 37 the operator console remotely. For example, a management 38 application might like to display to its user the current message 39 on the operator console of the remote printer or the management 40 application user might like to modify the current message on the 41 operators console of the remote printer. As another example, one 42 might have a remote application that puts up a pseudo console on a 43 workstation screen. Since the rules by which the printer state is 44 mapped onto the console and vice versa are not standardized, it is 45 not possible to reproduce the console state or the action of 46 console buttons and menus. Therefore, the Console Group provides 47 access to the console. The operator console is usually implemented 48 on the system controller with additional hardware for input and 49 display. 50

51 2.2.13 Alerts

52 53 The alert sub-unit is responsible for detecting reportable events, 54 making an entry in the alert table and, if and only if the event 11 12

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1 is a critical event, initiating a trap. The exception to this rule 2 is when the "alertRemovalofBinaryChangeEntry" trap is generated. 3 The alert sub-unit is represented by the Alerts Group and, in 4 particular, the Alert Table. This table contains information on 5 the severity, sub-unit, and detailed location within the sub-unit, б alert code and description of each critical alert that is 7 currently active within the printer. Each reportable event causes 8 an entry to be made in the Alert Table. 9

10 2.2.13.1 Status and Alerts

Summary information about the state of the printer is reported at three separate levels: (1) The status of the printer as a whole is reported in the Host Resources MIB, (2) The status of various subunits is reported in the principle table of the Group that represents the sub-unit, and (3) Alert codes are reported in the Alert Table.

19 2.2.13.2 Overall Printer Status

Of the many states a printer can be in, certain states are more "interesting" because of the distinct actions they are likely to provoke in the administrator. These states may be applied to the printer as a whole, or to a particular sub-unit of the printer. These named states are:

- 27 Non Critical Alert Active For the printer this means that one or 28 more sub-units have a non-critical alert active. For a sub-unit, 29 this means that the sub-unit has a non-critical alert active.
- Critical Alert Active For the printer this means that one or more sub-units have a critical alert active. For a sub-unit, this means that the sub-unit has a critical alert active.

35 Unavailable - The printer or sub-unit is unavailable for use (this 36 is the same as "broken" or "down" in other terminology). A 37 trained service person is typically necessary to make it 38 available.

Moving on-line or off-line - The printer is either off-line, in the process of moving off-line or moving back on-line. For example, on printers with motorized hoppers, reloading paper involves a transition to off-line to open the paper bin, filling the hopper and, finally, a transition back to on-line as the paper bin is repositioned for printing.

- 47 Standby The printer or sub-unit is not immediately available but 48 can accept new instructions. 49
- 50 Available The printer or subunit is functioning normally.
- 52 Idle The printer or subunit is immediately available.
- 54 Active The printer or subunit is performing its primary

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1	function.			
2 3 4 5 6	Busy - The printer or subunit is performing a function (not necessarily its primary function) and is not immediately available for its primary function.			
7 8 9 10 11 12 13 14 15 16	The Host Resources MIB (RFC 2790 [28]) provides three status objects that can be used to describe the status of a printer: (1) hrDeviceStatus in the entry in the hrDeviceTable; (2) hrPrinterStatus in the hrPrinterTable; and (3) hrPrinterDetectedErrorState in the hrPrinterTable. These objects describe many of the states that a printer can be in. The following table shows how the values of the three printer-related objects in the Host Resources MIB relate to the states named above:			
17 18 19	Printer Status	hrDeviceStatus	hrPrinterStatus	hrPrinterDetected- ErrorState
20	Idle	running(2)	idle(3)	none set
21 22 23 24	Busy/ Active	running(2)	printing(4)	
25 26 27 28	Non Critical Alert Active	warning(3)	<pre>idle(3) or printing(4)</pre>	could be: lowPaper, lowToner, or serviceRequested
29 30 31 32 33	Critical Alert Active	down(5)	other(1)	could be: jammed, noPaper, noToner, coverOpen, or serviceRequested
34 35	Unavailable	down(5)	other(1)	
36 37	Moving off- line	<pre>warning(3)</pre>	idle(3) or printing(4)	offline
38 39	Off-line	down(5)	other(1)	offline
40 41 42	Moving on-line	down(5)	warmup(5)	
43 44	Standby	running(2)	other(1)	
44 45 46 47 48 49 50 51 52 53 54	are not an exh several things not possible t are pending - will prevail. represented in running(2) and	austive list of should be note o detect when b if both are pen In addition, a the Host Resou	the possible s d. When using oth critical an ding, the Criti printer in the crces MIB with a us of other(1),	possible states - they states. Nevertheless, these states, it is ad non-critical alerts cal Alert Active state standby state will be a device status of a set of states that cinter state.

1 Detailed status per sub-unit is reported in the sub-unit status 2 fields. 3 4 2.2.13.2.1 Host Resources MIB Printer Status 5 6 For completeness, the definitions of the Printer Status objects of 7 the Host Resources MIB (RFC 2790 [28])are given below: 8 9 hrDeviceStatus OBJECT-TYPE 10 SYNTAX INTEGER { 11 unknown(1), 12 running(2), warning(3), 13 14 testing(4), 15 down(5) 16 17 ACCESS read-only 18 STATUS mandatory 19 DESCRIPTION 20 "The current operational state of the device 21 described by this row of the table. A value 22 unknown(1) indicates that the current state of the 23 device is unknown. running(2) indicates that the 24 device is up and running and that no unusual error 25 conditions are known. The warning(3) state 26 indicates that agent has been informed of an 27 unusual error condition by the operational software 28 (e.q., a disk device driver) but that the device 29 is still 'operational'. An example would be high 30 number of soft errors on a disk. A value of 31 testing(4), indicates that the device is not 32 available for use because it is in the testing 33 state. The state of down(5) is used only when 34 the agent has been informed that the device is 35 not available for any use." 36 ::= { hrDeviceEntry 5 } 37 38 hrPrinterStatus OBJECT-TYPE 39 SYNTAX INTEGER { 40 other(1), 41 unknown(2), 42 idle(3), 43 printing(4), 44 warmup(5) 45 46 ACCESS read-only 47 STATUS mandatory 48 DESCRIPTION 49 "The current status of this printer device. When in the 50 idle(3), printing(4), or warmup(5) state, the 51 corresponding 52 hrDeviceStatus should be running(2) or warning(3). When 53 in 54 the unknown(2) state, the corresponding hrDeviceStatus

1 2 3 4 5		ld be unknown(1)." ::= { hrPrinterEntry 1 } interDetectedErrorState OBJECT-TYPE
6 7 8 9 10	7	SYNTAX OCTET STRING (0128) ACCESS read-only STATUS mandatory DESCRIPTION "This object represents any error conditions detected by
11 12 13	the STRII	printer. The error conditions are encoded as an OCTET
14 15 16 17		with the following definitions: Condition Bit #
17 18 19 20 21		lowPaper0noPaper1lowToner2noToner3
22 23 24 25		doorOpen4jammed5offline6serviceRequested7
26 27 28 29 30 31 32 33		<pre>inputTrayMissing 8 outputTrayMissing 9 markerSupplyMissing 10 outputNearFull 11 outputFull 12 inputTrayEmpty 13 overduePreventMaint 14</pre>
34 35 36 37 38 39 40	worst	Bit # 15 is not assigned. If multiple conditions are currently detected and the hrDeviceStatus would not otherwise be unknown(1) or testing(4), the hrDeviceStatus shall correspond to the t state of those indicated, where down(5) is worse than
41 42 43 44	of	<pre>warning(3), which is worse than running(2). Bits are numbered starting with the most significant bit</pre>
45 46 47	the	the first byte being bit 0, the least significant bit of first byte being bit 7, the most significant bit of the
48 49 50	that	second byte being bit 8, and so on. A one bit encodes the condition was detected, while a zero bit encodes that
51 52 53 54	the	condition was not detected. This object is useful for alerting an operator to specific

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1 warning or error conditions that may occur, especially 2 those 3 requiring human intervention." 4 ::= { hrPrinterEntry 2 } 5 6 2.2.13.2.2 Sub-unit Status 7 8 Sub-unit status is reported in the entries of the principle table 9 in the Group that represents the sub-unit. For sub-units that 10 report a status, there is a status column in the table and the 11 value of this column is always an integer formed in the following 12 way. 13 14 The SubUnitStatus is an integer that is the sum of 5 distinct 15 values, Availability, Non-Critical, Critical, On-line, and 16 Transitioning. These values are: 17 18 Availability value 19 20 Available and Idle 0 000'b 21 2 Available and Standby 010'b 22 Available and Active 4 100'b 23 Available and Busy 6 110'b 24 Unavailable and OnRequest 1 001'b 25 3 Unavailable because Broken 011'b 5 26 Unknown 101'b 27 28 Non-Critical 29 30 No Non-Critical Alerts 0 31 Non-Critical Alerts 8 32 33 Critical 34 35 No Critical Alerts 0 36 Critical Alerts 16 37 38 On-Line 39 40 State is On-Line 0 41 State is Off-Line 32 42 43 Transitioning 44 45 At intended state 0 46 Transitioning to intended state 64 47 48 For example, an input (tray) that jammed on the next to the last 49 page may show a status of 27 (unavailable because broken (3) + a50 critical state (16), jammed, and a noncritical state (8), low 51 paper). 52 53 2.2.13.3 Alert Tables 54

1 The Alert Group consists of a single table in which all active alerts are represented. This section provides an overview of the 2 3 table and a description of how it is managed. The basic content 4 of the alert table is the severity (critical or non-critical) of 5 the alert, the Group and entry where a state change caused the 6 alert, additional information about the alert (a more detailed location, an alert code, and a description), and an indication of 7 8 the level of training needed to service the alert. 9

10 The Alert Table contains some information that is redundant, for 11 example that an event has occurred, and some information that is 12 only represented in the Alert Table, for example the additional 13 information. A single table was used because a single entry in a 14 group could cause more than one alert, for example paper jams in 15 more than one place in a media path. Associating the additional information with the entry in the affected group would only allow 16 17 one report where associating the additional information with the 18 alert makes multiple reports possible. Every time an alert occurs 19 in the printer, the printer makes one or more entries into the 20 Alert Table. The printer determines if an event is to be 21 classified as critical or non-critical. If the severity of the 22 Alert is "critical", the printer sends a trap or event 23 notification to the host indicating that the table has changed. 24 Whether or not a trap is sent, the management application is 25 expected to poll the printer on a regular basis and to read and 26 parse the table to determine what conditions have changed, in 27 order to provide reliable information to the management 28 application user.

30 2.2.13.4 Alert Table Management

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The alert tables are sparsely populated tables. This means the 33 tables will only contain entries of the alerts that are currently 34 active and the number of rows, or entries in the table will be dynamic. More than one event can be added or removed from the event tables at a time depending on the implementation of the 37 printer.

39 There are basically two kinds of events that produce alerts: 40 binary change events and unary change events. Binary change events 41 come in pairs: the leading edge event and the trailing edge event. 42 The leading edge event enters a state from which there is only one 43 exit; for example, going from running to stopped with a paper jam. 44 The only exit from this state is fixing the paper jam and it is 45 clear when that is accomplished. The trailing edge event exits 46 the state that was entered by the leading edge event. In the 47 example above, fixing the paper jam is the trailing edge event. 48

49 It is relatively straightforward to manage binary change events in 50 the Alert Table. Only the leading edge event makes an entry in the 51 alert table. This entry persists in the Alert Table until the 52 trailing edge event occurs at which point this event is signaled 53 by the removal of the leading edge event entry in the Alert Table. 54 That is, a trailing edge event does not create an entry; it

1 2 3 4 5 6 7 8 9	removes the corresponding leading edge event. Removing the leading edge entry may cause the unary change event "alertRemovalofBinaryChangeEntry" to be added to the table. With binary change events it is possible to compute the maximum number that can occur at the same time and construct an Alert Table that would hold that many events. There would be no possibility of table overflow and no information about outstanding events would be lost.
10 11 12 13 14 15 16 17 18 19 20 21 22	Unfortunately, there are some events that are not binary changes. This other category of event, the unary change event, is illustrated by the configuration change event. With this kind of event the state of the machine has changed, but to a state which is (often) just as valid as the state that was left and from which no return is necessary. For example, an operator may change the paper that is in the primary input source from letter to legal. At some time in the future the paper may be changed back to letter, but it might be changed to executive instead. This is where the problem occurs. It is not obvious how long to keep unary change event entries in the Alert Table. If they were never removed, the Alert Table would continue to grow indefinitely.
22 23 24 25 26 27 28 29	The agent needs to have an algorithm implemented for the management of the alert table, especially in the face of combinations of binary and unary alerts that would overflow the storage capacity of the table. When the table is full and new alerts need to be added, old alerts must be removed. An alert to be deleted should be chosen using the following rules:
30 31 32 33 34	1. Find a non-critical unary alert and delete it. If there are multiple non-critical unary alerts, it is suggested that the oldest one is chosen. If there are no non-critical unary alerts, then,
35 36 37 38 39	2. Find a non-critical binary alert and delete it. If there are multiple non-critical binary alerts, it is suggested that the oldest one is chosen. If there are no non-critical binary alerts, then,
40 41 42 43 44 45 46	3. Find a critical (binary) alert and delete it. If there are multiple critical alerts, it is suggested that the oldest one be chosen. Agent implementers are encouraged to provide at least enough storage space for the maximum number of critical alerts that could occur simultaneously. Note that all critical alerts are binary.
40 47 48 49 50 51 52 53 54	In the event that a critical binary alert must be managed out of the alert table; when space allows and the alert condition still exists, the alert must be re-added to the alert table even if there was no subsequent transition into the associated state. It is recommended that this be done for non-critical binary alerts as well. Note that the new alert entry will not have the same index as the original entry that was moved out of the table.

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Note that because the Alert Index is a monotonically increasing integer there will be gaps in the values in the table when an alert is deleted. The management application may want to reacquire the Printer state and check for state changes that it did not observe in the Alert Table if such gaps are detected.

2.3 Read-Write Objects

9 Some objects in the printer MIB reflect the existence or amount of 10 a given resource within the printer. Some examples of such 11 resources are the size and number of sheets in a paper tray or the 12 existence of certain output options. Some printers have automatic 13 sensors for these resources. Most printers lack sensors for every property of every resource. The management application is allowed 14 15 to write into objects that hold descriptive or existence values 16 for printers that cannot sense these values. The ability to change 17 the value of a read-write object may depend on the implementation 18 of the agent. Many objects in the MIB are given read-write 19 access, but a printer implementation might only permit a 20 management application to change the value if the printer can not 21 sense the value itself. Note that even though some objects 22 explicitly state the behavior of conditional ability to change 23 values, any read-write object may act this way.

25 Generally, an object is given read-write access in the Printer MIB 26 specification if:

1. The object involves installation of a resource that some printers cannot themselves detect. Therefore, external means are needed to inform the printer of the installation. (Here external means include using the operator console, or remote management application) and

- 34 2. The printer will behave differently if the installation of the 35 resource is reported than the printer would if the installation 36 were not reported; that is, the object is not to be used as a 37 place to put information not used by the printer, i.e., not a 38 "sticky-note". Another way of saying this is that the printer 39 believes that information given it and acts as if the information 40 were true. For example, on a printer that cannot sense the size, 41 if one paper size is loaded, but another size is set into the 42 paper size object, then the printer will use the size that was set 43 as its current paper size in its imaging and paper handling. 44
- 45 3. The printer may get hints that it may not know about the 46 existence or properties of certain resources. For example, a 47 paper tray may be removed and re-inserted. When this removal and 48 insertion happens, the printer may either assume that a property, 49 such as the size of paper in the tray, has not changed or the 50 printer may change the value of the associated object to 51 "unknown", as might be done for the amount of paper in the tray. 52 As long as the printer acts according to the value in the object 53 either strategy is acceptable. 54
 - Lewis, Gocek, Turner Expires 19 September 2001

1 4. It is an implementation-specific matter as to whether or not 2 MIB object values are persistent across power cycles or cold 3 starts. It is particularly important that the values of the 4 prtMarkerLifeCount object persist throughout the lifetime of the printer. Therefore, if the value of any MIB object persists across power cycles, then the prtMarkerLifeCount object must also 7 persist.

2.4 Enumerations

Enumerations (enums) are sets of symbolic values defined for use with one or more objects. Some common enumeration sets are assigned a symbolic data type name (textual convention). These enumerations are listed at the beginning of this specification.

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2.4.1 Registering Additional Enumerated Values

18 This working group has defined several types of enumerations. 19 These enumerations differ in the method employed to control the 20 addition of new enumerations. Throughout this document, references to "enumeration (n)", where n can be 1, 2 or 3 can be 21 22 found in the various tables. The definitions of these types of 23 enumerations are:

25 enumeration (1) All the values are defined in this Printer MIB 26 specification. Additional enumerated values require a revision to 27 this specification. Type 1 enumerations are typically used where 28 changes to the enumeration are either unlikely or will have a significant impact on the structure of the MIB or implementation 29 30 of the MIB in management applications.

32 Some criteria that suggest using a type 1 enumeration are:

a) the set of values in the enumeration is thought to be known, e.g., faceUp and faceDown

37 b) the enumeration defines a set of units of measure which must be 38 understood by a management application to be able to correctly 39 display the value of an object that measurement unit controls; and 40

41 c) the enumeration is tied to the structure of the MIB or the 42 model on which the MIB is based, e.q., the prtAlertGroup 43 enumeration is tied to the OIDs for the related tables. 44

45 enumeration (2) An initial set of values are defined in the 46 Printer MIB specification. This working group reviews and 47 registers additional enumerated values that pertain to printers 48 and this MIB. The initial versions of the MIB will contain the 49 values registered so far. After the MIB is approved, this working 50 group will register additional values through IANA as appropriate. 51 The current set of approved values should always be obtained from 52 the IANA registry. Type 2 enumerations are typically used where it 53 is important to insure consistent usage of the enumeration values; 54 that is, to insure that the same entity does not get two different INTERNET DRAFT

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1 2 3	enumerations values, or two different entities do not get the enum value.	same
4 5 6 7 8 9 10 11 12 13 14 15	enumeration (3) An initial set of values are defined in the Printer MIB specification. Additional enumerated values are registered without working group review. The initial versions the MIB will contain the values registered so far. After the is approved, anyone may register additional values through IAN without approval. The current set of approved values may be obtained from the IANA registry. Type 3 enumerations are used enumerations that can be extended without any controls; an exa is the prtMarkerSuppliesType, which can be extended as needed any manufacturer to describe the supplies required by a new printer.	MIB A for mple
16	3. Groups from other MIB Specifications	
17 18 19 20 21 22 23	This section identifies the groups from other MIBs that shall supported to supplement and complete a printer MIB implementat The section also describes some of the less obvious characteristics of the Printer MIB structure that are related the inclusion of these other MIB groups.	ion.
24	3.1 System Group	
25 26 27 28 29	All objects in the system group of MIB-II (RFC 1213 [14]) shal implemented; however, as described in paragraph 3.4, implement should carefully consider what constitutes the "system".	
30	3.2 System Controller	
31 32 33 34 35 36 37 38 39 40 41	The storage and device groups of the Host Resources MIB (RFC 2 [28]) shall be implemented to support the printer(s) system controller, and any supporting devices. If deemed appropriate the implementer, other groups of the Host Resources MIB (Syste Running Software, Running Software Performance, and Installed Software) may be implemented. Because of the structure of the Host Resources MIB, the device constituting the system controller are at the same level as th printer.	by m, s
42 43	3.3 Interface Group objects	
44 45 46 47	All objects in the Interfaces Group of MIB-II (RFC 1213 [14]) shall be implemented for all print information interfaces to t printer, including non-network interfaces.	he
48 49	3.3.1 Interface Types	
49 50 51 52 53 54	The interfaces group of RFC 1213 [14] contains only a partial of interface types that can be specified in the "ifType" objec For a complete list of interface types, refer to the IANA regi at "ftp://ftp.isi.edu/mib/ianaiftype.mib"	t.

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3.4 Implications involved with using external MIB groups

In structuring the Printer MIB, it is inconvenient to follow the hierarchical structure implicit in the printer block diagram. There are two reasons for this:

7 Figure 2 suggests that the printer interface to the network be 1. 8 through the interfaces group. It is generally required that this 9 network node is supported by an implementation of RFC 1213 [14]. 10 However, the network node may support one printer or several 11 printers. Further, the SNMP agent may be within the "system 12 controller" (the printer controller board), or the SNMP agent may 13 be within a device completely external to the printer system 14 controller. Therefore, the relationship between the MIB-II defined 15 network node, the agent implementing the Printer and Host 16 Resources MIB, and the functional printer itself may not be 17 consistent with the structure suggested in figure 2. 18

19 In many cases, the printer controller is a generic computing 2. 20 device (PC or other standalone computer) containing many of the 21 resources of a standard host computer. This includes devices such 22 as memory, interfaces, network, and printer. The Host Resources 23 MIB has well-developed structures for such devices. However, the 24 Host Resources MIB only deals with devices associated with a 25 single "host", and it considers the printer to be a part of this 26 host on the same level as memory, processor, and other devices 27 considered part of the "System Controller" of the printer.

Therefore, it was convenient to conceive of a "host" associated with the SNMP agent and with the network node by which the agent and ultimately the printer(s) communicate with the network. All host-resource devices communicating through this network node are considered part of the host and are supported by implementation of the Host Resources MIB Device and Storage group.

36 Another consideration is that, not only are the printer and the 37 host resource devices constituting the System Controller of the 38 printer at the same level, but if there are multiple printers, 39 these printers and the Host Resource devices constituting these 40 printers are all at the same level, whether the devices are 41 dedicated to one printer or shared. The functional hierarchy 42 implicit in the printer block diagram is therefore flattened with 43 respect to host resource devices.

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45 3.4.1 Host Resource MIB Device Group 46

47 For each instance of a host resource device, the following 48 attributes exist:

- 50 hrDeviceIndex, hrDeviceType, hrDeviceDescr, hrDeviceID, 51 hrDeviceStatus, and hrDeviceErrors.
- 52

53 The Device Description, Device ID and Device Status listed in this 54 table identify and characterize a printer. The hrDevice index for

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each printer is included as an indexing value for almost all variables in the Printer MIB. In the case of multiple printers, the printer MIB appears as a composite MIB for all printers considered part of this "host". Each table of the printer MIB that includes hrDeviceIndex as an index will contain the variables for each printer.

8 Non-printer devices listed in the table are associated with one or 9 more listed printer devices by the prtDeviceRefTable in the 10 printer MIB. This table, as most in the printer MIB, is indexed by 11 hrDeviceIndex; but unlike most of the other tables where the 12 devices of interest are printers, the devices of interest for this 13 table are non-printer devices. The only accessible object for each 14 row in this table is the device number of the printer device that 15 is associated with the indexed non-printer device. The table 16 includes a second index, prtDeviceRefSeqNumber, which allows a 17 listed device to be associated with multiple printer devices.

19 For example, a fully integrated printer may contain, as part of 20 its system controller, hrDeviceProcessor, hrDeviceNetwork, 21 hrDeviceDiskStorage, hrDeviceParallelPort, hrDeviceSerialPort, 22 hrDeviceVolatileMemory and hrDeviceNonVolatileMemory.

24 Ideally, these must all be listed as devices in the virtual host, 25 along with the printer (hrDevicePrinter) itself. Therefore, in this example, eight devices would be included with hrDeviceIndex 26 27 values of "1 - 8". Since there is but one printer, the 28 prtDeviceRefTable in the printer MIB would contain seven entries, 29 each with a value identifying the printer hrDeviceIndex. Because 30 there is only one printer, devices are not shared and the 31 prtDeviceRefSeqNumber index is (1) in all cases.

Further, the Host Resource MIB defines device specific tables to be supported for certain devices. These devices, and the primary significance of the additional table(s) are:

37 hrProcessorTable: identification and significant characteristics 38 of processor. 39

40 hrNetworkTable: correlates a network device to a MIB-II ifIndex 41 key 42 her interaction of the print of the set o

42 hrPrinterTable and hrPrinterErrorTable: the mechanism 43 communicating the status of each printer. 44

45 hrDiskStorageTable: identifies disk access, media type and 46 capacity. 47

48 hrPartitionTable: identifies "partitions" on long term storage 49 devices.

51 hrFSTable: identifies local file system type, characteristics and 52 parameters. 53 3.4.2 Host Resource Storage Group

2 3 Program and data storage exist both as physical devices in the 4 Host Resource Device Table, and as logical storage areas supported 5 in the Host Resource Storage Group. Logical storage is listed and 6 assigned an index in the hrStorageTable. Storage is correlated to 7 specific printers by the prtStorageRefTable in the Printer MIB. 8 This table is indexed by hrStorageIndex. The only accessible 9 object for each row in this table is the device number of the 10 printer device that is associated with the indexed storage. The 11 table includes a second index, prtStorageRefSeqNumber, which 12 allows logical storage to be associated with multiple printer 13 devices.

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3.4.3 MIB-II Interface Group

17 The interfaces by which the printer receives print data are 18 identified within the Interfaces table of MIB-II (RFC 1213 [14]). 19 In the case of multiple printers, the network interface for the 20 "host" as well as all of the interfaces for all printers is listed 21 in this table. The interfaces may also be listed as devices in the 22 Host Resource Device Table. Network Port devices are identified by 23 MIB-II "ifIndex" objects to correlate them back to the MIB-II 24 interface table; no such provision exists for "serial" and 25 "parallel" ports. Interfaces listed in the Host Resource device 26 table may be correlated to specific printers in the "host" by the 27 prtDeviceRefTable in the printer MIB; this may be useful if there are multiple printers. The "ifIndex" is also used to identify the 28 29 interface associated with each channel in the Printer MIB "Print 30 Job Delivery Channel" group. Therefore, specific interfaces are 31 also correlated back to specific printers via the "channels" 32 mechanism.

34 4. Differences from Previous Version
35

This draft supercedes and replaces RFC 1759. The following changes are included here.

39 - Minor editorial corrections and changes.

41 - Updated Coded Character Set description and IANA registration 42 process. 43

44 - Change hrPrinterDetectedErrorState "coverOpen" (bit 4) to 45 "doorOpen" per RFC 2790.

47 - Added second octet of hrPrinterDetectedErrorState as partially
48 described and assigned in the updated Host Resources MIB (RFC
49 2790).
50

- Remove fixed association of hrDeviceStatus (warning/down) from
 hrPrinterDetetctedErrorState per RFC 2790.

54 - Instead of showing bit 15 as "not assigned" in the quote from

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1 2 3	RFC 2790 in the hrPr from the tabular for doesn't show bit 15	rm and added it as	a sentence, be	
4 5 6	- Clarfied the inter	national considera	ations.	
6 7 8 9 10	- Added prtChannelIr conventions on a per description and enha	channel basis to	clarify the cl	
11 12	- Deprecated some ob	osolete channel typ	pes.	
13 14 15	- Extended the Alert conventions to inclu			
16 17	- Clarify alerts bas	sed on unary vs. b	inary change ev	vents.
18 19 20	- Added (optional) u alertRemovalOfBinary			
20 21 22 23	- Establish a conver prtGeneralCurrentOpe			
24 25	- Added prtAuxiliary	SheetStartupPage	Present0n0:	Ef
26 27	- Added prtAuxiliary	SheetBannerPage	PresentOnO:	Ef
28	- Added prtGeneralPr	rinterName	OCTET STRI	NG
29 30 21	- Added prtGeneralSe	erialNumber	OCTET STRII	NG
31 32	- Added prtInputNext	Index	Integer32	
33 34	- Added the Input Sw	vitching Group		
35 36	- Added prtAlertCrit	cicalEvents	Counter32	
37 38	- Added prtAlertAllE	lvents	Counter32	
39 40	- Updated PrtAlertCo	de enums including	g generic aler	t codes.
41 42 43 44	- Deprecated the use doorClosed(502), in			
45 46 47 48 49	- Added the PrtConso textual conventions, PrtMarkerAddressabil changed the PrtGener to reflect the new s	and changed the I ityUnit objects' s calEntry and PrtMan	PrtConsoleDisal syntax to use 1	ble and those TCs, and
50 51 52	- Added 'IANA Consid Considerations' as t			
53 54	- Updated Security a	and Copyright sect:	ions.	

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1 2 - Updated references. 3 4 - Added Appendix E - Overall Printer Status Table. 5 6 - Updated participant and contact information. 7 8 5. The Printer MIB 9 10 Printer-MIB DEFINITIONS ::= BEGIN 11 12 IMPORTS MODULE-IDENTITY, OBJECT-TYPE, Counter32, Integer32, TimeTicks, 13 14 NOTIFICATION-TYPE, OBJECT-IDENTITY, mib-2 FROM SNMPv2-SMI 15 TEXTUAL-CONVENTION, DisplayString FROM SNMPv2-TC 16 MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF 17 hrDeviceIndex, hrStorageIndex FROM HOST-RESOURCES-MIB; 18 19 printmib MODULE-IDENTITY 20 LAST-UPDATED "0008090000Z" -- 2-digit year, 20xx 21 ORGANIZATION "IETF Printer MIB Working Group" 22 CONTACT-INFO 23 "Harry Lewis 24 IBM Corporation. 25 6300 Diagonal Hwy 26 Boulder, CO 80301 27 harryl@us.ibm.com" 28 DESCRIPTION 29 "The MIB module for management of printers." 30 $::= \{ mib-2 \ 43 \}$ 31 32 -- Textual conventions for this MIB module 33 _ _ 34 -- Generic unspecific textual conventions 35 _ _ 36 37 PrtMediaUnitTC ::= TEXTUAL-CONVENTION 38 -- This is a type 1 enumeration. 39 STATUS current 40 DESCRIPTION "Units of measure for media dimensions." 41 42 SYNTAX INTEGER { 43 tenThousandthsOfInches(3), -- .0001 44 micrometers(4) 45 } 46 47 PrtCapacityUnitTC ::= TEXTUAL-CONVENTION -- This is a type 1 enumeration. 48 49 current STATUS 50 DESCRIPTION 51 "Units of measure for media capacity." 52 INTEGER { SYNTAX 53 other(1), 54 unknown(2),

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 1
                       tenThousandthsOfInches(3), -- .0001
 2
                       micrometers(4),
 3
                       sheets(8),
 4
                       feet(16),
 5
                       meters(17),
 6
                     -- Values for Finisher MIB
 7
                       items(18),
 8
                       percent(19)
 9
10
11
    PrtPrintOrientationTC ::= TEXTUAL-CONVENTION
12
         -- This value is a type 1 enumeration.
13
        STATUS
                   current
14
        DESCRIPTION
15
             "A generic representation for printing orientation on a
16
    'page'."
17
        SYNTAX
                   INTEGER {
18
                       other(1),
19
                       portrait(3),
20
                       landscape(4)
21
22
23
    PrtCoverStatusTC ::= TEXTUAL-CONVENTION
24
        -- This is a type 2 enumeration.
25
        STATUS
                   current
26
        DESCRIPTION
27
             "Values for encoding the state of a particular cover or
28
    access
29
             panel on the printer case or enclosure."
30
        SYNTAX
                   INTEGER {
31
                       other(1),
32
                       coverOpen(3),
33
                       coverClosed(4),
34
                       interlockOpen(5),
35
                       interlockClosed(6)
36
                        }
37
38
    PrtSubUnitStatusTC ::= TEXTUAL-CONVENTION
39
        -- This is a type 1 enumeration.
40
        STATUS
                 current
41
        DESCRIPTION
42
             "Status of a printer sub-unit.
43
44
             The SubUnitStatus is an integer that is the sum of 5 distinct
45
             values, Availability, Non-Critical, Critical, On-line, and
46
             Transitioning. These values are:
47
48
             Availability
                                                      Value
49
50
                 Available and Idle
                                                       0
                                                               000'b
51
                 Available and Standby
                                                       2
                                                               010'b
52
                 Available and Active
                                                      4
                                                               100'b
53
                 Available and Busy
                                                       б
                                                               110'b
54
                                                      1
                 Unavailable and OnRequest
                                                               001'b
```

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[Page 29]
```

1 Unavailable because Broken 3 011'b 2 5 101'b Unknown 3 4 Non-Critical 5 No Non-Critical Alerts 0 6 Non-Critical Alerts 8 7 8 Critical 9 10 No Critical Alerts 0 11 Critical Alerts 16 12 13 On-Line 14 15 State is On-Line 0 16 State is Off-Line 32 17 18 Transitioning 19 20 At intended state 0 21 Transitioning to intended state 64" 22 23 SYNTAX INTEGER (0..126) 24 25 PresentOnOff ::= TEXTUAL-CONVENTION 26 -- This is a type 1 enumeration. 27 STATUS current 28 DESCRIPTION 29 "Presence and configuration of a device or feature." 30 SYNTAX INTEGER { 31 other(1), 32 on(3), 33 off(4), 34 notPresent(5) 35 } 36 37 CodedCharSet ::= TEXTUAL-CONVENTION 38 -- This is a type 3 enumeration. 39 STATUS current 40 DESCRIPTION 41 "A coded character set value that specifies both a set of 42 characters that may be used and an encoding (as one or more 43 octets) that is used to represent the characters in the set. 44 These values are to be used to identify the encoding employed 45 for strings in the MIB where this is not fixed by the MIB. 46 47 Some objects that allow a choice of coded character set are: 48 the 49 prtLocalizationCharacterSet object in the LocalizationTable 50 and 51 prtInterpreterDefaultCharSetIn. The 52 prtGeneralCurrentLocalization and prtConsoleLocalization 53 objects 54 in turn contain the index in the LocalizationTable of the

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1 current localization (country, language, and coded character 2 set) of the 'description' objects and the console, 3 respectively. 4 5 The current list of character sets and their enumerated 6 values 7 used to reference them are contained in the IANA Character 8 Set 9 registry. The enum value is indicated by the MIBenum entry 10 in 11 the registry. The enum symbol is indicated by the Alias that 12 starts with 'cs' for character set. 13 14 The IANA character sets registry is [4]. 15 To add a new character set to the IANA Registry, see RFC 2278 16 or BCP 19 [20]." 17 18 INTEGER { SYNTAX 19 other(1) -- used if the designated coded 20 -- character set is not currently 21 -- registered by IANA 22 23 -- See [4] for registered character sets and 24 -- use the MIBenum integer value. 25 ł 26 27 _ _ 28 -- General Group textual-conventions 29 _ _ 30 31 PrtGeneralResetTC ::= TEXTUAL-CONVENTION 32 -- This value is a type 3 enumeration. 33 STATUS current 34 DESCRIPTION 35 "Values for reading and writing the prtGeneralReset object. 36 37 If a device does not have NVRAM, the device shall none the less 38 respond to a SET with the value resetToNVRAM(5) with some sort of 39 warm reset that resets the device to some implementation-defined 40 state that is preferably under control of the system 41 administrator 42 by some means outside the scope of this MIB specification." 43 44 SYNTAX INTEGER { 45 notResetting(3), 46 powerCycleReset(4), -- Cold Start 47 resetToNVRAM(5), -- Warm Start 48 resetToFactoryDefaults(6) -- Reset contents of -- NVRAM to factory 49 50 -- defaults } 51 52 53 54 -- Channel Group textual-conventions

```
1
    _ _
 2
 3
    PrtChannelStateTC ::= TEXTUAL-CONVENTION
 4
         -- This value is a type 1 enumeration.
 5
         STATUS
                   current
 6
        DESCRIPTION
 7
             "The state of this print job delivery channel. The value
 8
             determine whether control information and print data is
 9
    allowed
10
             through this channel."
11
         SYNTAX
                   INTEGER {
12
                       other(1),
13
                       printDataAccepted(3),
14
                       noDataAccepted(4)
15
                        }
16
17
    PrtChannelTypeTC ::= TEXTUAL-CONVENTION
18
             This is a type 2 enumeration.
         _ _
19
         STATUS
                   current
20
        DESCRIPTION
21
             "This enumeration indicates the type of channel that is
22
             receiving jobs."
23
                   INTEGER {
         SYNTAX
24
                        other(1),
25
                        chSerialPort(3),
26
                        chParallelPort(4),
27
                       chIEEE1284Port(5),
28
                       chSCSIPort(6),
29
                       chAppleTalkPAP(7),
30
                            -- AppleTalk Printer
31
                            -- Access Protocol (PAP)
32
                            _ _
33
                            -- prtChannelInformation entry:
34
                            _ _
35
                            -- Printer Name
36
                            -- Keyword:
                                               Name
37
                                 Syntax:
                                               Name
                            _ _
38
                                 Status:
                                              Optional
                            _ _
39
                                 Multiplicity: Single
                            _ _
                                 Description: The name of the printer
40
                            _ _
41
    within
42
                                 the AppleTalk naming scope
                            _ _
43
                       chLPDServer(8),
44
                            -- prtChannelInformation entry:
45
                            _ _
46
                            -- Printer queue name
47
                            -- Keyword:
                                               Queue
48
                                 Syntax:
                            _ _
                                               Name
49
                                 Status:
                                               Mandatory
                            _ _
50
                            _ _
                                 Multiplicity: Single
51
                                 Description: queue name as
                            _ _
52
                                               defined in RFC 1179 [12].
                            _ _
53
                       chNetwareRPrinter(9),
54
                            -- Novell, Inc.
```

	INTERNET DRAFT	Printer MIB V	2 19 March 2001
1 2 3 4		keywords. For N	of this type, the mation must have a pair of Metware 3.x channels this must Printer) pair. For Netware
5 6 7 8	4.x		or IntranetWare channels this Tree, NDSPrinter) pair.
9 10		prtChannelInfor	mation entries:
11 12 13		Print Server Na Keyword: Syntax:	PServer Name
14 15 16 17		<pre> Status: Multiplicity: Description: </pre>	
18 19 20 21		Printer Number Keyword: Syntax: Status:	Printer Integer Mandatory
22 23 24 25		Multiplicity: Description: NDSTree	Single
26 27 28		Keyword: Syntax: Multiplicity:	
29 30 31		Description: NDS Printer obj	
32 33		Keyword:	
34 35		Status: Multiplicity:	Mandatory
36 37 38		Description:	
39 40 41		client checks t	3.x environment, the he Bindery object he named PServer. The
42 43		client then che are associated	cks for queues which with the numbered
44 45 46		environment, th queues which ar	4.x and IntraNetware e client looks up the e associated with the
47 48 49 50		Depending on cl those queues, t	ect in the named Tree. ient access rights to he client submits jobs
51 52	chN	<pre> to the appropri etwarePServer(10), Novell,Inc.</pre>	
53 54		For each entry prtChannelInfor	of this type, the mation must have a pair

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15	Syntax: Nam Status: Man Multiplicity: Sin Description: The	ver, PServer) pair. IntranetWare be a er) pair. on entries: ver e datory gle
16 defined. 17		
18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54	Syntax: Nam Status: Man Multiplicity: Sin Description: The the NDS Tree Keyword: NDS Syntax: Nam Status: Man Multiplicity: Sin Description: The Syntax: Tex Status: Man Status: Man Multiplicity: Sin Description: The	datory gle bindery name of PServer Tree datory gle NDS Tree name PServer t (Unicode) datory gle fully qualified rver object in the tree. ent, the client object med PServer on the e 4.x and nment, he NDS object med PServer in the er case, the for all queues PServer object. access rights e client submits

1 -- DEPRECATED 2 -- (see chPortTCP - 37; chBidirPortTCP - 38) 3 chAppSocket(12), 4 -- A bi-directional, LPD-like, 5 -- protocol using 9101 for 6 -- control and 9100 for data. 7 -- Adobe Systems, Inc. 8 chFTP(13), -- RFC 959 [11] chTFTP(14), -- RFC 1350 [13] 9 chDLCLLCPort(15), chIBM3270(16), -- IBM Coax chIBM5250(17), -- IBM Twinax 10 11 12 13 chFax(18), 14 chIEEE1394(19), 15 chTransport1(20), -- TCP port 35, see reserved TCP port list 16 17 -- in RFC 1700 [15] or current "Assigned 18 -- Numbers" files. This RFC should also be 19 -- referenced for other channel 20 -- enumerations utilizing TCP port 21 -- numbers 0 through 1024. 22 chCPAP(21), -- TCP port 170 23 -- Digital Equipment Corp. 24 chDCERemoteProcCall(22), -- OSF 25 -- DEPRECATED 26 chONCRemoteProcCall(23), -- SUN Microsystems 27 -- DEPRECATED 28 -- Microsoft chOLE(24), 29 -- DEPRECATED chNamedPipe(25), 30 31 chPCPrint(26), -- Banyan 32 chServerMessageBlock(27), 33 -- File/Print sharing protocol used by 34 -- various network operating systems 35 -- from IBM 3Com, Microsoft and others 36 _ _ 37 -- prtChannelInformation entry: 38 _ _ 39 -- Service Name -- Keyword: Name -- Syntax: Name -- Status: Optional -- Multiplicity: Single -- Description: The service name of 40 41 42 43 44 45 the printer _ _ chPSM(28), -- Printing Systems 46 47 -- Manager, IBM 48 chDLLAPI(29), -- Microsoft 49 -- DEPRECATED 50 chVxDAPI(30), -- Microsoft 51 -- DEPRECATED 52 chSystemObjectManager(31), -- IBM 53 chDECLAT(32), 54 -- Digital Equipment Corp.

1 _ _ 2 -- prtChannelInformation entries: 3 _ _ 4 -- Port Name 5 -- Keyword: Port Name 6 Syntax: _ _ Conditionally 7 Status: _ _ 8 Mandatorv _ _ 9 (see note below) _ _ 10 -- Multiplicity: Single 11 _ _ Description: LAT port name 12 _ _ 13 -- Service Name 14 -- Keyword: Service 15 -- Syntax: Name Conditionally Status: 16 _ _ 17 Mandatory _ _ Multiplicity: Single 18 _ _ Description: LAT service name 19 _ _ 20 _ _ 21 -- The LAT channel may be 22 -- identified by either a port or 23 -- service, so either a 24 -- Port or Service entry must be 25 -- specified, but not both. 26 chNPAP(33), chUSB(34), -- Universal Serial Bus chIRDA(35), -- Infrared Data Assoc. Prot. 27 28 29 chPrintXChange(36), -- PrintXChange Protocol 30 chPortTCP(37), 31 -- A unidirectional "raw" TCP 32 -- channel that uses an administratively 33 -- assigned TCP port address. 34 _ _ 35 -- prtChannelInformation entry: 36 _ _ 37 -- Port Number 38 -- Keyword: Port -- Syntax: decimal number -- Status: Mandatory 39 40 41 -- Multiplicity: Single 42 ___ Description: TCP port number 43 chBidirPortTCP(38), 44 -- A bi-directional version of chPortTCP 45 _ _ 46 -- prtChannelInformation entries: 47 -- (See chPortTCP) 48 chUNPP(39), 49 -- Universal Network Printing 50 -- Protocol(UNPP). A bi-directional, 51 -- multiport network printing 52 -- application protocol available on 53 -- multiple transport protocols. 54 -- Underscore, Inc.

1 -- Contact: info@underscore.com 2 chAppleTalkADSP(40), 3 -- AppleTalk Data Stream Protocol. 4 -- ADSP is part of the AppleTalk 5 -- suite of protocols. 6 -- It is a symmetric, connection-7 -- oriented protocol that makes 8 -- possible the establishment 9 -- and maintenance of full-duplex 10 -- streams of data bytes between 11 -- two sockets in an AppleTalk 12 -- internet. 13 -- See [5]. 14 chPortSPX(41), 15 -- Sequenced Packet Exchange (SPX) 16 -- socket. 17 -- Novell, Inc. Similar to TCP, a 18 -- bi-directional data pipe using 19 -- Novell SPX as a transport. 20 _ _ 21 -- prtChannelInformation entries: 22 _ _ 23 -- Network Number -- Keyword: 24 Net -- Syntax: HexString -- Status: Mandatory 25 26 27 -- Multiplicity: Single Description: The network number 28 _ _ 29 _ _ 30 -- Node Number -- Keyword: 31 Node -- Syntax: HexString -- Status: Mandatory 32 33 -- Multiplicity: Single 34 35 Description: The node number _ _ 36 _ _ 37 -- Socket Number -- Keyword: Socket -- Syntax: HexString -- Status: Mandatory 38 39 40 41 -- Multiplicity: Single 42 -- Description: The SPX socket number 43 _ _ 44 -- There must be exactly one "Net" and 45 -- one "Node" and one "Socket" entry. A 46 -- HexString is a binary value 47 -- represented as a string of 48 -- ASCII characters using hexadecimal 49 -- notation. 50 chPortHTTP(42), 51 -- Hypertext Transfer Protocol. See RFC 1945 52 [16] 53 -- and RFC 2616 [27]. 54 chNDPS(43),

	INTERNET DRAF	Т	Printer MIB V2	19 March 2001	
1 2			Novell, Inc.		
3			prtChannelInformation entry:		
4 5			Printer Agent Na		
6 7			Keyword: Syntax:	PA Name	
8			Status:	Mandatory	
9					
10				The NDPS Printer	
11				Agent Name	
12		chIPP(4			
13 14				ng Protocol (IPP),	
$14 \\ 15$				RFC 2565 [23] and RFC 2566 lies to all future versions	
16 17			of IPP.		
18			IPP Printer URI		
19			Keyword:	URI	
20			Syntax:	URI (Unicode UTF-8 per	
21				RFC 2396 [22])	
22			Status:	Mandatory	
23			Multiplicity:		
24 25			Default: Degarintion:	not applicable	
25	within		Description.	URI of this IPP Printer	
27	W I CIIIII		the Internet	t naming scope. Unicode	
28				279 [21] string with	
29				escapes for any non-ASCII	
30				(per RFC 2396 [22]).	
31				An IPP Printer shall list all	
32 33				supports (one per IPP Channel a URI contains the 'http:'	
34				JST have an explicit port.	
35				[21], RFC 2396 [22], RFC	
36	2565				
37			[23], RFC 2	566 [24].	
38					
39 40				ent Authentication	
40 41			Keyword: Syntax:	Auth Keyword	
42				Optional	
43			Multiplicity:		
44				'none'	
45				A client authentication	
46				upported for this IPP Printer	
47			URI:		
48			'none'	at outbortigation machanism	
49 50				nt authentication mechanism ng-user-name'	
50 51				icated user in 'requesting-	
52			user-nar		
53			'basic'		
54			authent	icated user via HTTP Basic	

1			mechanism
2			'digest'
3			authenticated user via HTTP Digest
4			mechanism
5 6			'certificate'
6			authenticated user via certificate
7			mechanism
8			Conformance: An IPP Printer should list
9 10	all		TDD alight authorization machanisms it
11			IPP client authentication mechanisms it supports (one per IPP Channel entry).
12^{11}			See: [2] and [3].
13			5ee. [2] and [5].
14^{13}			IPP Printer Security
15			Keyword: Security
16			Syntax: Keyword
17			Status: Optional
18			Multiplicity: Single
19			Default: 'none'
20			Description: A security mechanism
21	supported		
22			for this IPP Printer URI:
23			'none'
24			no security mechanism
25			'ssl3'
26			SSL3 secure communications channel
27			protocol
28			'tls'
29 30			TLS secure communications channel protocol
31			Conformance: An IPP Printer should list
32	all		contormance. An irr rrinter should rist
33	0.1.1		IPP security mechanisms it supports
34			(one per IPP Channel entry).
35			See: RFC 2246 [18], RFC 2566 [24], [2].
36			
37		3	IPP Printer Protocol Version
38			Keyword: Version
39			Syntax: Keyword
40			Status: Optional
41			Multiplicity: Multiple
42			Default: '1.0'
43 44			Description: All of the IPP protocol versions (major.minor) supported for
44	this		versions (major.minor) supported for
46			IPP Printer URI:
47			'1.0'
48			IPP/1.0 conforming Printer
49			'1.1'
50			IPP/1.1 conforming Printer
51			Conformance: An IPP Printer should list
52	all		
53			IPP versions it supports (all listed in
54			each IPP Channel entry). An IPP Client
		D	nog 10 Gentember 2001

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```
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                                Printer MIB V2
 1
                                   should select the highest numbered
                           _ _
 2
                                   version that the client supports for use
                           _ _
 3
                                   in all IPP Requests (for optimum
                           _ _
 4
                                   interworking).
                           _ _
 5
                                 See: RFC 2566 [24], [2].
                           _ _
 6
    }
 7
    _ _
 8
    -- Interpreter Group textual conventions
 9
10
11
    PrtInterpreterLangFamilyTC ::= TEXTUAL-CONVENTION
12
         -- This value is a type 2 enumeration.
13
        STATUS
                   current
14
        DESCRIPTION
15
             "This enumeration indicates the type of interpreter that is
16
             receiving jobs."
17
        SYNTAX
                   INTEGER {
18
             other(1),
19
             unknown(2),
20
                                   -- PCL. Starting with PCL version 5,
             langPCL(3),
21
                                   -- HP-GL/2 is included as part of the
22
                                   -- PCL language.
23
                                   -- PCL and HP-GL/2 are registered
24
                                   -- trademarks of Hewlett-Packard
25
                                   -- Company.
26
             langHPGL(4),
                                   -- Hewlett-Packard Graphics Language.
27
                                   -- HP-GL is a registered trademark of
28
                                   -- Hewlett-Packard Company.
29
             langPJL(5),
                                   -- Peripheral Job Language. Appears in
30
                                   -- the data stream between data intended
31
                                   -- for a page description language.
32
                                   -- Hewlett-Packard Co.
33
             langPS(6),
                                   -- PostScript (tm) Language
34
                                   -- Postscript - a trademark of Adobe
35
                                   -- Systems Incorporated which may be
36
                                   -- registered in certain jurisdictions
37
             langIPDS(7),
                                   -- Intelligent Printer Data Stream
38
                                   -- Bi-directional print data stream for
39
                                   -- documents consisting of data objects
40
                                   -- (text, image, graphics, bar codes),
41
                                   -- resources (fonts, overlays) and page,
42
                                   -- form and finishing instructions.
                                   -- Facilitates system level device
43
44
                                   -- control, document tracking and error
45
                                   -- recovery throughout the print
46
                                   -- process.
47
                                   -- IBM Corporation.
48
                                   -- IBM Personal Printer Data Stream.
             langPPDS(8),
49
                                   -- Originally called IBM ASCII, the name
50
                                   -- was changed to PPDS when the Laser
51
                                   -- Printer was introduced in 1989.
52
                                   -- Lexmark International, Inc.
53
             langEscapeP(9),
                                   -- Epson Corp.
54
             langEpson(10),
```

1	langDDIF(11),	Dig	gital	Document Interchange Format
2		Dig	gital	Equipment Corp., Maynard MA
3	<pre>langInterpress(12),</pre>			
4			rox Co	
5 6	langISO6429(13),	IS	0 6429	. Control functions for
6		Co	ded Ch	aracter Sets (has ASCII
7		co	ntrol	characters, plus additional
8		co	ntrols	for
9		cha	aracte	r imaging devices.)
10	langLineData(14),	li:	ne-dat	a: Lines of data as
11		se	parate	ASCII or EBCDIC records
12		and	d cont	aining no control functions
13		(n	o CR,	LF, HT, FF, etc.)
14		Fo:	r use	with traditional line
15		pr	inters	. May use CR and/or LF to
16				lines, instead of records.
17				10175 Document Printing
18				ion (DPA) [7].
19	langMODCA(15),			ject Document Content
20			chited	
21				ons that allow the
22				ion, interchange, and
23				tion of final form
24				s as a collection of data
25				(text, image, graphics, bar
26				resources (fonts, overlays)
27				, form and finishing
28			struct	
29				oration.
30	<pre>langREGIS(16),</pre>			raphics Instruction Set,
31	Tangkedib(10),			Equipment Corp., Maynard MA
32	langSCS(17),			acter String
33				tional print data stream for
34				mode of communication.
35		IBI		
36	langSPDL(18),			0 Standard Page Description
37	TallgSPDL(18),			
38			nguage O Stan	
39	langTEK4014(19),			x Corp.
40	langPDS(20),	16	KCI OIII	x corp.
40		Dro	intron	ix Corp.
42	langIGP(21),			ode-V, Image and printer
43	langCodeV(22),			
				language used to control
44				ot-matrix printers.
45				., Mobile AL
46	langDSCDSE(23),			Data Stream Compatible and
47				n Bi-directional print data
48				or non-SNA (DSC) and SNA LU-3
49				troller (DSE) communications
50		IBI		
51	langWPS(24),			Printing System, Resource
52				mmand/data stream used by
53				t At Work Peripherals.
54		De	velope	d by the Microsoft

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1 2 3	[7].	langLN03(25),		Corporation. Early DEC-PPL3, Digita Corp.	al Equipment
4 5 7 8 9 10		<pre>langCCITT(26), langQUIC(27),</pre>	 	QUIC (Quality Informat Description Language f printers. Included gra control capability and other well-known print QMS, Inc.	or laser aphics, printer d emulation of
1112		<pre>langCPAP(28),</pre>		Common Printer Access Digital Equipment Corp	
13 14 15		<pre>langDecPPL(29),</pre>		Digital ANSI-Compliant Protocol (DEC-PPL)	Printing
16 17		langSimpleText(30)		Digital Equipment Corp	· ·
18 19 20 21 22				simple-text: character including NUL, CR , LF control characters. S Document Printing Appl	F, HT, and FF See ISO 10175
22 23 24 25 26 27 29 31 32 34 36 37 39 41 42 43		langNPAP(31),		Network Printer Allian (NPAP). This protocol superseded by the IEEE Std (ref. LangTIPSI(49	has been 5 1284.1 TIPSI
		langDOC(32),		Document Option Comman the data stream betwee intended for a page de QMS, Inc.	nds, Appears in en data
		langimPress(33),		imPRESS, Page descript originally developed f ImageServer product li language providing rep of text, simple graphi large forms (simple bit-map and CCITT grou encoded).The language was intended an 8-bit channel and s document preparation l TeX and TROFF). QMS, Inc.	for the ne. A binary presentations cs, and some up 3/4 to be sent over supported early
44 45 46 47 48 49 50		<pre>langPinwriter(34),</pre>	 	24 wire dot matrix pri USA, Europe, and Asia Japan. More widely used in Ge some Asian countries t NEC	except ermany, and
51 52		<pre>langNPDL(35),</pre>		Page printer for Japa NEC	nese market.
52 53 54		<pre>langNEC201PL(36),</pre>		Serial printer language the Japanese market.	ge used in

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1	$1 \sim 2 \sim 2 \sim 10^{-1}$	NEC
2 3 4 5	langAutomatic(37),	Automatic PDL sensing. Automatic sensing of the interpreter language family by the printer
5 6 7		examining the document content. Which actual interpreter language
8		families are sensed depends on
9 10	langPages(38),	the printer implementation. Page printer Advanced Graphic
11		Escape Set
12		IBM Japan
13	langLIPS(39),	LBP Image Processing System
14 15	langTIFF(40), langDiagnostic(41),	Tagged Image File Format (Aldus)
16		A hex dump of the input to the
17		interpreter
18	langPSPrinter(42),	
19 20	-	The PostScript Language used for control (with any PDLs)
20 21		Adobe Systems Incorporated
22	langCaPSL(43),	Canon Print Systems Language
23	langEXCL(44),	Extended Command Language
24		Talaris Systems Inc.
25 26	langLCDS(45),	Line Conditioned Data Stream Xerox Corporation
27	langXES(46),	Xerox Escape Sequences
28	_	Xerox Corporation
29	langPCLXL(47),	Printer Control Language. Extended
30 31		language features for printing, and printer control.
32		Hewlett-Packard Co.
33	langART(48),	Advanced Rendering Tools (ART).
34		Page Description language
35 36		originally developed for the Laser Press printers.
37		Technical reference manual: "ART IV
38		Reference Manual", No F33M.
39		Fuji Xerox Co., Ltd.
40 41	langTIPSI(49),	Transport Independent Printer System Interface (ref. IEEE Std.
42		1284.1)
43	langPrescribe(50),	,
44		Page description and printer
45		control language. It can be
46 47		described with ordinary ASCII Technical reference manual:
48		"PRESCRIBE II Programming Manual"
49	<pre>langLinePrinter(51),</pre>	
50		A simple-text character stream which
51 52		supports the control codes LF, VT, FF, and plus Centronics or
52		FF, and plus centronics of Dataproducts Vertical Format Unit
54		(VFU) language is commonly used on
Lewis,	Gocek, Turner Expires	19 September 2001 [Page 43]

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```
1
                                   -- many older model line and matrix
 2
                                   -- printers.
 3
                                  -- Imaging Device Protocol
             langIDP(52),
 4
                                  -- Apple Computer.
 5
                                  -- Xerox Job Control Language (JCL).
             langXJCL(53),
 6
                                  -- A Job Control language originally
 7
                                  -- developed for the LaserPress printers
 8
                                   -- and is capable of switching PDLs.
 9
                                   -- Technical reference manual:
10
                                   -- "ART IV Reference Manual", No F33M.
11
                                  -- Fuji Xerox Co., Ltd.
12
             langPDF(54),
                                  -- Adobe Portable Document Format
13
                                  -- Adobe Systems, Inc.
14
             langRPDL(55),
                                  -- Ricoh Page Description Language for
15
                                  -- printers.
                                   -- Technical manual "RPDL command
16
17
                                   -- reference" No.307029
18
                                   -- RICOH, Co. LTD
19
             langIntermecIPL(56),
20
                                   -- Intermec Printer Language for label
21
                                   -- printers.
22
                                   -- Technical Manual: "IPL Programmers
23
                                   -- Reference Manual"
24
                                   -- Intermec Corporation
25
             langUBIFingerprint(57),
26
                                   -- An intelligent basic-like programming
27
                                   -- language for label printers.
28
                                   -- Reference Manual: "UBI Fingerprint
29
                                   -- 7.1", No. 1-960434-00
30
                                   -- United Barcode Industries
31
             langUBIDirectProtocol(58),
32
                                  -- An intelligent control language for
33
                                   -- label printers.
34
                                   -- Programmers guide: " UBI Direct
35
                                   -- Protocol", No. 1-960419-00
36
                                   -- United Barcode Industries
37
             langFujitsu(59)
38
                              -- Fujitsu Printer Language
39
                              -- Reference Manual:
40
                              -- "FM Printer Sequence" No. 80HP-0770
41
                              -- FUJITSU LIMITED
42
             }
43
44
    _ _
45
    -- Input/Output Group Textual Conventions
46
    _ _
47
48
    PrtInputTypeTC ::= TEXTUAL-CONVENTION
49
        -- This is a type 2 enumeration.
50
        STATUS
                   current
51
        DESCRIPTION
52
             "The type of technology (discriminated primarily according to
53
             feeder mechanism type) employed by a specific component or
54
            components."
```

```
1
        SYNTAX
                   INTEGER {
 2
                       other(1),
 3
                       unknown(2),
 4
                       sheetFeedAutoRemovableTray(3),
 5
                       sheetFeedAutoNonRemovableTray(4),
 6
                       sheetFeedManual(5),
 7
                       continuousRoll(6),
 8
                       continuousFanFold(7)
 9
10
11
    PrtOutputTypeTC ::= TEXTUAL-CONVENTION
12
         -- This is a type 2 enumeration.
13
        STATUS
                   current
14
        DESCRIPTION
15
             "The Type of technology supported by this output sub-unit."
16
        SYNTAX
                   INTEGER {
17
                       other(1),
18
                       unknown(2),
19
                       removableBin(3),
20
                       unRemovableBin(4),
21
                       continuousRollDevice(5),
22
                       mailBox(6),
23
                       continuousFanFold(7)
24
25
26
    PrtOutputStackingOrderTC ::= TEXTUAL-CONVENTION
27
         -- This is a type 1 enumeration.
28
        STATUS
                   current
29
        DESCRIPTION
30
             "The current state of the stacking order for the associated
31
             output sub-unit. 'firstToLast' means that as pages are
32
    output,
33
             the front of the next page is placed against the back of the
34
             previous page. 'lastToFirst' means that as pages are output,
35
    the
36
             back of the next page is placed against the front of the
37
             previous page."
38
        SYNTAX
                   INTEGER {
39
                       unknown(2),
40
                       firstToLast(3),
41
                       lastToFirst(4)
42
                        }
43
44
    PrtOutputPageDeliveryOrientationTC ::= TEXTUAL-CONVENTION
45
        -- This is a type 1 enumeration.
46
        STATUS
                   current
47
        DESCRIPTION
48
             "The reading surface that will be 'up' when pages are
49
    delivered
50
             to the associated output sub-unit. Values are Face-Up and
51
    Face
52
             Down (Note: interpretation of these values is, in general,
53
             context-dependent based on locale; presentation of these
54
    values
```

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```
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```

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```
1
             to an end-user should be normalized to the expectations of
 2
    the
 3
             user."
 4
                   INTEGER {
         SYNTAX
 5
                        faceUp(3),
 б
                        faceDown(4)
 7
 8
 9
    _ _
10
    -- Marker Group Textual Conventions
11
    _ _
12
13
    PrtMarkerMarkTechTC ::= TEXTUAL-CONVENTION
14
         -- This value is a type 2 enumeration.
15
         STATUS
                   current
16
        DESCRIPTION
17
             "The type of marking technology used for this marking sub-
18
    unit"
19
         SYNTAX
                   INTEGER {
20
                        other(1),
21
                        unknown(2),
22
                        electrophotographicLED(3),
23
                        electrophotographicLaser(4),
24
                        electrophotographicOther(5),
25
                        impactMovingHeadDotMatrix9pin(6),
26
                        impactMovingHeadDotMatrix24pin(7),
27
                        impactMovingHeadDotMatrixOther(8),
28
                        impactMovingHeadFullyFormed(9),
29
                        impactBand(10),
30
                        impactOther(11),
31
                        inkjetAqueous(12),
32
                        inkjetSolid(13),
33
                        inkjetOther(14),
34
                        pen(15),
35
                        thermalTransfer(16),
36
                        thermalSensitive(17),
37
                        thermalDiffusion(18),
38
                        thermalOther(19),
39
                        electroerosion(20),
40
                        electrostatic(21),
41
                        photographicMicrofiche(22),
42
                        photographicImagesetter(23),
43
                        photographicOther(24),
44
                        ionDeposition(25),
45
                        eBeam(26),
46
                        typesetter(27)
47
48
49
    PrtMarkerCounterUnitTC ::= TEXTUAL-CONVENTION
50
         -- This value is a type 1 enumeration.
51
         STATUS
                   current
52
        DESCRIPTION
53
             "The unit that will be used by the printer when reporting
54
             counter values for this marking sub-unit.
                                                           The
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                                                                   [Page 46]
```

```
1
             time units of measure are provided for a device like a
 2
             strip recorder that does not or cannot track the physical
 3
             dimensions of the media and does not use characters,
 4
             lines or sheets."
 5
 6
         SYNTAX
                   INTEGER {
 7
                        tenThousandthsOfInches(3), -- .0001
 8
                        micrometers(4),
 9
                        characters(5),
10
                        lines(6),
11
                        impressions(7),
12
                        sheets(8),
13
                        dotRow(9),
14
                        hours(11),
15
                        feet(16),
16
                        meters(17)
17
                        }
18
19
    PrtMarkerSuppliesTypeTC ::= TEXTUAL-CONVENTION
20
         -- This value is a type 3 enumeration.
21
         STATUS
                   current
22
         DESCRIPTION
23
             "The type of this supply."
                   INTEGER {
24
         SYNTAX
25
                        other(1),
26
                        unknown(2),
27
                        toner(3),
28
                        wasteToner(4),
29
                        ink(5),
30
                        inkCartridge(6),
31
                        inkRibbon(7),
32
                        wasteInk(8),
33
                        opc(9), -- photo conductor
34
                        developer(10),
35
                        fuserOil(11),
36
                        solidWax(12),
37
                        ribbonWax(13),
38
                        wasteWax(14),
39
                        fuser(15),
40
                        coronaWire(16),
41
                        fuserOilWick(17),
42
                        cleanerUnit(18),
43
                        fuserCleaningPad(19),
44
                        transferUnit(20),
45
                        tonerCartridge(21),
46
                        fuserOiler(22),
47
                      -- Values for Finisher MIB
48
                        water(23),
49
                        wasteWater(24),
50
                        glueWaterAdditive(25),
51
                        wastePaper(26),
52
                        bindingSupply(27),
53
                        bandingSupply(28),
54
                        stitchingWire(29),
```

```
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```

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```
1
                       shrinkWrap(30),
 2
                       paperWrap(31),
 3
                       staples(32),
 4
                       inserts(33),
 5
                        covers(34)
 6
                      -- End of values for Finisher MIB
 7
 8
    PrtMarkerSuppliesSupplyUnitTC ::= TEXTUAL-CONVENTION
 9
10
         -- This value is a type 1 enumeration.
11
         STATUS
                   current
12
        DESCRIPTION
13
             "Unit of this marker supply container/receptacle."
14
         SYNTAX
                   INTEGER {
                       other(1),
15
16
                       unknown(2),
17
                       tenThousandthsOfInches(3), -- .0001
18
                       micrometers(4),
19
                        impressions(7),
20
                       sheets(8),
21
                       hours(11),
22
                       thousandthsOfOunces(12),
23
                       tenthsOfGrams(13),
24
                       hundrethsOfFluidOunces(14),
25
                       tenthsOfMilliliters(15),
26
                       feet(16),
                       meters(17),
27
28
                     -- Values for Finisher MIB
29
                        items(18),
                                      -- e.g. number of staples
30
                       percent(19)
31
32
33
    PrtMarkerSuppliesClassTC ::= TEXTUAL-CONVENTION
34
         -- This value is a type 1 enumeration.
35
         STATUS
                   current
36
        DESCRIPTION
37
             "Indicates whether this supply entity represents a supply
38
             that is consumed or a receptacle that is filled."
39
         SYNTAX
                   INTEGER {
40
                        other(1),
41
                        supplyThatIsConsumed(3),
42
                        receptacleThatIsFilled(4)
43
                        }
44
45
    PrtMarkerColorantRoleTC ::= TEXTUAL-CONVENTION
46
         -- This value is a type 1 enumeration.
47
         STATUS
                   current
48
        DESCRIPTION
49
             "The role played by this colorant."
50
         SYNTAX
                   INTEGER { -- Colorant Role
                       other(1),
51
52
                       process(3),
53
                       spot(4)
54
```

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```
1
    PrtMarkerAddressabilityUnitTC ::= TEXTUAL-CONVENTION
 2
 3
         -- This value is a type 1 enumeration.
 4
        STATUS
                   current
 5
        DESCRIPTION
 6
             "The unit of measure of distances, as applied to the marker's
 7
             resolution."
 8
        SYNTAX
                   INTEGER {
 9
                       tenThousandthsOfInches(3), -- .0001
10
                       micrometers(4)
11
                        }
12
13
    _ _
14
    -- Media Path Textual Conventions
15
    _ _
16
17
    PrtMediaPathMaxSpeedPrintUnitTC ::= TEXTUAL-CONVENTION
18
         -- This value is a type 1 enumeration.
19
        STATUS
                   current
20
        DESCRIPTION
21
             "The unit of measure used in specifying the speed of all
22
             media paths in the printer."
23
                   INTEGER {
        SYNTAX
24
                       tenThousandthsOfInchesPerHour(3), -- .0001/hour
25
                       micrometersPerHour(4),
26
                       charactersPerHour(5),
27
                       linesPerHour(6),
28
                       impressionsPerHour(7),
29
                       sheetsPerHour(8),
30
                       dotRowPerHour(9),
31
                       feetPerHour(16),
32
                       metersPerHour(17)
33
                      }
34
35
    PrtMediaPathTypeTC ::= TEXTUAL-CONVENTION
36
        -- This value is a type 2 enumeration.
37
        STATUS
                   current
38
        DESCRIPTION
39
             "The type of the media path for this media path."
40
        SYNTAX
                   INTEGER {
41
                       other(1),
42
                       unknown(2),
43
                       longEdgeBindingDuplex(3),
44
                       shortEdgeBindingDuplex(4),
45
                       simplex(5)
46
                      }
47
48
49
    -- Interpreter Group Textual Conventions
50
    _ _
51
52
    PrtInterpreterTwoWayTC ::= TEXTUAL-CONVENTION
53
        -- This is a type 1 enumeration.
54
        STATUS current
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```

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```
1
        DESCRIPTION
 2
             "Indicates whether or not this interpreter returns
 3
    information
 4
             back to the host."
 5
        SYNTAX
                   INTEGER {
 6
                       yes(3),
 7
                       no(4)
 8
                       }
 9
10
    _ _
11
    -- Console Group Textual Conventions
12
    _ _
13
14
    PrtConsoleColorTC ::= TEXTUAL-CONVENTION
15
         -- This value is a type 2 enumeration.
16
        STATUS
                    current
17
        DESCRIPTION
18
             "The color of this light."
19
                   INTEGER {
        SYNTAX
20
                       other(1),
21
                       unknown(2),
22
                       white(3),
23
                       red(4),
24
                       qreen(5),
25
                       blue(6),
26
                       cyan(7),
27
                       magenta(8),
28
                       yellow(9),
29
                       orange(10)
30
31
32
    PrtConsoleDisableTC ::= TEXTUAL-CONVENTION
33
         -- This value is a type 2 enumeration.
34
        STATUS
                    current
35
        DESCRIPTION
36
             "This value indicates whether or not input is accepted from
37
             the operator console. A value of 'operatorConsoleEnabled'
38
             indicates that input is accepted from the console, and a
39
    value
40
             of 'operatorConsoleDisabled' indicates that input is not
41
             accepted from the console. The other values indicate that
42
             limited input is accepted from the console, and the
43
    limitations
44
             are product specific. Limitations are generally less
45
    restrictive
46
             for operatorConsoleEnabledLevel1 than for
47
             operatorConsoleEnabledLeve2, which is less restrictive than
48
             operatorConsoleEnabledLevel3."
49
        SYNTAX
                   INTEGER {
50
                       operatorConsoleEnabled(3),
51
                       operatorConsoleDisabled(4),
52
                       operatorConsoleEnabledLevel1(5),
53
                       operatorConsoleEnabledLevel2(6),
54
                       operatorConsoleEnabledLevel3(7)
```

1 } 2 3 4 -- Alert Group Textual Conventions 5 _ _ 6 7 PrtAlertSeverityLevelTC ::= TEXTUAL-CONVENTION 8 -- This value is a type 1 enumeration. 9 STATUS current 10 DESCRIPTION 11 "The level of severity of this alert table entry. The 12 printer 13 determines the severity level assigned to each entry in the 14 table. A critical alert is binary by nature and definition. A 15 warning is defined to be a non-critical alert. The original 16 and 17 most common warning is unary. The binary warning was added 18 later 19 and given a more distinguished name." 20 INTEGER { SYNTAX 21 other(1), 22 critical(3), 23 warning(4), 24 warningBinaryChangeEvent(5) 25 } 26 27 PrtAlertTrainingLevelTC ::= TEXTUAL-CONVENTION 28 -- This value is a type 2 enumeration. 29 STATUS current 30 DESCRIPTION 31 "The level of training required to handle this alert, if 32 human 33 intervention is required. The noInterventionRequired value 34 should be used if the event does not require any human 35 intervention. The training level is an enumeration that is 36 determined and assigned by the printer manufacturer based on 37 the 38 information or the training required to handle this alert. 39 The 40 printer will break alerts into these different training 41 levels. 42 It is the responsibility of the management application in the system to determine how a particular alert is handled and how 43 44 and to whom that alert is routed. The following are the four 45 training levels of alerts: 46 47 Field Service - Alerts that typically require advanced 48 training and technical knowledge of the printer and its 49 sub 50 units. An example of a technical person would be a 51 manufacturer's Field Service representative, or other 52 person 53 formally trained by the manufacturer or similar 54 representative.

```
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```

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1 Trained - Alerts that require an intermediate or moderate 2 level 3 of knowledge of the printer and its sub-units. A typical 4 examples of alerts that a trained operator can handle is 5 replacing toner cartridges. 6 Untrained -Alerts that can be fixed without prior training either because the action to correct the alert 7 8 is 9 obvious or the printer can help the untrained person fix 10 the 11 problem. A typical example of such an alert is reloading 12 paper trays and emptying output bins on a low end 13 printer. 14 Management -Alerts that have to do with overall operation 15 of 16 and configuration of the printer. Examples of management 17 events are configuration change of sub-units." 18 INTEGER { SYNTAX 19 other(1), 20 unknown(2), 21 untrained(3), 22 trained(4), 23 fieldService(5), 24 management(6), 25 noInterventionRequired(7) 26 } 27 28 PrtAlertGroupTC ::= TEXTUAL-CONVENTION 29 -- This value is a type 1 enumeration for values in the range 30 -- 1 to 29. 31 -- Values of 30 and greater are type 2 enumerations and are 32 -- for use in other MIBs that augment tables in the Printer -- MIB. Therefore, other MIBs may assign alert codes of 30 or 33 34 -- higher to use the alert table from the Printer MIB without 35 -- requiring revising and re-publishing this document. 36 STATUS current 37 DESCRIPTION 38 "The type of sub-unit within the printer model that this 39 alert 40 is related. Input, output, and markers are examples of 41 printer 42 model groups, i.e., examples of types of sub-units. Wherever 43 possible, these enumerations match the sub-identifier that 44 identifies the relevant table in the printer MIB. 45 46 NOTE: Alert type codes have been added for the host resources 47 MIB storage table and device table. These additional types 48 are 49 for situations in which the printer's storage and device 50 objects 51 must generate alerts (and possibly traps for critical 52 alerts)." 53 SYNTAX INTEGER { 54 other(1),

19 March 2001 INTERNET DRAFT Printer MIB V2 hostResourcesMIBStorageTable(3), hostResourcesMIBDeviceTable(4), generalPrinter(5), cover(6), localization(7), input(8), output(9), marker(10), markerSupplies(11), markerColorant(12), mediaPath(13), channel(14), interpreter(15), consoleDisplayBuffer(16), consoleLights(17), alert(18), -- Values for Finisher MIB finDevice(30), finSupply(31), finSupplyMediaInput(32), finAttributeTable(33) -- End of values for Finisher MIB PrtAlertCodeTC ::= TEXTUAL-CONVENTION -- This value is a type 2 enumeration. STATUS current DESCRIPTION "The code that describes the type of alert for this entry in table. Binary change event alerts describe states of the subunit while unary change event alerts describe a single event. The same alert code can be used for a binary change event or a change event, depending on implementation. Also, the same code can be used to indicate a critical or a non-critical (warning) alert, depending on implementation. The value of

33 34 35 unary 36 37 alert 38 39 40 prtAlertSeverityLevel specifies binary vs. unary and critical 41 vs. non-critical for each event for the implementation. 42 While there are some specific codes for many subunits, the 43 44 generic codes should be used for most subunit alerts. The 45 network management station can then query the subunit 46 specified 47 by prtAlertGroup to determine further subunit status and 48 other 49 subunit information. 50 51 An agent shall not add two entries to the alert table for the 52 same event, one containing a generic event code and the other 53 containing a specific event code; the agent shall add only 54 one

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1

2

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4

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21

22

23 24 25

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30

31

32

the

19 March 2001 INTERNET DRAFT Printer MIB V2 1 entry in the alert table for each event; either generic 2 (preferred) or specific, not both. 3 4 Implementation of the unary change event 5 alertRemovalOfBinaryChangeEntry(1801) is optional. When 6 implemented, this alert code shall indicate to network 7 management stations that the trailing edge of a binary change 8 event has occurred and the corresponding alert entry has been 9 removed from the alert table. As with all events, the 10 alertRemovalOfBinaryChangeEntry(1801) alert shall be placed 11 at 12 the end of the alert table. Such an alert table entry shall 13 specify the following information: 14 15 prtAlertSeverityLevel warningUnaryChangeEvent(4) 16 prtAlertTrainingLevel noInterventionRequired(7) 17 alert(18) prtAlertGroup 18 the index of the row in the prtAlertGroupIndex 19 alert table of the binary 20 change event that this event 21 has removed. 22 unknown (-2) prtAlertLocation 23 prtAlertCode 24 alertRemovalOfBinaryChangeEntry(1801) 25 prtAlertDescription <description or null string> 26 prtAlertTime the value of sysUpTime at 27 the time of the removal of the 28 binary change event from the 29 alert table. 30 31 Optionally, the agent may generate a trap coincident with 32 removing the binary change event and placing the unary change event alertRemovalOfBinaryChangeEntry(1801) in the alert 33 34 table. 35 For such a trap, the prtAlertIndex sent with the above trap parameters shall be the index of the 36 37 alertRemovalOfBinaryChangeEvent row that was added to the 38 prtAlertTable; not the index of the row that was removed from 39 the prtAlertTable." 40 SYNTAX INTEGER { 41 other(1), 42 -- an event that is not represented 43 -- by one of the alert codes 44 -- specified below. 45 unknown(2), 46 -- The following generic codes are common to 47 -- multiple groups. The NMS may 48 -- examine the prtAlertGroup object to 49 determine 50 -- what group to guery for further information. coverOpen(3), 51 52 coverClosed(4), 53 interlockOpen(5), 54 interlockClosed(6), Lewis, Gocek, Turner Expires 19 September 2001

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1	configuration Change (7)
	<pre>configurationChange(7), iam(2)</pre>
2	jam(8),
5 Л	<pre>subunitMissing(9),</pre>
± 5	has been removed.
1 2 3 4 5 6	subunitLifeAlmostOver(10),
7	subunitLifeOver(11),
8	subunitAlmostEmpty(12),
9	subunitEmpty(13),
10	subunitAlmostFull(14),
11	subunitFull(15),
12	subunitNearLimit(16),
13	subunitAtLimit(17),
14	subunitOpened(18),
15	subunitClosed(19),
16	subunitTurnedOn(20),
17	subunitTurnedOff(21),
18	subunitOffline(22),
19	subunitPowerSaver(23),
20	subunitWarmingUp(24),
21	subunitAdded(25),
22	subunitRemoved(26),
23	subunitResourceAdded(27),
24	subunitResourceRemoved(28),
25	subunitRecoverableFailure(29),
26	subunitUnrecoverableFailure(30),
27	subunitRecoverableStorageError(31),
28	subunitUnrecoverableStorageError(32),
29	subunitMotorFailure(33),
30	subunitMemoryExhausted(34),
31	subunitUnderTemperature(35),
32	subunitOverTemperature(36),
33	subunitTimingFailure(37),
34	subunitThermistorFailure(38),
35	general Printer group
36	doorOpen(501), DEPRECATED
37	Use coverOpened(3)
38	doorClosed(502), DEPRECATED
39	Use coverClosed(4)
40	powerUp(503),
41	powerDown(504),
42	printerNMSReset(505),
43	The printer has been reset by some
44	network management station(NMS)
45	writing into 'prtGeneralReset'.
46	printerManualReset(506),
47	The printer has been reset manually.
48	printerReadyToPrint(507),
49	The printer is ready to print. (i.e.,
50	not warming up, not in power save
51	state, not adjusting print quality,
52	etc.).
53	
54	- Input Group

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1		<pre>inputMediaTrayMissing(801),</pre>	
2		inputMediaSizeChange(802),	
3		inputMediaWeightChange(803),	
4		inputMediaTypeChange(804),	
5		inputMediaColorChange(805),	
6		inputMediaFormPartsChange(806),	
7		inputMediaSupplyLow(807),	
8		<pre>inputMediaSupplyEmpty(808),</pre>	
9		<pre>inputMediaChangeRequest(809),</pre>	
10		An interpreter has detecte	
11		different medium is need i	
12		tray subunit. The prtAlert	
13		be used to convey a human	
14 15		description of the medium	required to
16		satisfy the request.	
17		<pre>inputManualInputRequest(810),</pre>	d that manual
18		input is required in this	
10 19		prtAlertDescription may be	
20		a human readable descripti	-
20 21		required to satisfy the re	
22		inputTrayPositionFailure(811),	quest.
23		The input tray failed to p	ogition correctly
24		inputTrayElevationFailure(812),	osición correctiy.
25		inputCannotFeedSizeSelected(813),	
26		Output Group	
27		outputMediaTrayMissing(901),	
28		outputMediaTrayAlmostFull(902),	
29		outputMediaTrayFull(903),	
30		outputMailboxSelectFailure(904),	
31		Marker group	
32		markerFuserUnderTemperature(1001)	1
33		markerFuserOverTemperature(1002),	
34		<pre>markerFuserTimingFailure(1003),</pre>	
35		markerFuserThermistorFailure(1004),
36		markerAdjustingPrintQuality(1005)	
37		Marker Supplies group	
38		<pre>markerTonerEmpty(1101),</pre>	
39		<pre>markerInkEmpty(1102),</pre>	
40		<pre>markerPrintRibbonEmpty(1103),</pre>	
41		<pre>markerTonerAlmostEmpty(1104),</pre>	
42		<pre>markerInkAlmostEmpty(1105),</pre>	
43		markerPrintRibbonAlmostEmpty(1106	
44		markerWasteTonerReceptacleAlmostF	
45		markerWasteInkReceptacleAlmostFul	
46		markerWasteTonerReceptacleFull(11	
47		markerWasteInkReceptacleFull(1110),
48		<pre>markerOpcLifeAlmostOver(1111),</pre>	
49		<pre>markerOpcLifeOver(1112),</pre>	
50		<pre>markerDeveloperAlmostEmpty(1113),</pre>	
51		<pre>markerDeveloperEmpty(1114),</pre>	
52		markerTonerCartridgeMissing(1115)	,
53		Media Path Device Group	
54		<pre>mediaPathMediaTrayMissing(1301),</pre>	

```
1
                       mediaPathMediaTrayAlmostFull(1302),
 2
                       mediaPathMediaTrayFull(1303),
 3
                       mediaPathcannotDuplexMediaSelected(1304),
 4
                     -- Interpreter Group
 5
                       interpreterMemoryIncrease(1501),
 6
                       interpreterMemoryDecrease(1502),
 7
                       interpreterCartridgeAdded(1503),
 8
                       interpreterCartridgeDeleted(1504),
 9
                       interpreterResourceAdded(1505),
10
                       interpreterResourceDeleted(1506),
11
                       interpreterResourceUnavailable(1507),
12
                       interpreterComplexPageEncountered(1509),
13
                           -- The interpreter has encountered a page
14
                         -- that is too complex for the resources that
15
                         -- are available.
16
                     -- Alert Group
17
                       alertRemovalOfBinaryChangeEntry(1801)
18
                           -- A binary change event entry has been
19
                           -- removed from the alert table. This unary
20
                           -- change alert table entry is added to the
21
                           -- end of the alert table.
22
                       }
23
24
    -- The General Printer Group
25
    _ _
26
    -- The general printer sub-unit is responsible for the overall
27
    -- control and status of the printer. There is exactly one
28
    -- general printer sub-unit in a printer.
29
    _ _
30
    -- Implementation of every object in this group is mandatory.
31
32
    prtGeneral OBJECT IDENTIFIER ::= { printmib 5 }
33
34
    prtGeneralTable OBJECT-TYPE
35
                  SEQUENCE OF PrtGeneralEntry
        SYNTAX
36
        MAX-ACCESS not-accessible
37
        STATUS
                  current
38
        DESCRIPTION
39
             "A table of general information per printer.
40
            Objects in this table are defined in various
41
            places in the MIB, nearby the groups to
42
            which they apply. They are all defined
43
            here to minimize the number of tables that would
44
            otherwise need to exist."
45
        ::= { prtGeneral 1 }
46
47
    prtGeneralEntry OBJECT-TYPE
48
        SYNTAX PrtGeneralEntry
49
        MAX-ACCESS not-accessible
50
        STATUS
                   current
51
        DESCRIPTION
52
             "An entry exists in this table for each device entry in the
53
    host
```

resources MIB device table with a device type of 'printer'"

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```
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 1
        INDEX { hrDeviceIndex }
 2
        ::= { prtGeneralTable 1 }
 3
 4
    PrtGeneralEntry ::= SEQUENCE {
 5
        -- Note that not all of the objects in this sequence are in
 6
        -- the general printer group. The group to which an
 7
        -- object belongs is tagged with a label "General", "Input"
 8
        -- "Output", etc. after each entry in the following sequence.
 9
10
        prtGeneralConfigChanges
                                         Counter32, -- General
11
        prtGeneralCurrentLocalization
                                         Integer32, -- General
12
        prtGeneralReset
                                         PrtGeneralResetTC,
13
                                                     -- General
14
        prtGeneralCurrentOperator
                                         OCTET STRING,
15
                                                     -- Responsible Party
16
        prtGeneralServicePerson
                                         OCTET STRING,
17
                                                    -- Responsible Party
18
                                         Integer32, -- Input
        prtInputDefaultIndex
19
        prtOutputDefaultIndex
                                         Integer32, -- Output
20
        prtMarkerDefaultIndex
                                         Integer32, -- Marker
21
        prtMediaPathDefaultIndex
                                         Integer32, -- Media Path
22
        prtConsoleLocalization
                                         Integer32, -- Console
23
        prtConsoleNumberOfDisplayLines
                                         Integer32, -- Console
24
        prtConsoleNumberOfDisplayChars
                                         Integer32, -- Console
25
        prtConsoleDisable
                                         PrtConsoleDisableTC,
26
                                                     -- Console,
27
        prtAuxiliarySheetStartupPage
                                         PresentOnOff,
28
                                                    -- AuxiliarySheet
29
        prtAuxiliarySheetBannerPage
                                         PresentOnOff,
30
                                                    -- AuxiliarySheet,
31
                                         OCTET STRING,
        prtGeneralPrinterName
32
                                                    -- General
33
        prtGeneralSerialNumber
                                         OCTET STRING,
34
                                                    -- General
35
                                         Counter32, -- Alert
        prtAlertCriticalEvents
36
        prtAlertAllEvents
                                         Counter32 -- Alert
37
38
39
    prtGeneralConfigChanges OBJECT-TYPE
40
        SYNTAX
                   Counter32
41
        MAX-ACCESS read-only
42
        STATUS
                   current
43
        DESCRIPTION
44
             "Counts configuration changes within the printer. A
45
            configuration change is defined to be an action that results
46
    in
47
            a change to any MIB object other than those that reflect
48
    status
49
            or level, or those that act as counters or gauges. In
50
    addition,
51
            any action that results in a row being added or deleted from
52
    any
53
            table in the Printer MIB is considered a configuration
54
    change.
```

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1 Such changes will often affect the capability of the printer 2 to 3 service certain types of print jobs. Management applications 4 may 5 cache infrequently changed configuration information about 6 sub 7 units within the printer. This object should be incremented 8 whenever the agent wishes to notify management applications 9 that 10 any cached configuration information for this device is to be 11 considered 'stale'. At this point, the management application 12 should flush any configuration information cached about this 13 device and fetch new configuration information. 14 15 The following are examples of actions that would cause the 16 prtGeneralConfigChanges object to be incremented: 17 18 - Adding an output bin 19 - Changing the media in a sensing input tray 20 - Changing the value of prtInputMediaType 21 22 Note that the prtGeneralConfigChanges counter would not be 23 incremented when an input tray is removed, or the level of an 24 input device changes." 25 26 ::= { prtGeneralEntry 1 } 27 prtGeneralCurrentLocalization OBJECT-TYPE 28 29 SYNTAX Integer32 (1..65535) 30 MAX-ACCESS read-write 31 STATUS current 32 DESCRIPTION 33 "The value of the prtLocalizationIndex corresponding to the 34 current language, country, and character set to be used for 35 localized string values that are identified as being 36 dependent 37 on the value of this object. Note that this object does not 38 apply to localized strings in the prtConsole group or to any object that is not explicitly identified as being localized 39 40 according to prtGeneralCurrentLocalization." 41 ::= { prtGeneralEntry 2 } 42 43 prtGeneralReset OBJECT-TYPE 44 -- This value is a type 3 enumeration. 45 PrtGeneralResetTC SYNTAX 46 MAX-ACCESS read-write 47 STATUS current 48 DESCRIPTION 49 "Setting this value to 'powerCycleReset', 'resetToNVRAM', or 'resetToFactoryDefaults' will result in the resetting of the 50 51 printer. When read, this object will always have the value 52 'notResetting(3)', and a SET of the value 'notResetting' 53 shall 54 have no effect on the printer. Some of the defined values

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1 are 2 optional. However, every implementation must support at 3 least 4 the values 'notResetting' and 'resetToNVRAM'." 5 ::= { prtGeneralEntry 3 } 6 7 -- The Responsible Party group 8 _ _ 9 -- This group is optional. However, to claim conformance to this 10 -- group, it is necessary to implement every object in the group. 11 12 prtGeneralCurrentOperator OBJECT-TYPE 13 OCTET STRING (SIZE(0..127)) SYNTAX 14 MAX-ACCESS read-write 15 STATUS current 16 DESCRIPTION 17 "The name of the person who is responsible for operating 18 this printer. It is suggested that this string include 19 information that would enable other humans to reach the 20 operator, such as a phone number. As a convention to 21 facilitate automatic notification of the operator by the 22 agent or network management station, the phone number, 23 fax number or email address should be indicated by the URL schemes 'tel:', 'fax:' and 'mailto:', respectively. 24 25 If either the phone, fax, or email information is not 26 available, then a line should not be included for this 27 information. 28 29 NOTE: For interoperability purposes, it is advisable to 30 use email addresses formatted according to RFC 822 [9] 31 requirements." 32 ::= { prtGeneralEntry 4 } 33 34 prtGeneralServicePerson OBJECT-TYPE 35 OCTET STRING (SIZE(0..127)) SYNTAX 36 MAX-ACCESS read-write 37 STATUS current 38 DESCRIPTION 39 "The name of the person responsible for servicing this 40 printer. It is suggested that this string include 41 information that would enable other humans to reach the 42 service person, such as a phone number. As a convention to facilitate automatic notification of the operator by 43 44 the agent or network management station, the phone 45 number, fax number or email address should be indicated 46 by the URL schemes 'tel:', 'fax:' and 'mailto:', 47 respectively. If either the phone, fax, or email 48 information is not available, then a line should not 49 be included for this information. 50 51 NOTE: For interoperability purposes, it is advisable to use 52 email addresses formatted per RFC 822 [9] requirements." 53 54 ::= { prtGeneralEntry 5 }

1 2 -- Default indexes section 3 4 -- The following four objects are used to specify the indexes of 5 -- certain subunits used as defaults during the printing process. 6 7 prtInputDefaultIndex OBJECT-TYPE 8 SYNTAX Integer32 MAX-ACCESS read-write 9 10 STATUS current 11 DESCRIPTION 12 "The value of prtInputIndex corresponding to the default 13 input 14 sub-unit: that is, this object selects the default source of 15 input media. 16 17 This value shall be -1 if there is no default input subunit 18 specified for the printer as a whole. In this case, the 19 actual 20 default input subunit may be specified by means outside the 21 scope of this MIB, such as by each interpreter in a printer 22 with 23 multiple interpreters." 24 25 ::= { prtGeneralEntry 6 } 26 27 prtOutputDefaultIndex OBJECT-TYPE 28 SYNTAX Integer32 MAX-ACCESS read-write 29 30 STATUS current 31 DESCRIPTION 32 "The value of prtOutputIndex corresponding to the default 33 output 34 sub-unit; that is, this object selects the default output 35 destination. 36 37 This value shall be -1 if there is no default output subunit 38 specified for the printer as a whole. In this case, the 39 actual 40 default output subunit may be specified by means outside the 41 scope of this MIB, such as by each interpreter in a printer 42 with 43 multiple interpreters." 44 45 ::= { prtGeneralEntry 7 } 46 47 prtMarkerDefaultIndex OBJECT-TYPE 48 Integer32 (1..65535) SYNTAX 49 MAX-ACCESS read-write 50 STATUS current 51 DESCRIPTION 52 "The value of prtMarkerIndex corresponding to the 53 default marker sub-unit; that is, this object selects the 54 default marker."

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 1
         ::= { prtGeneralEntry 8 }
 2
 3
    prtMediaPathDefaultIndex OBJECT-TYPE
 4
        SYNTAX
                 Integer32 (1..65535)
 5
        MAX-ACCESS read-write
 6
        STATUS
                   current
 7
        DESCRIPTION
 8
             "The value of prtMediaPathIndex corresponding to
 9
            the default media path; that is, the selection of the
10
            default media path."
11
        ::= { prtGeneralEntry 9 }
12
13
    -- Console general section
14
15
    -- The following four objects describe overall parameters of the
16
    -- printer console subsystem.
17
18
    prtConsoleLocalization OBJECT-TYPE
19
                    Integer32 (1..65535)
        SYNTAX
20
        MAX-ACCESS read-write
21
        STATUS
                    current
22
        DESCRIPTION
23
             "The value of the prtLocalizationIndex corresponding to
24
            the language, country, and character set to be used for the
25
            console. This localization applies both to the actual
26
    display
27
            on the console as well as the encoding of these console
28
    objects
29
             in management operations."
30
         ::= { prtGeneralEntry 10 }
31
32
    prtConsoleNumberOfDisplayLines OBJECT-TYPE
33
                    Integer32 (0..65535)
        SYNTAX
34
        MAX-ACCESS read-only
35
        STATUS
                    current
36
        DESCRIPTION
37
             "The number of lines on the printer's physical
38
            display. This value is 0 if there are no lines on the
39
            physical display or if there is no physical display"
        ::= { prtGeneralEntry 11 }
40
41
42
    prtConsoleNumberOfDisplayChars OBJECT-TYPE
43
        SYNTAX
                    Integer32 (0..65535)
44
        MAX-ACCESS read-only
45
                   current
        STATUS
46
        DESCRIPTION
47
             "The number of characters per line displayed on the physical
48
            display. This value is 0 if there are no lines on the
49
    physical
50
            display or if there is no physical display"
51
         ::= { prtGeneralEntry 12 }
52
53
    prtConsoleDisable OBJECT-TYPE
54
                  PrtConsoleDisableTC
        SYNTAX
```

```
1
        MAX-ACCESS read-write
 2
        STATUS
                current
 3
        DESCRIPTION
 4
             "This value indicates how input is (or is not) accepted from
 5
            the operator console."
 6
        ::= { prtGeneralEntry 13 }
 7
 8
    -- The Auxiliary Sheet Group
 9
    _ _
10
    -- The auxiliary sheet group allows the administrator to control
11
    -- the production of auxiliary sheets by the printer. This group
12
    -- contains only the "prtAuxiliarySheetStartupPage" and
13
    -- "prtAuxiliarySheetBannerPage" objects.
14
15
    -- This group is optional. However, to claim conformance to this
16
    -- group it is necessary to implement every object in the group.
17
18
    prtAuxiliarySheetStartupPage OBJECT-TYPE
19
        SYNTAX
                  PresentOnOff
20
        MAX-ACCESS read-write
21
        STATUS
                   current
22
        DESCRIPTION
23
             "Used to enable or disable printing a startup page. If
24
    enabled,
25
            a startup page will be printed shortly after power-up, when
26
    the
            device is ready. Typical startup pages include test patterns
27
28
            and/or printer configuration information."
29
        ::= { prtGeneralEntry 14 }
30
31
    prtAuxiliarySheetBannerPage OBJECT-TYPE
32
        SYNTAX
                   PresentOnOff
33
        MAX-ACCESS read-write
34
                  current
        STATUS
35
        DESCRIPTION
36
             "Used to enable or disable printing banner pages at the
37
            beginning of jobs. This is a master switch which applies to
38
    all
39
             jobs, regardless of interpreter."
40
          ::= { prtGeneralEntry 15 }
41
42
    -- Administrative section
43
44
    -- The following two objects are used to specify administrative
45
    -- information assigned to the printer.
46
47
    prtGeneralPrinterName OBJECT-TYPE
48
                   OCTET STRING (SIZE (0..127))
        SYNTAX
49
        MAX-ACCESS read-write
                   current
50
        STATUS
51
        DESCRIPTION
52
             "An administrator-specified name for this printer. Depending
53
            upon implementation of this printer, the value of this object
54
            may or may not be same as the value for the MIB-II 'SysName'
```

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1 object." 2 ::= { prtGeneralEntry 16 } 3 4 prtGeneralSerialNumber OBJECT-TYPE 5 SYNTAX OCTET STRING (SIZE (0..255)) 6 MAX-ACCESS read-write 7 STATUS current 8 DESCRIPTION 9 "A recorded serial number for this device that indexes some 10 type 11 device catalog or inventory. This value is usually set by the 12 device manufacturer but the MIB supports the option of 13 writing 14 for this object for site-specific administration of device 15 inventory or tracking." 16 ::= { prtGeneralEntry 17 } 17 18 -- General alert table section 19 _ _ 20 -- The following two objects are used to specify counters 21 -- associated with the Alert Table. 22 23 prtAlertCriticalEvents OBJECT-TYPE 24 SYNTAX Counter32 25 MAX-ACCESS read-only 26 STATUS current 27 DESCRIPTION 28 "A running counter of the number of critical alert events 29 that 30 have been recorded in the alert table. The value of this 31 object 32 is RESET in the event of a power cycle operation (i.e., the 33 value is not persistent." 34 ::= { prtGeneralEntry 18 } 35 36 prtAlertAllEvents OBJECT-TYPE 37 Counter32 SYNTAX MAX-ACCESS read-only 38 39 current STATUS 40 DESCRIPTION 41 "A running counter of the total number of alert event entries 42 (critical and non-critical) that have been recorded in the 43 alert 44 table" 45 ::= { prtGeneralEntry 19 } 46 47 -- The Cover Table 48 _ _ 49 -- The cover portion of the General print sub-unit describes the 50 -- covers and interlocks of the printer. The Cover Table has an 51 -- entry for each cover and interlock. 52 53 prtCover OBJECT IDENTIFIER ::= { printmib 6 } 54

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```

```
1
    prtCoverTable OBJECT-TYPE
 2
        SYNTAX SEQUENCE OF PrtCoverEntry
 3
        MAX-ACCESS not-accessible
 4
        STATUS current
 5
        DESCRIPTION
 6
            "A table of the covers and interlocks of the printer."
 7
        ::= { prtCover 1 }
 8
 9
    prtCoverEntry OBJECT-TYPE
10
        SYNTAX PrtCoverEntry
11
        MAX-ACCESS not-accessible
12
        STATUS
                   current
13
        DESCRIPTION
14
            "Information about a cover or interlock.
            Entries may exist in the table for each device
15
16
            index with a device type of 'printer'."
17
        INDEX { hrDeviceIndex, prtCoverIndex }
18
        ::= { prtCoverTable 1 }
19
20
    PrtCoverEntry ::= SEQUENCE {
21
        prtCoverIndex
                                 Integer32,
22
        prtCoverDescription
                              OCTET STRING,
23
        prtCoverStatus
                                PrtCoverStatusTC
24
25
26
    prtCoverIndex OBJECT-TYPE
27
        SYNTAX Integer32 (1..65535)
28
        MAX-ACCESS not-accessible
29
        STATUS
                  current
30
        DESCRIPTION
31
            "A unique value used by the printer to identify this Cover
32
    sub
33
            unit. Although these values may change due to a major
34
            reconfiguration of the device (e.g. the addition of new cover
35
            sub-units to the printer), values are expected to remain
36
    stable
37
            across successive printer power cycles."
38
        ::= { prtCoverEntry 1 }
39
40
    prtCoverDescription OBJECT-TYPE
41
        SYNTAX OCTET STRING (SIZE(0..255))
42
        MAX-ACCESS read-only
43
        STATUS
                  current
44
        DESCRIPTION
45
            "The manufacturer provided cover sub-mechanism name in the
46
            localization specified by prtGeneralCurrentLocalization."
47
        ::= { prtCoverEntry 2 }
48
49
    prtCoverStatus OBJECT-TYPE
50
        _ _
            This value is a type 2 enumeration
51
        SYNTAX
                  PrtCoverStatusTC
52
        MAX-ACCESS read-only
53
        STATUS
               current
54
       DESCRIPTION
```

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```
1
            "The status of this cover sub-unit."
 2
        ::= { prtCoverEntry 3 }
 3
 4
    -- The Localization Table
 5
    _ _
 б
    -- The localization portion of the General printer sub-unit is
 7
    -- responsible for identifying the natural language, country, and
 8
    -- character set in which character strings are expressed. There
 9
    -- may be one or more localizations supported per printer. The
10
    -- available localizations are represented by the Localization
11
    -- table.
12
13
    prtLocalization OBJECT IDENTIFIER ::= { printmib 7 }
14
15
    prtLocalizationTable OBJECT-TYPE
16
        SYNTAX SEQUENCE OF PrtLocalizationEntry
17
        MAX-ACCESS not-accessible
18
        STATUS
                  current
19
        DESCRIPTION
20
            "The available localizations in this printer."
21
        ::= { prtLocalization 1 }
22
23
    prtLocalizationEntry OBJECT-TYPE
24
        SYNTAX PrtLocalizationEntry
25
        MAX-ACCESS not-accessible
26
        STATUS
                   current
27
        DESCRIPTION
28
            "A description of a localization.
29
            Entries may exist in the table for each device
            index with a device type of 'printer'."
30
31
        INDEX { hrDeviceIndex, prtLocalizationIndex }
32
        ::= { prtLocalizationTable 1 }
33
34
    PrtLocalizationEntry ::= SEQUENCE {
35
        prtLocalizationIndex
                                       Integer32,
                                    DisplayString,
36
        prtLocalizationLanguage
37
        prtLocalizationCountry
                                      DisplayString,
38
        prtLocalizationCharacterSet CodedCharSet
39
40
41
    prtLocalizationIndex OBJECT-TYPE
42
        SYNTAX Integer32 (1..65535)
43
        MAX-ACCESS not-accessible
44
                 current
        STATUS
45
        DESCRIPTION
46
            "A unique value used by the printer to identify this
47
            localization entry. Although these values may change due to
48
    а
49
            major reconfiguration of the device (e.g., the addition of
50
    new
51
            localization data to the printer), values are expected to
52
    remain
53
            stable across successive printer power cycles."
54
        ::= { prtLocalizationEntry 1 }
```

```
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```

1

```
2
    prtLocalizationLanguage OBJECT-TYPE
 3
                  DisplayString (SIZE(0..2))
        SYNTAX
 4
        MAX-ACCESS read-only
 5
        STATUS
                   current
 6
        DESCRIPTION
 7
             "A two character language code from ISO 639. Examples en,
 8
            ca, fr, de."
 9
        ::= { prtLocalizationEntry 2 }
10
11
    prtLocalizationCountry OBJECT-TYPE
12
                   DisplayString (SIZE(0..2))
        SYNTAX
13
        MAX-ACCESS read-only
14
        STATUS
                  current
15
        DESCRIPTION
16
             "A two character country code from ISO 3166, a blank string
17
    (two
18
            space characters) shall indicate that the country is not
19
            defined. Examples: US, GB, FR, DE, ... "
20
        ::= { prtLocalizationEntry 3 }
21
22
    prtLocalizationCharacterSet OBJECT-TYPE
23
                   CodedCharSet
        SYNTAX
24
        MAX-ACCESS read-only
25
        STATUS
                  current
26
        DESCRIPTION
27
          "The coded character set used for this localization."
28
        ::= { prtLocalizationEntry 4 }
29
30
    -- The System Resources Tables
31
    _ _
32
    -- The Printer MIB makes use of the Host Resources MIB to
33
    -- define system resources by referencing the storage
34
    -- and device groups of the print group. In order to
35
    -- determine, amongst multiple printers serviced by
36
    -- one agent, which printer owns a particular resource,
37
    -- the prtStorageRef and prtDeviceRef tables associate
38
    -- particular storage and device entries to printers.
39
40
    prtStorageRefTable OBJECT-TYPE
41
        SYNTAX SEQUENCE OF PrtStorageRefEntry
42
        MAX-ACCESS not-accessible
43
        STATUS
                current
44
        DESCRIPTION
            .....
45
        ::= { prtGeneral 2 }
46
47
48
    prtStorageRefEntry OBJECT-TYPE
49
        SYNTAX PrtStorageRefEntry
50
        MAX-ACCESS not-accessible
51
        STATUS
                 current
52
        DESCRIPTION
53
             "This table will have an entry for each entry in the Host
54
            Resources MIB storage table that represents storage
```

```
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```
1
    associated
 2
            with a printer managed by this agent."
 3
                   { hrStorageIndex, prtStorageRefSeqNumber }
        INDEX
 4
        ::= { prtStorageRefTable 1 }
 5
 6
    PrtStorageRefEntry ::= SEQUENCE {
 7
        prtStorageRefSegNumber Integer32,
 8
        prtStorageRefIndex
                                Integer32
 9
10
11
    prtStorageRefSegNumber OBJECT-TYPE
12
                   Integer32 (1..65535)
        SYNTAX
13
        MAX-ACCESS not-accessible
14
        STATUS
                current
15
        DESCRIPTION
16
            "This value will be unique amongst all entries with a common
17
            value of hrStorageIndex. This object allows a storage entry
18
    to
19
            point to the multiple printer devices with which it is
20
            associated."
21
        ::= { prtStorageRefEntry 1 }
22
23
    prtStorageRefIndex OBJECT-TYPE
24
        SYNTAX Integer32 (1..65535)
        MAX-ACCESS read-only
25
26
        STATUS
                   current
27
        DESCRIPTION
28
            "The value of the hrDeviceIndex of the printer device that
29
    this
30
            storageEntry is associated with."
31
        ::= { prtStorageRefEntry 2 }
32
33
    prtDeviceRefTable OBJECT-TYPE
34
        SYNTAX SEQUENCE OF PrtDeviceRefEntry
35
        MAX-ACCESS not-accessible
36
        STATUS current
37
        DESCRIPTION
           .....
38
39
        ::= { prtGeneral 3 }
40
41
    prtDeviceRefEntry OBJECT-TYPE
42
        SYNTAX PrtDeviceRefEntry
43
        MAX-ACCESS not-accessible
44
                current
        STATUS
45
        DESCRIPTION
46
            "This table will have an entry for each entry in the Host
47
            Resources MIB device table that represents a device
48
    associated
49
            with a printer managed by this agent."
50
        INDEX
                   { hrDeviceIndex, prtDeviceRefSeqNumber }
51
        ::= { prtDeviceRefTable 1 }
52
53
    PrtDeviceRefEntry ::= SEQUENCE {
54
        prtDeviceRefSeqNumber Integer32,
```

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 1
        prtDeviceRefIndex
                                 Integer32
 2
 3
 4
    prtDeviceRefSeqNumber OBJECT-TYPE
 5
                   Integer32 (1..65535)
        SYNTAX
 6
        MAX-ACCESS not-accessible
 7
        STATUS
                   current
 8
        DESCRIPTION
 9
             "This value will be unique amongst all entries with a common
10
            value of hrDeviceIndex. This object allows a device entry to
11
            point to the multiple printer devices with which it is
12
            associated."
13
         ::= { prtDeviceRefEntry 1 }
14
15
    prtDeviceRefIndex OBJECT-TYPE
16
        SYNTAX
                 Integer32 (1..65535)
17
        MAX-ACCESS read-only
18
        STATUS
                    current
19
        DESCRIPTION
20
             "The value of the hrDeviceIndex of the printer device that
21
    this
22
            deviceEntry is associated with."
23
        ::= { prtDeviceRefEntry 2 }
24
25
    -- The Input Group
26
    _ _
27
    -- Input sub-units are managed as a tabular, indexed collection
28
    -- of possible devices capable of providing media for input to
    -- the printing process. Input sub-units typically have a
29
30
    -- location, a type, an identifier, a set of constraints on
31
    -- possible media sizes and potentially other media
32
    -- characteristics, and may be capable of indicating current
33
    -- status or capacity.
34
    _ _
35
    -- Implementation of every object in this group is mandatory.
36
37
               OBJECT IDENTIFIER ::= { printmib 8 }
    prtInput
38
39
    prtInputTable OBJECT-TYPE
40
        SYNTAX
                    SEQUENCE OF PrtInputEntry
41
        MAX-ACCESS not-accessible
42
        STATUS
                   current
43
        DESCRIPTION
44
             "A table of the devices capable of providing media for input
45
    to
46
            the printing process."
47
         ::= { prtInput 2 }
48
49
    prtInputEntry OBJECT-TYPE
50
        SYNTAX
                    PrtInputEntry
51
        MAX-ACCESS not-accessible
52
        STATUS
                    current
53
        DESCRIPTION
54
             "Attributes of a device capable of providing media for input
```

```
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```

1 2 3 4 5	<pre>to the printing process. Entries may exist in the table for each device index with a device type of 'printer'." INDEX { hrDeviceIndex, prtInputIndex } ::= { prtInputTable 1 }</pre>
678901123456789011234567890122234567890132	<pre>PrtInputIndret 1) PrtInputEntry ::= SEQUENCE { prtInputIndex Integer32, prtInputType PrtInputTypeTC, prtInputMediaDimFeedDirDeclared Integer32, prtInputMediaDimFeedDirDeclared Integer32, prtInputMediaDimFeedDirChosen Integer32, prtInputMediaDimXFeedDirChosen Integer32, prtInputMediaDimXFeedDirChosen Integer32, prtInputCapacityUnit PrtCapacityUnitTC, prtInputMaxCapacity Integer32, prtInputMediaName OCTET STRING, prtInputMediaName OCTET STRING, prtInputVendorName OCTET STRING, prtInputVersion OCTET STRING, prtInputVersion OCTET STRING, prtInputSerialNumber OCTET STRING, prtInputMediaWeight Integer32, prtInputMediaWeight Integer32, prtInputMediaWeight Integer32, prtInputMediaWeight Integer32, prtInputMediaColor OCTET STRING, prtInputMediaFormParts Integer32, prtInputMediaLoadTimeout Integer32, prtInputMextIndex Integer32, prtInputMextIndex</pre>
33 34 35 36 37	<pre>} prtInputIndex OBJECT-TYPE SYNTAX Integer32 (165535) MAX-ACCESS not-accessible</pre>
38 39 40	STATUS current DESCRIPTION "A unique value used by the printer to identify this input
41 42 43 44	sub unit. Although these values may change due to a major reconfiguration of the device (e.g. the addition of n input sub-
45 46 47 48	units to the printer), values are expected to remain stable across successive printer power cycles." ::= { prtInputEntry 1 }
49 50 51 52 53 54	<pre>prtInputType OBJECT-TYPE SYNTAX PrtInputTypeTC MAX-ACCESS read-only STATUS current DESCRIPTION "The type of technology (discriminated primarily according to</pre>
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1 feeder mechanism type) employed by the input sub-unit. Note, 2 the Optional Input Class provides for a descriptor field to 3 further qualify the other choice." 4 ::= { prtInputEntry 2 } 5 6 prtInputDimUnit OBJECT-TYPE 7 SYNTAX PrtMediaUnitTC 8 MAX-ACCESS read-only 9 STATUS current DESCRIPTION 10 11 "The unit of measurement for use calculating and relaying 12 dimensional values for this input sub-unit." ::= { prtInputEntry 3 } 13 14 15 prtInputMediaDimFeedDirDeclared OBJECT-TYPE 16 SYNTAX Integer32 17 MAX-ACCESS read-write 18 STATUS current 19 DESCRIPTION 20 "This object provides the value of the declared dimension, in 21 the feed direction, of the media that is (or, if empty, was 22 or 23 will be) in this input sub-unit. The feed direction is the 24 direction in which the media is fed on this sub-unit. This 25 dimension is measured in input sub-unit dimensional units 26 (prtInputDimUnit). If this input sub-unit can reliably sense 27 this value, the value is sensed by the printer and may not be 28 changed by management requests. Otherwise, the value may be 29 changed. The value (-1) means other and specifically means 30 that 31 this sub-unit places no restriction on this parameter. 32 33 The value (-2) indicates unknown." 34 ::= { prtInputEntry 4 } 35 36 prtInputMediaDimXFeedDirDeclared OBJECT-TYPE 37 SYNTAX Integer32 38 MAX-ACCESS read-write 39 current STATUS 40 DESCRIPTION 41 "This object provides the value of the declared dimension, in 42 the cross feed direction, of the media that is (or, if empty, 43 was or will be) in this input sub-unit. The cross feed 44 direction is ninety degrees relative to the feed direction 45 associated with this sub-unit. This dimension is measured in 46 input sub-unit dimensional units (prtInputDimUnit). If this 47 input sub-unit can reliably sense this value, the value is 48 sensed by the printer and may not be changed by management 49 requests. Otherwise, the value may be changed. The value (-1) 50 means other and specifically means that this sub-unit places 51 no 52 restriction on this parameter. The value (-2) indicates 53 unknown." 54 ::= { prtInputEntry 5 }

1 2 prtInputMediaDimFeedDirChosen OBJECT-TYPE 3 SYNTAX Integer32 4 MAX-ACCESS read-only 5 STATUS current 6 DESCRIPTION 7 "The printer will act as if media of the chosen dimension (in 8 the feed direction) is present in this input source. Note 9 that 10 this value will be used even if the input tray is empty. Feed 11 dimension measurements are taken relative to the feed 12 direction 13 associated with that sub-unit and are in input sub-unit 14 dimensional units (MediaUnit). If the printer supports the 15 declared dimension, the granted dimension is the same as the 16 declared dimension. If not, the granted dimension is set to 17 the 18 closest dimension that the printer supports when the declared 19 dimension is set. The value (-1) means other and specifically 20 indicates that this sub-unit places no restriction on this 21 parameter. The value (-2) indicates unknown." 22 ::= { prtInputEntry 6 } 23 24 prtInputMediaDimXFeedDirChosen OBJECT-TYPE 25 SYNTAX Integer32 26 MAX-ACCESS read-only current 27 STATUS 28 DESCRIPTION 29 "The printer will act as if media of the chosen dimension (in the cross feed direction) is present in this input source. 30 31 Note 32 that this value will be used even if the input tray is empty. 33 The cross feed direction is ninety degrees relative to the 34 feed 35 direction associated with this sub-unit. This dimension is 36 measured in input sub-unit dimensional units (MediaUnit). Ιf 37 the printer supports the declare dimension, the granted 38 dimension is the same as the declared dimension. If not, the 39 granted dimension is set to the closest dimension that the 40 printer supports when the declared dimension is set. The 41 value 42 (-1) means other and specifically indicates that this sub-43 unit 44 places no restriction on this parameter. The value (-2)45 indicates unknown." 46 ::= { prtInputEntry 7 } 47 48 prtInputCapacityUnit OBJECT-TYPE 49 PrtCapacityUnitTC SYNTAX 50 MAX-ACCESS read-only 51 STATUS current 52 DESCRIPTION 53 "The unit of measurement for use in calculating and relaying 54 capacity values for this input sub-unit."

```
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 1
        ::= { prtInputEntry 8 }
 2
 3
    prtInputMaxCapacity OBJECT-TYPE
 4
        SYNTAX
                 Integer32
 5
        MAX-ACCESS read-write
 6
        STATUS
                 current
 7
        DESCRIPTION
 8
             "The maximum capacity of the input sub-unit in input sub-unit
 9
            capacity units (PrtCapacityUnitTC). There is no convention
10
            associated with the media itself so this value reflects
11
    claimed
12
            capacity. If this input sub-unit can reliably sense this
13
    value,
14
            the value is sensed by the printer and may not be changed by
15
            management requests; otherwise, the value may be written (by
16
    а
17
            Remote Control Panel or a Management Application). The value
18
            (-1) means other and specifically indicates that the sub-unit
19
            places no restrictions on this parameter. The value (-2)
20
    means
21
            unknown."
22
        ::= { prtInputEntry 9 }
23
24
    prtInputCurrentLevel OBJECT-TYPE
25
        SYNTAX
                   Integer32 -- in capacity units
26
                                   (PrtCapacityUnitTC).
                              _ _
27
        MAX-ACCESS read-write
28
                   current
        STATUS
29
        DESCRIPTION
30
             "The current capacity of the input sub-unit in input sub-unit
31
            capacity units (PrtCapacityUnitTC). If this input sub-unit
32
    can
33
            reliably sense this value, the value is sensed by the printer
34
            and may not be changed by management requests; otherwise, the
35
            value may be written (by a Remote Control Panel or a
36
    Management
37
            Application). The value (-1) means other and specifically
38
            indicates that the sub-unit places no restrictions on this
39
            parameter. The value (-2) means unknown. The value (-3) means
40
            that the printer knows that at least one unit remains."
41
        ::= { prtInputEntry 10 }
42
43
    prtInputStatus OBJECT-TYPE
44
        SYNTAX
                 PrtSubUnitStatusTC
45
        MAX-ACCESS read-only
46
        STATUS
                   current
47
        DESCRIPTION
48
             "The current status of this input sub-unit."
49
        ::= { prtInputEntry 11 }
50
51
    prtInputMediaName OBJECT-TYPE
52
                   OCTET STRING (SIZE(0..63))
        SYNTAX
53
        MAX-ACCESS read-write
54
        STATUS
               current
```

1 DESCRIPTION 2 "A description of the media contained in this input sub-unit; 3 This description is intended for display to a human operator. 4 This description is not processed by the printer. It is used 5 to 6 provide information not expressible in terms of the other 7 media 8 attributes (e.q. prtInputMediaDimFeedDirChosen, 9 prtInputMediaDimXFeedDirChosen, prtInputMediaWeight, 10 prtInputMediaType). An example would be 'legal tender bond 11 paper'." 12 REFERENCE 13 "See Appendix C, 'Media Names'." 14 ::= { prtInputEntry 12 } 15 16 INPUT MEASUREMENT _ _ 17 _ _ 18 _ _ 19 ~ _ _ 20 _ _ 21 direction _ _ 22 _ _ 77 23 MaxCapacity Sheets _ _ 24 left CurrentLevel _ _ 25 _ _ in 26 _ _ tray v v 27 _ _ 28 29 -- The Extended Input Group 30 _ _ 31 -- This group is optional. However, to claim conformance to this 32 -- group, it is necessary to implement every object in the group. 33 34 prtInputName OBJECT-TYPE 35 SYNTAX OCTET STRING (SIZE(0..63)) 36 MAX-ACCESS read-write 37 STATUS current 38 DESCRIPTION 39 "The name assigned to this input sub-unit." 40 ::= { prtInputEntry 13 } 41 42 prtInputVendorName OBJECT-TYPE 43 SYNTAX OCTET STRING (SIZE(0..63)) 44 MAX-ACCESS read-only 45 current STATUS 46 DESCRIPTION 47 "The vendor name of this input sub-unit." 48 ::= { prtInputEntry 14 } 49 50 prtInputModel OBJECT-TYPE 51 OCTET STRING (SIZE(0..63)) SYNTAX 52 MAX-ACCESS read-only 53 STATUS current 54 DESCRIPTION Lewis, Gocek, Turner Expires 19 September 2001 [Page 74]

```
1
             "The model name of this input sub-unit."
 2
        ::= { prtInputEntry 15 }
 3
 4
    prtInputVersion OBJECT-TYPE
 5
        SYNTAX OCTET STRING (SIZE(0..63))
 6
        MAX-ACCESS read-only
 7
        STATUS
                  current
 8
        DESCRIPTION
 9
             "The version of this input sub-unit."
10
        ::= { prtInputEntry 16 }
11
12
    prtInputSerialNumber OBJECT-TYPE
13
                 OCTET STRING (SIZE(0..63))
        SYNTAX
14
        MAX-ACCESS read-only
15
                   current
        STATUS
16
        DESCRIPTION
17
             "The serial number assigned to this input sub-unit."
18
        ::= { prtInputEntry 17 }
19
20
    prtInputDescription OBJECT-TYPE
21
        SYNTAX
                  OCTET STRING (SIZE(0..255))
22
        MAX-ACCESS read-only
23
        STATUS
                  current
24
        DESCRIPTION
25
             "A free-form text description of this input sub-unit in the
26
            localization specified by prtGeneralCurrentLocalization."
27
        ::= { prtInputEntry 18 }
28
29
    prtInputSecurity OBJECT-TYPE
30
        SYNTAX
                 PresentOnOff
31
        MAX-ACCESS read-write
32
        STATUS
                   current
33
        DESCRIPTION
34
             "Indicates if this input sub-unit has some security
35
    associated
36
            with it."
37
        ::= { prtInputEntry 19 }
38
39
    -- The Input Media Group
40
    _ _
41
    -- The Input Media Group supports identification of media
42
    -- installed or available for use on a printing device.
    -- Medium resources are identified by name, and include a
43
44
    -- collection of characteristic attributes that may further be
45
    -- used for selection and management of them.
46
    -- The Input Media group consists of a set of optional
47
    -- "columns" in the Input Table. In this manner, a minimally
48
    -- conforming implementation may choose to not support reporting
49
    -- of media resources if it cannot do so.
50
    _ _
51
    -- This group is optional. However, to claim conformance to this
52
    -- group, it is necessary to implement every object in the group.
53
54
    prtInputMediaWeight
                         OBJECT-TYPE
```

1 SYNTAX Integer32 2 MAX-ACCESS read-write 3 STATUS current 4 DESCRIPTION 5 "The weight of the medium associated with this input sub-unit 6 in 7 grams / per meter squared. The value (-2) means unknown." 8 ::= { prtInputEntry 20 } 9 10 prtInputMediaType OBJECT-TYPE 11 SYNTAX OCTET STRING (SIZE(0..63)) 12 MAX-ACCESS read-write 13 STATUS current 14 DESCRIPTION 15 "The name of the type of medium associated with this input 16 sub 17 unit. This name need not be processed by the printer; it 18 might 19 simply be displayed to an operator. The standardized string 20 values from ISO 10175 (DPA) and ISO 10180 (SPDL) are: 21 22 Separately cut sheets of an opaque stationery 23 material 24 transparency Separately cut sheets of a transparent 25 material 26 envelope Envelopes that can be used for 27 conventional mailing purposes 28 envelope-plain Envelopes that are not preprinted and 29 have no windows 30 Envelopes that have windows for envelope-window 31 addressing purposes 32 Continuously connected sheets of an continuous-long 33 opaque material connected along the 34 long edge 35 continuous-short Continuously connected sheets of an opaque material connected along the 36 37 short edge 38 Media with tabs tab-stock 39 multi-part-form Form medium composed of multiple layers 40 not pre-attached to one another; each 41 sheet may be drawn separately from an 42 input source 43 Label stock labels 44 Form medium composed of multiple layers multi-layer 45 which are pre-attached to one another; 46 e.g., for use with impact printers. 47 48 Implementers may add additional string values. The naming 49 conventions in ISO 9070 are recommended in order to avoid 50 potential name clashes." 51 ::= { prtInputEntry 21 } 52 53 prtInputMediaColor OBJECT-TYPE OCTET STRING (SIZE(0..63)) 54 SYNTAX

1 MAX-ACCESS read-write 2 STATUS current 3 DESCRIPTION 4 "The name of the color of the medium associated with 5 this input sub-unit using standardized string values 6 from ISO 10175 (DPA) and ISO 10180 (SPDL) such as: 7 8 other 9 unknown 10 white 11 pink 12 yellow 13 buff 14 goldenrod 15 blue 16 green 17 transparent 18 19 Implementers may add additional string values. The naming 20 conventions in ISO 9070 are recommended in order to avoid 21 potential name clashes." 22 ::= { prtInputEntry 22 } 23 24 prtInputMediaFormParts OBJECT-TYPE 25 SYNTAX Integer32 26 MAX-ACCESS read-write 27 STATUS current 28 DESCRIPTION 29 "The number of parts associated with the medium 30 associated with this input sub-unit if the medium is a 31 multi-part form. The value (-1) means other and 32 specifically indicates that the device places no 33 restrictions on this parameter. The value (-2) means 34 unknown." 35 ::= { prtInputEntry 23 } 36 37 -- The Input Switching Group 38 _ _ 39 -- The input switching group allows the administrator to set the 40 -- input subunit time-out for the printer and to control the 41 -- automatic input subunit switching by the printer when an input 42 -- subunit becomes empty. 43 44 -- This group is optional. However, to claim conformance to this 45 -- group, it is required to implement every object in the group. 46 47 prtInputMediaLoadTimeout OBJECT-TYPE 48 SYNTAX Integer32 49 MAX-ACCESS read-write 50 STATUS current 51 DESCRIPTION 52 "When the printer is not able to print due to a subunit being 53 empty or the requested media must be manually loaded, the 54 printer will wait for the duration (in seconds) specified by

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1 2	will	this object. Upon expiration of the time-out, the printer				
2 3 4		take the action specified by prtInputNextIndex.				
5 6	is fed	The event which causes the printer to enter the waiting state				
7 8		product specific. If the printer is not waiting for manually				
9 10	rea	media, it may switch from an empty subunit to a different subunit without waiting for the time-out to expire.				
11		A malue of (1) implies lathers, on tinfinite, which				
12 13	translat	A value of (-1) implies 'other' or 'infinite' which anslates				
14		to 'wait forever'. The action which causes printing to				
15 16	continue					
18 17 18	::=	is product specific. A value of (-2) implies 'unknown'." ::= { prtInputEntry 24 }				
19	prtInput	tNextIndex OBJECT-TYPE				
20	SYNTA	SYNTAX Integer32				
21		ACCESS read-write				
22	STATUS current					
23 24	DESCI	RIPTION "The value of prtInputIndex corresponding to the input				
25	subunit	me value of prempuernaex corresponding to the input				
26		which will be used when this input subunit is emptied and the				
27		time-out specified by prtInputMediaLoadTimeout expires. A				
28	value					
29 30		of zero(0) indicates that auto input switching will not occur when this input subunit is emptied. If the time-out specified				
31 32	by	prtInputLoadMediaTimeout expires and this value is zero(0),				
33	the	picinpuchoadmediaiimeout expires and this value is zero(0),				
34 35	(-2)	job will be aborted. A value of (-1) means other. The value				
36	、 ,	means 'unknown' and specifically indicates that an				
37		implementation specific method will determine the next input				
38 39	time	subunit to use at the time this subunit is emptied and the				
39 40	time	out expires. The value(-3) means input switching is not				
41		supported for this subunit."				
42	::=	{ prtInputEntry 25 }				
43						
44 45	The Output Group					
45 46		ut sub-units are managed as a tabular, indexed collection				
47	of possible devices capable of receiving media delivered from					
48	the printing process. Output sub-units typically have a					
49	location, a type, an identifier, a set of constraints on					
50	possible media sizes and potentially other characteristics,					
51 52	and may be capable of indicating current status or capacity.					
52 53	Implementation of every object in this group is mandatory.					
54						

```
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```

```
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1
   prtOutput OBJECT IDENTIFIER ::= { printmib 9 }
2
3
   prtOutputTable OBJECT-TYPE
4
       SYNTAX SEQUENCE OF PrtOutputEntry
5
```

```
6
       STATUS
               current
7
       DESCRIPTION
8
```

9

10

11

15

16

17

18

19

20

21

22 23

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

MAX-ACCESS not-accessible

"A table of the devices capable of receiving media delivered from the printing process." ::= { prtOutput 2 }

```
12
    prtOutputEntry OBJECT-TYPE
13
        SYNTAX PrtOutputEntry
14
```

```
MAX-ACCESS not-accessible
STATUS
          current
```

DESCRIPTION "Attributes of a device capable of receiving media delivered from the printing process. Entries may exist in the table for

```
each device index with a device type of 'printer'."
INDEX { hrDeviceIndex, prtOutputIndex }
```

```
::= { prtOutputTable 1 }
```

PrtOutputEntry ::= SEQUENCE { 24 prtOutputIndex Integer32, PrtOutputTypeTC, prtOutputType prtOutputCapacityUnit PrtCapacityUnitTC, prtOutputMaxCapacity Integer32, prtOutputRemainingCapacity Integer32, prtOutputStatus PrtSubUnitStatusTC, prtOutputName OCTET STRING, prtOutputVendorName OCTET STRING, OCTET STRING,

```
prtOutputModel
prtOutputVersion
                                   OCTET STRING,
prtOutputSerialNumber
prtOutputDescription
```

```
OCTET STRING,
                                   OCTET STRING,
prtOutputSecurity
                                   PresentOnOff,
prtOutputDimUnit
```

PrtMediaUnitTC, prtOutputMaxDimFeedDir Integer32, Integer32, prtOutputMaxDimXFeedDir prtOutputMinDimFeedDir Integer32, prtOutputMinDimXFeedDir Integer32, prtOutputStackingOrder PrtOutputStackingOrderTC, prtOutputPageDeliveryOrientation

```
PrtOutputPageDeliveryOrientationTC,
                                  PresentOnOff,
prtOutputBursting
prtOutputDecollating
```

```
PresentOnOff,
prtOutputPageCollated
                                 PresentOnOff,
prtOutputOffsetStacking
                                  PresentOnOff
```

```
50
51
    prtOutputIndex OBJECT-TYPE
52
                   Integer32 (1..65535)
        SYNTAX
53
        MAX-ACCESS not-accessible
```

```
54
       STATUS
             current
```

```
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```

1	DESCRIPTION					
2	"A unique value used by this printer to identify this					
3	output sub-unit. Although these values may change due					
4	to a major reconfiguration of the sub-unit (e.g. the					
5	addition of new output devices to the printer), values					
6	are expected to remain stable across successive printer					
7						
	power cycles."					
8	::= { prtOutputEntry 1 }					
9						
10	prtOutputType OBJECT-TYPE					
11	This value is a type 2 enumeration					
12	SYNTAX PrtOutputTypeTC					
13	MAX-ACCESS read-only					
14	STATUS current					
15	DESCRIPTION					
16	"The type of technology supported by this output sub-unit."					
17	::= { prtOutputEntry 2 }					
18						
19	prtOutputCapacityUnit OBJECT-TYPE					
20	SYNTAX PrtCapacityUnitTC					
21	MAX-ACCESS read-only					
22	STATUS current					
23	DESCRIPTION					
24	"The unit of measurement for use in calculating and relaying					
25	capacity values for this output sub-unit."					
26	::= { prtOutputEntry 3 }					
27	··· { preducemery 5 }					
	not Output Moudone at the ODIEde WVDE					
28	prtOutputMaxCapacity OBJECT-TYPE					
29	SYNTAX Integer32					
30	MAX-ACCESS read-write					
31	STATUS current					
32	DESCRIPTION					
33	"The maximum capacity of this output sub-unit in output sub-					
34	unit					
35	capacity units (PrtCapacityUnitTC). There is no convention					
36	associated with the media itself so this value essentially					
37	reflects claimed capacity. If this output sub-unit can					
38	reliably					
39	sense this value, the value is sensed by the printer and may					
40	not					
41	be changed by management requests; otherwise, the value may					
42	be					
43	written (by a Remote Control Panel or a Management					
44	Application).					
45	The value (-1) means other and specifically indicates that					
46	the					
47	sub-unit places no restrictions on this parameter. The value					
48	(-2) means unknown."					
49	::= { prtOutputEntry 4 }					
50	(
51	prtOutputRemainingCapacity OBJECT-TYPE					
52	SYNTAX Integer32					
52 53	MAX-ACCESS read-write					
54	STATUS current					
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[Page 81]

1 DESCRIPTION 2 "The remaining capacity of the possible output sub-unit 3 capacity 4 in output sub-unit capacity units (PrtCapacityUnitTC) of this 5 output sub-unit. If this output sub-unit can reliably sense 6 this 7 value, the value is sensed by the printer and may not be 8 modified by management requests; otherwise, the value may be 9 written (by a Remote Control Panel or a Management 10 Application). 11 The value (-1) means other and specifically indicates that 12 the 13 sub-unit places no restrictions on this parameter. The value 14 (-2) means unknown. The value (-3) means that the printer 15 knows 16 that there remains capacity for at least one unit." 17 ::= { prtOutputEntry 5 } 18 19 prtOutputStatus OBJECT-TYPE 20 PrtSubUnitStatusTC SYNTAX 21 MAX-ACCESS read-only 22 STATUS current 23 DESCRIPTION 24 "The current status of this output sub-unit." 25 ::= { prtOutputEntry 6 } 26 27 OUTPUT MEASUREMENT _ _ 28 _ _ 29 _ _ . . 30 _ _ 31 _ _ 32 RemainingCapacity _ _ 33 -- MaxCapacity 34 v _ _ 35 direction _ _ 36 Sheets _ _ 37 in _ _ 38 Output _ _ 77 39 _ _ 40 41 -- The Extended Output Group 42 _ _ -- This group is optional. However, to claim conformance to this 43 44 -- group, it is necessary to implement every object in the group. 45 46 prtOutputName OBJECT-TYPE 47 SYNTAX OCTET STRING (SIZE(0..63)) 48 MAX-ACCESS read-write 49 current STATUS DESCRIPTION 50 51 "The name assigned to this output sub-unit." 52 ::= { prtOutputEntry 7 } 53 54 prtOutputVendorName OBJECT-TYPE

```
1
        SYNTAX
                 OCTET STRING (SIZE(0..63))
 2
        MAX-ACCESS read-only
 3
        STATUS
                 current
 4
        DESCRIPTION
 5
             "The vendor name of this output sub-unit."
 6
        ::= { prtOutputEntry 8 }
 7
 8
    prtOutputModel OBJECT-TYPE
 9
                   OCTET STRING (SIZE(0..63))
        SYNTAX
10
        MAX-ACCESS read-only
11
        STATUS
                  current
12
        DESCRIPTION
13
            "The model name assigned to this output sub-unit."
14
        ::= { prtOutputEntry 9 }
15
16
    prtOutputVersion OBJECT-TYPE
17
        SYNTAX OCTET STRING (SIZE(0..63))
18
        MAX-ACCESS read-only
19
        STATUS
               current
20
        DESCRIPTION
21
            "The version of this output sub-unit."
22
        ::= { prtOutputEntry 10 }
23
24
    prtOutputSerialNumber OBJECT-TYPE
25
        SYNTAX OCTET STRING (SIZE(0..63))
26
        MAX-ACCESS read-only
27
        STATUS
                  current
28
        DESCRIPTION
            "The serial number assigned to this output sub-unit."
29
30
        ::= { prtOutputEntry 11 }
31
32
    prtOutputDescription OBJECT-TYPE
33
        SYNTAX OCTET STRING (SIZE(0..255))
34
        MAX-ACCESS read-only
35
                   current
        STATUS
36
        DESCRIPTION
37
            "A free-form text description of this output sub-unit in the
38
            localization specified by prtGeneralCurrentLocalization."
39
        ::= { prtOutputEntry 12 }
40
41
    prtOutputSecurity OBJECT-TYPE
42
        SYNTAX PresentOnOff
        MAX-ACCESS read-write
43
44
        STATUS
                 current
45
        DESCRIPTION
46
             "Indicates if this output sub-unit has some security
47
    associated
48
            with it and if that security is enabled or not."
49
        ::= { prtOutputEntry 13 }
50
51
    -- The Output Dimensions Group
52
53
    -- This group is optional. However, to claim conformance to this
54
    -- group, it is necessary to implement every object in the group.
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                                                               [Page 82]
```

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```
1
 2
    prtOutputDimUnit OBJECT-TYPE
 3
        SYNTAX
                   PrtMediaUnitTC
 4
        MAX-ACCESS read-only
 5
        STATUS
                   current
 6
        DESCRIPTION
 7
             "The unit of measurement for use in calculating and relaying
 8
            dimensional values for this output sub-unit."
 9
         ::= { prtOutputEntry 14 }
10
11
    prtOutputMaxDimFeedDir OBJECT-TYPE
12
                    Integer32
        SYNTAX
13
        MAX-ACCESS read-write
14
        STATUS
                  current
15
        DESCRIPTION
16
             "The maximum dimensions supported by this output sub-unit
17
            for measurements taken parallel relative to the feed
18
            direction associated with that sub-unit in output
            sub-unit dimensional units (MediaUnit). If this output
19
20
            sub-unit can reliably sense this value, the value is
21
            sensed by the printer and may not be changed with
22
            management protocol operations."
23
        ::= { prtOutputEntry 15 }
24
25
    prtOutputMaxDimXFeedDir OBJECT-TYPE
26
        SYNTAX
                    Integer32
27
        MAX-ACCESS read-write
28
                   current
        STATUS
29
        DESCRIPTION
30
             "The maximum dimensions supported by this output sub-unit
31
            for measurements taken ninety degrees relative to the
32
            feed direction associated with that sub-unit in output
33
             sub-unit dimensional units (MediaUnit). If this output
34
            sub-unit can reliably sense this value, the value is
35
            sensed by the printer and may not be changed with
            management protocol operations."
36
37
        ::= { prtOutputEntry 16 }
38
39
    prtOutputMinDimFeedDir OBJECT-TYPE
40
        SYNTAX
                    Integer32
41
        MAX-ACCESS read-write
42
                   current
        STATUS
43
        DESCRIPTION
44
             "The minimum dimensions supported by this output sub-unit
45
            for measurements taken parallel relative to the feed
46
            direction associated with that sub-unit in output
47
            sub-unit dimensional units (DimUnit). If this output
48
            sub-unit can reliably sense this value, the value is
49
            sensed by the printer and may not be changed with
50
            management protocol operations."
51
        ::= { prtOutputEntry 17 }
52
53
    prtOutputMinDimXFeedDir OBJECT-TYPE
54
        SYNTAX
                   Integer32
```

```
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```

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```
1
        MAX-ACCESS read-write
 2
        STATUS
                current
 3
        DESCRIPTION
 4
             "The minimum dimensions supported by this output sub-unit
 5
            for measurements taken ninety degrees relative to the
 6
            feed direction associated with that sub-unit in output
 7
            sub-unit dimensional units (DimUnit). If this output
 8
            sub-unit can reliably sense this value, the value is
            sensed by the printer and may not be changed with
 9
10
            management protocol operations."
11
        ::= { prtOutputEntry 18 }
12
13
    -- The Output Features Group
14
15
    -- This group is optional. However, to claim conformance to this
16
    -- group, it is necessary to implement every object in the group.
17
18
    prtOutputStackingOrder OBJECT-TYPE
19
            This value is a type 1 enumeration
        _ _
20
                   PrtOutputStackingOrderTC
        SYNTAX
21
        MAX-ACCESS read-write
22
        STATUS
                  current
23
        DESCRIPTION
24
             "The current state of the stacking order for the
25
            associated output sub-unit. 'FirstToLast' means
26
            that as pages are output the front of the next page is
27
            placed against the back of the previous page.
28
            'LasttoFirst' means that as pages are output the back
29
            of the next page is placed against the front of the
30
            previous page."
31
        ::= { prtOutputEntry 19 }
32
33
    prtOutputPageDeliveryOrientation OBJECT-TYPE
34
             This value is a type 1 enumeration
        _ _
35
                   PrtOutputPageDeliveryOrientationTC
        SYNTAX
36
        MAX-ACCESS read-write
37
        STATUS
                   current
38
        DESCRIPTION
39
             "The reading surface that will be 'up' when pages are
40
            delivered to the associated output sub-unit. Values are
41
            faceUp and faceDown. (Note: interpretation of these
42
            values is in general context-dependent based on locale;
43
            presentation of these values to an end-user should be
44
            normalized to the expectations of the user)."
45
        ::= { prtOutputEntry 20 }
46
47
    prtOutputBursting OBJECT-TYPE
48
        SYNTAX
                  PresentOnOff
49
        MAX-ACCESS read-write
                current
50
        STATUS
51
        DESCRIPTION
52
             "This object indicates that the outputting sub-unit supports
53
            bursting, and if so, whether the feature is enabled. Bursting
54
    is
```

1 the process by which continuous media is separated into 2 individual sheets, typically by bursting along pre-formed 3 perforations." 4 ::= { prtOutputEntry 21 } 5 6 prtOutputDecollating OBJECT-TYPE 7 SYNTAX PresentOnOff 8 MAX-ACCESS read-write 9 STATUS current 10 DESCRIPTION 11 "This object indicates that the output supports decollating, 12 and 13 if so, whether the feature is enabled. Decollating is the 14 process by which the individual parts within a multi-part 15 form 16 are separated and sorted into separate stacks for each part." 17 ::= { prtOutputEntry 22 } 18 19 prtOutputPageCollated OBJECT-TYPE 20 SYNTAX PresentOnOff 21 MAX-ACCESS read-write 22 STATUS current 23 DESCRIPTION 24 "This object indicates that the output sub-unit supports page 25 collation, and if so, whether the feature is enabled. See 26 glossary for definition of how this document defines 27 collation." 28 ::= { prtOutputEntry 23 } 29 30 prtOutputOffsetStacking OBJECT-TYPE 31 SYNTAX PresentOnOff 32 MAX-ACCESS read-write 33 current STATUS 34 DESCRIPTION 35 "This object indicates that the output supports offset 36 stacking, 37 and if so, whether the feature is enabled. See glossary for 38 how 39 Offset Stacking is defined by this document." 40 ::= { prtOutputEntry 24 } 41 42 -- The Marker Group 43 _ _ 44 -- A marker is the mechanism that produces marks on the print 45 -- media. The marker sub-units and their associated supplies are -- represented by the Marker Group in the model. A printer can 46 47 -- contain one or more marking mechanisms. Some examples of 48 -- multiple marker sub-units are: a printer 49 -- with separate markers for normal and magnetic ink or an 50 -- imagesetter that can output to both a proofing device and 51 -- final film. Each marking device can have its own set of 52 -- characteristics associated with it, such as marking technology 53 -- and resolution. 54 _ _

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```
1
    -- Implementation of every object in this group is mandatory.
 2
 3
    prtMarker OBJECT IDENTIFIER ::= { printmib 10 }
 4
 5
    -- The printable area margins as listed below define an area of
 6
    -- the print media which is guaranteed to be printable for all
 7
    -- combinations of input, media paths, and interpreters for this
 8
    -- marker.
 9
10
    prtMarkerTable OBJECT-TYPE
11
        SYNTAX SEQUENCE OF PrtMarkerEntry
12
        MAX-ACCESS not-accessible
13
        STATUS current
14
        DESCRIPTION
15
            ......
16
        ::= { prtMarker 2 }
17
18
    prtMarkerEntry OBJECT-TYPE
19
        SYNTAX PrtMarkerEntry
20
        MAX-ACCESS not-accessible
21
        STATUS
                 current
22
        DESCRIPTION
23
             "Entries may exist in the table for each device index with a
24
            device type of 'printer'."
        INDEX { hrDeviceIndex, prtMarkerIndex }
25
26
        ::= { prtMarkerTable 1 }
27
28
    PrtMarkerEntry ::= SEQUENCE {
29
        prtMarkerIndex
                                         Integer32,
30
        prtMarkerMarkTech
                                         PrtMarkerMarkTechTC,
31
        prtMarkerCounterUnit
                                         PrtMarkerCounterUnitTC,
32
        prtMarkerLifeCount
                                         Counter32,
33
        prtMarkerPowerOnCount
                                         Counter32,
34
        prtMarkerProcessColorants
                                         Integer32,
35
        prtMarkerSpotColorants
                                         Integer32,
36
        prtMarkerAddressabilityUnit
                                         PrtMarkerAddressabilityUnitTC,
37
        prtMarkerAddressabilityFeedDir
                                         Integer32,
38
        prtMarkerAddressabilityXFeedDir Integer32,
39
        prtMarkerNorthMargin
                                         Integer32,
40
        prtMarkerSouthMargin
                                         Integer32,
41
        prtMarkerWestMargin
                                         Integer32,
42
        prtMarkerEastMargin
                                         Integer32,
43
        prtMarkerStatus
                                         PrtSubUnitStatusTC
44
45
46
    prtMarkerIndex OBJECT-TYPE
47
        SYNTAX Integer32 (1..65535)
48
        MAX-ACCESS not-accessible
49
        STATUS
                   current
50
        DESCRIPTION
51
             "A unique value used by the printer to identify this marking
52
            SubUnit. Although these values may change due to a major
53
            reconfiguration of the device (e.g. the addition of new
54
    marking
```

```
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```

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```
1
            sub-units to the printer), values are expected to remain
 2
    stable
 3
            across successive printer power cycles."
 4
        ::= { prtMarkerEntry 1 }
 5
 6
    prtMarkerMarkTech OBJECT-TYPE
 7
        -- This value is a type 2 enumeration
 8
        SYNTAX
                   PrtMarkerMarkTechTC
        MAX-ACCESS read-only
 9
10
        STATUS
                  current
11
        DESCRIPTION
12
             "The type of marking technology used for this marking sub-
13
    unit."
14
        ::= { prtMarkerEntry 2 }
15
16
    prtMarkerCounterUnit OBJECT-TYPE
17
        -- This value is a type 1 enumeration
18
                   PrtMarkerCounterUnitTC
        SYNTAX
19
        MAX-ACCESS read-only
20
        STATUS
                  current
21
        DESCRIPTION
22
             "The unit that will be used by the printer when reporting
23
            counter values for this marking sub-unit. The time units of
24
            measure are provided for a device like a strip recorder that
25
            does not or cannot track the physical dimensions of the media
26
            and does not use characters, lines or sheets."
27
        ::= { prtMarkerEntry 3 }
28
29
    prtMarkerLifeCount OBJECT-TYPE
30
        SYNTAX Counter32
31
        MAX-ACCESS read-only
32
                   current
        STATUS
33
        DESCRIPTION
34
             "The count of the number of units of measure counted during
35
    the
36
            life of printer using units of measure as specified by
37
            prtMarkerCounterUnit."
38
        ::= { prtMarkerEntry 4 }
39
40
    prtMarkerPowerOnCount OBJECT-TYPE
41
        SYNTAX
                Counter32
42
        MAX-ACCESS read-only
43
                   current
        STATUS
44
        DESCRIPTION
45
             "The count of the number of units of measure counted since
46
    the
47
            equipment was most recently powered on using units of measure
48
    as
49
            specified by prtMarkerCounterUnit."
        ::= { prtMarkerEntry 5 }
50
51
52
    prtMarkerProcessColorants OBJECT-TYPE
53
                   Integer32 (0..65535)
        SYNTAX
54
        MAX-ACCESS read-only
```

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```
1
        STATUS
                    current
 2
        DESCRIPTION
 3
             "The number of process colors supported by this marker. A
 4
            process color of 1 implies monochrome. The value of this
 5
    object
 6
            and prtMarkerSpotColorants cannot both be 0. The value of
 7
            prtMarkerProcessColorants must be 0 or greater."
 8
         ::= { prtMarkerEntry 6 }
 9
10
    prtMarkerSpotColorants OBJECT-TYPE
11
        SYNTAX
                    Integer32 (0..65535)
12
        MAX-ACCESS read-only
13
                    current
        STATUS
14
        DESCRIPTION
15
             "The number of spot colors supported by this marker. The
16
    value
17
            of this object and prtMarkerProcessColorants cannot both be
18
    Ο.
19
            Must be 0 or greater."
20
         ::= { prtMarkerEntry 7 }
21
22
    prtMarkerAddressabilityUnit OBJECT-TYPE
23
             This value is a type 1 enumeration
24
                   PrtMarkerAddressabilityUnitTC
        SYNTAX
25
        MAX-ACCESS read-only
26
        STATUS
                   current
27
        DESCRIPTION
28
             "The unit of measure of distances, as applied to the marker's
29
            resolution."
30
        ::= { prtMarkerEntry 8 }
31
32
    prtMarkerAddressabilityFeedDir OBJECT-TYPE
33
        SYNTAX
                    Integer32
34
        MAX-ACCESS read-only
35
                   current
        STATUS
36
        DESCRIPTION
37
             "The maximum number of addressable marking positions in the
38
    feed
39
            direction per 10000 units of measure specified by
40
            prtMarkerAddressabilityUnit. A value of (-1) implies 'other'
41
    or
42
             'infinite' while a value of (-2) implies 'unknown'."
43
         ::= { prtMarkerEntry 9 }
44
45
    prtMarkerAddressabilityXFeedDir OBJECT-TYPE
46
        SYNTAX
                    Integer32
47
        MAX-ACCESS read-only
48
        STATUS
                   current
49
        DESCRIPTION
50
             "The maximum number of addressable marking positions in the
51
            cross feed direction in 10000 units of measure specified by
52
            prtMarkerAddressabilityUnit. A value of (-1) implies 'other'
53
    or
54
             'infinite' while a value of (-2) implies 'unknown'."
```

```
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```

```
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```

```
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```

```
1
        ::= { prtMarkerEntry 10 }
 2
 3
    prtMarkerNorthMargin OBJECT-TYPE
 4
        SYNTAX
                 Integer32
 5
        MAX-ACCESS read-only
 6
        STATUS
                  current
 7
        DESCRIPTION
 8
             "The margin, in units identified by
    prtMarkerAddressabilityUnit,
 9
10
            from the leading edge of the medium as the medium flows
11
    through
12
            the marking engine with the side to be imaged facing the
13
             observer. The leading edge is the North edge and the other
14
    edqes
15
            are defined by the normal compass layout of directions with
16
    the
17
            compass facing the observer. Printing within the area
18
    bounded
19
            by all four margins is guaranteed for all interpreters.
                                                                        The
20
            value (-2) means unknown."
21
        ::= { prtMarkerEntry 11 }
22
23
    prtMarkerSouthMargin OBJECT-TYPE
24
        SYNTAX
                 Integer32
25
        MAX-ACCESS read-only
26
        STATUS
                   current
27
        DESCRIPTION
28
             "The margin from the South edge (see prtMarkerNorthMargin)
29
    of
30
            the medium in units identified by
    prtMarkerAddressabilityUnit.
31
32
            Printing within the area bounded by all four margins is
33
            guaranteed for all interpreters. The value (-2) means
34
    unknown."
35
        ::= { prtMarkerEntry 12 }
36
37
    prtMarkerWestMargin OBJECT-TYPE
38
                 Integer32
        SYNTAX
39
        MAX-ACCESS read-only
40
                   current
        STATUS
41
        DESCRIPTION
42
             "The margin from the West edge (see prtMarkerNorthMargin) of
43
    the
44
            medium in units identified by prtMarkerAddressabilityUnit.
45
            Printing within the area bounded by all four margins is
            guaranteed for all interpreters. The value (-2) means
46
47
    unknown."
48
        ::= { prtMarkerEntry 13 }
49
50
    prtMarkerEastMargin OBJECT-TYPE
51
        SYNTAX
                   Integer32
52
        MAX-ACCESS read-only
53
        STATUS
                   current
54
        DESCRIPTION
```

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```
1
             "The margin from the East edge (see prtMarkerNorthMargin) of
 2
    the
 3
            medium in units identified by prtMarkerAddressabilityUnit.
 4
            Printing within the area bounded by all four margins is
 5
            quaranteed for all interpreters. The value (-2) means
 6
    unknown."
 7
        ::= { prtMarkerEntry 14 }
 8
 9
    prtMarkerStatus OBJECT-TYPE
10
                 PrtSubUnitStatusTC
        SYNTAX
11
        MAX-ACCESS read-only
12
        STATUS
                   current
13
        DESCRIPTION
             "The current status of this marker sub-unit."
14
15
        ::= { prtMarkerEntry 15 }
16
17
    -- The Marker Supplies Group
18
    _ _
19
    -- This group is optional. However, to claim conformance to this
20
    -- group, it is necessary to implement every object in the group.
21
22
    prtMarkerSupplies OBJECT IDENTIFIER ::= { printmib 11 }
23
24
    prtMarkerSuppliesTable OBJECT-TYPE
25
        SYNTAX
                    SEQUENCE OF PrtMarkerSuppliesEntry
26
        MAX-ACCESS not-accessible
                   current
27
        STATUS
28
        DESCRIPTION
29
             "A table of the marker supplies available on this printer."
30
        ::= { prtMarkerSupplies 1 }
31
32
    prtMarkerSuppliesEntry OBJECT-TYPE
33
                   PrtMarkerSuppliesEntry
        SYNTAX
34
        MAX-ACCESS not-accessible
35
        STATUS
                    current
36
        DESCRIPTION
37
             "Attributes of a marker supply. Entries may exist in the
38
    table
39
            for each device index with a device type of 'printer'."
40
        INDEX { hrDeviceIndex, prtMarkerSuppliesIndex }
41
        ::= { prtMarkerSuppliesTable 1 }
42
43
    PrtMarkerSuppliesEntry ::= SEQUENCE {
44
        prtMarkerSuppliesIndex
                                         Integer32,
45
        prtMarkerSuppliesMarkerIndex
                                         Integer32,
46
        prtMarkerSuppliesColorantIndex
                                         Integer32,
47
        prtMarkerSuppliesClass
                                         PrtMarkerSuppliesClassTC,
48
        prtMarkerSuppliesType
                                         PrtMarkerSuppliesTypeTC,
49
        prtMarkerSuppliesDescription
                                         OCTET STRING,
50
        prtMarkerSuppliesSupplyUnit
                                        PrtMarkerSuppliesSupplyUnitTC,
51
        prtMarkerSuppliesMaxCapacity
                                         Integer32,
52
        prtMarkerSuppliesLevel
                                         Integer32
53
54
```

```
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 1
    prtMarkerSuppliesIndex OBJECT-TYPE
 2
                    Integer32 (1..65535)
        SYNTAX
 3
        MAX-ACCESS not-accessible
 4
                    current
        STATUS
 5
        DESCRIPTION
 6
             "A unique value used by the printer to identify this marker
             supply. Although these values may change due to a major
 7
 8
             reconfiguration of the device (e.g. the addition of new
 9
    marker
10
            supplies to the printer), values are expected to remain
11
    stable
12
             across successive power cycles."
13
         ::= { prtMarkerSuppliesEntry 1 }
14
15
    prtMarkerSuppliesMarkerIndex OBJECT-TYPE
16
        SYNTAX
                  Integer32 (0..65535)
17
        MAX-ACCESS read-only
18
                    current
        STATUS
19
        DESCRIPTION
20
             "The value of prtMarkerIndex corresponding to the marking sub
21
            unit with which this marker supply sub-unit is associated."
22
         ::= { prtMarkerSuppliesEntry 2 }
23
24
    prtMarkerSuppliesColorantIndex OBJECT-TYPE
25
        SYNTAX
                    Integer32 (0..65535)
26
        MAX-ACCESS read-only
27
        STATUS
                    current
28
        DESCRIPTION
29
             "The value of prtMarkerColorantIndex corresponding to the
30
             colorant with which this marker supply sub-unit is
31
    associated.
32
             This value shall be 0 if there is no colorant table or if
33
    this
34
             supply does not depend on a single specified colorant."
35
         ::= { prtMarkerSuppliesEntry 3 }
36
37
    prtMarkerSuppliesClass OBJECT-TYPE
38
            This value is a type 1 enumeration
        _ _
39
                    PrtMarkerSuppliesClassTC
        SYNTAX
40
        MAX-ACCESS read-only
41
        STATUS
                   current
42
        DESCRIPTION
43
             "Indicates whether this supply entity represents a supply
44
    that
45
             is consumed or a receptacle that is filled."
46
         ::= { prtMarkerSuppliesEntry 4 }
47
48
    prtMarkerSuppliesType OBJECT-TYPE
49
             This value is a type 3 enumeration
        _ _
50
        SYNTAX
                    PrtMarkerSuppliesTypeTC
51
        MAX-ACCESS read-only
52
        STATUS
                    current
53
        DESCRIPTION
54
             "The type of this supply."
```

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```
1
        ::= { prtMarkerSuppliesEntry 5 }
 2
 3
    prtMarkerSuppliesDescription OBJECT-TYPE
 4
        SYNTAX
                  OCTET STRING (SIZE(0..255))
 5
        MAX-ACCESS read-only
 6
        STATUS
                  current
 7
        DESCRIPTION
             "The description of this supply container/receptacle in the
 8
 9
            localization specified by prtGeneralCurrentLocalization."
10
        ::= { prtMarkerSuppliesEntry 6 }
11
12
    prtMarkerSuppliesSupplyUnit OBJECT-TYPE
13
        -- This value is a type 1 enumeration
14
        SYNTAX
                   PrtMarkerSuppliesSupplyUnitTC
15
        MAX-ACCESS read-only
                   current
16
        STATUS
17
        DESCRIPTION
             "Unit of measure of this marker supply container/receptacle."
18
19
        ::= { prtMarkerSuppliesEntry 7 }
20
21
    prtMarkerSuppliesMaxCapacity OBJECT-TYPE
22
        SYNTAX
                   Integer32
23
        MAX-ACCESS read-write
24
        STATUS
                  current
25
        DESCRIPTION
26
             "The maximum capacity of this supply container/receptacle
27
            expressed in prtMarkerSuppliesSupplyUnit. If this supply
28
            container/receptacle can reliably sense this value, the value
29
    is
30
            reported by the printer and is read-only; otherwise, the
31
    value
32
            may be written (by a Remote Control Panel or a Management
33
            Application). The value (-1) means other and specifically
34
            indicates that the sub-unit places no restrictions on this
35
            parameter. The value (-2) means unknown."
36
        ::= { prtMarkerSuppliesEntry 8 }
37
38
    prtMarkerSuppliesLevel OBJECT-TYPE
39
        SYNTAX Integer32
40
        MAX-ACCESS read-write
41
        STATUS
                  current
42
        DESCRIPTION
43
             "The current level if this supply is a container; remaining
44
            space if this supply is a receptacle. If this supply
45
            container/receptacle can reliably sense this value, the value
46
    is
47
            reported by the printer and is read-only; otherwise, the
48
    value
49
            may be written (by a Remote Control Panel or a Management
50
            Application). The value (-1) means other and specifically
51
            indicates that the sub-unit places no restrictions on this
52
            parameter. The value (-2) means unknown. A value of (-3)
53
    means
54
            that the printer knows that there is some supply/remaining
```

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```

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1 space, respectively." 2 ::= { prtMarkerSuppliesEntry 9 } 3 4 -- The Marker Colorant Group 5 _ _ 6 -- This group is optional. However, to claim conformance to this 7 -- group, it is necessary to implement every object in the group. 8 9 prtMarkerColorant OBJECT IDENTIFIER ::= { printmib 12 } 10 11 prtMarkerColorantTable OBJECT-TYPE 12 SEQUENCE OF PrtMarkerColorantEntry SYNTAX 13 MAX-ACCESS not-accessible 14 STATUS current 15 DESCRIPTION 16 "A table of all of the colorants available on the printer." 17 ::= { prtMarkerColorant 1 } 18 19 prtMarkerColorantEntry OBJECT-TYPE 20 SYNTAX PrtMarkerColorantEntry 21 MAX-ACCESS not-accessible 22 STATUS current 23 DESCRIPTION 24 "Attributes of a colorant available on the printer. Entries 25 may 26 exist in the table for each device index with a device type 27 of 28 'printer'." 29 INDEX { hrDeviceIndex, prtMarkerColorantIndex } ::= { prtMarkerColorantTable 1 } 30 31 32 PrtMarkerColorantEntry ::= SEQUENCE { prtMarkerColorantIndex Integer32, prtMarkerColorantMarkerIndex PrtMarkerC 33 prtMarkerColorantIndex Integer32, 34 35 PrtMarkerColorantRoleTC, prtMarkerColorantValue 36 OCTET STRING, 37 prtMarkerColorantTonality Integer32 38 39 40 prtMarkerColorantIndex OBJECT-TYPE 41 SYNTAX Integer32 (1..65535) 42 MAX-ACCESS not-accessible 43 STATUS current 44 DESCRIPTION 45 "A unique value used by the printer to identify this 46 colorant. 47 Although these values may change due to a major 48 reconfiguration 49 of the device (e.g. the addition of new colorants to the 50 printer)." 51 ::= { prtMarkerColorantEntry 1 } 52 53 prtMarkerColorantMarkerIndex OBJECT-TYPE 54 Integer32 (0..65535) SYNTAX Lewis, Gocek, Turner Expires 19 September 2001 [Page 93]

```
1
        MAX-ACCESS read-only
 2
        STATUS
                    current
 3
        DESCRIPTION
 4
             "The value of prtMarkerIndex corresponding to the marker sub
 5
             unit with which this colorant entry is associated."
 6
         ::= { prtMarkerColorantEntry 2 }
 7
 8
    prtMarkerColorantRole OBJECT-TYPE
 9
        -- This value is a type 1 enumeration
10
                   PrtMarkerColorantRoleTC
        SYNTAX
11
        MAX-ACCESS read-only
12
        STATUS
                   current
13
        DESCRIPTION
14
             "The role played by this colorant."
15
         ::= { prtMarkerColorantEntry 3 }
16
17
    prtMarkerColorantValue OBJECT-TYPE
18
        SYNTAX
                   OCTET STRING (SIZE(0..255))
19
        MAX-ACCESS read-only
20
                  current
        STATUS
21
        DESCRIPTION
22
             "The name of the color of this colorant using standardized
             string names from ISO 10175 (DPA) and ISO 10180 (SPDL) such
23
24
    as:
25
                 other
26
                 unknown
27
                 white
28
                 red
29
                 green
30
                 blue
31
                 cyan
32
                 magenta
33
                 yellow
34
                 black
35
             Implementers may add additional string values. The naming
36
             conventions in ISO 9070 are recommended in order to avoid
37
            potential name clashes"
38
        ::= { prtMarkerColorantEntry 4 }
39
40
    prtMarkerColorantTonality OBJECT-TYPE
41
        SYNTAX
                   Integer32
42
        MAX-ACCESS read-only
43
        STATUS
                    current
44
        DESCRIPTION
             "The distinct levels of tonality realizable by a marking sub
45
46
             unit when using this colorant. This value does not include
47
    the
48
             number of levels of tonal difference that an interpreter can
49
             obtain by techniques such as half toning. This value must be
50
    at
51
            least 2."
52
         ::= { prtMarkerColorantEntry 5 }
53
```

```
1
    -- The Media Path Group
 2
    _ _
 3
    -- The media paths encompass the mechanisms in the printer that
 4
    -- move the media through the printer and connect all other media
 5
    -- related sub-units: inputs, outputs, markers and finishers. A
 6
    -- printer contains one or more media paths. These are
 7
    -- represented by the Media Path Group in the model. The Media
 8
    -- Path group has some attributes that apply to all
    -- paths plus a table of the separate media paths.
 9
10
11
    prtMediaPath OBJECT IDENTIFIER ::= { printmib 13 }
12
13
    prtMediaPathTable OBJECT-TYPE
14
        SYNTAX
                    SEQUENCE OF PrtMediaPathEntry
15
        MAX-ACCESS not-accessible
16
        STATUS
                    current
17
        DESCRIPTION
18
             нп
19
        ::= { prtMediaPath 4 }
20
21
    prtMediaPathEntry OBJECT-TYPE
22
        SYNTAX PrtMediaPathEntry
23
        MAX-ACCESS not-accessible
24
        STATUS
                 current
25
        DESCRIPTION
26
             "Entries may exist in the table for each device index with a
27
            device type of 'printer'."
28
        INDEX { hrDeviceIndex, prtMediaPathIndex }
29
        ::= { prtMediaPathTable 1 }
30
31
    PrtMediaPathEntry ::= SEQUENCE {
32
        prtMediaPathIndex
                                         Integer32,
33
        prtMediaPathMaxSpeedPrintUnit
34
                               PrtMediaPathMaxSpeedPrintUnitTC,
35
        prtMediaPathMediaSizeUnit
                                         PrtMediaUnitTC,
36
        prtMediaPathMaxSpeed
                                         Integer32,
37
        prtMediaPathMaxMediaFeedDir
                                         Integer32,
38
        prtMediaPathMaxMediaXFeedDir
                                         Integer32,
39
        prtMediaPathMinMediaFeedDir
                                         Integer32,
40
        prtMediaPathMinMediaXFeedDir
                                         Integer32,
41
        prtMediaPathType
                                         PrtMediaPathTypeTC,
42
        prtMediaPathDescription
                                         OCTET STRING,
43
        prtMediaPathStatus
                                         PrtSubUnitStatusTC
44
45
46
    prtMediaPathIndex OBJECT-TYPE
47
                   Integer32 (1..65535)
        SYNTAX
48
        MAX-ACCESS not-accessible
49
        STATUS
                   current
        DESCRIPTION
50
51
             "A unique value used by the printer to identify this media
52
    path.
53
            Although these values may change due to a major
54
    reconfiguration
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                                                                 [Page 95]
```

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```
1
            of the device (e.q. the addition of new media paths to the
 2
            printer), values are expected to remain stable across
 3
    successive
 4
            printer power cycles."
 5
        ::= { prtMediaPathEntry 1 }
 6
 7
    prtMediaPathMaxSpeedPrintUnit OBJECT-TYPE
 8
        -- This value is a type 1 enumeration
 9
        SYNTAX PrtMediaPathMaxSpeedPrintUnitTC
10
        MAX-ACCESS read-only
11
        STATUS
                   current
12
        DESCRIPTION
13
             "The unit of measure used in specifying the speed of all
14
    media
15
            paths in the printer."
16
        ::= { prtMediaPathEntry 2 }
17
18
    prtMediaPathMediaSizeUnit OBJECT-TYPE
19
        SYNTAX PrtMediaUnitTC
20
        MAX-ACCESS read-only
21
        STATUS
                 current
22
        DESCRIPTION
23
             "The units of measure of media size for use in calculating
24
    and
25
            relaying dimensional values for all media paths in the
26
    printer."
27
        ::= { prtMediaPathEntry 3 }
28
29
    prtMediaPathMaxSpeed OBJECT-TYPE
30
        SYNTAX Integer32
31
        MAX-ACCESS read-only
32
                   current
        STATUS
33
        DESCRIPTION
34
             "The maximum printing speed of this media path expressed in
35
            prtMediaPathMaxSpeedUnit's. A value of (-1) implies
36
    'other'."
37
        ::= { prtMediaPathEntry 4 }
38
39
    prtMediaPathMaxMediaFeedDir OBJECT-TYPE
40
        SYNTAX Integer32
41
        MAX-ACCESS read-only
42
                   current
        STATUS
43
        DESCRIPTION
44
             "The maximum physical media size in the feed direction of
45
    this
46
            media path expressed in units of measure specified by
47
            PrtMediaPathMediaSizeUnit. A value of (-1) implies
48
    'unlimited'
49
            a value of (-2) implies 'unknown'"
50
        ::= { prtMediaPathEntry 5 }
51
52
    prtMediaPathMaxMediaXFeedDir OBJECT-TYPE
53
        SYNTAX Integer32
54
        MAX-ACCESS read-only
```

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```
1
        STATUS
                   current
 2
        DESCRIPTION
 3
             "The maximum physical media size across the feed direction of
 4
            this media path expressed in units of measure specified by
 5
            prtMediaPathMediaSizeUnit. A value of (-2) implies
 6
    'unknown'."
 7
        ::= { prtMediaPathEntry 6 }
 8
 9
    prtMediaPathMinMediaFeedDir OBJECT-TYPE
10
        SYNTAX Integer32
11
        MAX-ACCESS read-only
12
                   current
        STATUS
13
        DESCRIPTION
14
             "The minimum physical media size in the feed direction of
15
    this
16
            media path expressed in units of measure specified by
17
            prtMediaPathMediaSizeUnit. A value of (-2) implies
18
    'unknown'."
19
        ::= { prtMediaPathEntry 7 }
20
21
    prtMediaPathMinMediaXFeedDir OBJECT-TYPE
22
        SYNTAX
                   Integer32
23
        MAX-ACCESS read-only
24
        STATUS
                 current
25
        DESCRIPTION
26
             "The minimum physical media size across the feed direction of
27
            this media path expressed in units of measure specified by
28
            prtMediaPathMediaSizeUnit. A value of (-2) implies
29
     'unknown'."
30
        ::= { prtMediaPathEntry 8 }
31
32
    prtMediaPathType OBJECT-TYPE
33
             This value is a type 2 enumeration
        _ _
34
                  PrtMediaPathTypeTC
        SYNTAX
35
        MAX-ACCESS read-only
36
        STATUS
                   current
37
        DESCRIPTION
38
             "The type of the media path for this media path."
        ::= { prtMediaPathEntry 9 }
39
40
41
    prtMediaPathDescription OBJECT-TYPE
42
        SYNTAX OCTET STRING (SIZE(0..255))
43
        MAX-ACCESS read-only
44
                  current
        STATUS
45
        DESCRIPTION
46
             "The manufacturer-provided description of this media path in
47
    the
48
            localization specified by prtGeneralCurrentLocalization."
49
        ::= { prtMediaPathEntry 10 }
50
51
    prtMediaPathStatus OBJECT-TYPE
52
                  PrtSubUnitStatusTC
        SYNTAX
53
        MAX-ACCESS read-only
54
        STATUS
                current
```

1 DESCRIPTION 2 "The current status of this media path." 3 ::= { prtMediaPathEntry 11 } 4 5 -- The Print Job Delivery Channel Group 6 _ _ 7 -- Implementation of every object in this group is mandatory. 8 _ _ 9 -- Print Job Delivery Channels are independent sources of print 10 -- data. Here, print data is the term used for the information 11 -- that is used to construct printed pages and may have both data 12 -- and control aspects. The output of a channel is in a form 13 -- suitable for input to one of the interpreters as a 14 -- stream. A channel may be independently enabled (allowing 15 -- print data to flow) or disabled (stopping the flow of 16 -- print data). A printer may have one or more channels. 17 18 -- The Print Job Delivery Channel table describes the 19 -- capabilities of the printer and not what is currently being 20 -- performed by the printer 21 22 -- Basically, the print job delivery channel abstraction 23 -- describes the final processing step of getting the print data 24 -- to an interpreter. It might include some level of -- decompression or decoding of print stream data. 25 26 -- channel. All of these aspects are hidden in the channel 27 -- abstraction. 28 _ _ 29 -- There are many kinds of print job delivery channels; some of 30 -- which are based on networks and others which are not. For 31 -- example, a channel can be a serial (or parallel) connection; 32 -- it can be a service, such as the UNIX Line Printer Daemon 33 -- (LPD), offering services over a network connection; or -- it could be a disk drive into which a floppy disk with 34 35 -- the print data is inserted. Each print job delivery channel is 36 -- identified by the electronic path and/or service protocol 37 -- used to deliver print data to a print data interpreter. 38 _ _ 39 -- Channel example Implementation 40 _ _ 41 -- serial port channel bi-directional data channel 42 -- parallel port channel often uni-directional channel -- IEEE 1284 port channel bi-directional channel 43 44 -- SCSI port channel bi-directional 45 -- Apple PAP channel may be based on LocalTalk, -- Netware Print Server Channel SPX/IPX based channel SPX/IPX based channel 46 47 48 49 50 51 -- It is easy to note that this is a mixed bag. There are 52 -- some physical connections over which no (or very meager) 53 -- protocols are run (e.g. the serial or old parallel ports) 54 -- and there are services which often have elaborate

1 -- protocols that run over a number of protocol stacks. In 2 -- the end, what is important is the delivery of print data 3 -- through the channel. 4 _ _ 5 -- The print job delivery channel sub-units are represented by -- the Print Job Delivery Channel Group in the Model. It has a 6 7 -- current print job control language, which can be used to 8 -- specify which interpreter is to be used for the print data and 9 -- to query and change environment variables used by the 10 -- interpreters (and Management Applications). There is also a 11 -- default interpreter that is to be used if an interpreter is 12 -- not explicitly specified using the Control Language. 13 14 -- The first seven items in the Print Job Delivery Channel Table 15 -- define the "channel" itself. A channel typically depends on 16 -- other protocols and interfaces to provide the data that flows 17 -- through the channel. 18 _ _ 19 -- Control of a print job delivery channel is largely limited to 20 -- enabling or disabling the entire channel itself. It is likely 21 -- that more control of the process of accessing print data 22 -- will be needed over time. Thus, the ChannelType will 23 -- allow type-specific data to be associated with each 24 -- channel (using ChannelType specific groups in a fashion 25 -- analogous to the media specific MIBs that are associated 26 -- with the IANAIfType in the Interfaces Table). As a first 27 -- step in this direction, each channel will identify the 28 -- underlying Interface on which it is based. This is the 29 -- eighth object in each row of the table. 30 31 -- The Print Job Delivery Channel Table 32 _ _ 33 -- The prtChannelTable represents the set of input data sources 34 -- which can provide print data to one or more of the 35 -- interpreters available on a printer 36 37 prtChannel OBJECT IDENTIFIER ::= { printmib 14 } 38 39 prtChannelTable OBJECT-TYPE 40 SYNTAX SEQUENCE OF PrtChannelEntry 41 MAX-ACCESS not-accessible 42 STATUS current 43 DESCRIPTION 44 45 ::= { prtChannel 1 } 46 47 prtChannelEntry OBJECT-TYPE 48 SYNTAX PrtChannelEntry 49 MAX-ACCESS not-accessible 50 STATUS current 51 DESCRIPTION 52 "Entries may exist in the table for each device index with a 53 device type of 'printer'." 54 INDEX { hrDeviceIndex, prtChannelIndex }

```
INTERNET DRAFT
```

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```
1
        ::= { prtChannelTable 1 }
 2
 3
    PrtChannelEntry ::= SEQUENCE {
 4
        prtChannelIndex
                                             Integer32,
 5
        prtChannelType
                                             PrtChannelTypeTC,
 6
        prtChannelProtocolVersion
                                             OCTET STRING,
 7
        prtChannelCurrentJobCntlLangIndex
                                             Integer32,
 8
        prtChannelDefaultPageDescLangIndex Integer32,
                                             PrtChannelStateTC,
 9
        prtChannelState
10
        prtChannelIfIndex
                                             Integer32,
11
        prtChannelStatus
                                             PrtSubUnitStatusTC,
12
        prtChannelInformation
                                             OCTET STRING
13
14
15
    prtChannelIndex OBJECT-TYPE
16
        SYNTAX Integer32 (1..65535)
17
        MAX-ACCESS not-accessible
18
        STATUS
                   current
19
        DESCRIPTION
20
             "A unique value used by the printer to identify this data
21
            channel. Although these values may change due to a major
22
            reconfiguration of the device (e.g. the addition of new data
23
            channels to the printer), values are expected to remain
24
    stable
25
            across successive printer power cycles."
26
        ::= { prtChannelEntry 1 }
27
28
    prtChannelType OBJECT-TYPE
29
                   PrtChannelTypeTC
        SYNTAX
30
        MAX-ACCESS read-only
31
                  current
        STATUS
32
        DESCRIPTION
33
             "The type of this print data channel. This object provides
34
    the
35
            linkage to ChannelType-specific groups that may
36
    (conceptually)
37
            extend the prtChannelTable with additional details about that
38
            channel."
39
        ::= { prtChannelEntry 2 }
40
41
    prtChannelProtocolVersion OBJECT-TYPE
42
        SYNTAX OCTET STRING (SIZE(0..63))
43
        MAX-ACCESS read-only
44
        STATUS
                  current
45
        DESCRIPTION
46
             "The version of the protocol used on this channel.
                                                                  The
47
    format
48
            used for version numbering depends on prtChannelType."
49
        ::= { prtChannelEntry 3 }
50
51
    prtChannelCurrentJobCntlLangIndex OBJECT-TYPE
52
                   Integer32
        SYNTAX
        MAX-ACCESS read-write
53
54
        STATUS
                current
```

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1 DESCRIPTION 2 "The value of prtInterpreterIndex corresponding to the 3 Control 4 Language Interpreter for this channel. This interpreter 5 defines 6 the syntax used for control functions, such as querying or 7 changing environment variables and identifying job boundaries 8 (e.g. PJL, PostScript, NPAP). A value of zero indicates that 9 there is no current Job Control Language Interpreter for this 10 channel" 11 ::= { prtChannelEntry 4 } 12 13 prtChannelDefaultPageDescLangIndex OBJECT-TYPE 14 SYNTAX Integer32 15 MAX-ACCESS read-write 16 STATUS current 17 DESCRIPTION 18 "The value of prtInterpreterIndex corresponding to the Page 19 Description Language Interpreter for this channel. This interpreter defines the default Page Description Language 20 21 interpreter to be used for the print data unless the Control 22 Language is used to select a specific interpreter (e.g., PCL, 23 PostScript Language, auto-sense). A value of zero indicates 24 that 25 there is no default page description language interpreter for 26 this channel." 27 ::= { prtChannelEntry 5 } 28 29 prtChannelState OBJECT-TYPE 30 -- This value is a type 1 enumeration 31 SYNTAX PrtChannelStateTC 32 MAX-ACCESS read-write 33 STATUS current 34 DESCRIPTION 35 "The state of this print data channel. The value determines 36 whether control information and print data is allowed through 37 this channel or not." 38 ::= { prtChannelEntry 6 } 39 40 prtChannelIfIndex OBJECT-TYPE 41 SYNTAX Integer32 42 MAX-ACCESS read-write 43 current STATUS 44 DESCRIPTION 45 "The value of ifIndex in the ifTable; see the interface 46 section 47 of MIB-II (RFC 1213 [14]) which corresponds to this channel. 48 When more than one row of the ifTable is relevant, this is 49 the 50 index of the row representing the topmost layer in the 51 interface 52 hierarchy. A value of zero indicates that no interface is 53 associated with this channel." ::= { prtChannelEntry 7 } 54

1

2 prtChannelStatus OBJECT-TYPE 3 SYNTAX PrtSubUnitStatusTC 4 MAX-ACCESS read-only 5 STATUS current 6 DESCRIPTION 7 "The current status of the channel." 8 ::= { prtChannelEntry 8 } 9 10 prtChannelInformation OBJECT-TYPE 11 SYNTAX OCTET STRING (SIZE (0..255)) 12 MAX-ACCESS read-only 13 STATUS current 14 DESCRIPTION 15 "Auxiliary information to allow a printing application to use 16 the channel for data submission to the printer. An 17 application 18 capable of using a specific PrtChannelType should be able to 19 use 20 the combined information from the prtChannelInformation and 21 other channel and interface group objects to 'bootstrap' its 22 use 23 of the channel. prtChannelInformation is not intended to 24 provide a general channel description, nor to provide 25 information that is available once the channel is in use. 26 27 The encoding and interpretation of the prtChannelInformation 28 object is specific to channel type. The description of each 29 PrtChannelType enum value for which prtChannelInformation is 30 defined specifies the appropriate encoding and 31 interpretation, 32 including interaction with other objects. For channel types 33 that do not specify a prtChannelInformation value, its value 34 shall be null (0 length). 35 36 When a new PrtChannelType enumeration value is registered, 37 its 38 accompanying description must specify the encoding and 39 interpretation of the prtChannelInformation value for the 40 channel type. prtChannelInformation semantics for an 41 existing 42 PrtChannelType may be added or amended in the same manner as 43 described in section 2.4.1 for type 2 enumeration values. 44 45 The prtChannelInformation specifies values for a collection 46 of 47 channel attributes, represented as text according to the following rules: 48 49 50 1. The prtChannelInformation is not affected by localization. 51 52 2. The prtChannelInformation is a list of entries 53 representing 54 the attribute values. Each entry consists of the following Lewis, Gocek, Turner Expires 19 September 2001 [Page 102]

1 items, in order: 2 3 a. A keyword, composed of alphabetic characters (A-Z, a-Z) 4 represented by their NVT ASCII [10] codes, that 5 identifies a channel attribute, 6 7 b. The NVT ASCII code for an Equals Sign (=) (code 61) to 8 delimit the keyword, 9 10 c. A data value encoded using rules specific to the 11 PrtChannelType to with the prtChannelInformation applies 12 which 13 must in no case allow an octet with value 10 (the NVT ASCII 14 Line 15 Feed code), 16 17 d. the NVT ASCII code for a Line Feed character (code 10) to 18 delimit the data value. 19 20 No other octets shall be present. 21 22 Keywords are case-sensitive. Conventionally, keywords are 23 capitalized (including each word of a multi-word keyword) and 24 since they occupy space in the prtChannelInformation, they 25 are 26 kept short. 27 28 3. If a channel attribute has multiple values, it is 29 represented 30 by multiple entries with the same keyword, each specifying 31 one 32 value. Otherwise, there shall be at most one entry for each 33 attribute. 34 35 4. By default, entries may appear in any order. If there are 36 ordering constraints for particular entries, these must be 37 specified in their definitions. 38 39 5. The prtChannelInformation value by default consists of 40 text 41 represented by NVT ASCII graphics character codes. However, 42 other representations may be specified: 43 44 a. In cases where the prtChannelInformation value contains 45 information not normally coded in textual form, whatever 46 symbolic representation is conventionally used for the 47 information should be used for encoding the 48 prtChannelInformation value. (For instance, a binary port 49 value 50 might be represented as a decimal number using NVT ASCII 51 codes.) 52 Such encoding must be specified in the definition of the 53 value. 54

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19 March 2001

1		b. The value 1	may contain textual information in a character		
$\begin{smallmatrix} 2 & 3 \\ 4 & 5 \\ 6 & 7 \\ 8 & 9 \\ 0 & 1 & 1 \\ 1 & 2 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 &$	set	other than NVT ASCII graphics characters. (For instance, an identifier might consist of ISO 10646 text encoded using the UTF-8 encoding scheme.) Such a character set and its encoding must be specified in the definition of the value.			
		6. For each PrtChannelType for which prtChannelInformation entries are defined, the descriptive text associated with the PrtChannelType enumeration value shall specify the following information for each entry:			
		Title:	Brief description phrase, e.g.: 'Port name', 'Service Name', etc.		
		Keyword:	The keyword value, e.g.: 'Port' or 'Service'		
		Syntax:	The encoding of the entry value if it cannot be directly represented by NVT ASCII.		
		Status:	'Mandatory', 'Optional', or 'Conditionally Mandatory'		
		Multiplicity:	'Single' or 'Multiple' to indicate whether the entry may be present multiple times.		
		Description:	Description of the use of the entry, other information required to complete the definition (e.g.: ordering constraints, interactions		
	between		entries).		
	ignore	Applications	that interpret prtChannelInformation should		
		unrecognized entries, so they are not affected if new entry types are added."			
	::= { prtChannelEntry 9 }				
39 40	The Interpreter Group				
41 42 43 44 45 46 47 48 49 50 51 52 53	 The interpreter sub-units are responsible for the conversion of a description of intended print instances into images that are to be marked on the media. A printer may have one or more interpreters. The interpreter sub-units are represented by the Interpreter Group in the Model. Each interpreter is generally implemented with software running on the System Controller sub-unit. The Interpreter Table has one entry per interpreter where the interpreters include both Page Description Language (PDL) Interpreters and Control Language Interpreters.				
	Implementation of every object in this group is mandatory.				
54	<pre>prtInterpreter OBJECT IDENTIFIER ::= { printmib 15 }</pre>				
	Lewis,	Gocek, Turner	Expires 19 September 2001 [Page 104]		

1 2 Interpreter Table _ _ 3 _ _ 4 -- The prtInterpreterTable is a table representing the 5 -- interpreters in the printer. An entry shall be placed in the 6 -- interpreter table for each interpreter on the printer. 7 8 prtInterpreterTable OBJECT-TYPE 9 SYNTAX SEQUENCE OF PrtInterpreterEntry 10 MAX-ACCESS not-accessible 11 STATUS current 12 DESCRIPTION 13 нп 14 ::= { prtInterpreter 1 } 15 16 prtInterpreterEntry OBJECT-TYPE 17 SYNTAX PrtInterpreterEntry 18 MAX-ACCESS not-accessible 19 STATUS current 20 DESCRIPTION 21 "Entries may exist in the table for each device index with a 22 device type of 'printer'." 23 INDEX { hrDeviceIndex, prtInterpreterIndex } 24 ::= { prtInterpreterTable 1 } 25 26 PrtInterpreterEntry ::= SEQUENCE { 27 prtInterpreterIndex Integer32, 28 prtInterpreterLangFamily PrtInterpreterLangFamilyTC, 29 OCTET STRING, prtInterpreterLangLevel 30 OCTET STRING, prtInterpreterLangVersion 31 prtInterpreterDescription OCTET STRING, 32 prtInterpreterVersion OCTET STRING, 33 prtInterpreterDefaultOrientation PrtPrintOrientationTC, 34 prtInterpreterFeedAddressability Integer32, prtInterpreterXFeedAddressability 35 Integer32, 36 prtInterpreterDefaultCharSetIn CodedCharSet, 37 prtInterpreterDefaultCharSetOut CodedCharSet, 38 prtInterpreterTwoWay PrtInterpreterTwoWayTC 39 40 41 prtInterpreterIndex OBJECT-TYPE 42 SYNTAX Integer32 (1..65535) 43 MAX-ACCESS not-accessible 44 STATUS current 45 DESCRIPTION 46 "A unique value for each PDL or control language for which 47 there 48 exists an interpreter or emulator in the printer. The value 49 is 50 used to identify this interpreter. Although these values may 51 change due to a major reconfiguration of the device (e.g. the 52 addition of new interpreters to the printer), values are 53 expected to remain stable across successive printer power 54 cycles."

```
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```

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```
1
        ::= { prtInterpreterEntry 1 }
 2
 3
    prtInterpreterLangFamily OBJECT-TYPE
 4
        -- This value is a type 2 enumeration
 5
        SYNTAX
                    PrtInterpreterLangFamilyTC
 6
        MAX-ACCESS read-only
 7
        STATUS
                   current
 8
        DESCRIPTION
 9
             "The family name of a Page Description Language (PDL) or
10
    control
11
            language which this interpreter in the printer can interpret
12
    or
13
            emulate."
14
        ::= { prtInterpreterEntry 2 }
15
16
    prtInterpreterLangLevel OBJECT-TYPE
17
        SYNTAX
                  OCTET STRING (SIZE(0..31))
18
        MAX-ACCESS read-only
19
        STATUS
                   current
20
        DESCRIPTION
21
             "The level of the language which this interpreter is
22
             interpreting or emulating. This might contain a value like
23
    '5e'
24
            for an interpreter which is emulating level 5e of the PCL
25
            language. It might contain '2' for an interpreter which is
26
            emulating level 2 of the PostScript language. Similarly it
27
    might
28
            contain '2' for an interpreter which is emulating level 2 of
29
    the
30
            HPGL language."
31
        ::= { prtInterpreterEntry 3 }
32
33
    prtInterpreterLangVersion OBJECT-TYPE
34
        SYNTAX OCTET STRING (SIZE(0..31))
35
        MAX-ACCESS read-only
36
        STATUS
                   current
37
        DESCRIPTION
38
             "The date code or version of the language which this
39
    interpreter
40
             is interpreting or emulating."
41
        ::= { prtInterpreterEntry 4 }
42
43
    prtInterpreterDescription OBJECT-TYPE
44
        SYNTAX
                 OCTET STRING (SIZE(0..255))
        MAX-ACCESS read-only
45
46
        STATUS
                   current
47
        DESCRIPTION
             "A string to identify this interpreter in the localization
48
49
            specified by prtGeneralCurrentLocalization as opposed to the
            language which is being interpreted. It is anticipated that
50
51
            this string will allow manufacturers to unambiguously
52
    identify
53
            their interpreters."
54
        ::= { prtInterpreterEntry 5 }
```

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```
1
 2
    prtInterpreterVersion OBJECT-TYPE
 3
                   OCTET STRING (SIZE(0..31))
        SYNTAX
 4
        MAX-ACCESS read-only
 5
                   current
        STATUS
 б
        DESCRIPTION
 7
             "The date code, version number, or other product specific
 8
            information tied to this interpreter.
                                                    This value is
 9
    associated
10
            with the interpreter, rather than with the version of the
11
            language which is being interpreted or emulated."
12
        ::= { prtInterpreterEntry 6 }
13
14
    prtInterpreterDefaultOrientation OBJECT-TYPE
15
        -- This value is a type 1 enumeration
16
        SYNTAX
                   PrtPrintOrientationTC
17
        MAX-ACCESS read-write
18
        STATUS
                   current
19
        DESCRIPTION
20
             "The current orientation default for this interpreter. This
21
            value may be overridden for a particular job (e.g., by a
22
    command
23
            in the input data stream)."
24
        ::= { prtInterpreterEntry 7 }
25
26
    prtInterpreterFeedAddressability OBJECT-TYPE
27
        SYNTAX Integer32
28
        MAX-ACCESS read-only
29
        STATUS
                   current
30
        DESCRIPTION
31
             "The maximum interpreter addressability in the feed
32
            direction in 10000 prtMarkerAddressabilityUnits (see
            prtMarkerAddressabilityFeedDir ) for this interpreter. The
33
34
    value
35
            (-1) means other and specifically indicates that the sub-unit
36
            places no restrictions on this parameter."
37
        ::= { prtInterpreterEntry 8 }
38
39
    prtInterpreterXFeedAddressability OBJECT-TYPE
40
        SYNTAX Integer32
41
        MAX-ACCESS read-only
42
                   current
        STATUS
43
        DESCRIPTION
44
             "The maximum interpreter addressability in the cross feed
45
            direction in 10000 prtMarkerAddressabilityUnits (see
            prtMarkerAddressabilityXFeedDir) for this interpreter. The
46
47
    value
48
            (-1) means other and specifically indicates that the sub-unit
49
            places no restrictions on this parameter."
        ::= { prtInterpreterEntry 9 }
50
51
52
    prtInterpreterDefaultCharSetIn OBJECT-TYPE
53
        SYNTAX CodedCharSet
        MAX-ACCESS read-write
54
```

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1 STATUS current 2 DESCRIPTION 3 "The default coded character set for input octets encountered 4 outside a context in which the Page Description Language 5 established the interpretation of the octets. (Input octets 6 are 7 presented to the interpreter through a path defined in the 8 channel group.) This value shall be (2) if there is no 9 default." 10 ::= { prtInterpreterEntry 10 } 11 12 prtInterpreterDefaultCharSetOut OBJECT-TYPE 13 CodedCharSet SYNTAX 14 MAX-ACCESS read-write 15 STATUS current 16 DESCRIPTION 17 "The default character set for data coming from this 18 interpreter 19 through the printer's output channel (i.e. the 20 'backchannel'). 21 This value shall be (2) if there is no default." 22 ::= { prtInterpreterEntry 11 } 23 24 prtInterpreterTwoWay OBJECT-TYPE 25 -- This value is a type 1 enumeration 26 SYNTAX PrtInterpreterTwoWayTC 27 MAX-ACCESS read-only 28 current STATUS 29 DESCRIPTION 30 "Indicates whether or not this interpreter returns 31 information 32 back to the host." 33 ::= { prtInterpreterEntry 12 } 34 35 -- The Console Group 36 _ _ 37 -- Many printers have a console on the printer, the operator -- console, that is used to display and modify the state of the 38 39 -- printer. The console can be as simple as a few indicators and 40 -- switches or as complicated as full screen displays and 41 -- keyboards. There can be at most one such console. 42 43 -- Implementation of every object in this group is mandatory. 44 45 -- The Display Buffer Table 46 47 prtConsoleDisplayBuffer OBJECT IDENTIFIER ::= { printmib 16 } 48 49 prtConsoleDisplayBufferTable OBJECT-TYPE 50 SEQUENCE OF PrtConsoleDisplayBufferEntry SYNTAX 51 MAX-ACCESS not-accessible 52 STATUS current 53 DESCRIPTION 54 "Physical display buffer for printer console display or

```
INTERNET DRAFT
```

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```
1
            operator panel"
 2
         ::= { prtConsoleDisplayBuffer 5 }
 3
 4
    prtConsoleDisplayBufferEntry OBJECT-TYPE
 5
        SYNTAX
                   PrtConsoleDisplayBufferEntry
 6
        MAX-ACCESS not-accessible
 7
        STATUS
                   current
 8
        DESCRIPTION
 9
             "This table contains one entry for each physical line on
10
            the display. Lines cannot be added or deleted. Entries may
11
            exist in the table for each device index with a device type
12
    of
13
             'printer'."
14
        INDEX { hrDeviceIndex, prtConsoleDisplayBufferIndex }
15
        ::= { prtConsoleDisplayBufferTable 1 }
16
17
    PrtConsoleDisplayBufferEntry ::= SEQUENCE {
18
        prtConsoleDisplayBufferIndex
                                         Integer32,
19
        prtConsoleDisplayBufferText
                                         OCTET STRING
20
21
22
    prtConsoleDisplayBufferIndex OBJECT-TYPE
23
                   Integer32 (1..65535)
        SYNTAX
24
        MAX-ACCESS not-accessible
25
        STATUS
                   current
26
        DESCRIPTION
27
             "A unique value for each console line in the printer. The
28
    value
29
            is used to identify this console line. Although these values
30
    may
31
            change due to a major reconfiguration of the device (e.g. the
32
            addition of new console lines to the printer). Values are
33
            normally expected to remain stable across successive printer
34
            power cycles."
35
        ::= { prtConsoleDisplayBufferEntry 1 }
36
37
    prtConsoleDisplayBufferText OBJECT-TYPE
38
                OCTET STRING (SIZE(0..255))
        SYNTAX
39
        MAX-ACCESS read-write
40
                   current
        STATUS
41
        DESCRIPTION
42
             "The content of a line in the logical display buffer of
43
            the operator's console of the printer. When a write
44
            operation occurs, normally a critical message, to one of
45
            the LineText strings, the agent should make that line
46
            displayable if a physical display is present. Writing a zero
47
            length string clears the line. It is an implementation-
48
    specific
49
            matter as to whether the agent allows a line to be
50
    overwritten
51
            before it has been cleared. Printer generated strings shall
52
    be
53
            in the localization specified by prtConsoleLocalization.
54
            Management Application generated strings should be localized
```

```
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```

[Page 110]

```
1
    by
 2
            the Management Application."
 3
        ::= { prtConsoleDisplayBufferEntry 2 }
 4
 5
    -- The Console Light Table
 6
 7
    prtConsoleLights OBJECT IDENTIFIER ::= { printmib 17 }
 8
 9
    prtConsoleLightTable OBJECT-TYPE
10
        SYNTAX SEQUENCE OF PrtConsoleLightEntry
11
        MAX-ACCESS not-accessible
12
        STATUS
                   current
13
        DESCRIPTION
14
            нп
15
        ::= { prtConsoleLights 6 }
16
17
    prtConsoleLightEntry OBJECT-TYPE
18
        SYNTAX PrtConsoleLightEntry
19
        MAX-ACCESS not-accessible
20
        STATUS current
21
        DESCRIPTION
22
             "Entries may exist in the table for each device index with a
23
            device type of 'printer'."
24
        INDEX { hrDeviceIndex, prtConsoleLightIndex }
25
        ::= { prtConsoleLightTable 1 }
26
27
    PrtConsoleLightEntry ::= SEQUENCE {
        prtConsoleLightIndex
28
                                         Integer32,
29
        prtConsoleOnTime
                                         Integer32,
30
        prtConsoleOffTime
                                         Integer32,
31
        prtConsoleColor
                                         PrtConsoleColorTC,
32
        prtConsoleDescription
                                         OCTET STRING
33
34
35
    prtConsoleLightIndex OBJECT-TYPE
36
        SYNTAX Integer32 (1..65535)
37
        MAX-ACCESS not-accessible
38
        STATUS
                   current
39
        DESCRIPTION
40
             "A unique value used by the printer to identify this light.
41
            Although these values may change due to a major
42
            reconfiguration of the device (e.g. the addition of new
43
    liqhts
44
            to the printer). Values are normally expected to remain
45
    stable
46
            across successive printer power cycles."
47
        ::= { prtConsoleLightEntry 1 }
48
49
    prtConsoleOnTime OBJECT-TYPE
50
        SYNTAX Integer32
51
        MAX-ACCESS read-write
52
        STATUS
                   current
53
        DESCRIPTION
54
             "This object, in conjunction with prtConsoleOffTime, defines
```

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1 the 2 current status of the light. If both prtConsoleOnTime and 3 prtConsoleOffTime are non-zero, the lamp is blinking and the 4 values presented define the on time and off time, 5 respectively, 6 in milliseconds. If prtConsoleOnTime is zero and 7 prtConsoleOffTime is non-zero, the lamp is off. If 8 prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, 9 the 10 lamp is on. If both values are zero the lamp is off." 11 ::= { prtConsoleLightEntry 2 } 12 13 prtConsoleOffTime OBJECT-TYPE 14 SYNTAX Integer32 15 MAX-ACCESS read-write 16 STATUS current 17 DESCRIPTION 18 "This object, in conjunction with prtConsoleOnTime, defines 19 the 20 current status of the light. If both prtConsoleOnTime and 21 prtConsoleOffTime are non-zero, the lamp is blinking and the 22 values presented define the on time and off time, 23 respectively, 24 in milliseconds. If prtConsoleOnTime is zero and 25 prtConsoleOffTime is non-zero, the lamp is off. If 26 prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, 27 the 28 lamp is on. If both values are zero the lamp is off." 29 ::= { prtConsoleLightEntry 3 } 30 31 prtConsoleColor OBJECT-TYPE 32 -- This value is a type 2 enumeration 33 PrtConsoleColorTC SYNTAX 34 MAX-ACCESS read-only 35 current STATUS 36 DESCRIPTION 37 "The color of this light." 38 ::= { prtConsoleLightEntry 4 } 39 40 prtConsoleDescription OBJECT-TYPE 41 SYNTAX OCTET STRING (SIZE(0..255)) 42 MAX-ACCESS read-only 43 STATUS current 44 DESCRIPTION 45 "The vendor description or label of this light in the 46 localization specified by prtConsoleLocalization." 47 ::= { prtConsoleLightEntry 5 } 48 49 -- The Alerts Group 50 _ _ 51 -- The prtAlertTable lists all the critical and non-critical 52 -- alerts currently active in the printer. A critical alert is 53 -- one that stops the printer from printing immediately and 54 -- printing can not continue until the critical alert condition

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1 -- is eliminated. Non-critical alerts are those items that do 2 -- not stop printing but may at some future time. 3 -- The table contains information on the severity, component, 4 -- detail location within the component, alert code and 5 -- description of each critical alert that is currently active 6 -- within the printer. See 2.2.13 for a more complete 7 -- description of the alerts table and its management. 8 _ _ 9 -- Each parameter in the Trap PDU is a full OID which itself is 10 -- indexed by the host resources MIB "hrDeviceIndex" object. In 11 -- order for a management station to obtain the correct 12 -- "hrDeviceIndex" associated with a particular Trap PDU, the 13 -- "hrDeviceIndex" value can be extracted from the returned OID 14 -- value in the Trap PDU when the PDU is received by the 15 -- Management station. 16 _ _ 17 -- Implementation of every object in this group is mandatory. 18 19 prtAlert OBJECT IDENTIFIER ::= { printmib 18 } 20 21 prtAlertTable OBJECT-TYPE 22 SYNTAX SEQUENCE OF PrtAlertEntry 23 MAX-ACCESS not-accessible 24 current STATUS 25 DESCRIPTION 26 27 ::= { prtAlert 1 } 28 29 prtAlertEntry OBJECT-TYPE 30 SYNTAX PrtAlertEntry MAX-ACCESS not-accessible 31 32 STATUS current 33 DESCRIPTION 34 "Entries may exist in the table for each device 35 index with a device type of 'printer'." 36 INDEX { hrDeviceIndex, prtAlertIndex } 37 ::= { prtAlertTable 1 } 38 39 PrtAlertEntry ::= SEQUENCE { 40 prtAlertIndex Integer32, 41 prtAlertSeverityLevel PrtAlertSeverityLevelTC, 42 prtAlertTrainingLevel PrtAlertTrainingLevelTC, 43 prtAlertGroup PrtAlertGroupTC, 44 prtAlertGroupIndex Integer32, 45 prtAlertLocation Integer32, 46 prtAlertCode PrtAlertCodeTC, 47 prtAlertDescription OCTET STRING, 48 prtAlertTime TimeTicks 49 50 51 prtAlertIndex OBJECT-TYPE 52 Integer32 (1..65535) SYNTAX 53 MAX-ACCESS read-only 54 STATUS current Lewis, Gocek, Turner Expires 19 September 2001

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1 DESCRIPTION 2 "The index value used to determine which alerts have been 3 added 4 or removed from the alert table. This is an incrementing 5 integer 6 starting from zero every time the printer is reset. When the 7 printer adds an alert to the table, that alert is assigned 8 the 9 next higher integer value from the last item entered into the 10 table. If the index value reaches its maximum value, the 11 next 12 item entered will cause the index value to roll over and 13 start 14 at zero again. The first event placed in the alert table 15 after 16 a reset of the printer shall have an index value of 1. NOTE: 17 The management application will read the alert table when a 18 trap 19 or event notification occurs or at a periodic rate and then parse the table to determine if any new entries were added by 20 21 comparing the last known index value with the current highest 22 index value. The management application will then update its 23 copy of the alert table. When the printer discovers that an 24 alert is no longer active, the printer shall remove the row 25 for 26 that alert from the table and shall reduce the number of rows 27 in 28 the table. The printer may add or delete any number of rows 29 from the table at any time. The management station can 30 detect 31 when binary change alerts have been deleted by requesting an 32 attribute of each alert, and noting alerts as deleted when 33 that 34 retrieval is not possible." 35 ::= { prtAlertEntry 1 } 36 37 prtAlertSeverityLevel OBJECT-TYPE 38 -- This value is a type 1 enumeration 39 PrtAlertSeverityLevelTC SYNTAX 40 MAX-ACCESS read-only 41 STATUS current 42 DESCRIPTION 43 "The level of severity of this alert table entry. The 44 printer 45 determines the severity level assigned to each entry into the 46 table." 47 ::= { prtAlertEntry 2 } 48 49 prtAlertTrainingLevel OBJECT-TYPE 50 -- This value is a type 2 enumeration 51 SYNTAX PrtAlertTrainingLevelTC 52 MAX-ACCESS read-only 53 STATUS current 54 DESCRIPTION

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1 "See textual convention PrtAlertTrainingLevelTC" 2 ::= { prtAlertEntry 3 } 3 4 prtAlertGroup OBJECT-TYPE 5 -- This value is a type 1 enumeration 6 SYNTAX PrtAlertGroupTC 7 MAX-ACCESS read-only 8 STATUS current 9 DESCRIPTION 10 "The type of sub-unit within the printer model that this 11 alert 12 is related. Input, output, and markers are examples of 13 printer 14 model groups, i.e., examples of types of sub-units. Wherever 15 possible, these enumerations match the sub-identifier that 16 identifies the relevant table in the printmib." 17 ::= { prtAlertEntry 4 } 18 19 prtAlertGroupIndex OBJECT-TYPE 20 SYNTAX Integer32 21 MAX-ACCESS read-only 22 STATUS current 23 DESCRIPTION 24 "An index of the row within the principle table in the 25 group identified by prtAlertGroup that represents the sub-26 unit 27 of the printer that caused this alert. The combination of 28 the 29 prtAlertGroup and the prtAlertGroupIndex defines exactly 30 which 31 printer sub-unit caused the alert; for example, Input #3, 32 Output 33 #2, and Marker #1. Every object in this MIB is indexed with 34 hrDeviceIndex and optionally, another index variable. Ιf 35 this 36 other index variable is present in the table that generated 37 the 38 alert, it will be used as the value for this object. 39 Otherwise, 40 this value shall be -1." 41 ::= { prtAlertEntry 5 } 42 43 prtAlertLocation OBJECT-TYPE 44 SYNTAX Integer32 45 MAX-ACCESS read-only 46 STATUS current 47 DESCRIPTION 48 "The sub-unit location that is defined by the printer 49 manufacturer to further refine the location of this alert 50 within 51 the designated sub-unit. The location is used in conjunction 52 with the Group and GroupIndex values; for example, there is 53 an 54 alert in Input #2 at location number 7. The value (-2)

```
indicates
 1
 2
            unknown"
 3
        ::= { prtAlertEntry 6 }
 4
 5
    prtAlertCode OBJECT-TYPE
 6
        -- This value is a type 2 enumeration
 7
                   PrtAlertCodeTC
        SYNTAX
 8
        MAX-ACCESS read-only
                current
 9
        STATUS
10
        DESCRIPTION
11
             "See associated textual convention PrtAlertCodeTC"
12
        ::= { prtAlertEntry 7 }
13
14
    prtAlertDescription OBJECT-TYPE
15
        SYNTAX
                   OCTET STRING (SIZE(0..255))
16
        MAX-ACCESS read-only
17
        STATUS
                current
18
        DESCRIPTION
19
             "A description of this alert entry in the localization
20
            specified by prtGeneralCurrentLocalization. The description
21
    is
22
            provided by the printer to further elaborate on the
23
    enumerated
24
            alert or provide information in the case where the code is
25
            classified as 'other' or 'unknown'. The printer is required
26
    to
27
            return a description string but the string may be a null
28
            string."
29
        ::= { prtAlertEntry 8 }
30
31
    prtAlertTime OBJECT-TYPE
32
        SYNTAX TimeTicks
33
        MAX-ACCESS read-only
34
        STATUS
                current
35
        DESCRIPTION
36
             "The value of sysUpTime at the time that this alert was
37
            generated."
38
        ::= { prtAlertEntry 9 }
39
40
    printerV1Alert OBJECT-IDENTITY
41
        STATUS current
42
        DESCRIPTION
43
             "The value of the enterprise-specific OID in an SNMPv1 trap
44
    sent
45
            signaling a critical event in the prtAlertTable."
46
        ::= { prtAlert 2 }
47
48
    printerV2AlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 0 }
49
50
    printerV2Alert NOTIFICATION-TYPE
51
        OBJECTS { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
52
            prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
53
        STATUS current
54
        DESCRIPTION
```

```
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```

```
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```

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1 "This trap is sent whenever a critical event is added to the 2 prtAlertTable." 3 ::= { printerV2AlertPrefix 1 } 4 5 -- Note that the SNMPv2 to SNMPv1 translation rules dictate that -- the preceding structure will result in SNMPv1 traps of the 6 7 -- following form: 8 _ _ 9 -- printerAlert TRAP-TYPE 10 ENTERPRISE printerV1Alert _ _ 11 VARIABLES { prtAlertIndex, prtAlertSeverityLevel, _ _ 12 prtAlertGroup, prtAlertGroupIndex, _ _ 13 prtAlertLocation, prtAlertCode } _ _ 14 DESCRIPTION _ _ 15 _ _ "This trap is sent whenever a critical event is added 16 to the prtAlertTable." _ _ 17 _ _ ::= 1 18 19 -- Conformance Information 20 21 prtMIBConformance OBJECT IDENTIFIER ::= { printmib 2 } 22 23 -- compliance statements 24 25 prtMIBCompliance MODULE-COMPLIANCE 26 STATUS current 27 DESCRIPTION 28 "The compliance statement for agents that implement the 29 printer MIB." MODULE -- this module 30 31 MANDATORY-GROUPS { prtGeneralGroup, prtInputGroup, 32 prtOutputGroup, 33 prtMarkerGroup, prtMediaPathGroup, 34 prtChannelGroup, prtInterpreterGroup, 35 prtConsoleGroup, prtAlertTableGroup } 36 OBJECT prtGeneralReset 37 SYNTAX INTEGER { 38 notResetting(3), 39 resetToNVRAM(5) 40 41 DESCRIPTION 42 "It is conformant to implement just these two states in this 43 object. Any additional states are optional." 44 45 OBJECT prtGeneralCurrentLocalization 46 MIN-ACCESS read-only 47 DESCRIPTION 48 "It is conformant to implement this object as read-only" 49 prtGeneralCurrentOperator 50 OBJECT 51 MIN-ACCESS read-only 52 DESCRIPTION 53 "It is conformant to implement this object as read-only" 54

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1 OBJECT prtGeneralServicePerson 2 MIN-ACCESS read-only 3 DESCRIPTION 4 "It is conformant to implement this object as read-only" 5 6 prtAuxiliarySheetStartupPage OBJECT 7 MIN-ACCESS read-only 8 DESCRIPTION 9 "It is conformant to implement this object as read-only" 10 11 OBJECT prtAuxiliarySheetBannerPage 12 MIN-ACCESS read-only 13 DESCRIPTION 14 "It is conformant to implement this object as read-only" 15 16 OBJECT prtGeneralPrinterName 17 MIN-ACCESS read-only 18 DESCRIPTION 19 "It is conformant to implement this object as read-only" 20 21 OBJECT prtGeneralSerialNumber 22 MIN-ACCESS read-only 23 DESCRIPTION 24 "It is conformant to implement this object as read-only" 25 26 prtInputDefaultIndex OBJECT 27 MIN-ACCESS read-only 28 DESCRIPTION 29 "It is conformant to implement this object as read-only" 30 31 prtInputMediaDimFeedDirDeclared OBJECT 32 MIN-ACCESS read-only 33 DESCRIPTION 34 "It is conformant to implement this object as read-only" 35 36 OBJECT prtInputMaxCapacity 37 MIN-ACCESS read-only 38 DESCRIPTION 39 "It is conformant to implement this object as read-only" 40 41 prtInputCurrentLevel OBJECT 42 MIN-ACCESS read-only 43 DESCRIPTION 44 "It is conformant to implement this object as read-only" 45 46 OBJECT prtInputMediaName 47 MIN-ACCESS read-only 48 DESCRIPTION 49 "It is conformant to implement this object as read-only" 50 51 prtInputName OBJECT 52 MIN-ACCESS read-only 53 DESCRIPTION 54 "It is conformant to implement this object as read-only"

1 2 prtInputSecurity OBJECT 3 MIN-ACCESS read-only 4 DESCRIPTION 5 "It is conformant to implement this object as read-only" 6 7 prtInputMediaWeight OBJECT 8 MIN-ACCESS read-only 9 DESCRIPTION 10 "It is conformant to implement this object as read-only" 11 12 prtInputMediaType OBJECT 13 MIN-ACCESS read-only 14 DESCRIPTION 15 "It is conformant to implement this object as read-only" 16 17 prtInputMediaColor OBJECT 18 MIN-ACCESS read-only 19 DESCRIPTION "It is conformant to implement this object as read-only" 20 21 22 prtInputMediaFormParts OBJECT 23 MIN-ACCESS read-only 24 DESCRIPTION 25 "It is conformant to implement this object as read-only" 26 27 OBJECT prtInputMediaLoadTimeout 28 MIN-ACCESS read-only 29 DESCRIPTION 30 "It is conformant to implement this object as read-only" 31 32 prtInputNextIndex OBJECT 33 MIN-ACCESS read-only 34 DESCRIPTION 35 "It is conformant to implement this object as read-only" 36 37 prtOutputDefaultIndex OBJECT MIN-ACCESS read-only 38 39 DESCRIPTION 40 "It is conformant to implement this object as read-only" 41 42 prtOutputMaxCapacity OBJECT 43 MIN-ACCESS read-only 44 DESCRIPTION 45 "It is conformant to implement this object as read-only" 46 47 prtOutputRemainingCapacity OBJECT 48 MIN-ACCESS read-only 49 DESCRIPTION "It is conformant to implement this object as read-only" 50 51 52 prtOutputName OBJECT 53 MIN-ACCESS read-only 54 DESCRIPTION

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1 "It is conformant to implement this object as read-only" 2 3 prtOutputSecurity OBJECT 4 MIN-ACCESS read-only 5 DESCRIPTION 6 "It is conformant to implement this object as read-only" 7 8 OBJECT prtOutputMaxDimFeedDir 9 MIN-ACCESS read-only 10 DESCRIPTION 11 "It is conformant to implement this object as read-only" 12 13 prtOutputMaxDimXFeedDir OBJECT 14 MIN-ACCESS read-only 15 DESCRIPTION 16 "It is conformant to implement this object as read-only" 17 18 prtOutputMinDimFeedDir OBJECT 19 MIN-ACCESS read-only 20 DESCRIPTION 21 "It is conformant to implement this object as read-only" 22 23 prtOutputMinDimXFeedDir OBJECT MIN-ACCESS read-only 24 25 DESCRIPTION 26 "It is conformant to implement this object as read-only" 27 28 prtOutputStackingOrder OBJECT 29 MIN-ACCESS read-only 30 DESCRIPTION 31 "It is conformant to implement this object as read-only" 32 33 prtOutputPageDeliveryOrientation OBJECT 34 MIN-ACCESS read-only 35 DESCRIPTION 36 "It is conformant to implement this object as read-only" 37 38 prtOutputBursting OBJECT 39 MIN-ACCESS read-only 40 DESCRIPTION 41 "It is conformant to implement this object as read-only" 42 43 prtOutputDecollating OBJECT 44 MIN-ACCESS read-only 45 DESCRIPTION 46 "It is conformant to implement this object as read-only" 47 48 prtOutputPageCollated OBJECT 49 MIN-ACCESS read-only 50 DESCRIPTION 51 "It is conformant to implement this object as read-only" 52 53 OBJECT prtOutputOffsetStacking 54 MIN-ACCESS read-only

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1 DESCRIPTION 2 "It is conformant to implement this object as read-only" 3 4 prtMarkerDefaultIndex OBJECT 5 MIN-ACCESS read-only 6 DESCRIPTION 7 "It is conformant to implement this object as read-only" 8 9 prtMarkerSuppliesMaxCapacity OBJECT 10 MIN-ACCESS read-only 11 DESCRIPTION 12 "It is conformant to implement this object as read-only" 13 14 OBJECT prtMarkerSuppliesLevel 15 MIN-ACCESS read-only 16 DESCRIPTION 17 "It is conformant to implement this object as read-only" 18 19 prtMediaPathDefaultIndex OBJECT 20 MIN-ACCESS read-only 21 DESCRIPTION 22 "It is conformant to implement this object as read-only" 23 24 OBJECT prtChannelCurrentJobCntlLangIndex 25 MIN-ACCESS read-only 26 DESCRIPTION "It is conformant to implement this object as read-only" 27 28 29 prtChannelDefaultPageDescLangIndex OBJECT 30 MIN-ACCESS read-only 31 DESCRIPTION 32 "It is conformant to implement this object as read-only" 33 34 OBJECT prtChannelState 35 MIN-ACCESS read-only 36 DESCRIPTION 37 "It is conformant to implement this object as read-only" 38 39 prtChannelIfIndex OBJECT 40 MIN-ACCESS read-only 41 DESCRIPTION 42 "It is conformant to implement this object as read-only" 43 44 prtInterpreterDefaultOrientation OBJECT 45 MIN-ACCESS read-only 46 DESCRIPTION 47 "It is conformant to implement this object as read-only" 48 prtInterpreterDefaultCharSetIn 49 OBJECT 50 MIN-ACCESS read-only 51 DESCRIPTION 52 "It is conformant to implement this object as read-only" 53 54 prtInterpreterDefaultCharSetOut OBJECT

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1 MIN-ACCESS read-only 2 DESCRIPTION 3 "It is conformant to implement this object as read-only" 4 5 OBJECT prtConsoleLocalization б MIN-ACCESS read-only 7 DESCRIPTION 8 "It is conformant to implement this object as read-only" 9 10 OBJECT prtConsoleDisable 11 MIN-ACCESS read-only 12 DESCRIPTION "It is conformant to implement this object as read-only" 13 14 15 OBJECT prtConsoleDisplayBufferText 16 MIN-ACCESS read-only 17 DESCRIPTION 18 "It is conformant to implement this object as read-only" 19 20 OBJECT prtConsoleOnTime 21 MIN-ACCESS read-only 22 DESCRIPTION 23 "It is conformant to implement this object as read-only" 24 25 OBJECT prtConsoleOffTime 26 MIN-ACCESS read-only 27 DESCRIPTION 28 "It is conformant to implement this object as read-only" 29 30 GROUP prtResponsiblePartyGroup 31 DESCRIPTION 32 "This group is unconditionally optional." 33 34 prtExtendedInputGroup GROUP 35 DESCRIPTION 36 "This group is unconditionally optional." 37 38 GROUP prtInputMediaGroup 39 DESCRIPTION 40 "This group is unconditionally optional." 41 42 prtExtendedOutputGroup GROUP 43 DESCRIPTION 44 "This group is unconditionally optional." 45 46 prtOutputDimensionsGroup GROUP 47 DESCRIPTION "This group is unconditionally optional." 48 49 50 GROUP prtOutputFeaturesGroup 51 DESCRIPTION 52 "This group is unconditionally optional." 53 54 prtMarkerSuppliesGroup GROUP

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1 DESCRIPTION 2 "This group is unconditionally optional." 3 4 prtMarkerColorantGroup GROUP 5 DESCRIPTION "This group is unconditionally optional." 6 7 8 GROUP prtAuxiliarySheetGroup 9 DESCRIPTION "This group is unconditionally optional." 10 11 12 prtInputSwitchingGroup GROUP 13 DESCRIPTION 14 "This group is unconditionally optional." 15 16 ::= { prtMIBConformance 1 } 17 18 OBJECT IDENTIFIER ::= { prtMIBConformance 2 } prtMIBGroups 19 20 prtGeneralGroup OBJECT-GROUP 21 OBJECTS { prtGeneralConfigChanges, 22 prtGeneralCurrentLocalization, 23 prtGeneralReset, prtCoverDescription, 24 prtCoverStatus, 25 prtLocalizationLanguage, prtLocalizationCountry, 26 prtLocalizationCharacterSet, prtStorageRefIndex, 27 prtDeviceRefIndex, prtGeneralPrinterName, 28 prtGeneralSerialNumber } 29 STATUS current 30 DESCRIPTION 31 "The general printer group." 32 ::= { prtMIBGroups 1 } 33 34 prtResponsiblePartyGroup OBJECT-GROUP 35 OBJECTS { prtGeneralCurrentOperator, prtGeneralServicePerson } 36 STATUS current 37 DESCRIPTION 38 "The responsible party group contains contact information for 39 humans responsible for the printer." 40 ::= { prtMIBGroups 2 } 41 42 prtInputGroup OBJECT-GROUP 43 OBJECTS { prtInputDefaultIndex, prtInputType, prtInputDimUnit, 44 prtInputMediaDimFeedDirDeclared, 45 prtInputMediaDimXFeedDirDeclared, 46 prtInputMediaDimFeedDirChosen, 47 prtInputMediaDimXFeedDirChosen, prtInputCapacityUnit, 48 prtInputMaxCapacity, prtInputCurrentLevel, 49 prtInputStatus, 50 prtInputMediaName } 51 STATUS current 52 DESCRIPTION 53 "The input group." 54 ::= { prtMIBGroups 3 }

```
1
 2
    prtExtendedInputGroup OBJECT-GROUP
 3
        OBJECTS { prtInputName, prtInputVendorName, prtInputModel,
 4
                   prtInputVersion, prtInputSerialNumber,
 5
                   prtInputDescription, prtInputSecurity }
 6
                 current
        STATUS
 7
        DESCRIPTION
 8
             "The extended input group."
 9
         ::= { prtMIBGroups 4 }
10
11
    prtInputMediaGroup OBJECT-GROUP
12
        OBJECTS { prtInputMediaWeight, prtInputMediaType,
13
                   prtInputMediaColor, prtInputMediaFormParts }
14
        STATUS
                current
15
        DESCRIPTION
16
             "The input media group."
17
        ::= { prtMIBGroups 5 }
18
19
    prtOutputGroup OBJECT-GROUP
20
        OBJECTS { prtOutputDefaultIndex, prtOutputType,
21
                   prtOutputCapacityUnit, prtOutputMaxCapacity,
22
                   prtOutputRemainingCapacity, prtOutputStatus }
23
        STATUS current
24
        DESCRIPTION
25
             "The output group."
26
         ::= { prtMIBGroups 6 }
27
28
    prtExtendedOutputGroup OBJECT-GROUP
29
        OBJECTS { prtOutputName, prtOutputVendorName, prtOutputModel,
30
                   prtOutputVersion, prtOutputSerialNumber,
31
                   prtOutputDescription, prtOutputSecurity }
32
        STATUS current
33
        DESCRIPTION
34
             "The extended output group."
35
        ::= { prtMIBGroups 7 }
36
37
    prtOutputDimensionsGroup OBJECT-GROUP
38
        OBJECTS { prtOutputDimUnit, prtOutputMaxDimFeedDir,
                   prtOutputMaxDimXFeedDir, prtOutputMinDimFeedDir,
39
40
                   prtOutputMinDimXFeedDir }
41
                current
        STATUS
42
        DESCRIPTION
43
             "The output dimensions group"
44
        ::= { prtMIBGroups 8 }
45
46
    prtOutputFeaturesGroup OBJECT-GROUP
47
        OBJECTS { prtOutputStackingOrder,
48
                   prtOutputPageDeliveryOrientation, prtOutputBursting,
49
                   prtOutputDecollating, prtOutputPageCollated,
50
                   prtOutputOffsetStacking }
51
        STATUS current
52
        DESCRIPTION
53
             "The output features group."
54
        ::= { prtMIBGroups 9 }
```

1

```
2
    prtMarkerGroup OBJECT-GROUP
 3
        OBJECTS { prtMarkerDefaultIndex, prtMarkerMarkTech,
 4
                   prtMarkerCounterUnit, prtMarkerLifeCount,
 5
                   prtMarkerPowerOnCount, prtMarkerProcessColorants,
 б
                   prtMarkerSpotColorants, prtMarkerAddressabilityUnit,
 7
                   prtMarkerAddressabilityFeedDir,
 8
                   prtMarkerAddressabilityXFeedDir, prtMarkerNorthMargin,
 9
                   prtMarkerSouthMargin, prtMarkerWestMargin,
10
                   prtMarkerEastMargin, prtMarkerStatus }
11
        STATUS
                 current
12
        DESCRIPTION
13
             "The marker group."
14
         ::= { prtMIBGroups 10 }
15
16
    prtMarkerSuppliesGroup OBJECT-GROUP
17
        OBJECTS { prtMarkerSuppliesMarkerIndex,
18
                   prtMarkerSuppliesColorantIndex, prtMarkerSuppliesClass,
19
                   prtMarkerSuppliesType, prtMarkerSuppliesDescription,
20
                   prtMarkerSuppliesSupplyUnit,
21
                   prtMarkerSuppliesMaxCapacity, prtMarkerSuppliesLevel }
22
        STATUS current
23
        DESCRIPTION
24
             "The marker supplies group."
25
         ::= { prtMIBGroups 11 }
26
27
    prtMarkerColorantGroup OBJECT-GROUP
28
        OBJECTS { prtMarkerColorantMarkerIndex, prtMarkerColorantRole,
29
                   prtMarkerColorantValue, prtMarkerColorantTonality }
30
        STATUS
                current
31
        DESCRIPTION
32
             "The marker colorant group."
33
         ::= { prtMIBGroups 12 }
34
35
    prtMediaPathGroup OBJECT-GROUP
36
        OBJECTS { prtMediaPathDefaultIndex,
37
    prtMediaPathMaxSpeedPrintUnit,
38
                   prtMediaPathMediaSizeUnit, prtMediaPathMaxSpeed,
39
                   prtMediaPathMaxMediaFeedDir,
40
                   prtMediaPathMaxMediaXFeedDir,
41
                   prtMediaPathMinMediaFeedDir,
42
                   prtMediaPathMinMediaXFeedDir, prtMediaPathType,
43
                   prtMediaPathDescription, prtMediaPathStatus}
44
                 current
        STATUS
45
        DESCRIPTION
46
             "The media path group."
47
         ::= { prtMIBGroups 13 }
48
49
    prtChannelGroup OBJECT-GROUP
        OBJECTS { prtChannelType, prtChannelProtocolVersion,
50
51
                   prtChannelCurrentJobCntlLangIndex,
52
                   prtChannelDefaultPageDescLangIndex, prtChannelState,
53
                   prtChannelIfIndex, prtChannelStatus,
54
    prtChannelInformation
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                                                                [Page 124]
```

```
1
 2
        STATUS current
 3
        DESCRIPTION
 4
             "The channel group."
 5
         ::= { prtMIBGroups 14 }
 6
 7
    prtInterpreterGroup OBJECT-GROUP
 8
        OBJECTS { prtInterpreterLangFamily, prtInterpreterLangLevel,
 9
                   prtInterpreterLangVersion, prtInterpreterDescription,
10
                   prtInterpreterVersion,
11
    prtInterpreterDefaultOrientation,
12
                   prtInterpreterFeedAddressability,
13
                   prtInterpreterXFeedAddressability,
14
                   prtInterpreterDefaultCharSetIn,
15
                   prtInterpreterDefaultCharSetOut, prtInterpreterTwoWay }
16
        STATUS current
17
        DESCRIPTION
18
             "The interpreter group."
19
         ::= { prtMIBGroups 15 }
20
21
    prtConsoleGroup OBJECT-GROUP
22
        OBJECTS { prtConsoleLocalization, prtConsoleNumberOfDisplayLines,
23
                   prtConsoleNumberOfDisplayChars, prtConsoleDisable,
24
                   prtConsoleDisplayBufferText, prtConsoleOnTime,
25
                   prtConsoleOffTime, prtConsoleColor,
26
                   prtConsoleDescription }
27
        STATUS current
28
        DESCRIPTION
29
             "The console group."
30
         ::= { prtMIBGroups 16 }
31
32
    prtAlertTableGroup OBJECT-GROUP
33
        OBJECTS { prtAlertIndex, prtAlertCriticalEvents,
34
    prtAlertAllEvents,
35
                   prtAlertSeverityLevel, prtAlertTrainingLevel,
36
                   prtAlertGroup, prtAlertGroupIndex, prtAlertLocation,
37
                   prtAlertCode, prtAlertDescription, prtAlertTime }
38
                current
        STATUS
39
        DESCRIPTION
40
             "The alert table group."
41
        ::= { prtMIBGroups 17 }
42
43
44
    -- prtAlertTimeGroup has been DEPRECATED (prtMIBGroups 18)
45
    _ _
46
47
    prtAuxiliarySheetGroup OBJECT-GROUP
48
        OBJECTS { prtAuxiliarySheetStartupPage,
49
                   prtAuxiliarySheetBannerPage }
        STATUS current
50
51
        DESCRIPTION
52
             "The auxiliary sheet group."
53
         ::= { prtMIBGroups 19 }
54
```

INTERNET DRAFT 19 March 2001 Printer MIB V2 1 prtInputSwitchingGroup OBJECT-GROUP 2 OBJECTS { prtInputMediaLoadTimeout, prtInputNextIndex } 3 STATUS current 4 DESCRIPTION 5 "The input switching group." 6 ::= { prtMIBGroups 20 } 7 8 END 9 10 6. TANA Considerations 11 12 See section 2.4.1, 'Registering Additional Enumerated Values'. 13 14 7. Internationalization Considerations 15 16 See section 2.2.1.1, 'International Considerations'. 17 18 8. Security Considerations 19 20 The Printer MIB specifies a database and not necessarily a protocol for accessing the database. With regards to the security 21 22 of the information within the database, it is anticipated that the 23 primary vehicle for accessing this data will be through the use of 24 the Simple Network Protocol (SNMP). There are a number of 25 management objects defined in this MIB that have a MAX-ACCESS 26 clause of read-write. Such objects may be considered sensitive or 27 vulnerable in some network environments. The support for SET 28 operations in a non-secure environment without proper protection 29 can have a negative effect on network operations. 30 31 SNMPv1 by itself is not a secure environment. Even if the network 32 is secure (for example by using IPSec), there is no control as to who on the secure network is allowed to access and GET/SET 33 34 (read/change) the objects in this MIB. 35 36 It is recommended that implementers consider the security features 37 provided by the SNMPv3 framework. Specifically, the use of the 38 User-based Security Model (RFC 2574 [25]) and the View-based 39 Access Control Model (RFC 2575 [26]) is recommended. 40 41 It is then a customer/user responsibility to ensure that the SNMP 42 entity giving access to an instance of this MIB, is properly 43 configured to give access to the objects only to those principals 44 (users) that have legitimate rights to indeed GET or SET them. 45 46 Where the operational capability of the printing device are 47 especially vulnerable or difficult to administer, certain objects 48 within this MIB have been tagged as READ-ONLY, preventing 49 modification. Further, for all READ-WRITE objects within the MIB, 50 the working group has included specific conformance guidelines 51 stating that vendors are free to implement these objects as READ-52 ONLY. This conformance allowance should cover cases where specific vendor vulnerabilities may differ from product to product. (See 53 54 conformance section with regards to MIN-ACCESS clauses).

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9. Copyright Section

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1 Appendix A - Glossary of Terms 2 3 Addressability - On the marker, the number of distinct marking 4 units (pels) per unit of addressability unit that can be set; for 5 example, 300 dots per inch is expressed as 300 per 1000 б Thousandths Of Inches and 4 dots per millimeter is 4 per 1000 7 Micrometers. Addressability is not resolution because marks that 8 are one addressability position apart may not be independently 9 resolvable by the eye due to factors such as gain in the area of 10 marks so they overlap or nearly touch. 11 12 Alert - A reportable event for which there is an entry in the 13 alert table. 14 15 Bin - An output sub-unit which may or may not be removable. 16 17 Binary Change Event - An event which comes in pairs; the leading 18 edge event and the trailing edge event. The leading edge event enters a state from which there is only one exit. A binary change 19 20 event may be critical or non-critical. See unary change event. 21 22 Bursting - The process by which continuous media is separated into 23 individual sheets, typically by bursting along pre-formed 24 perforations. 25 Channel - A term used to describe a single source of data which is 26 27 presented to a printer. The model that we use in describing a 28 printer allows for an arbitrary number of channels. Multiple 29 channels can exist on the same physical port. This is commonly 30 done over Ethernet ports where EtherTalk, TCP/IP, and SPX/IPX 31 protocols can be supplying different data streams simultaneously 32 to a single printer on the same physical port. 33 34 Collation - In multiple copy output, placing the pages from 35 separate copies into separate ordered sets, ready for binding. 36 37 Control Language - A data syntax or language for controlling the 38 printer through the print data channel. 39 40 Critical Alert - An alert triggered by an event which leads to a 41 state in which printing is no longer possible; the printer is 42 stopped. 43 44 Decollating - The process by which the individual parts within a 45 multi-part form are separated and sorted into separate stacks for 46 each part. 47 48 Description - Information about the configuration and capabilities 49 of the printer and its various sub-units. 50 51 DPA - ISO 10175 Document Printing Application standard. A 52 standard for a client server protocol for a print system, 53 including (1) submitting print jobs to and (2) managing print jobs 54 in a spooler.

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1 2 Event - A state change in the printer. 3 4 Group - A collection of objects that represent a type of sub-unit 5 of the printer. б 7 Host Resources MIB - See RFC 2790 [28]. 8 9 IANA - Internet Assigned Numbers Authority. See STD 2, RFC 1700 10 [15]. 11 12 Idempotent - Idempotence is the property of an operation that 13 results in the same state no matter how many times it is executed 14 (at least once). This is a property that is shared by true 15 databases in which operations on data items only change the state 16 of the data item and do not have other side effects. Because the 17 SNMP data model is that of operations on a database, SNMP MIB 18 objects should be assumed to be idempotent. If a MIB object is 19 defined in a non-idempotent way, the this data model can break in subtle ways when faced with packet loss, multiple managers, and 20 21 other common conditions. 22 23 In order to fulfill the common need for actions to result from 24 SNMP Set operations, SNMP MIB objects can be modeled such that 25 the change in state from one state to another has the side 26 effect of causing an action. It is important to note that with 27 this model, an SNMP operation that sets a value equal to its 28 current value will cause no action. This retains the 29 idempotence of a single command, while allowing actions to be 30 initiated by SNMP SET requests. 31 32 Input - A tray or bin from which instances of the media are obtained and fed into the Media Path. 33 34 35 Interpreter - The embodiment of an algorithm that processes a data 36 stream consisting of a Page Description Language (PDL) and/or a 37 Control Language. 38 39 Localization - The specification of human language, country, and 40 character set needed to present information to people in their 41 native languages. 42 43 Management Application (a.k.a. Manager) - A program which queries 44 and controls one or more managed nodes. 45 46 Management Station - A physical computer on which one or more 47 management applications can run. 48 49 Media Path - The mechanisms that transport instances of the media 50 from an input, through the marker, possibly through media buffers 51 and duplex pathways, out to the output with optional finishing 52 applied. The inputs and outputs are not part of the Media Path. 53 54 Non-critical Alert - An alert triggered by a reportable event

	INTERNET DRAFT	Printer MIB V2	19 March 2001						
1 2 3 4 5 6	possible; such a	nting is no longer e from which printing ach as the low toner al, such as a							
7 8 9		r stacker which accepts ins sed by a printer.	tances of media that						
10 11 12 13		Language (PDL) - A data sy epresentation of a document							
14 15 16 17 18	produces marks o page control lan	ical device that takes medi n that media according to s guage and puts the result i sibly with finishing applie	some page description or .n some output						
19 20 21 22 23 24	generation of th properties, sele	Printing - The entire process of producing a printed document from generation of the file to be printed, choosing printing properties, selection of a printer, routing, queuing, resource management, scheduling, and finally printing including notifying the user.							
25 26 27	-	- An event that is deemed on watching the printer.	of interest to a						
28 29 30 31	Status - Informa printer and its exact physical c	operating state of the an abstraction of the							
32 33	Sub-mechanism -	A distinguishable part of a	sub-unit.						
34 35 36		t of the printer which may he input sources or a logic							
37 38 20	Tray - An input	sub-unit which is typically	removable.						
39 40 41 42 43 44	the printer, but	es a change of state of n) just as valid as the arn is necessary. See							
45 46		The portion of the state of management application.	the printer that can						
47 48 49	Warning - A non-	critical alert. See non-cri	tical alert.						

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1 2 3	Appendix B - Media Size Na Document Prin	umes from ISO/IEC 10175 Iting Architecture
4 5 7 8 9 10 11 12 13 14	appendix lists the stan 10175 Document Printing applications that prese media size are encourag to avoid requiring the used to describe the si Printer MIB has no know sizes in the MIB are gi	management application developers, this dardized media size names from ISO/IEC Application (DPA), [7]. Management ent a dialogue for choosing or displaying red to present relevant names from this list user to remember the physical dimensions ze of the media. A printer implementing the ledge of these names, however; all media ven in terms of media dimensions as the edDir and prtInputChosenMediaDimXFeedDir.
15 16	String name	Description
17 18	other	
19	unknown	
20	na-letter or letter	North American letter
21		size: 8.5 by 11 inches
22	na-legal or legal	North American legal
23		size: 8.5 by 14 inches
24	na-10x13-envelope	North American 10x13 envelope
25	0.10	size: 10 by 13 inches
26 27	na-9x12-envelope	North American 9x12 envelope size: 9 by 12 inches
28 29	na-number-10-envelope	North American number 10 business envelope size: 4.125 by 9.5 inches
30 31	na-7x9-envelope	North American 7x9 size: 7 by 9 inches
32	na-9x11-envelope	North American 9x11
33	-	size: 9 by 11 inches
34	na-10x14-envelope	North American 10x14 envelope
35		size: 10 by 14 inches
36 37	na-number-9-envelope	North American number 9 business envelope size: 3.875 by 8.875 inches
38 39	na-6x9-envelope	North American 6x9 envelope size: 6 by 9 inches
40 41	na-10x15-envelope	North American 10x15 envelope size: 10 by 15 inches
42	a	engineering A size 8.5 inches by 11 inches
43	b	engineering B size 11 inches by 17 inches
44	C	engineering C size 17 inches by 22 inches
45	d	engineering D size 22 inches by 34 inches
46	e	engineering E size 34 inches by 44 inches
47	iso-a0	ISO A0 size: 841 mm by 1189 mm
48	iso-al	ISO A1 size: 594 mm by 841 mm
49 50	iso-a2 iso-a3	ISO A2 size: 420 mm by 594 mm ISO A3 size: 297 mm by 420 mm
50 51	iso-a3	ISO A4 size: 210 mm by 297 mm
52	iso-a5	ISO A5 size: 148 mm by 210 mm
53	iso-a6	ISO A6 size: 105 mm by 148 mm
54	iso-a7	ISO A7 size: 74 mm by 105 mm
		2

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1	iso-a8	ISO		size:		mm			mm
2	iso-a9	ISO		size:		mm			mm
3	iso-al0	ISO				mm			mm
4	iso-b0	ISO		size:				1414	
5	iso-bl	ISO		size:				1000	
6	iso-b2	ISO		size:	500		-	707	mm
7	iso-b3	ISO		size:		mm		500	mm
8	iso-b4	ISO		size:	250		-		
9	iso-b5	ISO		size:	176		-		mm
10	iso-b6	ISO		size:	125		-		
11	iso-b7	ISO		size:	88		by		mm
12	iso-b8	ISO		size:		mm		88	mm
13	iso-b9	ISO	В9	size:		mm		62	mm
14	iso-b10	ISO				mm		44	mm
15	iso-c0	ISO	C0	size:	917	mm	by	1297	mm
16	iso-cl	ISO	C1	size:	648	mm	by	917	mm
17	iso-c2	ISO	C2	size:	458	mm	by	648	mm
18	iso-c3	ISO	C3	size:	324	mm	by	458	mm
19	iso-c4	ISO	C4	size:	229	mm	by	324	mm
20	iso-c5	ISO	С5	size:	162	mm	by	229	mm
21	iso-c6	ISO	Сб	size:	114	mm	by	162	mm
22	iso-c7	ISO	C7	size:	81	mm	by	114	mm
23	iso-c8	ISO	C8	size:	57	mm	by	81	mm
24	iso-designated	ISO	Des	signated	l Long	3			
25				size:	110	mm	by	220	mm
26	jis-b0	JIS	в0	size	1030	mm	by	1456	mm
27	jis-bl	JIS	В1	size	728	mm	by	1030	mm
28	jis-b2	JIS	В2	size	515	mm	by	728	mm
29	jis-b3	JIS	В3	size	364	mm	by	515	mm
30	jis-b4	JIS	В4	size	257	mm	by	364	mm
31	jis-b5	JIS	В5	size	182	mm	by	257	mm
32	jis-b6	JIS	вб	size	128	mm	by		mm
33	jis-b7	JIS	в7	size	91	mm	by	128	mm
34	jis-b8	JIS	В8	size	64	mm	-	91	mm
35	jis-b9	JIS		size	45		by	64	mm
36	jis-b10	JIS			32	mm	-	45	mm
37	-						-		

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1 Appendix C - Media Names 2 3 For the convenience of management application developers, this 4 appendix lists the standardized media names from ISO/IEC 10175 5 Document Printing Application (DPA), [7]. Management applications 6 that present a dialogue for choosing media may wish to use these 7 names as an alternative to separately specifying, size, color, 8 and/or type. Using standard media names will mean that a single 9 management application dealing with printers from different 10 vendors and under different system mangers will tend to use the 11 same names for the same media. If selection of media by name is 12 used, the attributes (size, type or color) implied by the name 13 must be explicitly mapped to the appropriate object 14 (prtInputDeclared-MediaDimFeedDir, 15 prtInputDeclaredMediaDimXFeedDir, prtInputMediaType and 16 prtInputMediaColor) in the MIB. The object prtInputMediaName is 17 intended for display to an operator and is purely descriptive. The 18 value in prtInputMediaName is not interpreted by the printer so using a standard name for this value will not change any of the 19 20 other media attributes nor will it cause an alert if the media in 21 the input sub-unit does not match the name. 22 23 Simple Name Descriptor Text 24 25 other 26 unknown 27 iso-a4-white Specifies the ISO A4 white medium with 28 size: 210 mm by 297 mm as defined in ISO 216 29 iso-a4-coloured Specifies the ISO A4 colored medium with 30 size: 210 mm by 297 mm as defined in ISO 216 31 iso-a4-transparent Specifies the ISO A4 transparent medium with 32 size: 210 mm by 297 mm as defined in ISO 216 33 iso-a3-white Specifies the ISO A3 white medium with 34 size: 297 mm by 420 mm as defined in ISO 216 35 iso-a3-coloured Specifies the ISO A3 colored medium with 36 size: 297 mm by 420 mm as defined in ISO 216 37 iso-a5-white Specifies the ISO A5 white medium with 38 size: 148 mm by 210 mm as defined in ISO 216 39 iso-a5-coloured Specifies the ISO A5 colored medium with 40 size: 148 mm by 210 mm as defined in ISO 216 41 iso-b4-white Specifies the ISO B4 white medium with 42 size: 250 mm by 353 mm as defined in ISO 216 Specifies the ISO B4 colored medium with 43 iso-b4-coloured 44 size: 250 mm by 353 mm as defined in ISO 216 45 iso-b5-white Specifies the ISO B5 white medium with 46 size: 176 mm by 250 mm as defined in ISO 216 47 iso-b5-coloured Specifies the ISO B5 colored medium with 48 size: 176 mm by 250 mm as defined in ISO 216 49 jis-b4-white Specifies the JIS B4 white medium with 50 size: 257 mm by 364 mm as defined in JIS 51 P0138 52 Specifies the JIS B4 colored medium with jis-b4-coloured 53 size: 257 mm by 364 mm as defined in JIS 54 P0138

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INTERNET DRAFT 19 March 2001 Printer MIB V2 1 jis-b5-white Specifies the JIS B5 white medium with 2 size: 182 mm by 257 mm as defined in JIS 3 P0138 4 jis-b5-coloured Specifies the JIS B5 colored medium with 5 size: 182 mm by 257 mm as defined in JIS 6 P0138 7 8 The following standard values are defined for North American 9 media: 10 11 na-letter-white Specifies the North American letter white 12 medium with size: 8.5 inches by 11 inches 13 na-letter-coloured Specifies the North American letter colored 14 medium with size: 8.5 inches by 11 inches 15 na-letter-transparent 16 Specifies the North American letter 17 transparent medium with size: 8.5 inches 18 by 11 inches 19 Specifies the North American legal white na-legal-white 20 medium with size: 8.5 inches by 14 inches 21 na-legal-coloured Specifies the North American legal colored 22 medium with size: 8.5 inches by 14 inches 23 24 The following standard values are defined for envelopes: 25 26 iso-b5-envelope Specifies the ISO B5 envelope medium 27 with size: 176 mm by 250 mm 28 as defined in ISO 216 and ISO 269 29 iso-b4-envelope Specifies the ISO B4 envelope medium 30 with size: 250 mm by 353 mm 31 as defined in ISO 216 32 Specifies the ISO C4 envelope medium iso-c4-envelope with size: 229 mm by 324 mm 33 34 as defined in ISO 216 and ISO 269 35 iso-c5-envelope Specifies the ISO C5 envelope medium 36 with size: 162 mm by 229 mm 37 as defined in ISO 269 38 iso-designated-long-envelope 39 Specifies the ISO Designated Long envelope 40 medium with size: 110 mm by 220 mm 41 as defined in ISO 269 42 43 na-10x13-envelope Specifies the North American 10x13 envelope medium with size: 10 inches by 13 inches 44 45 Specifies the North American 9x12 envelope na-9x12-envelope medium with size: 9 inches by 12 inches 46 47 na-number-10-envelope 48 Specifies the North American number 10 49 business envelope medium with size: 4.125 50 inches by 9.5 inches 51 na-7x9-envelope Specifies the North American 7x9 inch envelope 52 53 na-9x11-envelope Specifies the North American 9x11 inch 54 envelope

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1 2 na-10x14-envelope Specifies the North American 10x14 inch 3 envelope 4 5 na-number-9-envelope 6 Specifies the North American number 9 7 business envelope 3.875 by 8.875 inches 8 na-6x9-envelope Specifies the North American 6x9 inch envelope 9 10 Specifies the North American 10x15 inch na-10x15-envelope 11 envelope 12 13 The following standard values are defined for the less commonly 14 used media (white-only): 15 16 iso-a0-white Specifies the ISO A0 white medium 17 with size: 841 mm by 1189 mm 18 as defined in ISO 216 19 iso-al-white Specifies the ISO A1 white medium 20 with size: 594 mm by 841 mm as defined in ISO 216 21 22 iso-a2-white Specifies the ISO A2 white medium 23 with size: 420 mm by 594 mm 24 as defined in ISO 216 25 iso-a6-white Specifies the ISO A6 white medium 26 with size: 105 mm by 148 mm 27 as defined in ISO 216 28 iso-a7-white Specifies the ISO A7 white medium 29 with size: 74 mm by 105 mm 30 as defined in ISO 216 31 iso-a8-white Specifies the ISO A8 white medium 32 with size: 52 mm by 74 mm 33 as defined in ISO 216 34 Specifies the ISO A9 white medium iso-a9-white 35 with size: 39 mm by 52 mm 36 as defined in ISO 216 37 iso-a10-white Specifies the ISO A10 white medium with size: 26 mm by 37 mm 38 39 as defined in ISO 216 40 iso-b0-white Specifies the ISO B0 white medium 41 with size: 1000 mm by 1414 mm 42 as defined in ISO 216 43 Specifies the ISO B1 white medium iso-b1-white with size: 707 mm by 1000 mm 44 as defined in ISO 216 45 46 iso-b2-white Specifies the ISO B2 white medium 47 with size: 500 mm by 707 mm 48 as defined in ISO 216 49 iso-b3-white Specifies the ISO B3 white medium 50 with size: 353 mm by 500 mm 51 as defined in ISO 216 52 iso-b6-white Specifies the ISO B6 white medium 53 with size: 125 mm by 176 mm i 54 as defined in ISO 216

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1	iso-b7-white Specifies the ISO B7 white medium
2	with size: 88 mm by 125 mm
3	as defined in ISO 216
4	iso-b8-white Specifies the ISO B8 white medium
5	with size: 62 mm by 88 mm
6	as defined in ISO 216
7	iso-b9-white Specifies the ISO B9 white medium
8	with size: 44 mm by 62 mm
9	as defined in ISO 216
10	iso-b10-white Specifies the ISO B10 white medium
11	with size: 31 mm by 44 mm
12	as defined in ISO 216
13	jis-b0-white Specifies the JIS B0 white medium with size:
14	1030 mm by 1456 mm
15	jis-bl-white Specifies the JIS B1 white medium with size:
16	728 mm by 1030 mm
17	jis-b2-white Specifies the JIS B2 white medium with size:
18	515 mm by 728 mm
19	jis-b3-white Specifies the JIS B3 white medium with size:
20	364 mm by 515 mm
21	jis-b6-white Specifies the JIS B6 white medium with size:
22	257 mm by 364 mm
23	jis-b7-white Specifies the JIS B7 white medium with size:
24	182 mm by 257 mm
25	jis-b8-white Specifies the JIS B8 white medium with size:
26	128 mm by 182 mm
27	jis-b9-white Specifies the JIS B9 white medium with size:
28	91 mm by 128 mm
29	jis-b10-white Specifies the JIS B10 white medium with size:
30	64 mm by 91 mm
31	
32	The following standard values are defined for engineering media:
33	a Specifies the engineering A size medium with
34	size: 8.5 inches by 11 inches
35	b Specifies the engineering B size medium with
36	size: 11 inches by 17 inches
37	c Specifies the engineering C size medium with
38	size: 17 inches by 22 inches
39	d Specifies the engineering D size medium with
40	size: 22 inches by 34 inches
41	e Specifies the engineering E size medium with
42	size: 34 inches by 44 inches
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Appendix D - Roles of Users

Background

The need for "Role Models" stemmed in large part from the need to understand the importance of any given proposed object for the MIB. Many times the real world need for a proposed object would be debated within the group; the debate would typically result in the need to describe the potential usage of the object in terms of a "live" person performing some type of printing-related task.

12 Determining the value of a proposed object through identification 13 of the associated human users was found to be so common that a 14 more formalized model was required for consistent analysis. The 15 model describing categories of human-oriented tasks is called 16 "Role Models" in this document.

In developing the Role Models it was necessary to identify the common, primary tasks that humans typically face when interacting with a printer and its related printing system(s). It was expected that certain kinds of tasks would serve to identify the various Role Models.

In presenting the set of Role Models, the set of "Common Print
System Tasks" are first presented, followed by the set of Role
Model definitions. Finally, a simple matrix is presented in which
Role Models and Tasks are cross-compared.

Common Print System Tasks

31 Upon researching the many tasks encountered by humans in dealing 32 with printers and printing systems, the following were found to be 33 pervasive within any operating environment: 34

Printer job state - Determine the status of a job without a printer.

38 Printer capabilities - Determine the current capabilities of a 39 printer, for example, the available media sizes, two-sided 40 printing, a particular type of interpreter, etc. 41

42 Printer job submission - Submit a print job to a printer.

44 Printer job removal - Remove a job from a printer.

46 Notification of events - Receive notification of the existence of 47 a defined printer event. An event can be of many types, including 48 warnings, errors, job stage completion (e.g., "job done"), etc. 49

50 Printer configuration - Query the current configuration of a 51 printer.

52

53 Printer consumables - Determine the current state of any and all 54 consumables within a printer.

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1 2 Print job identification - Determine the identification of a job 3 within a printer. 4 5 Internal printer status - Determine the current status of the б printer. 7 8 Printer identification - Determine the identity of a printer. 9 Printer location - Determine the physical location of a printer. 10 11 Local system configuration - Determine various aspects of the 12 current configuration of the local system involved with the 13 operation of a printer. 14 15 These "tasks" cover a large spectrum of requirements surrounding 16 the operation of a printer in a network environment. This list 17 serves as the basis for defining the various Role Models described 18 below. 19 20 Proposed Role Models 21 2.2 Following is the list of "Role Models" used to evaluate the 23 requirements for any given Printer MIB object. Note that the 24 keyword enclosed in parentheses represents an abbreviation for the 25 particular Role Model in the matrix described later in this 26 document. 27 28 User (USER) - A person or application that submits print jobs to 29 the printer; typically viewed as the "end user" within the overall 30 printing environment. 31 32 Operator (OP) - A person responsible for maintaining a printer on 33 a day-to-day basis, including such tasks as filling empty media 34 trays, emptying full output trays, replacing toner cartridges, 35 clearing simple paper jams, etc. 36 37 Technician (TECH) - A person responsible for repairing a 38 malfunctioning printer, performing routine preventive maintenance, 39 and other tasks that typically require advanced training on the 40 printer internals. An example of a "technician" would be a 41 manufacturer's Field Service representative, or other person 42 formally trained by the manufacturer or similar representative. 43 44 System Manager (MGR) - A person responsible for configuration and troubleshooting of components involved in the overall printing 45 46 environment, including printers, print queues and network 47 connectivity issues. This person is typically responsible for ensuring the overall operational integrity of the print system 48 49 components, and is typically viewed as the central point of 50 coordination among all other Role Models. 51 52 Help Desk (HELP) - A person responsible for supporting Users in 53 their printing needs, including training Users and troubleshooting 54 Users' printing problems.

1 2 Asset Manager (AM) - A person responsible for managing an 3 organization's printing system assets (primarily printers). Such 4 a person needs to be able to identify and track the location of 5 printing assets on an ongoing basis. б 7 Capacity Planner (CP) - A person responsible for tracking the 8 usage of printing resources on an ongoing basis for the purpose of 9 planning printer acquisitions and/or placement of printers based 10 on usage trends. 11 12 Installer (INST) - A person or application responsible for 13 installing or configuring printing system components on a local 14 system. 15 16 Accountant (ACCT) - A person responsible for tracking the usage 17 of printing resources on an ongoing basis for the purpose of 18 charging Users for resources used. 19 20 Matrix of Common Print System Tasks and Role Models 21 22 To better understand the relationship between the set of defined 23 "Common Print System Tasks" and the various "Role Models," the 24 following matrix is provided. 25 26 It is important to recognize that many of the tasks will appear to 27 be applicable to many of the Role Models. However, when 28 considering the actual context of a task, it is very important to 29 realize that often the actual context of a task is such that the 30 Role Model can change. 31 32 For example, it is obvious that a "System Manager" must be able to 33 submit print jobs to a printer; however, when submitting a print 34 job, a person identified as a "System Manager" is actually 35 operating in the context of a "User" in this case; hence, the 36 requirement to submit a print job is not listed as a requirement 37 for a System Manager. 38 39 Conversely, while a "User" must be able to remove a job previously 40 submitted to a printer, an "Operator" is often expected to be able 41 to remove any print job from any printer; hence, print job removal 42 is a (subtly different) requirement for both the "User" and 43 "Operator" Role Models. 44

Role Models _____

1 2		Role	Mode	els						
3										
4	Requirement Area	USER	OP	TECH	MGR	HELP	AM	CP	INST	ACCT
5	Print job status	XX	xx	XX	xx	XX				
6	Printer capabilities	XX			xx	XX				
7	Print job submission	XX								
8	Print job removal	XX	xx							
9	Notification of events		xx	XX						
10	Printer configuration				xx				xx	
11	Printer consumables		xx					XX	xx	
12	Print job identification	ı	xx		xx	XX		XX		XX
13	Internal printer status		xx	xx	xx					
14	Printer identification		xx	xx	xx	XX	xx	XX	xx	
15	Printer location							XX		
16 17	Local system configuration	ion			xx				xx	

Printer MIB V2

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1 2	Appendix E - Overall	Printer Status Table	
3	The Status Table e	stablishes a convention for	or the top 25 printer
2 3 4 5	errors. The table	defines a suggested relati	ionship between various
5		the variables Printer hr	
6		rPrinterDetectedErrorState	
7		arious sub-unit status var	
8 9		rtOutputStatus, prtMarkerS	
		and prtChannelStatus). Th	
10		entation of these variable	
11		of this MIB and users of	
12 13		es and the variable values ult of that state. This ir	
$13 \\ 14$		ection 2.2.13.2 "Overall B	
15		ve list rather it is a qui	
16			
17	The definition of	PrtSubUnitStatusTC specifi	ies that SubUnitStatus
18		is the sum of 5 distinct	
19	Availability, Crit	ical, Non-Critical, On-lir	ne and Transitioning.
20	Thus when a non-cr	itical alert or alerts are	e present the values
21		On-Line and Transitioning	will be summed with
22	the Non-Critical A	lerts (8) value.	
23			
24		rated in landscape format	
25	itp://itp.pwg.org/	pub/pwg/pmp/contributions/	'l'op25Errors.pdi.
26			

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INTERNET DRAFT
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    Appendix F - Participants
 2
 3
       The following people attended at least one meeting of the Printer
 4
       Working Group; many attended most meetings.
 5
 6
       Ron Bergman - Hitachi Koki
 7
       Luis Cubero - Hewlett-Packard
 8
       Jay Cummings - Novell
 9
       Andy Davidson - Tektronix
10
       Lee Farrell - Canon
11
       Joel Gyllenskog - Microworks
12
       Tom Hastings - Xerox
13
       Scott Isaacson - Novell
14
       Binnur Al-Kazily - Hewlett-Packard
15
       Rick Landau - Digital Equipment Corporation
16
       David Kellerman - Northlake Software
17
       Harry Lewis - IBM
18
       Pete Loya - Hewlett-Packard
19
       Jay Martin - Underscore, Inc.
20
       Bob Pentecost - Hewlett-Packard
21
       Dave Roach - Unisys
22
       Stuart Rowley - Kyocera
23
       Bob Setterbo - Adobe
24
       Ron Smith - Texas Instruments
25
       Mike Timperman - Lexmark
26
       Randy Turner - 2Wire, Inc.
27
       Bill Wagner - NETsilicon, Inc.
28
       Chris Wellens - Interworking Labs
29
       Craiq Whittle - Sharp Labs
30
       Don Wright - Lexmark
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