Printer MIB Working Group

Harry Lewis
IBM
Gary Gocek
Xerox Corp.
Randy Turner
2Wire, Inc.

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Abstract

This document provides definitions of models and manageable objects for printing environments. The objects included in this MIB apply to physical, as well as logical entities within a printing device. This MIB definition makes explicit references to the Host Resources MIB (RFC 2790 [28]), as well as the Interfaces Group of MIB-II (RFC 1213 [14]).

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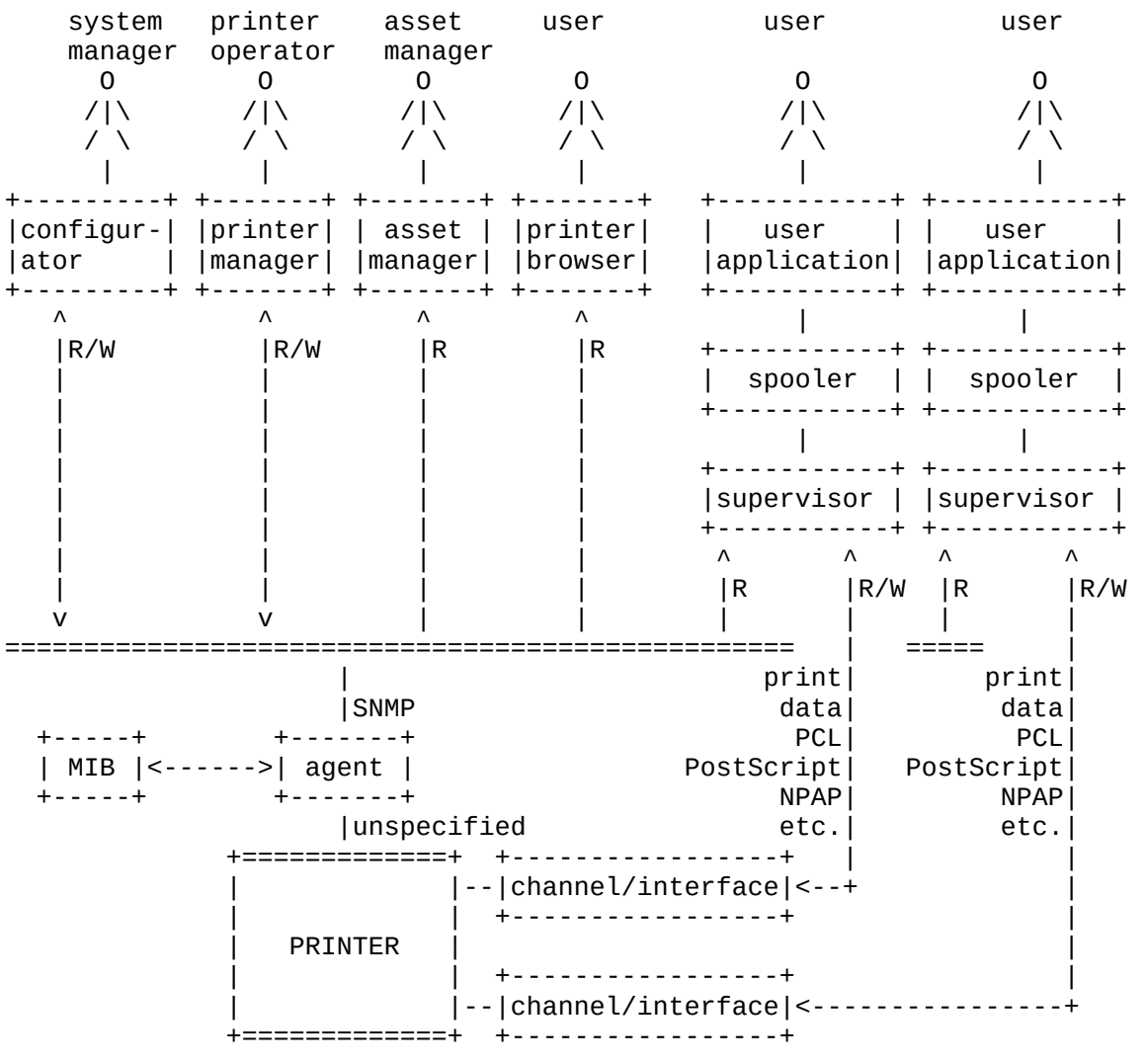
1. Introduction

1.1 Network Printing Environment

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

Figure 1 - One Printer's View of the Network



1.2 Printer Device Overview

A printer is the physical device that takes media from an input source, produces marks on that media according to some page description or page control language and puts the result in some output destination, possibly with finishing applied. Printers are complex devices that consume supplies, produce waste and may have mechanical problems. In the management of the physical device the description, status and alert information concerning the printer and its various subparts has to be made available to the management application so that it can be reported to the end user, key operators for the replenishment of supplies or the repair or maintenance of the device. The information needed in the management of the physical printer and the management of a printing job overlap highly and many of the tasks in each management area require the same or similar information.

1.3 Categories of Printer Information

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

1.3.1 Descriptions

Descriptions convey information about the configuration and capabilities of the printer and its various sub-units. This information is largely static information and does not generally change during the operation of the system but may change as the 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.

1.3.2 Status

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

1.3.3 Alerts

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

Alerts can be classified into two basic categories, critical and non-

critical. A critical alert is one that is triggered by entry into a state in which the printer is stopped and printing can not continue until the condition that caused the critical alert is eliminated. "Out of paper", "toner empty" and "output bin full" are examples of critical alerts. Non-critical alerts are triggered 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.

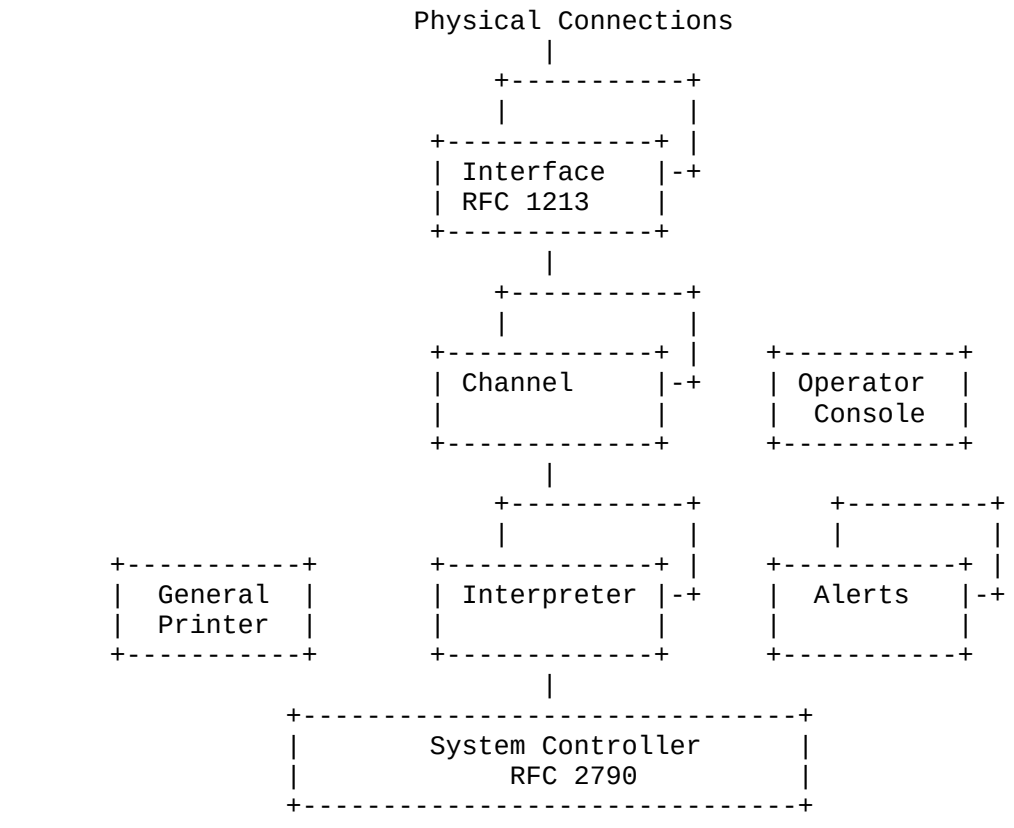
Description, status and alert information about the printer can be thought of as a database describing the printer. The management application for a printer will want to view the printer data base differently depending on how and for what purposes the information in the database is needed.

2. Printer Model

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

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

Figure 2 - Printer Block Diagram



2.1 Overview of the Printer Model

The model has three basic parts: (1) the flow of a print file into an interpreter and onto the marker, (2) the flow of media through the marker and (3) the auxiliary sub-units that control and facilitate the two prior flows. The flow of the print data comes through a physical connection on which some form of transport protocol stack is running. The data provided by the transport protocol (interface)

appears on a channel, which is the input to an interpreter. The interpreter converts the print data into a form suitable for marking on the media.

The media resides in Input sub-units from which the media is selected and then transported via a Media Path first to a Marking sub-unit and then onto an Output sub-unit with (optionally) some finishing operations being performed. The auxiliary sub-units facilitate control of the printer, inquiry/control of the operator panel, reporting of alerts and the adaptation of the printer to various natural languages and characters sets. All the software sub-units run on the System Controller that represents the processor, memory and storage systems of the Printer. Each of the sub-units is discussed in more detail below.

All of the sub-units other than the Alerts report only state information, either a description or a status. The Alerts sub-unit reports event information.

2.2 Printer Sub-Units

A printer is composed of 13 types of sub-units, called groups. The following sections describe the different types of sub-units.

2.2.1 General Printer

The general printer sub-unit is responsible for the overall control and status of the printer. There is exactly one general printer sub-unit in a printer. The General Printer Group in the model represents the general printer sub-unit. In addition to the providing the status of the whole printer and allowing the printer to be reset, this Group provides information on the status of the packaging of the printer, in particular, the covers. The general printer sub-unit is usually implemented on the system controller.

2.2.1.1 International Considerations

The localization portion of the general printer sub-unit is responsible for identifying the natural language, country, and character set in which certain character strings are expressed in this MIB.

There may be one or more localizations supported per printer. The available localizations are specified in the Localization table. Localization SHOULD only be performed on string objects which are named 'xxxDescription' (sub-unit descriptions) or 'prtConsoleDisplayBufferText' (local console text).

The agent SHALL return all other character strings in coded character sets in which code positions 0-127 (decimal) are US-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.

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.

2.2.2 Inputs

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.

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.

2.2.3 Media

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.

2.2.4 Outputs

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.

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

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

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

2.2.6 Markers

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

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

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

2.2.8 System Controller

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

2.2.9 Interfaces

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

2.2.10 Print Job Delivery Channels

The print job delivery channel sub-units identify the independent sources of print data (here print data is the information that is used to construct printed pages and may have both data and control aspects). A printer may have one or more channels. The channel sub-units are represented by the Print Job Delivery Channel Group in the Model. The electronic path typically identifies each channel and service protocol used to deliver print data to the printer. A channel sub-unit may be independently enabled (allowing print data to flow) or disabled (stopping the flow of print data). It has a current Control Language that can be used to specify which interpreter is to be used for the print data and to query and change environment variables used by the interpreters (and SNMP). There is also a default interpreter that is to be used if an interpreter is not

explicitly specified using the Control Language. Print Job Delivery Channel sub-units can, and usually are, based on an underlying interface.

2.2.11 Interpreters

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 Group in the Model represents the interpreter sub-units. 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.

2.2.12 Console

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

2.2.13 Alerts

The alert sub-unit is responsible for detecting reportable events, making an entry in the alert table and, if and only if the event is a critical event, initiating a trap. The exception to this rule is when the "alertRemovalofBinaryChangeEntry" trap is generated. The alert sub-unit is represented by the Alerts Group and, in particular, the Alert Table. This table contains information on the severity, sub-unit, and detailed location within the sub-unit, alert code and description of each critical alert that is currently active within the printer. Each reportable event causes an entry to be made in the Alert Table.

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 sub-units is reported in the principle table of the Group that represents the sub-unit, and (3) Alert codes reported in the Alert Table.

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:

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

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

Standby - The printer or sub-unit is not immediately available but can accept new instructions.

Available - The printer or subunit is functioning normally.

Idle - The printer or subunit is immediately available.

Active - The printer or subunit is performing its primary function.

Busy - The printer or subunit is performing a function (not necessarily its primary function) and is not immediately available for its primary function.

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:

Printer Status	hrDeviceStatus	hrPrinterStatus	hrPrinterDetectedErrorState
Idle	running(2)	idle(3)	none set
Busy/ Active	running(2)	printing(4)	
Non Critical Alert Active	warning(3)	idle(3) or printing(4)	could be: lowPaper, lowToner, or serviceRequested
Critical Alert Active	down(5)	other(1)	could be: jammed, noPaper, noToner, coverOpen, or serviceRequested
Unavailable	down(5)	other(1)	
Moving off-line	warning(3)	idle(3) or printing(4)	offline
Off-line	down(5)	other(1)	offline
Moving on-line	down(5)	warmup(5)	
Standby	running(2)	other(1)	

These named states are only a subset of the possible states - they are not an exhaustive list of the possible states. Nevertheless, several things should be noted. When using these states, it is not possible to detect when both critical and non-critical alerts are pending - if both are pending, the Critical Alert Active state will prevail. In addition, a printer in the Standby state will be represented in the Host Resources MIB with a device status of running(2) and a printer status of other(1), a set of states that don't uniquely distinguish this important printer state.

Detailed status per sub-unit is reported in the sub-unit status fields.

2.2.13.2.1 Host Resources MIB Printer Status

For completeness, the definitions of the Printer Status objects of the Host Resources MIB (RFC 2790 [28])are given below:

```
690         hrDeviceStatus OBJECT-TYPE
691             SYNTAX  INTEGER {
692                         unknown(1),
693                         running(2),
694                         warning(3),
695                         testing(4),
696                         down(5)
697                     }
698             ACCESS  read-only
699             STATUS  mandatory
700             DESCRIPTION
701              "The current operational state of the device
702              described by this row of the table.  A value
703              unknown(1) indicates that the current state of the
704              device is unknown.  running(2) indicates that the
705              device is up and running and that no unusual error
706              conditions are known.  The warning(3) state
707              indicates that agent has been informed of an
708              unusual error condition by the operational software
709              (e.g., a disk device driver) but that the device
710              is still 'operational'.  An example would be high
711              number of soft errors on a disk.  A value of
712              testing(4), indicates that the device is not
713              available for use because it is in the testing
714              state.  The state of down(5) is used only when
715              the agent has been informed that the device is
716              not available for any use."
717             ::= { hrDeviceEntry 5 }
718
719         hrPrinterStatus OBJECT-TYPE
720             SYNTAX INTEGER {
721                         other(1),
722                         unknown(2),
723                         idle(3),
724                         printing(4),
725                         warmup(5)
726                     }
727             ACCESS  read-only
728             STATUS  mandatory
729             DESCRIPTION
730              "The current status of this printer device.  When in the
731              idle(3), printing(4), or warmup(5) state, the corresponding
732              hrDeviceStatus should be running(2) or warning(3).  When in
733              the unknown(2) state, the corresponding hrDeviceStatus should
734              be unknown(1)."
735             ::= { hrPrinterEntry 1 }
736
```

```
      hrPrinterDetectedErrorState OBJECT-TYPE
          SYNTAX OCTET STRING (0..128)
          ACCESS read-only
          STATUS mandatory
          DESCRIPTION
           "This object represents any error conditions detected by the
           printer.  The error conditions are encoded as an OCTET STRING
           with the following definitions:

           Condition          Bit #

           lowPaper             0
           noPaper              1
           lowToner             2
           noToner              3
           doorOpen             4
           jammed               5
           offline              6
           serviceRequested     7

           inputTrayMissing     8
           outputTrayMissing    9
           markerSupplyMissing 10
           outputNearFull      11
           outputFull          12
           inputTrayEmpty      13
           overduePreventMaint 14

           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 worst
           state of those indicated, where down(5) is worse than
           warning(3), which is worse than running(2).

           Bits are numbered starting with the most significant bit of
           the first byte being bit 0, the least significant bit of the
           first byte being bit 7, the most significant bit of the
           second byte being bit 8, and so on.  A one bit encodes that
           the condition was detected, while a zero bit encodes that the
           condition was not detected.

           This object is useful for alerting an operator to specific
           warning or error conditions that may occur, especially those
           requiring human intervention."
      ::= { hrPrinterEntry 2 }
```

2.2.13.2.2 Sub-unit Status

Sub-unit status is reported in the entries of the principle table in the Group that represents the sub-unit. For sub-units that report a status, there is a status column in the table and the value of this column is always an integer formed in the following way.

The SubUnitStatus is an integer that is the sum of 5 distinct values, Availability, Non-Critical, Critical, On-line, and Transitioning. These values are:

Availability	value	
Available and Idle	0	000'b
Available and Standby	2	010'b
Available and Active	4	100'b
Available and Busy	6	110'b
Unavailable and OnRequest	1	001'b
Unavailable because Broken	3	011'b
Unknown	5	101'b
Non-Critical		
No Non-Critical Alerts	0	
Non-Critical Alerts	8	
Critical		
No Critical Alerts	0	
Critical Alerts	16	
On-Line		
State is On-Line	0	
State is Off-Line	32	
Transitioning		
At intended state	0	
Transitioning to intended state	64	

For example, an input (tray) that jammed on the next to the last page may show a status of 27 (unavailable because broken (3) + a critical state (16), jammed, and a noncritical state (8), low paper).

2.2.13.3 Alert Tables

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

The Alert Table contains some information that is redundant, for example that an event has occurred, and some information that is only represented in the Alert Table, for example the additional information. A single table was used because a single entry in a group could cause more than one alert, for example paper jams in more

than one place in a media path. Associating the additional information with the entry in the affected group would only allow one report where associating the additional information with the alert makes multiple reports possible. Every time an alert occurs in the printer, the printer makes one or more entries into the Alert Table. The printer determines if an event is to be classified as critical or non-critical. If the severity of the Alert is "critical", the printer sends a trap or event notification to the host indicating that the table has changed. Whether or not a trap is sent, the management application is expected to poll the printer on a regular basis and to read and parse the table to determine what conditions have changed, in order to provide reliable information to the management application user.

2.2.13.4 Alert Table Management

The alert tables are sparsely populated tables. This means the tables will only contain entries of the alerts that are currently 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 printer.

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

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

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.

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:

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,

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,

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.

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.

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 re-acquire 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

Some objects in the printer MIB reflect the existence or amount of a given resource within the printer. Some examples of such resources are the size and number of sheets in a paper tray or the existence of certain output options. Some printers have automatic sensors for these resources. Most printers lack sensors for every property of every resource. The management application is allowed to write into objects that hold descriptive or existence values for printers that cannot sense these values. The ability to change the value of a read-write object may depend on the implementation of the agent. Many objects in the MIB are given read-write access, but a printer implementation might only permit a management application to change the value if the printer can not sense the value itself. Note that

even though some objects explicitly state the behavior of conditional ability to change values, any read-write object may act this way.

Generally, an object is given read-write access in the Printer MIB 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

2. The printer will behave differently if the installation of the resource is reported than the printer would if the installation were not reported; that is, the object is not to be used as a place to put information not used by the printer, i.e., not a "sticky-note". Another way of saying this is that the printer believes that information given it and acts as if the information were true. For example, on a printer that cannot sense the size, if one paper size is loaded, but another size is set into the paper size object, then the printer will use the size that was set as its current paper size in its imaging and paper handling.

3. The printer may get hints that it may not know about the existence or properties of certain resources. For example, a paper tray may be removed and re-inserted. When this removal and insertion happens, the printer may either assume that a property, such as the size of paper in the tray, has not changed or the printer may change the value of the associated object to "unknown", as might be done for the amount of paper in the tray. As long as the printer acts according to the value in the object either strategy is acceptable.

4. It is an implementation-specific matter as to whether or not MIB object values are persistent across power cycles or cold starts. It is particularly important that the values of the 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 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.

2.4.1 Registering Additional Enumerated Values

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

enumeration (1) All the values are defined in this Printer MIB

specification. Additional enumerated values require a revision to this specification. Type 1 enumerations are typically used where changes to the enumeration are either unlikely or will have a significant impact on the structure of the MIB or implementation of the MIB in management applications.

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

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

c) the enumeration is tied to the structure of the MIB or the model on which the MIB is based, e.g., the prtAlertGroup enumeration is tied to the OIDs for the related tables.

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

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 of the MIB will contain the values registered so far. After the MIB is approved, anyone may register additional values through IANA without approval. The current set of approved values may be obtained from the IANA registry. Type 3 enumerations are used for enumerations that can be extended without any controls; an example is the prtMarkerSuppliesType, which can be extended as needed by any manufacturer to describe the supplies required by a new printer.

3. Groups from other MIB Specifications

This section identifies the groups from other MIBs that shall be supported to supplement and complete a printer MIB implementation. The section also describes some of the less obvious characteristics of the Printer MIB structure that are related to the inclusion of these other MIB groups.

3.1 System Group

All objects in the system group of MIB-II (RFC 1213 [14]) shall be implemented; however, as described in paragraph 3.4, implementers

should carefully consider what constitutes the "system".

3.2 System Controller

The storage and device groups of the Host Resources MIB (RFC 2790 [28]) shall be implemented to support the printer(s) system controller, and any supporting devices. If deemed appropriate by the implementer, other groups of the Host Resources MIB (System, Running Software, Running Software Performance, and Installed Software) may be implemented.
Because of the structure of the Host Resources MIB, the devices constituting the system controller are at the same level as the printer.

3.3 Interface Group objects

All objects in the Interfaces Group of MIB-II (RFC 1213 [14]) shall be implemented for all print information interfaces to the printer, including non-network interfaces.

3.3.1 Interface Types

The interfaces group of RFC 1213 [14] contains only a partial list of interface types that can be specified in the "ifType" object. For a complete list of interface types, refer to the IANA registry at "ftp://ftp.isi.edu/mib/ianaiftype.mib"

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:

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

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

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

3.4.1 Host Resource MIB Device Group

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

hrDeviceIndex, hrDeviceType, hrDeviceDescr, hrDeviceID, hrDeviceStatus, and hrDeviceErrors.

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

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

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

Ideally, these must all be listed as devices in the virtual host, along with the printer (hrDevicePrinter) itself. Therefore, in this example, eight devices would be included with hrDeviceIndex values of "1 - 8". Since there is but one printer, the prtDeviceRefTable in the printer MIB would contain seven entries, each with a value

identifying the printer hrDeviceIndex. Because there is only one printer, devices are not shared and the 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:

hrProcessorTable: identification and significant characteristics of processor.

hrNetworkTable: correlates a network device to a MIB-II ifIndex key hrPrinterTable and hrPrinterErrorTable: the mechanism communicating the status of each printer.

hrDiskStorageTable: identifies disk access, media type and capacity.

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

hrFSTable: identifies local file system type, characteristics and parameters.

3.4.2 Host Resource Storage Group

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

3.4.3 MIB-II Interface Group

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

4. Differences from Previous Version

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

- Minor editorial corrections and changes.

- Updated Coded Character Set description and IANA registration process.

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

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

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

- Instead of showing bit 15 as "not assigned" in the quote from RFC 2790 in the hrPrinterDetectedErrorState object, removed that from the tabular form and added it as a sentence, because the RFC doesn't show bit 15 in the tabular form.

- Clarfied the international considerations.

- Added prtChannelInformation to the Channel Group textual-conventions on a per channel basis to clarify the channel description and enhance interoperability.

- Deprecated some obsolete channel types.

- Extended the Alert Table and PrtMarkerSuppliesSupplyUnit textual conventions to include values from the Finisher MIB.

- Clarify alerts based on unary vs. binary change events.

- Added (optional) unary change event alertRemovalOfBinaryChangeEntry(1801).

- Establish a convention for contact information for prtGeneralCurrentOperator and prtGeneralServicePerson.

- Added prtAuxiliarySheetStartupPage PresentOnOff

- Added prtAuxiliarySheetBannerPage PresentOnOff

- Added prtGeneralPrinterName OCTET STRING

- Added prtGeneralSerialNumber OCTET STRING

- Added prtInputNextIndex Integer32

- Added the Input Switching Group

- Added prtAlertCriticalEvents Counter32

- Added prtAlertAllEvents Counter32

- Updated PrtAlertCode enums including generic alert codes.

- Deprecated the use of alert codes doorOpen(501) and doorClosed(502), in favor of coverOpened(3) and coverClosed(4).

- Added the PrtConsoleDisableTC and PrtMarkerAddressabilityUnitTC textual conventions, and changed the PrtConsoleDisable and PrtMarkerAddressabilityUnit objects' syntax to use those TCs, and changed the PrtGeneralEntry and PrtMarkerColorantEntry SEQUENCEs to reflect the new syntax.

- Added 'IANA Considerations' and 'Internationalization Considerations' as top level sections, per IETF guidelines.

- Updated Security and Copyright sections.

- Updated references.

- Added Appendix E - Overall Printer Status Table.

- Updated participant and contact information.

5. The Printer MIB

```
Printer-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, Counter32, Integer32, TimeTicks,
        NOTIFICATION-TYPE, OBJECT-IDENTITY, mib-2 FROM SNMPv2-SMI
    TEXTUAL-CONVENTION, DisplayString FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP FROM SNMPv2-CONF
    hrDeviceIndex, hrStorageIndex FROM HOST-RESOURCES-MIB;

printmib MODULE-IDENTITY
    LAST-UPDATED "0008090000Z"  -- 2-digit year, 20xx
    ORGANIZATION "IETF Printer MIB Working Group"
    CONTACT-INFO
        "Harry Lewis
        IBM Corporation.
        6300 Diagonal Hwy
        Boulder, CO 80301
        harryl@us.ibm.com"
    DESCRIPTION
        "The MIB module for management of printers."
    ::= { mib-2 43 }

-- Textual conventions for this MIB module
--
-- Generic unspecific textual conventions
```

```
--

PrtMediaUnitTC ::= TEXTUAL-CONVENTION
    -- This is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "Units of measure for media dimensions."
    SYNTAX    INTEGER {
                  tenThousandthsOfInches(3),  -- .0001
                  micrometers(4)
                  }

PrtCapacityUnitTC ::= TEXTUAL-CONVENTION
    -- This is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "Units of measure for media capacity."
    SYNTAX    INTEGER {
                  tenThousandthsOfInches(3),  -- .0001
                  micrometers(4),
                  sheets(8),
                  feet(16),
                  meters(17)
                  }

PrtPrintOrientationTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "A generic representation for printing orientation on a 'page'."
    SYNTAX    INTEGER {
                  other(1),
                  portrait(3),
                  landscape(4)
                  }

PrtCoverStatusTC ::= TEXTUAL-CONVENTION
    -- This is a type 2 enumeration.
    STATUS    current
    DESCRIPTION
        "Values for encoding the state of a particular cover or access
        panel on the printer case or enclosure."
    SYNTAX    INTEGER {
                  other(1),
                  coverOpen(3),
                  coverClosed(4),
                  interlockOpen(5),
                  interlockClosed(6)
                  }

PrtSubUnitStatusTC ::= TEXTUAL-CONVENTION
    -- This is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
```

```
1385          "Status of a printer sub-unit.
1386
1387          The SubUnitStatus is an integer that is the sum of 5 distinct
1388          values, Availability, Non-Critical, Critical, On-line, and
1389          Transitioning. These values are:
1390
1391          Availability                              Value
1392
1393              Available and Idle                     0       000'b
1394              Available and Standby                  2       010'b
1395              Available and Active                   4       100'b
1396              Available and Busy                     6       110'b
1397              Unavailable and OnRequest              1       001'b
1398              Unavailable because Broken             3       011'b
1399              Unknown                                5       101'b
1400
1401          Non-Critical
1402              No Non-Critical Alerts                 0
1403              Non-Critical Alerts                    8
1404
1405          Critical
1406
1407              No Critical Alerts                     0
1408              Critical Alerts                       16
1409
1410          On-Line
1411
1412              State is On-Line                       0
1413              State is Off-Line                     32
1414
1415          Transitioning
1416
1417              At intended state                      0
1418              Transitioning to intended state       64"
1419
1420      SYNTAX    INTEGER (0..126)
1421
1422  PresentOnOff ::= TEXTUAL-CONVENTION
1423      -- This is a type 1 enumeration.
1424      STATUS    current
1425      DESCRIPTION
1426          "Presence and configuration of a device or feature."
1427      SYNTAX    INTEGER {
1428                    other(1),
1429                    on(3),
1430                    off(4),
1431                    notPresent(5)
1432                    }
1433
1434  CodedCharSet ::= TEXTUAL-CONVENTION
1435      -- This is a type 3 enumeration.
1436      STATUS    current
1437      DESCRIPTION
1438          "A coded character set value that specifies both a set of
```

```
1439          characters that may be used and an encoding (as one or more
1440          octets) that is used to represent the characters in the set.
1441          These values are to be used to identify the encoding employed
1442          for strings in the MIB where this is not fixed by the MIB.
1443
1444          Some objects that allow a choice of coded character set are: the
1445          prtLocalizationCharacterSet object in the LocalizationTable and
1446          prtInterpreterDefaultCharSetIn. The
1447          prtGeneralCurrentLocalization and prtConsoleLocalization objects
1448          in turn contain the index in the LocalizationTable of the
1449          current localization (country, language, and coded character
1450          set) of the 'description' objects and the console, respectively.
1451
1452          The current list of character sets and their enumerated values
1453          used to reference them are contained in the IANA Character Set
1454          registry.  The enum value is indicated by the MIBenum entry in
1455          the registry.  The enum symbol is indicated by the Alias that
1456          starts with 'cs' for character set.
1457
1458          The IANA character sets registry is [4].
1459          To add a new character set to the IANA Registry, see RFC 2278
1460          or BCP 19 [20]."
1461
1462      SYNTAX    INTEGER {
1463                    other(1)    -- used if the designated coded
1464                                -- character set is not currently
1465                                -- registered by IANA
1466
1467      -- See [4] for registered character sets and
1468      -- use the MIBenum integer value.
1469                    }
1470
1471  --
1472  -- General Group textual-conventions
1473  --
1474
1475  PrtGeneralResetTC ::= TEXTUAL-CONVENTION
1476      -- This value is a type 3 enumeration.
1477      STATUS    current
1478      DESCRIPTION
1479          "Values for reading and writing the prtGeneralReset object.
1480
1481      If a device does not have NVRAM, the device shall none the less
1482      respond to a SET with the value resetToNVRAM(5) with some sort of
1483      warm reset that resets the device to some implementation-defined
1484      state that is preferably under control of the system administrator
1485      by some means outside the scope of this MIB specification."
1486
1487      SYNTAX    INTEGER {
1488                    notResetting(3),
1489                    powerCycleReset(4), -- Cold Start
1490                    resetToNVRAM(5), -- Warm Start
1491                    resetToFactoryDefaults(6) -- Reset contents of
1492                                              -- NVRAM to factory
```

```
                                                -- defaults
                    }

    --
    -- Channel Group textual-conventions
    --

    PrtChannelStateTC ::= TEXTUAL-CONVENTION
        -- This value is a type 1 enumeration.
        STATUS    current
        DESCRIPTION
            "The state of this print job delivery channel. The value
            determine whether control information and print data is allowed
            through this channel."
        SYNTAX    INTEGER {
                      other(1),
                      printDataAccepted(3),
                      noDataAccepted(4)
                      }

    PrtChannelTypeTC ::= TEXTUAL-CONVENTION
        --  This is a type 2 enumeration.
        STATUS    current
        DESCRIPTION
            "This enumeration indicates the type of channel that is
            receiving jobs."
        SYNTAX    INTEGER {
                      other(1),
                      chSerialPort(3),
                      chParallelPort(4),
                      chIEEE1284Port(5),
                      chSCSIPort(6),
                      chAppleTalkPAP(7),
                          -- AppleTalk Printer
                          -- Access Protocol (PAP)
                          --
                          -- prtChannelInformation entry:
                          --
                          -- Printer Name
                          --   Keyword:      Name
                          --   Syntax:       Name
                          --   Status:       Optional
                          --   Multiplicity: Single
                          --   Description:  The name of the printer within
                          --   the AppleTalk naming scope
                      chLPDServer(8),
                          -- prtChannelInformation entry:
                          --
                          -- Printer queue name
                          --   Keyword:      Queue
                          --   Syntax:       Name
                          --   Status:       Mandatory
                          --   Multiplicity: Single
                          --   Description: queue name as
```

```
                        --                defined in RFC 1179 [12].
                    chNetwareRPrinter(9),
                        -- Novell, Inc.
                        -- For each entry of this type, the
                        -- prtChannelInformation must have a pair of
                        -- keywords. For Netware 3.x channels this must
                        -- be a (PServer, Printer) pair. For Netware 4.x
                        -- channels and for IntranetWare channels this
                        -- must be a (NDSTree, NDSPrinter) pair.
                        --
                        -- prtChannelInformation entries:

                        -- Print Server Name
                        --   Keyword:      PServer
                        --   Syntax:       Name
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The Pserver's SAP name
                        --
                        -- Printer Number
                        --   Keyword:      Printer
                        --   Syntax:       Integer
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The printer number
                        --
                        -- NDSTree
                        --   Keyword:      NDSTree
                        --   Syntax:       Name
                        --   Multiplicity: Single
                        --   Description:  The tree's SAP name
                        --
                        -- NDS Printer object
                        --   Keyword:      NDSPrinter
                        --   Syntax:       Text (Unicode)
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The fully qualified
                        --                 name of the Printer
                        --
                        -- In the Netware 3.x environment, the
                        -- client checks the Bindery object
                        -- representing the named PServer. The
                        -- client then checks for queues which
                        -- are associated with the numbered
                        -- printer. In the 4.x and IntraNetware
                        -- environment, the client looks up the
                        -- queues which are associated with the
                        -- NDS Printer Object in the named Tree.
                        -- Depending on client access rights to
                        -- those queues, the client submits jobs
                        -- to the appropriate queue.
                    chNetwarePServer(10),
                        -- Novell,Inc.
```

```
                        -- For each entry of this type, the
                        -- prtChannelInformation must have a pair
                        -- of keywords. For Netware 3.x channels
                        -- this must be a (Server, PServer) pair.
                        -- For Netware 4.x and IntranetWare
                        -- channels, this must be a
                        -- (NDSTree, NDSPServer) pair.
                        --
                        -- prtChannelInformation entries:
                        --
                        -- Server Name
                        --   Keyword:      Server
                        --   Syntax:       Name
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The SAP name of the
                        --       server for which the PServer is defined.
                        --
                        -- PServer
                        --   Keyword:      PServer
                        --   Syntax:       Name
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The bindery name of
                        --                 the PServer
                        --
                        -- NDS Tree
                        --   Keyword:      NDSTree
                        --   Syntax:       Name
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The NDS Tree name
                        --
                        -- PServer
                        --   Keyword:      NDSPServer
                        --   Syntax:       Text (Unicode)
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The fully qualified
                        --     name of the PServer object in the tree.
                        --
                        -- In the 3.x environment, the client
                        -- checks the bindery object
                        -- representing the named PServer on the
                        -- named Server. In the 4.x and
                        -- IntranetWare environment,
                        -- the client checks the NDS object
                        -- representing the named PServer in the
                        -- named Tree. In either case, the
                        -- client then checks for all queues
                        -- associated with the Pserver object.
                        -- Depending on client access rights
                        -- to those queues, the client submits
                        -- jobs to the appropriate queue.
```

```
1655                    chPort9100(11),
1656                        -- DEPRECATED
1657                        -- (see chPortTCP – 37; chBidirPortTCP – 38)
1658                    chAppSocket(12),
1659                        -- A bi-directional, LPD-like,
1660                        -- protocol using 9101 for
1661                        -- control and 9100 for data.
1662                        -- Adobe Systems, Inc.
1663                    chFTP(13),          -- RFC 959 [11]
1664                    chTFTP(14),         -- RFC 1350 [13]
1665                    chDLCLLCPort(15),
1666                    chIBM3270(16),      -- IBM Coax
1667                    chIBM5250(17),      -- IBM Twinax
1668                    chFax(18),
1669                    chIEEE1394(19),
1670                    chTransport1(20),
1671                        -- TCP port 35, see reserved TCP port list
1672                        -- in RFC 1700 [15] or current "Assigned
1673                        -- Numbers" files. This RFC should also be
1674                        -- referenced for other channel
1675                        -- enumerations utilizing TCP port
1676                        -- numbers 0 through 1024.
1677                    chCPAP(21),       -- TCP port 170
1678                        -- Digital Equipment Corp.
1679                    chDCERemoteProcCall(22), -- OSF
1680                        -- DEPRECATED
1681                    chONCRemoteProcCall(23), -- SUN Microsystems
1682                        -- DEPRECATED
1683                    chOLE(24),          -- Microsoft
1684                        -- DEPRECATED
1685                    chNamedPipe(25),
1686                    chPCPrint(26),    -- Banyan
1687                    chServerMessageBlock(27),
1688                        -- File/Print sharing protocol used by
1689                        -- various network operating systems
1690                        -- from IBM 3Com, Microsoft and others
1691                        --
1692                        -- prtChannelInformation entry:
1693                        --
1694                        -- Service Name
1695                        --   Keyword:      Name
1696                        --   Syntax:       Name
1697                        --   Status:       Optional
1698                        --   Multiplicity: Single
1699                        --   Description:  The service name of
1700                        --                 the printer
1701                    chPSM(28),        -- Printing Systems
1702                        -- Manager, IBM
1703                    chDLLAPI(29), -- Microsoft
1704                        -- DEPRECATED
1705                    chVxDAPI(30), -- Microsoft
1706                        -- DEPRECATED
1707                    chSystemObjectManager(31), -- IBM
1708                    chDECLAT(32),
```

```
                        -- Digital Equipment Corp.
                        --
                        -- prtChannelInformation entries:
                        --
                        -- Port Name
                        --   Keyword:      Port
                        --   Syntax:       Name
                        --   Status:       Conditionally
                        --                 Mandatory
                        --                 (see note below)
                        --   Multiplicity: Single
                        --   Description:  LAT port name
                        --
                        -- Service Name
                        --   Keyword:      Service
                        --   Syntax:       Name
                        --   Status:       Conditionally
                        --                 Mandatory
                        --   Multiplicity: Single
                        --   Description:  LAT service name
                        --
                        -- The LAT channel may be
                        -- identified by either a port or
                        -- service, so either a
                        -- Port or Service entry must be
                        -- specified, but not both.
                    chNPAP(33),
                    chUSB(34),    -- Universal Serial Bus
                    chIRDA(35),   -- Infrared Data Assoc. Prot.
                    chPrintXChange(36), -- PrintXChange Protocol
                    chPortTCP(37),
                        -- A unidirectional "raw" TCP
                        -- channel that uses an administratively
                        -- assigned TCP port address.
                        --
                        -- prtChannelInformation entry:
                        --
                        -- Port Number
                        --   Keyword:      Port
                        --   Syntax:       decimal number
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  TCP port number
                    chBidirPortTCP(38),
                        -- A bi-directional version of chPortTCP
                        --
                        -- prtChannelInformation entries:
                        -- (See chPortTCP)
                    chUNPP(39),
                        -- Universal Network Printing
                        -- Protocol(UNPP). A bi-directional,
                        -- multiport network printing
                        -- application protocol available on
                        -- multiple transport protocols.
```

```
                        -- Underscore, Inc.
                        -- Contact: info@underscore.com
                    chAppleTalkADSP(40),
                        -- AppleTalk Data Stream Protocol.
                        -- ADSP is part of the AppleTalk
                        -- suite of protocols.
                        -- It is a symmetric, connection-
                        -- oriented protocol that makes
                        -- possible the establishment
                        -- and maintenance of full-duplex
                        -- streams of data bytes between
                        -- two sockets in an AppleTalk
                        -- internet.
                        -- See [5].
                    chPortSPX(41),
                        -- Sequenced Packet Exchange (SPX)
                        -- socket.
                        -- Novell, Inc. Similar to TCP, a
                        -- bi-directional data pipe using
                        -- Novell SPX as a transport.
                        --
                        -- prtChannelInformation entries:
                        --
                        -- Network Number
                        --   Keyword:      Net
                        --   Syntax:       HexString
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The network number
                        --
                        -- Node Number
                        --   Keyword:      Node
                        --   Syntax:       HexString
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The node number
                        --
                        -- Socket Number
                        --   Keyword:      Socket
                        --   Syntax:       HexString
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The SPX socket number
                        --
                        -- There must be exactly one "Net" and
                        -- one "Node" and one "Socket" entry. A
                        -- HexString is a binary value
                        -- represented as a string of
                        -- ASCII characters using hexadecimal
                        -- notation.
                    chPortHTTP(42),
                        -- Hypertext Transfer Protocol. See RFC 1945 [16]
                        -- and RFC 2616 [27].
                    chNDPS(43),
```

```
                        -- Novell, Inc.
                        --
                        -- prtChannelInformation entry:
                        --
                        -- Printer Agent Name
                        --   Keyword:      PA
                        --   Syntax:       Name
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Description:  The NDPS Printer
                        --                 Agent Name
                    chIPP(44)
                        -- Internet Printing Protocol (IPP),
                        -- (IPP/1.0 - see RFC 2565 [23] and RFC 2566
                        -- [24]), also applies to all future versions
                        -- of IPP.
                        --
                        -- IPP Printer URI
                        --   Keyword:      URI
                        --   Syntax:       URI (Unicode UTF-8 per
                        --                 RFC 2396 [22])
                        --   Status:       Mandatory
                        --   Multiplicity: Single
                        --   Default:      not applicable
                        --   Description:  URI of this IPP Printer within
                        --     the Internet naming scope.  Unicode
                        --     UTF-8 RFC 2279 [21] string with
                        --     hexadecimal escapes for any non-ASCII
                        --     characters (per RFC 2396 [22]).
                        --   Conformance: An IPP Printer shall list all
                        --     IPP URI it supports (one per IPP Channel
                        --     entry). If a URI contains the 'http:'
                        --     scheme it MUST have an explicit port.
                        --   See: RFC 2279 [21], RFC 2396 [22], RFC 2565
                        --     [23], RFC 2566 [24].
                        --
                        -- IPP Printer Client Authentication
                        --   Keyword:      Auth
                        --   Syntax:       Keyword
                        --   Status:       Optional
                        --   Multiplicity: Single
                        --   Default:      'none'
                        --   Description:  A client authentication
                        --     mechanism supported for this IPP Printer
                        --     URI:
                        --       'none'
                        --         no client authentication mechanism
                        --       'requesting-user-name'
                        --         authenticated user in 'requesting-
                        --         user-name'
                        --       'basic'
                        --         authenticated user via HTTP Basic
                        --         mechanism
                        --       'digest'
```

```
                        --         authenticated user via HTTP Digest
                        --         mechanism
                        --       'certificate'
                        --         authenticated user via certificate
                        --         mechanism
                        --   Conformance: An IPP Printer should list all
                        --     IPP client authentication mechanisms it
                        --     supports (one per IPP Channel entry).
                        --     See: [2] and [3].
                        --
                        -- IPP Printer Security
                        --   Keyword:      Security
                        --   Syntax:       Keyword
                        --   Status:       Optional
                        --   Multiplicity: Single
                        --   Default:      'none'
                        --   Description:  A security mechanism supported
                        --     for this IPP Printer URI:
                        --     'none'
                        --       no security mechanism
                        --     'ssl3'
                        --       SSL3 secure communications channel
                        --       protocol
                        --     'tls'
                        --       TLS secure communications channel
                        --       protocol
                        --   Conformance: An IPP Printer should list all
                        --     IPP security mechanisms it supports
                        --     (one per IPP Channel entry).
                        --   See: RFC 2246 [18], RFC 2566 [24], [2].
                        --
                        -- IPP Printer Protocol Version
                        --   Keyword:      Version
                        --   Syntax:       Keyword
                        --   Status:       Optional
                        --   Multiplicity: Multiple
                        --   Default:      '1.0'
                        --   Description:  All of the IPP protocol
                        --     versions (major.minor) supported for this
                        --     IPP Printer URI:
                        --     '1.0'
                        --       IPP/1.0 conforming Printer
                        --     '1.1'
                        --       IPP/1.1 conforming Printer
                        --   Conformance:  An IPP Printer should list all
                        --     IPP versions it supports (all listed in
                        --     each IPP Channel entry). An IPP Client
                        --     should select the highest numbered
                        --     version that the client supports for use
                        --     in all IPP Requests (for optimum
                        --     interworking).
                        --   See: RFC 2566 [24], [2].
  }
  --
```

```
1925  -- Interpreter Group textual conventions
1926  --
1927
1928  PrtInterpreterLangFamilyTC ::= TEXTUAL-CONVENTION
1929      -- This value is a type 2 enumeration.
1930      STATUS    current
1931      DESCRIPTION
1932          "This enumeration indicates the type of interpreter that is
1933          receiving jobs."
1934      SYNTAX    INTEGER {
1935          other(1),
1936          unknown(2),
1937          langPCL(3),          -- PCL.  Starting with PCL version 5,
1938                               -- HP-GL/2 is included as part of the
1939                               -- PCL language.
1940                               -- PCL and HP-GL/2 are registered
1941                               -- trademarks of Hewlett-Packard
1942                               -- Company.
1943          langHPGL(4),         -- Hewlett-Packard Graphics Language.
1944                               -- HP-GL is a registered trademark of
1945                               -- Hewlett-Packard Company.
1946          langPJL(5),          -- Peripheral Job Language. Appears in
1947                               -- the data stream between data intended
1948                               -- for a page description language.
1949                               -- Hewlett-Packard Co.
1950          langPS(6),           -- PostScript (tm) Language
1951                               -- Postscript - a trademark of Adobe
1952                               -- Systems Incorporated which may be
1953                               -- registered in certain jurisdictions
1954          langIPDS(7),         -- Intelligent Printer Data Stream
1955                               -- Bi-directional print data stream for
1956                               -- documents consisting of data objects
1957                               -- (text, image, graphics, bar codes),
1958                               -- resources (fonts, overlays) and page,
1959                               -- form and finishing instructions.
1960                               -- Facilitates system level device
1961                               -- control, document tracking and error
1962                               -- recovery throughout the print
1963                               -- process.
1964                               -- IBM Corporation.
1965          langPPDS(8),         -- IBM Personal Printer Data Stream.
1966                               -- Originally called IBM ASCII, the name
1967                               -- was changed to PPDS when the Laser
1968                               -- Printer was introduced in 1989.
1969                               -- Lexmark International, Inc.
1970          langEscapeP(9),      -- Epson Corp.
1971          langEpson(10),
1972          langDDIF(11),        -- Digital Document Interchange Format
1973                               -- Digital Equipment Corp., Maynard MA
1974          langInterpress(12),
1975                               -- Xerox Corp.
1976          langISO6429(13),     -- ISO 6429.  Control functions for
1977                               -- Coded Character Sets (has ASCII
1978                               -- control characters, plus additional
```

```
                                -- controls for
                                -- character imaging devices.)
            langLineData(14),   -- line-data:  Lines of data as
                                -- separate ASCII or EBCDIC records
                                -- and containing no control functions
                                -- (no CR, LF, HT, FF, etc.)
                                -- For use with traditional line
                                -- printers.  May use CR and/or LF to
                                -- delimit lines, instead of records.
                                -- See ISO 10175 Document Printing
                                -- Application (DPA) [7].
            langMODCA(15),      -- Mixed Object Document Content
                                -- Architecture
                                -- Definitions that allow the
                                -- composition, interchange, and
                                -- presentation of final form
                                -- documents as a collection of data
                                -- objects (text, image, graphics, bar
                                -- codes), resources (fonts, overlays)
                                -- and page, form and finishing
                                -- instructions.
                                -- IBM Corporation.
            langREGIS(16),      -- Remote Graphics Instruction Set,
                                -- Digital Equipment Corp., Maynard MA
            langSCS(17),        -- SNA Character String
                                -- Bi-directional print data stream for
                                -- SNA LU-1 mode of communication.
                                -- IBM
            langSPDL(18),       -- ISO 10180 Standard Page Description
                                -- Language
                                -- ISO Standard
            langTEK4014(19),    -- Tektronix Corp.
            langPDS(20),
            langIGP(21),        -- Printronix Corp.
            langCodeV(22),      -- Magnum Code-V, Image and printer
                                -- control language used to control
                                -- impact/dot-matrix printers.
                                -- QMS, Inc., Mobile AL
            langDSCDSE(23),     -- DSC-DSE:  Data Stream Compatible and
                                -- Emulation Bi-directional print data
                                -- stream for non-SNA (DSC) and SNA LU-3
                                -- 3270 controller (DSE) communications
                                -- IBM
            langWPS(24),        -- Windows Printing System, Resource
                                -- based command/data stream used by
                                -- Microsoft At Work Peripherals.
                                -- Developed by the Microsoft
                                -- Corporation.
            langLN03(25),       -- Early DEC-PPL3, Digital Equipment
                                -- Corp.
            langCCITT(26),
            langQUIC(27),       -- QUIC (Quality Information Code), Page
                                -- Description Language for laser
                                -- printers. Included graphics, printer
```

```
                                -- control capability and emulation of
                                -- other well-known printer.
                                -- QMS, Inc.
        langCPAP(28),           -- Common Printer Access Protocol
                                -- Digital Equipment Corp.
        langDecPPL(29),         -- Digital ANSI-Compliant Printing
                                -- Protocol
                                -- (DEC-PPL)
                                -- Digital Equipment Corp.
        langSimpleText(30),
                                -- simple-text:  character coded data,
                                -- including NUL, CR , LF, HT, and FF
                                -- control characters.  See ISO 10175
                                -- Document Printing Application (DPA) [7].
        langNPAP(31),           -- Network Printer Alliance Protocol
                                -- (NPAP). This protocol has been
                                -- superseded by the IEEE 1284.1 TIPSI
                                -- Std (ref. LangTIPSI(49)).
        langDOC(32),            -- Document Option Commands, Appears in
                                -- the data stream between data
                                -- intended for a page description.
                                -- QMS, Inc.
        langimPress(33),        -- imPRESS, Page description language
                                -- originally developed for the
                                -- ImageServer product line. A binary
                                -- language providing representations
                                -- of text, simple graphics, and some
                                -- large forms (simple
                                -- bit-map and CCITT group 3/4
                                -- encoded).The
                                -- language was intended to be sent over
                                -- an 8-bit channel and supported early
                                -- document preparation languages (e.g.,
                                -- TeX and TROFF).
                                -- QMS, Inc.
        langPinwriter(34),
                                -- 24 wire dot matrix printer  for
                                -- USA, Europe, and Asia except
                                -- Japan.
                                -- More widely used in Germany, and
                                -- some Asian countries than in US.
                                -- NEC
        langNPDL(35),           -- Page printer  for Japanese market.
                                -- NEC
        langNEC201PL(36),       -- Serial printer language used in
                                -- the Japanese market.
                                -- NEC
        langAutomatic(37),
                                -- Automatic PDL sensing.  Automatic
                                -- sensing of the interpreter
                                -- language family by the printer
                                -- examining the document content.
                                -- Which actual interpreter language
                                -- families are sensed depends on
```

```
                                -- the printer implementation.
        langPages(38),          -- Page printer Advanced Graphic
                                -- Escape Set
                                -- IBM Japan
        langLIPS(39),           -- LBP Image Processing System
        langTIFF(40),           -- Tagged Image File Format (Aldus)
        langDiagnostic(41),
                                -- A hex dump of the input to the
                                -- interpreter
        langPSPrinter(42),
                               -- The PostScript Language used for
                                -- control (with any PDLs)
                                -- Adobe Systems Incorporated
        langCaPSL(43),          -- Canon Print Systems Language
        langEXCL(44),           -- Extended Command Language
                                -- Talaris Systems Inc.
        langLCDS(45),           -- Line Conditioned Data Stream
                                -- Xerox Corporation
        langXES(46),            -- Xerox Escape Sequences
                                -- Xerox Corporation
        langPCLXL(47),          -- Printer Control Language. Extended
                                -- language features for printing, and
                                -- printer control.
                                -- Hewlett-Packard Co.
        langART(48),            -- Advanced Rendering Tools (ART).
                                -- Page Description language
                                -- originally developed for the Laser
                                -- Press printers.
                                -- Technical reference manual: "ART IV
                                -- Reference Manual", No F33M.
                                -- Fuji Xerox Co., Ltd.
        langTIPSI(49),          -- Transport Independent Printer
                                -- System Interface (ref. IEEE Std.
                                -- 1284.1)
        langPrescribe(50),
                                -- Page description and printer
                                -- control language. It can be
                                -- described with ordinary ASCII
                                -- Technical reference manual:
                                -- "PRESCRIBE II Programming Manual"
        langLinePrinter(51),
                                -- A simple-text character stream which
                                -- supports the control codes LF, VT,
                                -- FF, and plus Centronics or
                                -- Dataproducts Vertical Format Unit
                                -- (VFU) language is commonly used on
                                -- many older model line and matrix
                                -- printers.
        langIDP(52),            -- Imaging Device Protocol
                                -- Apple Computer.
        langXJCL(53),           -- Xerox Job Control Language (JCL).
                                -- A Job Control language originally
                                -- developed for the LaserPress printers
                                -- and is capable of switching PDLs.
```

```
                                -- Technical reference manual:
                                -- "ART IV Reference Manual", No F33M.
                                -- Fuji Xerox Co., Ltd.
        langPDF(54),            -- Adobe Portable Document Format
                                -- Adobe Systems, Inc.
        langRPDL(55),           -- Ricoh Page Description Language for
                                -- printers.
                                -- Technical manual "RPDL command
                                -- reference" No.307029
                                -- RICOH, Co. LTD
        langIntermecIPL(56),
                                -- Intermec Printer Language for label
                                -- printers.
                                -- Technical Manual: "IPL Programmers
                                -- Reference Manual"
                                -- Intermec Corporation
        langUBIFingerprint(57),
                                -- An intelligent basic-like programming
                                -- language for label printers.
                                -- Reference Manual: "UBI Fingerprint
                                -- 7.1", No. 1-960434-00
                                -- United Barcode Industries
        langUBIDirectProtocol(58),
                                -- An intelligent control language for
                                -- label printers.
                                -- Programmers guide: " UBI Direct
                                -- Protocol", No. 1-960419-00
                                -- United Barcode Industries
        langFujitsu(59)
                           -- Fujitsu Printer Language
                           -- Reference Manual:
                           -- "FM Printer Sequence" No. 80HP-0770
                           -- FUJITSU LIMITED
        }

--
-- Input/Output Group Textual Conventions
--

PrtInputTypeTC ::= TEXTUAL-CONVENTION
    -- This is a type 2 enumeration.
    STATUS    current
    DESCRIPTION
        "The type of technology (discriminated primarily according to
        feeder mechanism type) employed by a specific component or
        components."
    SYNTAX    INTEGER {
                  other(1),
                  unknown(2),
                  sheetFeedAutoRemovableTray(3),
                  sheetFeedAutoNonRemovableTray(4),
                  sheetFeedManual(5),
                  continuousRoll(6),
                  continuousFanFold(7)
```

```
2195                    }
2196
2197    PrtOutputTypeTC ::= TEXTUAL-CONVENTION
2198        -- This is a type 2 enumeration.
2199        STATUS    current
2200        DESCRIPTION
2201            "The Type of technology supported by this output sub-unit."
2202        SYNTAX    INTEGER {
2203                      other(1),
2204                      unknown(2),
2205                      removableBin(3),
2206                      unRemovableBin(4),
2207                      continuousRollDevice(5),
2208                      mailBox(6),
2209                      continuousFanFold(7)
2210                      }
2211
2212    PrtOutputStackingOrderTC ::= TEXTUAL-CONVENTION
2213        -- This is a type 1 enumeration.
2214        STATUS    current
2215        DESCRIPTION
2216            "The current state of the stacking order for the associated
2217            output sub-unit. 'firstToLast' means that as pages are output,
2218            the front of the next page is placed against the back of the
2219            previous page. 'lastToFirst' means that as pages are output, the
2220            back of the next page is placed against the front of the
2221            previous page."
2222        SYNTAX    INTEGER {
2223                      unknown(2),
2224                      firstToLast(3),
2225                      lastToFirst(4)
2226                      }
2227
2228    PrtOutputPageDeliveryOrientationTC ::= TEXTUAL-CONVENTION
2229        -- This is a type 1 enumeration.
2230        STATUS    current
2231        DESCRIPTION
2232            "The reading surface that will be 'up' when pages are delivered
2233            to the associated output sub-unit. Values are Face-Up and Face
2234            Down (Note: interpretation of these values is, in general,
2235            context-dependent based on locale; presentation of these values
2236            to an end-user should be normalized to the expectations of the
2237            user."
2238        SYNTAX    INTEGER {
2239                      faceUp(3),
2240                      faceDown(4)
2241                      }
2242
2243    --
2244    -- Marker Group Textual Conventions
2245    --
2246
2247    PrtMarkerMarkTechTC ::= TEXTUAL-CONVENTION
2248        -- This value is a type 2 enumeration.
```

```
2249      STATUS    current
2250      DESCRIPTION
2251          "The type of marking technology used for this marking sub-unit"
2252      SYNTAX    INTEGER {
2253                    other(1),
2254                    unknown(2),
2255                    electrophotographicLED(3),
2256                    electrophotographicLaser(4),
2257                    electrophotographicOther(5),
2258                    impactMovingHeadDotMatrix9pin(6),
2259                    impactMovingHeadDotMatrix24pin(7),
2260                    impactMovingHeadDotMatrixOther(8),
2261                    impactMovingHeadFullyFormed(9),
2262                    impactBand(10),
2263                    impactOther(11),
2264                    inkjetAqueous(12),
2265                    inkjetSolid(13),
2266                    inkjetOther(14),
2267                    pen(15),
2268                    thermalTransfer(16),
2269                    thermalSensitive(17),
2270                    thermalDiffusion(18),
2271                    thermalOther(19),
2272                    electroerosion(20),
2273                    electrostatic(21),
2274                    photographicMicrofiche(22),
2275                    photographicImagesetter(23),
2276                    photographicOther(24),
2277                    ionDeposition(25),
2278                    eBeam(26),
2279                    typesetter(27)
2280                    }
2281
2282  PrtMarkerCounterUnitTC ::= TEXTUAL-CONVENTION
2283      -- This value is a type 1 enumeration.
2284      STATUS    current
2285      DESCRIPTION
2286          "The unit that will be used by the printer when reporting
2287          counter values for this marking sub-unit.  The
2288          time units of measure are provided for a device like a
2289          strip recorder that does not or cannot track the physical
2290          dimensions of the media and does not use characters,
2291          lines or sheets."
2292
2293      SYNTAX    INTEGER {
2294                    tenThousandthsOfInches(3),  -- .0001
2295                    micrometers(4),
2296                    characters(5),
2297                    lines(6),
2298                    impressions(7),
2299                    sheets(8),
2300                    dotRow(9),
2301                    hours(11),
2302                    feet(16),
```

```
2303                    meters(17)
2304                    }
2305
2306  PrtMarkerSuppliesTypeTC ::= TEXTUAL-CONVENTION
2307      -- This value is a type 3 enumeration.
2308      STATUS    current
2309      DESCRIPTION
2310          "The type of this supply."
2311      SYNTAX    INTEGER {
2312                    other(1),
2313                    unknown(2),
2314                    toner(3),
2315                    wasteToner(4),
2316                    ink(5),
2317                    inkCartridge(6),
2318                    inkRibbon(7),
2319                    wasteInk(8),
2320                    opc(9), -- photo conductor
2321                    developer(10),
2322                    fuserOil(11),
2323                    solidWax(12),
2324                    ribbonWax(13),
2325                    wasteWax(14),
2326                    fuser(15),
2327                    coronaWire(16),
2328                    fuserOilWick(17),
2329                    cleanerUnit(18),
2330                    fuserCleaningPad(19),
2331                    transferUnit(20),
2332                    tonerCartridge(21),
2333                    fuserOiler(22),
2334                  -- Values for Finisher MIB
2335                    water(23),
2336                    wasteWater(24),
2337                    glueWaterAdditive(25),
2338                    wastePaper(26),
2339                    bindingSupply(27),
2340                    bandingSupply(28),
2341                    stitchingWire(29),
2342                    shrinkWrap(30),
2343                    paperWrap(31),
2344                    staples(32),
2345                    inserts(33),
2346                    covers(34)
2347                  -- End of values for Finisher MIB
2348                    }
2349
2350  PrtMarkerSuppliesSupplyUnitTC ::= TEXTUAL-CONVENTION
2351      -- This value is a type 1 enumeration.
2352      STATUS    current
2353      DESCRIPTION
2354          "Unit of this marker supply container/receptacle."
2355      SYNTAX    INTEGER {
2356                    tenThousandthsOfInches(3),  -- .0001
```

```
                    micrometers(4),
                    impressions(7),
                    sheets(8),
                    hours(11),
                    thousandthsOfOunces(12),
                    tenthsOfGrams(13),
                    hundrethsOfFluidOunces(14),
                    tenthsOfMilliliters(15),
                    feet(16),
                    meters(17),
                  -- Value for Finisher MIB
                    items(18)    -- e.g. number of staples
                    }

PrtMarkerSuppliesClassTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "Indicates whether this supply entity represents a supply
        that is consumed or a receptacle that is filled."
    SYNTAX    INTEGER {
                    other(1),
                    supplyThatIsConsumed(3),
                    receptacleThatIsFilled(4)
                    }

PrtMarkerColorantRoleTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "The role played by this colorant."
    SYNTAX    INTEGER { --  Colorant Role
                    other(1),
                    process(3),
                    spot(4)
                    }

PrtMarkerAddressabilityUnitTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "The unit of measure of distances, as applied to the marker's
        resolution."
    SYNTAX    INTEGER {
                    tenThousandthsOfInches(3), -- .0001
                    micrometers(4)
                    }

--
-- Media Path Textual Conventions
--

PrtMediaPathMaxSpeedPrintUnitTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
```

```
2411      STATUS    current
2412      DESCRIPTION
2413          "The unit of measure used in specifying the speed of all
2414          media paths in the printer."
2415      SYNTAX    INTEGER {
2416                    tenThousandthsOfInchesPerHour(3),-- .0001/hour
2417                    micrometersPerHour(4),
2418                    charactersPerHour(5),
2419                    linesPerHour(6),
2420                    impressionsPerHour(7),
2421                    sheetsPerHour(8),
2422                    dotRowPerHour(9),
2423                    feetPerHour(16),
2424                    metersPerHour(17)
2425                   }
2426
2427   PrtMediaPathTypeTC ::= TEXTUAL-CONVENTION
2428      -- This value is a type 2 enumeration.
2429      STATUS    current
2430      DESCRIPTION
2431          "The type of the media path for this media path."
2432      SYNTAX    INTEGER {
2433                    other(1),
2434                    unknown(2),
2435                    longEdgeBindingDuplex(3),
2436                    shortEdgeBindingDuplex(4),
2437                    simplex(5)
2438                   }
2439
2440   --
2441   -- Interpreter Group Textual Conventions
2442   --
2443
2444   PrtInterpreterTwoWayTC ::= TEXTUAL-CONVENTION
2445      -- This is a type 1 enumeration.
2446      STATUS    current
2447      DESCRIPTION
2448          "Indicates whether or not this interpreter returns information
2449          back to the host."
2450      SYNTAX    INTEGER {
2451                    yes(3),
2452                    no(4)
2453                    }
2454
2455   --
2456   -- Console Group Textual Conventions
2457   --
2458
2459   PrtConsoleColorTC ::= TEXTUAL-CONVENTION
2460      -- This value is a type 2 enumeration.
2461      STATUS     current
2462      DESCRIPTION
2463          "The color of this light."
2464      SYNTAX    INTEGER {
```

```
                    other(1),
                    unknown(2),
                    white(3),
                    red(4),
                    green(5),
                    blue(6),
                    cyan(7),
                    magenta(8),
                    yellow(9),
                    orange(10)
                    }

PrtConsoleDisableTC ::= TEXTUAL-CONVENTION
    -- This value is a type 2 enumeration.
    STATUS     current
    DESCRIPTION
        "This value indicates whether or not input is accepted from
        the operator console.  A value of 'operatorConsoleEnabled'
        indicates that input is accepted from the console, and a value
        of 'operatorConsoleDisabled' indicates that input is not
        accepted from the console.  The other values indicate that
        limited input is accepted from the console, and the limitations
        are product specific. Limitations are generally less restrictive
        for operatorConsoleEnabledLevel1 than for
        operatorConsoleEnabledLeve2, which is less restrictive than
        operatorConsoleEnabledLevel3."
    SYNTAX    INTEGER {
                    operatorConsoleEnabled (3),
                    operatorConsoleDisabled (4),
                    operatorConsoleEnabledLevel1 (5),
                    operatorConsoleEnabledLevel2 (6),
                    operatorConsoleEnabledLevel3 (7)
                    }

--
-- Alert Group Textual Conventions
--

PrtAlertSeverityLevelTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "The level of severity of this alert table entry.  The printer
        determines the severity level assigned to each entry in the
        table. A critical alert is binary by nature and definition. A
        warning is defined to be a non-critical alert. The original and
        most common warning is unary. The binary warning was added later
        and given a more distinguished name."
    SYNTAX    INTEGER {
                    other(1),
                    critical(3),
                    warning(4),
                    warningBinaryChangeEvent(5)
                    }
```

```
2519
2520  PrtAlertTrainingLevelTC ::= TEXTUAL-CONVENTION
2521      -- This value is a type 2 enumeration.
2522      STATUS    current
2523      DESCRIPTION
2524          "The level of training required to handle this alert, if human
2525          intervention is required. The noInterventionRequired value
2526          should be used if the event does not require any human
2527          intervention. The training level is an enumeration that is
2528          determined and assigned by the printer manufacturer based on the
2529          information or the training required to handle this alert.  The
2530          printer will break alerts into these different training levels.
2531          It is the responsibility of the management application in the
2532          system to determine how a particular alert is handled and how
2533          and to whom that alert is routed.  The following are the four
2534          training levels of alerts:
2535
2536          Field Service - Alerts that typically require advanced
2537              training and technical knowledge of the printer and its sub
2538              units. An example of a technical person would be a
2539              manufacturer's Field Service representative, or other person
2540              formally trained by the manufacturer or similar
2541              representative.
2542          Trained - Alerts that require an intermediate or moderate level
2543              of knowledge of the printer and its sub-units. A typical
2544              examples of alerts that a trained operator can handle is
2545              replacing toner cartridges.
2546          Untrained -     Alerts that can be fixed without prior
2547              training either because the action to correct the alert is
2548              obvious or the printer can help the untrained person fix the
2549              problem. A typical example of such an alert is reloading
2550              paper trays and emptying output bins on a low end printer.
2551          Management -    Alerts that have to do with overall operation of
2552              and configuration of the printer. Examples of management
2553              events are configuration change of sub-units."
2554      SYNTAX    INTEGER {
2555                    other(1),
2556                    unknown(2),
2557                    untrained(3),
2558                    trained(4),
2559                    fieldService(5),
2560                    management(6),
2561                    noInterventionRequired(7)
2562                   }
2563
2564  PrtAlertGroupTC ::= TEXTUAL-CONVENTION
2565      -- This value is a type 1 enumeration for values in the range
2566      -- 1 to 29.
2567      -- Values of 30 and greater are type 2 enumerations and are
2568      -- for use in other MIBs that augment tables in the Printer
2569      -- MIB. Therefore, other MIBs may assign alert codes of 30 or
2570      -- higher to use the alert table from the Printer MIB without
2571      -- requiring revising and re-publishing this document.
2572      STATUS    current
```

```
2573      DESCRIPTION
2574          "The type of sub-unit within the printer model that this alert
2575          is related.  Input, output, and markers are examples of printer
2576          model groups, i.e., examples of types of sub-units. Wherever
2577          possible, these enumerations match the sub-identifier that
2578          identifies the relevant table in the printer MIB.
2579
2580          NOTE: Alert type codes have been added for the host resources
2581          MIB storage table and device table. These additional types are
2582          for situations in which the printer's storage and device objects
2583          must generate alerts (and possibly traps for critical alerts)."
2584      SYNTAX    INTEGER {
2585                    other(1),
2586                    hostResourcesMIBStorageTable(3),
2587                    hostResourcesMIBDeviceTable(4),
2588                    generalPrinter(5),
2589                    cover(6),
2590                    localization(7),
2591                    input(8),
2592                    output(9),
2593                    marker(10),
2594                    markerSupplies(11),
2595                    markerColorant(12),
2596                    mediaPath(13),
2597                    channel(14),
2598                    interpreter(15),
2599                    consoleDisplayBuffer(16),
2600                    consoleLights(17),
2601                    alert(18),
2602                  -- Values for Finisher MIB
2603                    finDevice(30),
2604                    finSupply(31),
2605                    finSupplyMediaInput(32),
2606                    finAttributeTable(33)
2607                  -- End of values for Finisher MIB
2608                    }
2609
2610  PrtAlertCodeTC ::= TEXTUAL-CONVENTION
2611      -- This value is a type 2 enumeration.
2612      STATUS    current
2613      DESCRIPTION
2614          "The code that describes the type of alert for this entry in the
2615          table. Binary change event alerts describe states of the subunit
2616          while unary change event alerts describe a single event. The
2617          same alert code can be used for a binary change event or a unary
2618          change event, depending on implementation. Also, the same alert
2619          code can be used to indicate a critical or a non-critical
2620          (warning) alert, depending on implementation. The value of
2621          prtAlertSeverityLevel specifies binary vs. unary and critical
2622          vs. non-critical for each event for the implementation.
2623
2624          While there are some specific codes for many subunits, the
2625          generic codes should be used for most subunit alerts. The
2626          network management station can then query the subunit specified
```

```
2627          by prtAlertGroup to determine further subunit status and other
2628          subunit information.
2629
2630          An agent shall not add two entries to the alert table for the
2631          same event, one containing a generic event code and the other
2632          containing a specific event code; the agent shall add only one
2633          entry in the alert table for each event; either generic
2634          (preferred) or specific, not both.
2635
2636          Implementation of the unary change event
2637          alertRemovalOfBinaryChangeEntry(1801) is optional. When
2638          implemented, this alert code shall indicate to network
2639          management stations that the trailing edge of a binary change
2640          event has occurred and the corresponding alert entry has been
2641          removed from the alert table. As with all events, the
2642          alertRemovalOfBinaryChangeEntry(1801) alert shall be placed at
2643          the end of the alert table. Such an alert table entry shall
2644          specify the following information:
2645
2646          prtAlertSeverityLevel    warningUnaryChangeEvent(4)
2647          prtAlertTrainingLevel    noInterventionRequired(7)
2648          prtAlertGroup            alert(18)
2649          prtAlertGroupIndex       the index of the row in the
2650                                   alert table of the binary
2651                                   change event that this event
2652                                   has removed.
2653          prtAlertLocation         unknown (-2)
2654          prtAlertCode             alertRemovalOfBinaryChangeEntry(1801)
2655          prtAlertDescription      <description or null string>
2656          prtAlertTime             the value of sysUpTime at
2657                                   the time of the removal of the
2658                                   binary change event from the
2659                                   alert table.
2660
2661          Optionally, the agent may generate a trap coincident with
2662          removing the binary change event and placing the unary change
2663          event alertRemovalOfBinaryChangeEntry(1801) in the alert table.
2664          For such a trap, the prtAlertIndex sent with the above trap
2665          parameters shall be the index of the
2666          alertRemovalOfBinaryChangeEvent row that was added to the
2667          prtAlertTable; not the index of the row that was removed from
2668          the prtAlertTable."
2669      SYNTAX    INTEGER {
2670                    other(1),
2671                        -- an event that is not represented
2672                        -- by one of the alert codes
2673                        -- specified below.
2674                    unknown(2),
2675                        -- The following generic codes are common to
2676                        -- multiple groups. The NMS may
2677                        -- examine the prtAlertGroup object to determine
2678                        -- what group to query for further information.
2679                    coverOpen(3),
2680                    coverClosed(4),
```

```
                    interlockOpen(5),
                    interlockClosed(6),
                    configurationChange(7),
                    jam(8),
                    subunitMissing(9),
                        -- The subunit tray, bin, etc.
                        -- has been removed.
                    subunitLifeAlmostOver(10),
                    subunitLifeOver(11),
                    subunitAlmostEmpty(12),
                    subunitEmpty(13),
                    subunitAlmostFull(14),
                    subunitFull(15),
                    subunitNearLimit(16),
                    subunitAtLimit(17),
                    subunitOpened(18),
                    subunitClosed(19),
                    subunitTurnedOn(20),
                    subunitTurnedOff(21),
                    subunitOffline(22),
                    subunitPowerSaver(23),
                    subunitWarmingUp(24),
                    subunitAdded(25),
                    subunitRemoved(26),
                    subunitResourceAdded(27),
                    subunitResourceRemoved(28),
                    subunitRecoverableFailure(29),
                    subunitUnrecoverableFailure(30),
                    subunitRecoverableStorageError(31),
                    subunitUnrecoverableStorageError(32),
                    subunitMotorFailure(33),
                    subunitMemoryExhausted(34),
                    subunitUnderTemperature(35),
                    subunitOverTemperature(36),
                    subunitTimingFailure(37),
                    subunitThermistorFailure(38),
                  -- general Printer group
                    doorOpen(501),    -- DEPRECATED
                                      -- Use coverOpened(3)
                    doorClosed(502),  -- DEPRECATED
                                      -- Use coverClosed(4)
                    powerUp(503),
                    powerDown(504),
                    printerNMSReset(505),
                        -- The printer has been reset by some
                        -- network management station(NMS)
                        -- writing into 'prtGeneralReset'.
                    printerManualReset(506),
                        -- The printer has been reset manually.
                    printerReadyToPrint(507),
                        -- The printer is ready to print. (i.e.,
                        -- not warming up, not in power save
                        -- state, not adjusting print quality,
                        -- etc.).
```

```
2735
2736                -- Input Group
2737                  inputMediaTrayMissing(801),
2738                  inputMediaSizeChange(802),
2739                  inputMediaWeightChange(803),
2740                  inputMediaTypeChange(804),
2741                  inputMediaColorChange(805),
2742                  inputMediaFormPartsChange(806),
2743                  inputMediaSupplyLow(807),
2744                  inputMediaSupplyEmpty(808),
2745                  inputMediaChangeRequest(809),
2746                      -- An interpreter has detected that a
2747                      -- different medium is need in this input
2748                      -- tray subunit. The prtAlertDescription may
2749                      -- be used to convey a human readable
2750                      -- description of the medium required to
2751                      -- satisfy the request.
2752                  inputManualInputRequest(810),
2753                      -- An interpreter has detected that manual
2754                      -- input is required in this subunit. The
2755                      -- prtAlertDescription may be used to convey
2756                      -- a human readable description of the medium
2757                      -- required to satisfy the request.
2758                  inputTrayPositionFailure(811),
2759                      -- The input tray failed to position correctly.
2760                  inputTrayElevationFailure(812),
2761                  inputCannotFeedSizeSelected(813),
2762                -- Output Group
2763                  outputMediaTrayMissing(901),
2764                  outputMediaTrayAlmostFull(902),
2765                  outputMediaTrayFull(903),
2766                  outputMailboxSelectFailure(904),
2767                -- Marker group
2768                  markerFuserUnderTemperature(1001),
2769                  markerFuserOverTemperature(1002),
2770                  markerFuserTimingFailure(1003),
2771                  markerFuserThermistorFailure(1004),
2772                  markerAdjustingPrintQuality(1005),
2773                -- Marker Supplies group
2774                  markerTonerEmpty(1101),
2775                  markerInkEmpty(1102),
2776                  markerPrintRibbonEmpty(1103),
2777                  markerTonerAlmostEmpty(1104),
2778                  markerInkAlmostEmpty(1105),
2779                  markerPrintRibbonAlmostEmpty(1106),
2780                  markerWasteTonerReceptacleAlmostFull(1107),
2781                  markerWasteInkReceptacleAlmostFull(1108),
2782                  markerWasteTonerReceptacleFull(1109),
2783                  markerWasteInkReceptacleFull(1110),
2784                  markerOpcLifeAlmostOver(1111),
2785                  markerOpcLifeOver(1112),
2786                  markerDeveloperAlmostEmpty(1113),
2787                  markerDeveloperEmpty(1114),
2788                  markerTonerCartridgeMissing(1115),
```

```
                -- Media Path Device Group
                  mediaPathMediaTrayMissing(1301),
                  mediaPathMediaTrayAlmostFull(1302),
                  mediaPathMediaTrayFull(1303),
                  mediaPathcannotDuplexMediaSelected(1304),
                -- Interpreter Group
                  interpreterMemoryIncrease(1501),
                  interpreterMemoryDecrease(1502),
                  interpreterCartridgeAdded(1503),
                  interpreterCartridgeDeleted(1504),
                  interpreterResourceAdded(1505),
                  interpreterResourceDeleted(1506),
                  interpreterResourceUnavailable(1507),
                  interpreterComplexPageEncountered(1509),
                      -- The interpreter has encountered a page
                    -- that is too complex for the resources that
                    -- are available.
                -- Alert Group
                  alertRemovalOfBinaryChangeEntry(1801)
                      -- A binary change event entry has been
                      -- removed from the alert table. This unary
                      -- change alert table entry is added to the
                      -- end of the alert table.
                  }

-- The General Printer Group
--
-- The general printer sub-unit is responsible for the overall
-- control and status of the printer.  There is exactly one
-- general printer sub-unit in a printer.
--
-- Implementation of every object in this group is mandatory.

prtGeneral OBJECT IDENTIFIER ::= { printmib 5 }

prtGeneralTable OBJECT-TYPE
    SYNTAX     SEQUENCE OF PrtGeneralEntry
    MAX-ACCESS not-accessible
    STATUS     current
    DESCRIPTION
        "A table of general information per printer.
        Objects in this table are defined in various
        places in the MIB, nearby the groups to
        which they apply.  They are all defined
        here to minimize the number of tables that would
        otherwise need to exist."
    ::= { prtGeneral 1 }

prtGeneralEntry OBJECT-TYPE
    SYNTAX     PrtGeneralEntry
    MAX-ACCESS not-accessible
    STATUS     current
    DESCRIPTION
        "An entry exists in this table for each device entry in the host
```

```
2843          resources MIB device table with a device type of 'printer'"
2844      INDEX    { hrDeviceIndex }
2845      ::= { prtGeneralTable 1 }
2846
2847  PrtGeneralEntry ::= SEQUENCE {
2848      -- Note that not all of the objects in this sequence are in
2849      -- the general printer group. The group to which an
2850      -- object belongs is tagged with a label "General", "Input"
2851      -- "Output", etc. after each entry in the following sequence.
2852      --
2853      prtGeneralConfigChanges         Counter32, -- General
2854      prtGeneralCurrentLocalization   Integer32, -- General
2855      prtGeneralReset                 PrtGeneralResetTC,
2856                                                 -- General
2857      prtGeneralCurrentOperator       OCTET STRING,
2858                                                 -- Responsible Party
2859      prtGeneralServicePerson         OCTET STRING,
2860                                                 -- Responsible Party
2861      prtInputDefaultIndex            Integer32, -- Input
2862      prtOutputDefaultIndex           Integer32, -- Output
2863      prtMarkerDefaultIndex           Integer32, -- Marker
2864      prtMediaPathDefaultIndex        Integer32, -- Media Path
2865      prtConsoleLocalization          Integer32, -- Console
2866      prtConsoleNumberOfDisplayLines  Integer32, -- Console
2867      prtConsoleNumberOfDisplayChars  Integer32, -- Console
2868      prtConsoleDisable               PrtConsoleDisableTC,
2869                                                 -- Console,
2870      prtAuxiliarySheetStartupPage    PresentOnOff,
2871                                                 -- AuxiliarySheet
2872      prtAuxiliarySheetBannerPage     PresentOnOff,
2873                                                 -- AuxiliarySheet,
2874      prtGeneralPrinterName           OCTET STRING,
2875                                                 -- General
2876      prtGeneralSerialNumber          OCTET STRING,
2877                                                 -- General
2878      prtAlertCriticalEvents          Counter32, -- Alert
2879      prtAlertAllEvents               Counter32  -- Alert
2880      }
2881
2882  prtGeneralConfigChanges OBJECT-TYPE
2883      SYNTAX     Counter32
2884      MAX-ACCESS read-only
2885      STATUS     current
2886      DESCRIPTION
2887          "Counts configuration changes within the printer. A
2888          configuration change is defined to be an action that results in
2889          a change to any MIB object other than those that reflect status
2890          or level, or those that act as counters or gauges. In addition,
2891          any action that results in a row being added or deleted from any
2892          table in the Printer MIB is considered a configuration change.
2893          Such changes will often affect the capability of the printer to
2894          service certain types of print jobs. Management applications may
2895          cache infrequently changed configuration information about sub
2896          units within the printer. This object should be incremented
```

```
2897          whenever the agent wishes to notify management applications that
2898          any cached configuration information for this device is to be
2899          considered 'stale'. At this point, the management application
2900          should flush any configuration information cached about this
2901          device and fetch new configuration information.
2902
2903          The following are examples of actions that would cause the
2904          prtGeneralConfigChanges object to be incremented:
2905
2906          - Adding an output bin
2907          - Changing the media in a sensing input tray
2908          - Changing the value of prtInputMediaType
2909
2910          Note that the prtGeneralConfigChanges counter would not be
2911          incremented when an input tray is removed, or the level of an
2912          input device changes."
2913
2914      ::= { prtGeneralEntry 1 }
2915
2916  prtGeneralCurrentLocalization OBJECT-TYPE
2917      SYNTAX     Integer32 (1..65535)
2918      MAX-ACCESS read-write
2919      STATUS     current
2920      DESCRIPTION
2921          "The value of the prtLocalizationIndex corresponding to the
2922          current language, country, and character set to be used for
2923          localized string values that are identified as being dependent
2924          on the value of this object.  Note that this object does not
2925          apply to localized strings in the prtConsole group or to any
2926          object that is not explicitly identified as being localized
2927          according to prtGeneralCurrentLocalization."
2928      ::= { prtGeneralEntry 2 }
2929
2930  prtGeneralReset OBJECT-TYPE
2931      -- This value is a type 3 enumeration.
2932      SYNTAX     PrtGeneralResetTC
2933      MAX-ACCESS read-write
2934      STATUS     current
2935      DESCRIPTION
2936          "Setting this value to 'powerCycleReset', 'resetToNVRAM', or
2937          'resetToFactoryDefaults' will result in the resetting of the
2938          printer.  When read, this object will always have the value
2939          'notResetting(3)', and a SET of the value 'notResetting' shall
2940          have no effect on the printer.  Some of the defined values are
2941          optional.  However, every implementation must support at least
2942          the values 'notResetting' and 'resetToNVRAM'."
2943      ::= { prtGeneralEntry 3 }
2944
2945  -- The Responsible Party group
2946  --
2947  -- This group is optional.  However, to claim conformance to this
2948  -- group, it is necessary to implement every object in the group.
2949
2950  prtGeneralCurrentOperator OBJECT-TYPE
```

```
2951      SYNTAX     OCTET STRING (SIZE(0..127))
2952      MAX-ACCESS read-write
2953      STATUS     current
2954      DESCRIPTION
2955          "The name of the person who is responsible for operating
2956          this printer. It is suggested that this string include
2957          information that would enable other humans to reach the
2958          operator, such as a phone number. As a convention to
2959          facilitate automatic notification of the operator by the
2960          agent or network management station, the phone number,
2961          fax number or email address should be indicated by the
2962          URL schemes 'tel:', 'fax:' and 'mailto:', respectively.
2963          If either the phone, fax, or email information is not
2964          available, then a line should not be included for this
2965          information.
2966
2967          NOTE: For interoperability purposes, it is advisable to
2968          use email addresses formatted according to RFC 822 [9]
2969          requirements."
2970      ::= { prtGeneralEntry 4 }
2971
2972  prtGeneralServicePerson OBJECT-TYPE
2973      SYNTAX     OCTET STRING (SIZE(0..127))
2974      MAX-ACCESS read-write
2975      STATUS     current
2976      DESCRIPTION
2977          "The name of the person responsible for servicing this
2978          printer. It is suggested that this string include
2979          information that would enable other humans to reach the
2980          service person, such as a phone number. As a convention
2981          to facilitate automatic notification of the operator by
2982          the agent or network management station, the phone
2983          number, fax number or email address should be indicated
2984          by the URL schemes 'tel:', 'fax:' and 'mailto:',
2985          respectively. If either the phone, fax, or email
2986          information is not available, then a line should not
2987          be included for this information.
2988
2989          NOTE: For interoperability purposes, it is advisable to use
2990          email addresses formatted per RFC 822 [9] requirements."
2991
2992      ::= { prtGeneralEntry 5 }
2993
2994  -- Default indexes section
2995  --
2996  -- The following four objects are used to specify the indexes of
2997  -- certain subunits used as defaults during the printing process.
2998
2999  prtInputDefaultIndex OBJECT-TYPE
3000      SYNTAX     Integer32
3001      MAX-ACCESS read-write
3002      STATUS     current
3003      DESCRIPTION
3004          "The value of prtInputIndex corresponding to the default input
```

```
3005          sub-unit: that is, this object selects the default source of
3006          input media.
3007
3008          This value shall be -1 if there is no default input subunit
3009          specified for the printer as a whole.  In this case, the actual
3010          default input subunit may be specified by means outside the
3011          scope of this MIB, such as by each interpreter in a printer with
3012          multiple interpreters."
3013
3014      ::= { prtGeneralEntry 6 }
3015
3016  prtOutputDefaultIndex OBJECT-TYPE
3017      SYNTAX     Integer32
3018      MAX-ACCESS read-write
3019      STATUS     current
3020      DESCRIPTION
3021          "The value of prtOutputIndex corresponding to the default output
3022          sub-unit; that is, this object selects the default output
3023          destination.
3024
3025          This value shall be -1 if there is no default output subunit
3026          specified for the printer as a whole.  In this case, the actual
3027          default output subunit may be specified by means outside the
3028          scope of this MIB, such as by each interpreter in a printer with
3029          multiple interpreters."
3030
3031      ::= { prtGeneralEntry 7 }
3032
3033  prtMarkerDefaultIndex OBJECT-TYPE
3034      SYNTAX     Integer32 (1..65535)
3035      MAX-ACCESS read-write
3036      STATUS     current
3037      DESCRIPTION
3038          "The value of prtMarkerIndex corresponding to the
3039          default marker sub-unit; that is, this object selects the
3040          default marker."
3041      ::= { prtGeneralEntry 8 }
3042
3043  prtMediaPathDefaultIndex OBJECT-TYPE
3044      SYNTAX     Integer32 (1..65535)
3045      MAX-ACCESS read-write
3046      STATUS     current
3047      DESCRIPTION
3048          "The value of prtMediaPathIndex corresponding to
3049          the default media path; that is, the selection of the
3050          default media path."
3051      ::= { prtGeneralEntry 9 }
3052
3053  -- Console general section
3054  --
3055  -- The following four objects describe overall parameters of the
3056  -- printer console subsystem.
3057
3058  prtConsoleLocalization OBJECT-TYPE
```

```
3059      SYNTAX     Integer32 (1..65535)
3060      MAX-ACCESS read-write
3061      STATUS     current
3062      DESCRIPTION
3063          "The value of the prtLocalizationIndex corresponding to
3064          the language, country, and character set to be used for the
3065          console.  This localization applies both to the actual display
3066          on the console as well as the encoding of these console objects
3067          in management operations."
3068      ::= { prtGeneralEntry 10 }
3069
3070  prtConsoleNumberOfDisplayLines OBJECT-TYPE
3071      SYNTAX     Integer32 (0..65535)
3072      MAX-ACCESS read-only
3073      STATUS     current
3074      DESCRIPTION
3075          "The number of lines on the printer's physical
3076          display.  This value is 0 if there are no lines on the
3077          physical display or if there is no physical display"
3078      ::= { prtGeneralEntry 11 }
3079
3080  prtConsoleNumberOfDisplayChars OBJECT-TYPE
3081      SYNTAX     Integer32 (0..65535)
3082      MAX-ACCESS read-only
3083      STATUS     current
3084      DESCRIPTION
3085          "The number of characters per line displayed on the physical
3086          display. This value is 0 if there are no lines on the physical
3087          display or if there is no physical display"
3088      ::= { prtGeneralEntry 12 }
3089
3090  prtConsoleDisable OBJECT-TYPE
3091      SYNTAX     PrtConsoleDisableTC
3092      MAX-ACCESS read-write
3093      STATUS     current
3094      DESCRIPTION
3095          "This value indicates how input is (or is not) accepted from
3096          the operator console."
3097      ::= { prtGeneralEntry 13 }
3098
3099  -- The Auxiliary Sheet Group
3100  --
3101  -- The auxiliary sheet group allows the administrator to control
3102  -- the production of auxiliary sheets by the printer. This group
3103  -- contains only the "prtAuxiliarySheetStartupPage" and
3104  -- "prtAuxiliarySheetBannerPage" objects.
3105  --
3106  -- This group is optional. However, to claim conformance to this
3107  -- group it is necessary to implement every object in the group.
3108
3109  prtAuxiliarySheetStartupPage OBJECT-TYPE
3110      SYNTAX     PresentOnOff
3111      MAX-ACCESS read-write
3112      STATUS     current
```

```
3113      DESCRIPTION
3114          "Used to enable or disable printing a startup page. If enabled,
3115          a startup page will be printed shortly after power-up, when the
3116          device is ready. Typical startup pages include test patterns
3117          and/or printer configuration information."
3118      ::= { prtGeneralEntry 14 }
3119
3120  prtAuxiliarySheetBannerPage OBJECT-TYPE
3121      SYNTAX     PresentOnOff
3122      MAX-ACCESS read-write
3123      STATUS     current
3124      DESCRIPTION
3125          "Used to enable or disable printing banner pages at the
3126          beginning of jobs. This is a master switch which applies to all
3127          jobs, regardless of interpreter."
3128       ::= { prtGeneralEntry 15 }
3129
3130  -- Administrative section
3131  --
3132  -- The following two objects are used to specify administrative
3133  -- information assigned to the printer.
3134
3135  prtGeneralPrinterName OBJECT-TYPE
3136      SYNTAX     OCTET STRING (SIZE (0..127))
3137      MAX-ACCESS read-write
3138      STATUS     current
3139      DESCRIPTION
3140          "An administrator-specified name for this printer. Depending
3141          upon implementation of this printer, the value of this object
3142          may or may not be same as the value for the MIB-II 'SysName'
3143          object."
3144       ::= { prtGeneralEntry 16 }
3145
3146  prtGeneralSerialNumber OBJECT-TYPE
3147      SYNTAX     OCTET STRING (SIZE (0..255))
3148      MAX-ACCESS read-write
3149      STATUS     current
3150      DESCRIPTION
3151          "A recorded serial number for this device that indexes some type
3152          device catalog or inventory. This value is usually set by the
3153          device manufacturer but the MIB supports the option of writing
3154          for this object for site-specific administration of device
3155          inventory or tracking."
3156      ::= { prtGeneralEntry 17 }
3157
3158  -- General alert table section
3159  --
3160  -- The following two objects are used to specify counters
3161  -- associated with the Alert Table.
3162
3163  prtAlertCriticalEvents OBJECT-TYPE
3164      SYNTAX     Counter32
3165      MAX-ACCESS read-only
3166      STATUS     current
```

```
3167      DESCRIPTION
3168          "A running counter of the number of critical alert events that
3169          have been recorded in the alert table. The value of this object
3170          is RESET in the event of a power cycle operation (i.e., the
3171          value is not persistent."
3172      ::= { prtGeneralEntry 18 }
3173
3174  prtAlertAllEvents OBJECT-TYPE
3175      SYNTAX     Counter32
3176      MAX-ACCESS read-only
3177      STATUS     current
3178      DESCRIPTION
3179          "A running counter of the total number of alert event entries
3180          (critical and non-critical) that have been recorded in the alert
3181          table"
3182      ::= { prtGeneralEntry 19 }
3183
3184  -- The Cover Table
3185  --
3186  -- The cover portion of the General print sub-unit describes the
3187  -- covers and interlocks of the printer.  The Cover Table has an
3188  -- entry for each cover and interlock.
3189
3190  prtCover OBJECT IDENTIFIER ::= { printmib 6 }
3191
3192  prtCoverTable OBJECT-TYPE
3193      SYNTAX     SEQUENCE OF PrtCoverEntry
3194      MAX-ACCESS not-accessible
3195      STATUS     current
3196      DESCRIPTION
3197          "A table of the covers and interlocks of the printer."
3198      ::= { prtCover 1 }
3199
3200  prtCoverEntry OBJECT-TYPE
3201      SYNTAX     PrtCoverEntry
3202      MAX-ACCESS not-accessible
3203      STATUS     current
3204      DESCRIPTION
3205          "Information about a cover or interlock.
3206          Entries may exist in the table for each device
3207          index with a device type of 'printer'."
3208      INDEX  { hrDeviceIndex, prtCoverIndex }
3209      ::= { prtCoverTable 1 }
3210
3211  PrtCoverEntry ::= SEQUENCE {
3212      prtCoverIndex            Integer32,
3213      prtCoverDescription      OCTET STRING,
3214      prtCoverStatus           PrtCoverStatusTC
3215      }
3216
3217  prtCoverIndex OBJECT-TYPE
3218      SYNTAX     Integer32 (1..65535)
3219      MAX-ACCESS not-accessible
3220      STATUS     current
```

```
3221      DESCRIPTION
3222          "A unique value used by the printer to identify this Cover sub
3223          unit.  Although these values may change due to a major
3224          reconfiguration of the device (e.g. the addition of new cover
3225          sub-units to the printer), values are expected to remain stable
3226          across successive printer power cycles."
3227      ::= { prtCoverEntry 1 }
3228
3229  prtCoverDescription OBJECT-TYPE
3230      SYNTAX     OCTET STRING (SIZE(0..255))
3231      MAX-ACCESS read-only
3232      STATUS     current
3233      DESCRIPTION
3234          "The manufacturer provided cover sub-mechanism name in the
3235          localization specified by prtGeneralCurrentLocalization."
3236      ::= { prtCoverEntry 2 }
3237
3238  prtCoverStatus  OBJECT-TYPE
3239      --  This value is a type 2 enumeration
3240      SYNTAX     PrtCoverStatusTC
3241      MAX-ACCESS read-only
3242      STATUS     current
3243      DESCRIPTION
3244          "The status of this cover sub-unit."
3245      ::= { prtCoverEntry 3 }
3246
3247  -- The Localization Table
3248  --
3249  -- The localization portion of the General printer sub-unit is
3250  -- responsible for identifying the natural language, country, and
3251  -- character set in which character strings are expressed. There
3252  -- may be one or more localizations supported per printer. The
3253  -- available localizations are represented by the Localization
3254  -- table.
3255
3256  prtLocalization  OBJECT IDENTIFIER ::= { printmib 7 }
3257
3258  prtLocalizationTable OBJECT-TYPE
3259      SYNTAX     SEQUENCE OF PrtLocalizationEntry
3260      MAX-ACCESS not-accessible
3261      STATUS     current
3262      DESCRIPTION
3263          "The available localizations in this printer."
3264      ::= { prtLocalization 1 }
3265
3266  prtLocalizationEntry OBJECT-TYPE
3267      SYNTAX     PrtLocalizationEntry
3268      MAX-ACCESS not-accessible
3269      STATUS     current
3270      DESCRIPTION
3271          "A description of a localization.
3272          Entries may exist in the table for each device
3273          index with a device type of 'printer'."
3274      INDEX  { hrDeviceIndex, prtLocalizationIndex }
```

```
3275      ::= { prtLocalizationTable 1 }
3276
3277  PrtLocalizationEntry ::= SEQUENCE {
3278      prtLocalizationIndex          Integer32,
3279      prtLocalizationLanguage       DisplayString,
3280      prtLocalizationCountry        DisplayString,
3281      prtLocalizationCharacterSet   CodedCharSet
3282      }
3283
3284  prtLocalizationIndex OBJECT-TYPE
3285      SYNTAX     Integer32 (1..65535)
3286      MAX-ACCESS not-accessible
3287      STATUS     current
3288      DESCRIPTION
3289          "A unique value used by the printer to identify this
3290          localization entry.  Although these values may change due to a
3291          major reconfiguration of the device (e.g., the addition of new
3292          localization data to the printer), values are expected to remain
3293          stable across successive printer power cycles."
3294      ::= { prtLocalizationEntry 1 }
3295
3296  prtLocalizationLanguage OBJECT-TYPE
3297      SYNTAX     DisplayString (SIZE(0..2))
3298      MAX-ACCESS read-only
3299      STATUS     current
3300      DESCRIPTION
3301          "A two character language code from ISO 639.  Examples en, gb,
3302          ca, fr, de."
3303      ::= { prtLocalizationEntry 2 }
3304
3305  prtLocalizationCountry OBJECT-TYPE
3306      SYNTAX     DisplayString (SIZE(0..2))
3307      MAX-ACCESS read-only
3308      STATUS     current
3309      DESCRIPTION
3310          "A two character country code from ISO 3166, a blank string (two
3311          space characters) shall indicate that the country is not
3312          defined.  Examples: US, FR, DE, ..."
3313      ::= { prtLocalizationEntry 3 }
3314
3315  prtLocalizationCharacterSet OBJECT-TYPE
3316      SYNTAX     CodedCharSet
3317      MAX-ACCESS read-only
3318      STATUS     current
3319      DESCRIPTION
3320        "The coded character set used for this localization."
3321      ::= { prtLocalizationEntry 4 }
3322
3323  -- The System Resources Tables
3324  --
3325  -- The Printer MIB makes use of the Host Resources MIB to
3326  -- define system resources by referencing the storage
3327  -- and device groups of the print group.  In order to
3328  -- determine, amongst multiple printers serviced by
```

```
3329  -- one agent, which printer owns a particular resource,
3330  -- the prtStorageRef and prtDeviceRef tables associate
3331  -- particular storage and device entries to printers.
3332
3333  prtStorageRefTable OBJECT-TYPE
3334      SYNTAX     SEQUENCE OF PrtStorageRefEntry
3335      MAX-ACCESS not-accessible
3336      STATUS     current
3337      DESCRIPTION
3338          ""
3339      ::= { prtGeneral 2 }
3340
3341  prtStorageRefEntry OBJECT-TYPE
3342      SYNTAX     PrtStorageRefEntry
3343      MAX-ACCESS not-accessible
3344      STATUS     current
3345      DESCRIPTION
3346          "This table will have an entry for each entry in the Host
3347          Resources MIB storage table that represents storage associated
3348          with a printer managed by this agent."
3349      INDEX      { hrStorageIndex, prtStorageRefSeqNumber }
3350      ::= { prtStorageRefTable 1 }
3351
3352  PrtStorageRefEntry ::= SEQUENCE {
3353      prtStorageRefSeqNumber  Integer32,
3354      prtStorageRefIndex      Integer32
3355      }
3356
3357  prtStorageRefSeqNumber OBJECT-TYPE
3358      SYNTAX     Integer32 (1..65535)
3359      MAX-ACCESS not-accessible
3360      STATUS     current
3361      DESCRIPTION
3362          "This value will be unique amongst all entries with a common
3363          value of hrStorageIndex. This object allows a storage entry to
3364          point to the multiple printer devices with which it is
3365          associated."
3366      ::= { prtStorageRefEntry 1 }
3367
3368  prtStorageRefIndex OBJECT-TYPE
3369      SYNTAX     Integer32 (1..65535)
3370      MAX-ACCESS read-only
3371      STATUS     current
3372      DESCRIPTION
3373          "The value of the hrDeviceIndex of the printer device that this
3374          storageEntry is associated with."
3375      ::= { prtStorageRefEntry 2 }
3376
3377  prtDeviceRefTable OBJECT-TYPE
3378      SYNTAX     SEQUENCE OF PrtDeviceRefEntry
3379      MAX-ACCESS not-accessible
3380      STATUS     current
3381      DESCRIPTION
3382          ""
```

```
3383      ::= { prtGeneral 3 }
3384
3385  prtDeviceRefEntry OBJECT-TYPE
3386      SYNTAX     PrtDeviceRefEntry
3387      MAX-ACCESS not-accessible
3388      STATUS     current
3389      DESCRIPTION
3390          "This table will have an entry for each entry in the Host
3391          Resources MIB device table that represents a device associated
3392          with a printer managed by this agent."
3393      INDEX      { hrDeviceIndex, prtDeviceRefSeqNumber }
3394      ::= { prtDeviceRefTable 1 }
3395
3396  PrtDeviceRefEntry ::= SEQUENCE {
3397      prtDeviceRefSeqNumber   Integer32,
3398      prtDeviceRefIndex       Integer32
3399      }
3400
3401  prtDeviceRefSeqNumber OBJECT-TYPE
3402      SYNTAX     Integer32 (1..65535)
3403      MAX-ACCESS not-accessible
3404      STATUS     current
3405      DESCRIPTION
3406          "This value will be unique amongst all entries with a common
3407          value of hrDeviceIndex. This object allows a device entry to
3408          point to the multiple printer devices with which it is
3409          associated."
3410      ::= { prtDeviceRefEntry 1 }
3411
3412  prtDeviceRefIndex OBJECT-TYPE
3413      SYNTAX     Integer32 (1..65535)
3414      MAX-ACCESS read-only
3415      STATUS     current
3416      DESCRIPTION
3417          "The value of the hrDeviceIndex of the printer device that this
3418          deviceEntry is associated with."
3419      ::= { prtDeviceRefEntry 2 }
3420
3421  -- The Input Group
3422  --
3423  -- Input sub-units are managed as a tabular, indexed collection
3424  -- of possible devices capable of providing media for input to
3425  -- the printing process. Input sub-units typically have a
3426  -- location, a type, an identifier, a set of constraints on
3427  -- possible media sizes and potentially other media
3428  -- characteristics, and may be capable of indicating current
3429  -- status or capacity.
3430  --
3431  -- Implementation of every object in this group is mandatory.
3432
3433  prtInput   OBJECT IDENTIFIER ::= { printmib 8 }
3434
3435  prtInputTable OBJECT-TYPE
3436      SYNTAX     SEQUENCE OF PrtInputEntry
```

```
3437      MAX-ACCESS not-accessible
3438      STATUS     current
3439      DESCRIPTION
3440          "A table of the devices capable of providing media for input to
3441          the printing process."
3442      ::= { prtInput 2 }
3443
3444  prtInputEntry OBJECT-TYPE
3445      SYNTAX     PrtInputEntry
3446      MAX-ACCESS not-accessible
3447      STATUS     current
3448      DESCRIPTION
3449          "Attributes of a device capable of providing media for input to
3450          the printing process. Entries may exist in the table for each
3451          device index with a device type of 'printer'."
3452      INDEX  { hrDeviceIndex, prtInputIndex }
3453      ::= { prtInputTable 1 }
3454
3455  PrtInputEntry ::= SEQUENCE {
3456      prtInputIndex                     Integer32,
3457      prtInputType                      PrtInputTypeTC,
3458      prtInputDimUnit                   PrtMediaUnitTC,
3459      prtInputMediaDimFeedDirDeclared   Integer32,
3460      prtInputMediaDimXFeedDirDeclared  Integer32,
3461      prtInputMediaDimFeedDirChosen     Integer32,
3462      prtInputMediaDimXFeedDirChosen    Integer32,
3463      prtInputCapacityUnit              PrtCapacityUnitTC,
3464      prtInputMaxCapacity               Integer32,
3465      prtInputCurrentLevel              Integer32,
3466      prtInputStatus                    PrtSubUnitStatusTC,
3467      prtInputMediaName                 OCTET STRING,
3468      prtInputName                      OCTET STRING,
3469      prtInputVendorName                OCTET STRING,
3470      prtInputModel                     OCTET STRING,
3471      prtInputVersion                   OCTET STRING,
3472      prtInputSerialNumber              OCTET STRING,
3473      prtInputDescription               OCTET STRING,
3474      prtInputSecurity                  PresentOnOff,
3475      prtInputMediaWeight               Integer32,
3476      prtInputMediaType                 OCTET STRING,
3477      prtInputMediaColor                OCTET STRING,
3478      prtInputMediaFormParts            Integer32,
3479      prtInputMediaLoadTimeout          Integer32,
3480      prtInputNextIndex                 Integer32
3481      }
3482
3483  prtInputIndex OBJECT-TYPE
3484      SYNTAX     Integer32 (1..65535)
3485      MAX-ACCESS not-accessible
3486      STATUS     current
3487      DESCRIPTION
3488          "A unique value used by the printer to identify this input sub
3489          unit.  Although these values may change due to a major
3490          reconfiguration of the device (e.g. the addition of n input sub-
```

```
3491          units to the printer), values are expected to remain stable
3492          across successive printer power cycles."
3493      ::= { prtInputEntry 1 }
3494
3495  prtInputType OBJECT-TYPE
3496      SYNTAX     PrtInputTypeTC
3497      MAX-ACCESS read-only
3498      STATUS     current
3499      DESCRIPTION
3500          "The type of technology (discriminated primarily according to
3501          feeder mechanism type) employed by the input sub-unit.  Note,
3502          the Optional Input Class provides for a descriptor field to
3503          further qualify the other choice."
3504      ::= { prtInputEntry 2 }
3505
3506  prtInputDimUnit OBJECT-TYPE
3507      SYNTAX     PrtMediaUnitTC
3508      MAX-ACCESS read-only
3509      STATUS     current
3510      DESCRIPTION
3511          "The unit of measurement for use calculating and relaying
3512           dimensional values for this input sub-unit."
3513      ::= { prtInputEntry 3 }
3514
3515  prtInputMediaDimFeedDirDeclared OBJECT-TYPE
3516      SYNTAX     Integer32
3517      MAX-ACCESS read-write
3518      STATUS     current
3519      DESCRIPTION
3520          "This object provides the value of the declared dimension, in
3521          the feed direction, of the media that is (or, if empty, was or
3522          will be) in this input sub-unit.  The feed direction is the
3523          direction in which the media is fed on this sub-unit.  This
3524          dimension is measured in input sub-unit dimensional units
3525          (prtInputDimUnit).  If this input sub-unit can reliably sense
3526          this value, the value is sensed by the printer and may not be
3527          changed by management requests.  Otherwise, the value may be
3528          changed. The value (-1) means other and specifically means that
3529          this sub-unit places no restriction on this parameter.
3530
3531          The value (-2) indicates unknown."
3532      ::= { prtInputEntry 4 }
3533
3534  prtInputMediaDimXFeedDirDeclared OBJECT-TYPE
3535      SYNTAX     Integer32
3536      MAX-ACCESS read-write
3537      STATUS     current
3538      DESCRIPTION
3539          "This object provides the value of the declared dimension, in
3540          the cross feed direction, of the media that is (or, if empty,
3541          was or will be) in this input sub-unit.  The cross  feed
3542          direction is ninety degrees relative to the feed direction
3543          associated with this sub-unit. This dimension is measured in
3544          input sub-unit dimensional units (prtInputDimUnit).  If this
```

```
3545          input sub-unit can reliably sense this value, the value is
3546          sensed by the printer and may not be changed by management
3547          requests. Otherwise, the value may be changed. The value (-1)
3548          means other and specifically means that this sub-unit places no
3549          restriction on this parameter. The value (-2) indicates
3550          unknown."
3551      ::= { prtInputEntry 5 }
3552
3553  prtInputMediaDimFeedDirChosen OBJECT-TYPE
3554      SYNTAX     Integer32
3555      MAX-ACCESS read-only
3556      STATUS     current
3557      DESCRIPTION
3558          "The printer will act as if media of the chosen dimension (in
3559          the feed direction) is present in this input source.  Note that
3560          this value will be used even if the input tray is empty. Feed
3561          dimension measurements are taken relative to the feed direction
3562          associated with that sub-unit and are in input sub-unit
3563          dimensional units (MediaUnit). If the printer supports the
3564          declared dimension, the granted dimension is the same as the
3565          declared dimension. If not, the granted dimension is set to the
3566          closest dimension that the printer supports when the declared
3567          dimension is set. The value (-1) means other and specifically
3568          indicates that this sub-unit places no restriction on this
3569          parameter. The value (-2) indicates unknown."
3570      ::= { prtInputEntry 6 }
3571
3572  prtInputMediaDimXFeedDirChosen OBJECT-TYPE
3573      SYNTAX     Integer32
3574      MAX-ACCESS read-only
3575      STATUS     current
3576      DESCRIPTION
3577          "The printer will act as if media of the chosen dimension (in
3578          the cross feed direction) is present in this input source. Note
3579          that this value will be used even if the input tray is empty.
3580          The cross feed direction is ninety degrees relative to the feed
3581          direction associated with this sub-unit. This dimension is
3582          measured in input sub-unit dimensional units (MediaUnit).  If
3583          the printer supports the declare dimension, the granted
3584          dimension is the same as the declared dimension. If not, the
3585          granted dimension is set to the closest dimension that the
3586          printer supports when the declared dimension is set. The value
3587          (-1) means other and specifically indicates that this sub-unit
3588          places no restriction on this parameter.  The value (-2)
3589          indicates unknown."
3590      ::= { prtInputEntry 7 }
3591
3592  prtInputCapacityUnit OBJECT-TYPE
3593      SYNTAX     PrtCapacityUnitTC
3594      MAX-ACCESS read-only
3595      STATUS     current
3596      DESCRIPTION
3597          "The unit of measurement for use in calculating and relaying
3598          capacity values for this input sub-unit."
```

```
3599      ::= { prtInputEntry 8 }
3600
3601  prtInputMaxCapacity OBJECT-TYPE
3602      SYNTAX     Integer32
3603      MAX-ACCESS read-write
3604      STATUS     current
3605      DESCRIPTION
3606          "The maximum capacity of the input sub-unit in input sub-unit
3607          capacity units (PrtCapacityUnitTC).  There is no convention
3608          associated with the media itself so this value reflects claimed
3609          capacity. If this input sub-unit can reliably sense this value,
3610          the value is sensed by the printer and may not be changed by
3611          management requests; otherwise, the value may be written (by a
3612          Remote Control Panel or a Management Application). The value
3613          (-1) means other and specifically indicates that the sub-unit
3614          places no restrictions on this parameter.  The value (-2) means
3615          unknown."
3616      ::= { prtInputEntry 9 }
3617
3618  prtInputCurrentLevel OBJECT-TYPE
3619      SYNTAX     Integer32 --    in capacity units
3620                           --   (PrtCapacityUnitTC).
3621      MAX-ACCESS read-write
3622      STATUS     current
3623      DESCRIPTION
3624          "The current capacity of the input sub-unit in input sub-unit
3625          capacity units (PrtCapacityUnitTC). If this input sub-unit can
3626          reliably sense this value, the value is sensed by the printer
3627          and may not be changed by management requests; otherwise, the
3628          value may be written (by a Remote Control Panel or a Management
3629          Application).  The value (-1) means other and specifically
3630          indicates that the sub-unit places no restrictions on this
3631          parameter. The value (-2) means unknown. The value (-3) means
3632          that the printer knows that at least one unit remains."
3633      ::= { prtInputEntry 10 }
3634
3635  prtInputStatus OBJECT-TYPE
3636      SYNTAX     PrtSubUnitStatusTC
3637      MAX-ACCESS read-only
3638      STATUS     current
3639      DESCRIPTION
3640          "The current status of this input sub-unit."
3641      ::= { prtInputEntry 11 }
3642
3643  prtInputMediaName OBJECT-TYPE
3644      SYNTAX     OCTET STRING (SIZE(0..63))
3645      MAX-ACCESS read-write
3646      STATUS     current
3647      DESCRIPTION
3648          "A description of the media contained in this input sub-unit;
3649          This description is intended for display to a human operator.
3650          This description is not processed by the printer.  It is used to
3651          provide information not expressible in terms of the other media
3652          attributes (e.g. prtInputMediaDimFeedDirChosen,
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```
3653          prtInputMediaDimXFeedDirChosen, prtInputMediaWeight,
3654          prtInputMediaType). An example would be 'legal tender bond
3655          paper'."
3656      REFERENCE
3657           "See Appendix C, 'Media Names'."
3658      ::= { prtInputEntry 12 }
3659
3660  --              INPUT MEASUREMENT
3661  --
3662  --     _______ |               |
3663  --      ^      |               |
3664  --      |      |               |                  |
3665  --      |      |_ _ _ _ _ _ _ _| _________________ |direction
3666  --      |      |               |       ^           v
3667  -- MaxCapacity |    Sheets     |       |
3668  --      |      |     left      | CurrentLevel
3669  --      |      |      in       |       |
3670  --      v      |     tray      |       v
3671  --     _______ +_______________+ _______
3672
3673  -- The Extended Input Group
3674  --
3675  -- This group is optional.  However, to claim conformance to this
3676  -- group, it is necessary to implement every object in the group.
3677
3678  prtInputName OBJECT-TYPE
3679      SYNTAX     OCTET STRING (SIZE(0..63))
3680      MAX-ACCESS read-write
3681      STATUS     current
3682      DESCRIPTION
3683          "The name assigned to this input sub-unit."
3684      ::= { prtInputEntry 13 }
3685
3686  prtInputVendorName OBJECT-TYPE
3687      SYNTAX     OCTET STRING (SIZE(0..63))
3688      MAX-ACCESS read-only
3689      STATUS     current
3690      DESCRIPTION
3691          "The vendor name of this input sub-unit."
3692      ::= { prtInputEntry 14 }
3693
3694  prtInputModel OBJECT-TYPE
3695      SYNTAX     OCTET STRING (SIZE(0..63))
3696      MAX-ACCESS read-only
3697      STATUS     current
3698      DESCRIPTION
3699          "The model name of this input sub-unit."
3700      ::= { prtInputEntry 15 }
3701
3702  prtInputVersion OBJECT-TYPE
3703      SYNTAX     OCTET STRING (SIZE(0..63))
3704      MAX-ACCESS read-only
3705      STATUS     current
3706      DESCRIPTION
```

```
3707          "The version of this input sub-unit."
3708      ::= { prtInputEntry 16 }
3709
3710  prtInputSerialNumber OBJECT-TYPE
3711      SYNTAX     OCTET STRING (SIZE(0..63))
3712      MAX-ACCESS read-only
3713      STATUS     current
3714      DESCRIPTION
3715          "The serial number assigned to this input sub-unit."
3716      ::= { prtInputEntry 17 }
3717
3718  prtInputDescription OBJECT-TYPE
3719      SYNTAX     OCTET STRING (SIZE(0..255))
3720      MAX-ACCESS read-only
3721      STATUS     current
3722      DESCRIPTION
3723          "A free-form text description of this input sub-unit in the
3724          localization specified by  prtGeneralCurrentLocalization."
3725      ::= { prtInputEntry 18 }
3726
3727  prtInputSecurity OBJECT-TYPE
3728      SYNTAX     PresentOnOff
3729      MAX-ACCESS read-write
3730      STATUS     current
3731      DESCRIPTION
3732          "Indicates if this input sub-unit has some security associated
3733          with it."
3734      ::= { prtInputEntry 19 }
3735
3736  -- The Input Media Group
3737  --
3738  -- The Input Media Group supports identification of media
3739  -- installed or available for use on a printing device.
3740  -- Medium resources are identified by name, and include a
3741  -- collection of characteristic attributes that may further be
3742  -- used for selection and management of them.
3743  -- The Input Media group consists of a set of optional
3744  -- "columns" in the Input Table. In this manner, a minimally
3745  -- conforming implementation may choose to not support reporting
3746  -- of media resources if it cannot do so.
3747  --
3748  -- This group is optional.  However, to claim conformance to this
3749  -- group, it is necessary to implement every object in the group.
3750
3751  prtInputMediaWeight  OBJECT-TYPE
3752      SYNTAX     Integer32
3753      MAX-ACCESS read-write
3754      STATUS     current
3755      DESCRIPTION
3756          "The weight of the medium associated with this input sub-unit in
3757          grams / per meter squared. The value (-2) means unknown."
3758      ::= { prtInputEntry 20 }
3759
3760  prtInputMediaType OBJECT-TYPE
```

```
3761      SYNTAX     OCTET STRING (SIZE(0..63))
3762      MAX-ACCESS read-write
3763      STATUS     current
3764      DESCRIPTION
3765          "The name of the type of medium associated with this input sub
3766          unit. This name need not be processed by the printer; it might
3767          simply be displayed to an operator. The standardized string
3768          values from ISO 10175 (DPA) and ISO 10180 (SPDL) are:
3769
3770          stationery       Separately cut sheets of an opaque
3771                           material
3772          transparency     Separately cut sheets of a transparent
3773                           material
3774          envelope         Envelopes that can be used for
3775                           conventional mailing purposes
3776          envelope-plain   Envelopes that are not preprinted and
3777                           have no windows
3778          envelope-window  Envelopes that have windows for
3779                           addressing purposes
3780          continuous-long  Continuously connected sheets of an
3781                           opaque material connected along the
3782                           long edge
3783          continuous-short Continuously connected sheets of an
3784                           opaque material connected along the
3785                           short edge
3786          tab-stock        Media with tabs
3787          multi-part-form  Form medium composed of multiple layers
3788                           not pre-attached to one another; each
3789                           sheet may be drawn separately from an
3790                           input source
3791          labels           Label stock
3792          multi-layer      Form medium composed of multiple layers
3793                           which are pre-attached to one another;
3794                           e.g., for use with impact printers.
3795
3796          Implementers may add additional string values. The naming
3797          conventions in ISO 9070 are recommended in order to avoid
3798          potential name clashes."
3799      ::= { prtInputEntry 21 }
3800
3801  prtInputMediaColor OBJECT-TYPE
3802      SYNTAX     OCTET STRING (SIZE(0..63))
3803      MAX-ACCESS read-write
3804      STATUS     current
3805      DESCRIPTION
3806          "The name of the color of the medium associated with
3807          this input sub-unit using standardized string values
3808          from ISO 10175 (DPA) and ISO 10180 (SPDL) such as:
3809
3810          other
3811          unknown
3812          white
3813          pink
3814          yellow
```

```
3815          buff
3816          goldenrod
3817          blue
3818          green
3819          transparent
3820
3821          Implementers may add additional string values. The naming
3822          conventions in ISO 9070 are recommended in order to avoid
3823          potential name clashes."
3824      ::= { prtInputEntry 22 }
3825
3826  prtInputMediaFormParts OBJECT-TYPE
3827      SYNTAX     Integer32
3828      MAX-ACCESS read-write
3829      STATUS     current
3830      DESCRIPTION
3831          "The number of parts associated with the medium
3832          associated with this input sub-unit if the medium is a
3833          multi-part form.  The value (-1) means other and
3834          specifically indicates that the device places no
3835          restrictions on this parameter.  The value (-2) means
3836          unknown."
3837      ::= { prtInputEntry 23 }
3838
3839  -- The Input Switching Group
3840  --
3841  -- The input switching group allows the administrator to set the
3842  -- input subunit time-out for the printer and to control the
3843  -- automatic input subunit switching by the printer when an input
3844  -- subunit becomes empty.
3845  --
3846  -- This group is optional. However, to claim conformance to this
3847  -- group, it is required to implement every object in the group.
3848
3849  prtInputMediaLoadTimeout OBJECT-TYPE
3850     SYNTAX     Integer32
3851     MAX-ACCESS read-write
3852     STATUS     current
3853     DESCRIPTION
3854          "When the printer is not able to print due to a subunit being
3855          empty or the requested media must be manually loaded, the
3856          printer will wait for the duration (in seconds) specified by
3857          this object. Upon expiration of the time-out, the printer will
3858          take the action specified by prtInputNextIndex.
3859
3860          The event which causes the printer to enter the waiting state is
3861          product specific. If the printer is not waiting for manually fed
3862          media, it may switch from an empty subunit to a different
3863          subunit without waiting for the time-out to expire.
3864
3865          A value of (-1) implies 'other' or 'infinite' which translates
3866          to 'wait forever'. The action which causes printing to continue
3867          is product specific. A value of (-2) implies 'unknown'."
3868     ::= { prtInputEntry 24 }
```

```
3869
3870  prtInputNextIndex OBJECT-TYPE
3871     SYNTAX     Integer32
3872     MAX-ACCESS read-write
3873     STATUS     current
3874     DESCRIPTION
3875          "The value of prtInputIndex corresponding to the input subunit
3876          which will be used when this input subunit is emptied and the
3877          time-out specified by prtInputMediaLoadTimeout expires. A value
3878          of zero(0) indicates that auto input switching will not occur
3879          when this input subunit is emptied. If the time-out specified by
3880          prtInputLoadMediaTimeout expires and this value is zero(0), the
3881          job will be aborted. A value of (-1) means other. The value (-2)
3882          means 'unknown' and specifically indicates that an
3883          implementation specific method will determine the next input
3884          subunit to use at the time this subunit is emptied and the time
3885          out expires. The value(-3) means input switching is not
3886          supported for this subunit."
3887     ::= { prtInputEntry 25 }
3888
3889  -- The Output Group
3890  --
3891  -- Output sub-units are managed as a tabular, indexed collection
3892  -- of possible devices capable of receiving media delivered from
3893  -- the printing process.  Output sub-units typically have a
3894  -- location, a type, an identifier, a set of constraints on
3895  -- possible media sizes and potentially other characteristics,
3896  -- and may be capable of indicating current status or capacity.
3897  --
3898  -- Implementation of every object in this group is mandatory.
3899
3900  prtOutput  OBJECT IDENTIFIER ::= { printmib 9 }
3901
3902  prtOutputTable OBJECT-TYPE
3903      SYNTAX     SEQUENCE OF PrtOutputEntry
3904      MAX-ACCESS not-accessible
3905      STATUS     current
3906      DESCRIPTION
3907          "A table of the devices capable of receiving media delivered
3908          from the printing process."
3909      ::= { prtOutput 2 }
3910
3911  prtOutputEntry OBJECT-TYPE
3912      SYNTAX     PrtOutputEntry
3913      MAX-ACCESS not-accessible
3914      STATUS     current
3915      DESCRIPTION
3916          "Attributes of a device capable of receiving media delivered
3917          from the printing process. Entries may exist in the table for
3918          each device index with a device type of 'printer'."
3919      INDEX  { hrDeviceIndex, prtOutputIndex }
3920      ::= { prtOutputTable 1 }
3921
3922  PrtOutputEntry ::= SEQUENCE {
```

```
3923      prtOutputIndex                    Integer32,
3924      prtOutputType                     PrtOutputTypeTC,
3925      prtOutputCapacityUnit             PrtCapacityUnitTC,
3926      prtOutputMaxCapacity              Integer32,
3927      prtOutputRemainingCapacity        Integer32,
3928      prtOutputStatus                   PrtSubUnitStatusTC,
3929      prtOutputName                     OCTET STRING,
3930      prtOutputVendorName               OCTET STRING,
3931      prtOutputModel                    OCTET STRING,
3932      prtOutputVersion                  OCTET STRING,
3933      prtOutputSerialNumber             OCTET STRING,
3934      prtOutputDescription              OCTET STRING,
3935      prtOutputSecurity                 PresentOnOff,
3936      prtOutputDimUnit                  PrtMediaUnitTC,
3937      prtOutputMaxDimFeedDir            Integer32,
3938      prtOutputMaxDimXFeedDir           Integer32,
3939      prtOutputMinDimFeedDir            Integer32,
3940      prtOutputMinDimXFeedDir           Integer32,
3941      prtOutputStackingOrder        PrtOutputStackingOrderTC,
3942      prtOutputPageDeliveryOrientation
3943                           PrtOutputPageDeliveryOrientationTC,
3944      prtOutputBursting                 PresentOnOff,
3945      prtOutputDecollating              PresentOnOff,
3946      prtOutputPageCollated             PresentOnOff,
3947      prtOutputOffsetStacking           PresentOnOff
3948      }
3949
3950  prtOutputIndex OBJECT-TYPE
3951      SYNTAX     Integer32 (1..65535)
3952      MAX-ACCESS not-accessible
3953      STATUS     current
3954      DESCRIPTION
3955          "A unique value used by this printer to identify this
3956          output sub-unit. Although these values may change due
3957          to a major reconfiguration of the sub-unit (e.g.  the
3958          addition of new output devices to the printer), values
3959          are expected to remain stable across successive printer
3960          power cycles."
3961      ::= { prtOutputEntry 1 }
3962
3963  prtOutputType OBJECT-TYPE
3964      -- This value is a type 2 enumeration
3965      SYNTAX     PrtOutputTypeTC
3966      MAX-ACCESS read-only
3967      STATUS     current
3968      DESCRIPTION
3969          "The type of technology supported by this output sub-unit."
3970      ::= { prtOutputEntry 2 }
3971
3972  prtOutputCapacityUnit OBJECT-TYPE
3973      SYNTAX     PrtCapacityUnitTC
3974      MAX-ACCESS read-only
3975      STATUS     current
3976      DESCRIPTION
```

```
3977          "The unit of measurement for use in calculating and relaying
3978          capacity values for this output sub-unit."
3979      ::= { prtOutputEntry 3 }
3980
3981  prtOutputMaxCapacity OBJECT-TYPE
3982      SYNTAX     Integer32
3983      MAX-ACCESS read-write
3984      STATUS     current
3985      DESCRIPTION
3986          "The maximum capacity of this output sub-unit in output sub-unit
3987          capacity units (PrtCapacityUnitTC). There is no convention
3988          associated with the media itself so this value essentially
3989          reflects claimed capacity. If this output sub-unit can reliably
3990          sense this value, the value is sensed by the printer and may not
3991          be changed by management requests; otherwise, the value may be
3992          written (by a Remote Control Panel or a Management Application).
3993          The value (-1) means other and specifically indicates that the
3994          sub-unit places no restrictions on this parameter. The value
3995          (-2) means unknown."
3996      ::= { prtOutputEntry 4 }
3997
3998  prtOutputRemainingCapacity OBJECT-TYPE
3999      SYNTAX     Integer32
4000      MAX-ACCESS read-write
4001      STATUS     current
4002      DESCRIPTION
4003          "The remaining capacity of the possible output sub-unit capacity
4004          in output sub-unit capacity units (PrtCapacityUnitTC)of this
4005          output sub-unit. If this output sub-unit can reliably sense this
4006          value, the value is sensed by the printer and may not be
4007          modified by management requests; otherwise, the value may be
4008          written (by a Remote Control Panel or a Management Application).
4009          The value (-1) means other and specifically indicates that the
4010          sub-unit places no restrictions on this parameter.  The value
4011          (-2) means unknown.  The value (-3) means that the printer knows
4012          that there remains capacity for at least one unit."
4013      ::= { prtOutputEntry 5 }
4014
4015  prtOutputStatus OBJECT-TYPE
4016      SYNTAX     PrtSubUnitStatusTC
4017      MAX-ACCESS read-only
4018      STATUS     current
4019      DESCRIPTION
4020          "The current status of this output sub-unit."
4021      ::= { prtOutputEntry 6 }
4022
4023  --             OUTPUT MEASUREMENT
4024  --
4025  --    _______  |                | ________
4026  --       ^     |                |     ^
4027  --       |     |                |     |
4028  --       |     |                |RemainingCapacity
4029  -- MaxCapacity|                |     |
4030  --       |     |                |     v           ^
```

```
4031  --      |     |_ _ _ _ _ _ _ _ | _________________ |direction
4032  --      |     |    Sheets      |                   |
4033  --      |     |      in        |
4034  --      v     |    Output      |
4035  --   _______  +________________+
4036
4037  -- The Extended Output Group
4038  --
4039  -- This group is optional.  However, to claim conformance to this
4040  -- group, it is necessary to implement every object in the group.
4041
4042  prtOutputName OBJECT-TYPE
4043      SYNTAX     OCTET STRING (SIZE(0..63))
4044      MAX-ACCESS read-write
4045      STATUS     current
4046      DESCRIPTION
4047          "The name assigned to this output sub-unit."
4048      ::= { prtOutputEntry 7 }
4049
4050  prtOutputVendorName OBJECT-TYPE
4051      SYNTAX     OCTET STRING (SIZE(0..63))
4052      MAX-ACCESS read-only
4053      STATUS     current
4054      DESCRIPTION
4055          "The vendor name of this output sub-unit."
4056      ::= { prtOutputEntry 8 }
4057
4058  prtOutputModel OBJECT-TYPE
4059      SYNTAX     OCTET STRING (SIZE(0..63))
4060      MAX-ACCESS read-only
4061      STATUS     current
4062      DESCRIPTION
4063          "The model name assigned to this output sub-unit."
4064      ::= { prtOutputEntry 9 }
4065
4066  prtOutputVersion OBJECT-TYPE
4067      SYNTAX     OCTET STRING (SIZE(0..63))
4068      MAX-ACCESS read-only
4069      STATUS     current
4070      DESCRIPTION
4071          "The version of this output sub-unit."
4072      ::= { prtOutputEntry 10 }
4073
4074  prtOutputSerialNumber OBJECT-TYPE
4075      SYNTAX     OCTET STRING (SIZE(0..63))
4076      MAX-ACCESS read-only
4077      STATUS     current
4078      DESCRIPTION
4079          "The serial number assigned to this output sub-unit."
4080      ::= { prtOutputEntry 11 }
4081
4082  prtOutputDescription OBJECT-TYPE
4083      SYNTAX     OCTET STRING (SIZE(0..255))
4084      MAX-ACCESS read-only
```

```
4085      STATUS     current
4086      DESCRIPTION
4087          "A free-form text description of this output sub-unit in the
4088          localization specified by prtGeneralCurrentLocalization."
4089      ::= { prtOutputEntry 12 }
4090
4091  prtOutputSecurity OBJECT-TYPE
4092      SYNTAX     PresentOnOff
4093      MAX-ACCESS read-write
4094      STATUS     current
4095      DESCRIPTION
4096          "Indicates if this output sub-unit has some security associated
4097          with it and if that security is enabled or not."
4098      ::= { prtOutputEntry 13 }
4099
4100  -- The Output Dimensions Group
4101  --
4102  -- This group is optional.  However, to claim conformance to this
4103  -- group, it is necessary to implement every object in the group.
4104
4105  prtOutputDimUnit OBJECT-TYPE
4106      SYNTAX     PrtMediaUnitTC
4107      MAX-ACCESS read-only
4108      STATUS     current
4109      DESCRIPTION
4110          "The unit of measurement for use in calculating and relaying
4111          dimensional values for this output sub-unit."
4112      ::= { prtOutputEntry 14 }
4113
4114  prtOutputMaxDimFeedDir OBJECT-TYPE
4115      SYNTAX     Integer32
4116      MAX-ACCESS read-write
4117      STATUS     current
4118      DESCRIPTION
4119          "The maximum dimensions supported by this output sub-unit
4120          for measurements taken parallel relative to the feed
4121          direction associated with that sub-unit in output
4122          sub-unit dimensional units (MediaUnit). If this output
4123          sub-unit can reliably sense this value, the value is
4124          sensed by the printer and may not be changed with
4125          management protocol operations."
4126      ::= { prtOutputEntry 15 }
4127
4128  prtOutputMaxDimXFeedDir OBJECT-TYPE
4129      SYNTAX     Integer32
4130      MAX-ACCESS read-write
4131      STATUS     current
4132      DESCRIPTION
4133          "The maximum dimensions supported by this output sub-unit
4134          for measurements taken ninety degrees relative to the
4135          feed direction associated with that sub-unit in output
4136          sub-unit dimensional units (MediaUnit). If this output
4137          sub-unit can reliably sense this value, the value is
4138          sensed by the printer and may not be changed with
```

```
4139          management protocol operations."
4140      ::= { prtOutputEntry 16 }
4141
4142  prtOutputMinDimFeedDir OBJECT-TYPE
4143      SYNTAX     Integer32
4144      MAX-ACCESS read-write
4145      STATUS     current
4146      DESCRIPTION
4147          "The minimum dimensions supported by this output sub-unit
4148          for measurements taken parallel relative to the feed
4149          direction associated with that sub-unit in output
4150          sub-unit dimensional units (DimUnit).  If this output
4151          sub-unit can reliably sense this value, the value is
4152          sensed by the printer and may not be changed with
4153          management protocol operations."
4154      ::= { prtOutputEntry 17 }
4155
4156  prtOutputMinDimXFeedDir OBJECT-TYPE
4157      SYNTAX     Integer32
4158      MAX-ACCESS read-write
4159      STATUS     current
4160      DESCRIPTION
4161          "The minimum dimensions supported by this output sub-unit
4162          for measurements taken ninety degrees relative to the
4163          feed direction associated with that sub-unit in output
4164          sub-unit dimensional units (DimUnit). If this output
4165          sub-unit can reliably sense this value, the value is
4166          sensed by the printer and may not be changed with
4167          management protocol operations."
4168      ::= { prtOutputEntry 18 }
4169
4170  -- The Output Features Group
4171  --
4172  -- This group is optional.  However, to claim conformance to this
4173  -- group, it is necessary to implement every object in the group.
4174
4175  prtOutputStackingOrder OBJECT-TYPE
4176      --  This value is a type 1 enumeration
4177      SYNTAX     PrtOutputStackingOrderTC
4178      MAX-ACCESS read-write
4179      STATUS     current
4180      DESCRIPTION
4181          "The current state of the stacking order for the
4182          associated output sub-unit. 'FirstToLast' means
4183          that as pages are output the front of the next page is
4184          placed against the back of the previous page.
4185          'LasttoFirst' means that as pages are output the back
4186          of the next page is placed against the front of the
4187          previous page."
4188      ::= { prtOutputEntry 19 }
4189
4190  prtOutputPageDeliveryOrientation OBJECT-TYPE
4191      --   This value is a type 1 enumeration
4192      SYNTAX     PrtOutputPageDeliveryOrientationTC
```

```
4193      MAX-ACCESS read-write
4194      STATUS     current
4195      DESCRIPTION
4196          "The reading surface that will be 'up' when pages are
4197          delivered to the associated output sub-unit. Values are
4198          faceUp and faceDown. (Note: interpretation of these
4199          values is in general context-dependent based on locale;
4200          presentation of these values to an end-user should be
4201          normalized to the expectations of the user)."
4202      ::= { prtOutputEntry 20 }
4203
4204  prtOutputBursting OBJECT-TYPE
4205      SYNTAX     PresentOnOff
4206      MAX-ACCESS read-write
4207      STATUS     current
4208      DESCRIPTION
4209          "This object indicates that the outputting sub-unit supports
4210          bursting, and if so, whether the feature is enabled. Bursting is
4211          the process by which continuous media is separated into
4212          individual sheets, typically by bursting along pre-formed
4213          perforations."
4214      ::= { prtOutputEntry 21 }
4215
4216  prtOutputDecollating OBJECT-TYPE
4217      SYNTAX     PresentOnOff
4218      MAX-ACCESS read-write
4219      STATUS     current
4220      DESCRIPTION
4221          "This object indicates that the output supports decollating, and
4222          if so, whether the feature is enabled. Decollating is the
4223          process by which the individual parts within a multi-part form
4224          are separated and sorted into separate stacks for each part."
4225      ::= { prtOutputEntry 22 }
4226
4227  prtOutputPageCollated OBJECT-TYPE
4228      SYNTAX     PresentOnOff
4229      MAX-ACCESS read-write
4230      STATUS     current
4231      DESCRIPTION
4232          "This object indicates that the output sub-unit supports page
4233          collation, and if so, whether the feature is enabled. See
4234          glossary for definition of how this document defines collation."
4235      ::= { prtOutputEntry 23 }
4236
4237  prtOutputOffsetStacking OBJECT-TYPE
4238      SYNTAX     PresentOnOff
4239      MAX-ACCESS read-write
4240      STATUS     current
4241      DESCRIPTION
4242          "This object indicates that the output supports offset stacking,
4243          and if so, whether the feature is enabled. See glossary for how
4244          Offset Stacking is defined by this document."
4245      ::= { prtOutputEntry 24 }
4246
```

```
4247  -- The Marker Group
4248  --
4249  -- A marker is the mechanism that produces marks on the print
4250  -- media. The marker sub-units and their associated supplies are
4251  -- represented by the Marker Group in the model.  A printer can
4252  -- contain one or more marking mechanisms.  Some examples of
4253  -- multiple marker sub-units are: a printer
4254  -- with separate markers for normal and magnetic ink or an
4255  -- imagesetter that can output to both a proofing device and
4256  -- final film. Each marking device can have its own set of
4257  -- characteristics associated with it, such as marking technology
4258  -- and resolution.
4259  --
4260  -- Implementation of every object in this group is mandatory.
4261
4262  prtMarker OBJECT IDENTIFIER ::= { printmib 10 }
4263
4264  -- The printable area margins as listed below define an area of
4265  -- the print media which is guaranteed to be printable for all
4266  -- combinations of input, media paths, and interpreters for this
4267  -- marker.
4268
4269  prtMarkerTable OBJECT-TYPE
4270      SYNTAX     SEQUENCE OF PrtMarkerEntry
4271      MAX-ACCESS not-accessible
4272      STATUS     current
4273      DESCRIPTION
4274          ""
4275      ::= { prtMarker 2 }
4276
4277  prtMarkerEntry OBJECT-TYPE
4278      SYNTAX     PrtMarkerEntry
4279      MAX-ACCESS not-accessible
4280      STATUS     current
4281      DESCRIPTION
4282          "Entries may exist in the table for each device index with a
4283          device type of 'printer'."
4284      INDEX  { hrDeviceIndex, prtMarkerIndex }
4285      ::= { prtMarkerTable 1 }
4286
4287  PrtMarkerEntry ::= SEQUENCE {
4288      prtMarkerIndex                  Integer32,
4289      prtMarkerMarkTech               PrtMarkerMarkTechTC,
4290      prtMarkerCounterUnit            PrtMarkerCounterUnitTC,
4291      prtMarkerLifeCount              Counter32,
4292      prtMarkerPowerOnCount           Counter32,
4293      prtMarkerProcessColorants       Integer32,
4294      prtMarkerSpotColorants          Integer32,
4295      prtMarkerAddressabilityUnit     PrtMarkerAddressabilityUnitTC,
4296      prtMarkerAddressabilityFeedDir  Integer32,
4297      prtMarkerAddressabilityXFeedDir Integer32,
4298      prtMarkerNorthMargin            Integer32,
4299      prtMarkerSouthMargin            Integer32,
4300      prtMarkerWestMargin             Integer32,
```

```
4301      prtMarkerEastMargin             Integer32,
4302      prtMarkerStatus                 PrtSubUnitStatusTC
4303      }
4304
4305  prtMarkerIndex OBJECT-TYPE
4306      SYNTAX     Integer32 (1..65535)
4307      MAX-ACCESS not-accessible
4308      STATUS     current
4309      DESCRIPTION
4310          "A unique value used by the printer to identify this marking
4311          SubUnit.  Although these values may change due to a major
4312          reconfiguration of the device (e.g. the addition of new marking
4313          sub-units to the printer), values are expected to remain stable
4314          across successive printer power cycles."
4315      ::= { prtMarkerEntry 1 }
4316
4317  prtMarkerMarkTech OBJECT-TYPE
4318      -- This value is a type 2 enumeration
4319      SYNTAX     PrtMarkerMarkTechTC
4320      MAX-ACCESS read-only
4321      STATUS     current
4322      DESCRIPTION
4323          "The type of marking technology used for this marking sub-unit."
4324      ::= { prtMarkerEntry 2 }
4325
4326  prtMarkerCounterUnit OBJECT-TYPE
4327      -- This value is a type 1 enumeration
4328      SYNTAX     PrtMarkerCounterUnitTC
4329      MAX-ACCESS read-only
4330      STATUS     current
4331      DESCRIPTION
4332          "The unit that will be used by the printer when reporting
4333          counter values for this marking sub-unit.  The time units of
4334          measure are provided for a device like a strip recorder that
4335          does not or cannot track the physical dimensions of the media
4336          and does not use characters, lines or sheets."
4337      ::= { prtMarkerEntry 3}
4338
4339  prtMarkerLifeCount OBJECT-TYPE
4340      SYNTAX     Counter32
4341      MAX-ACCESS read-only
4342      STATUS     current
4343      DESCRIPTION
4344          "The count of the number of units of measure counted during the
4345          life of printer using units of measure as specified by
4346          prtMarkerCounterUnit."
4347      ::= { prtMarkerEntry 4 }
4348
4349  prtMarkerPowerOnCount OBJECT-TYPE
4350      SYNTAX     Counter32
4351      MAX-ACCESS read-only
4352      STATUS     current
4353      DESCRIPTION
4354          "The count of the number of units of measure counted since the
```

```
4355          equipment was most recently powered on using units of measure as
4356          specified by prtMarkerCounterUnit."
4357      ::= { prtMarkerEntry 5 }
4358
4359  prtMarkerProcessColorants OBJECT-TYPE
4360      SYNTAX     Integer32 (0..65535)
4361      MAX-ACCESS read-only
4362      STATUS     current
4363      DESCRIPTION
4364          "The number of process colors supported by this marker.  A
4365          process color of 1 implies monochrome.  The value of this object
4366          and prtMarkerSpotColorants cannot both be 0.  The value of
4367          prtMarkerProcessColorants must be 0 or greater."
4368      ::= { prtMarkerEntry 6 }
4369
4370  prtMarkerSpotColorants OBJECT-TYPE
4371      SYNTAX     Integer32 (0..65535)
4372      MAX-ACCESS read-only
4373      STATUS     current
4374      DESCRIPTION
4375          "The number of spot colors supported by this marker. The value
4376          of this object and prtMarkerProcessColorants cannot both be 0.
4377          Must be 0 or greater."
4378      ::= { prtMarkerEntry 7 }
4379
4380  prtMarkerAddressabilityUnit OBJECT-TYPE
4381      --   This value is a type 1 enumeration
4382      SYNTAX     PrtMarkerAddressabilityUnitTC
4383      MAX-ACCESS read-only
4384      STATUS     current
4385      DESCRIPTION
4386          "The unit of measure of distances, as applied to the marker's
4387          resolution."
4388      ::= { prtMarkerEntry 8 }
4389
4390  prtMarkerAddressabilityFeedDir OBJECT-TYPE
4391      SYNTAX     Integer32
4392      MAX-ACCESS read-only
4393      STATUS     current
4394      DESCRIPTION
4395          "The maximum number of addressable marking positions in the feed
4396          direction per 10000 units of measure specified by
4397          prtMarkerAddressabilityUnit.  A value of (-1) implies 'other' or
4398          'infinite' while a value of (-2) implies 'unknown'."
4399      ::= { prtMarkerEntry 9 }
4400
4401  prtMarkerAddressabilityXFeedDir OBJECT-TYPE
4402      SYNTAX     Integer32
4403      MAX-ACCESS read-only
4404      STATUS     current
4405      DESCRIPTION
4406          "The maximum number of addressable marking positions in the
4407          cross feed direction in 10000 units of measure specified by
4408          prtMarkerAddressabilityUnit.  A value of (-1) implies 'other' or
```

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4409          'infinite' while a value of (-2) implies 'unknown'."
4410      ::= { prtMarkerEntry 10 }
4411
4412  prtMarkerNorthMargin OBJECT-TYPE
4413      SYNTAX     Integer32
4414      MAX-ACCESS read-only
4415      STATUS     current
4416      DESCRIPTION
4417          "The margin, in units identified by prtMarkerAddressabilityUnit,
4418          from the leading edge of the medium as the medium flows through
4419          the marking engine with the side to be imaged facing the
4420          observer. The leading edge is the North edge and the other edges
4421          are defined by the normal compass layout of  directions with the
4422          compass facing the observer.  Printing within the area bounded
4423          by all four margins is guaranteed for all interpreters.   The
4424          value (-2) means unknown."
4425      ::= { prtMarkerEntry 11 }
4426
4427  prtMarkerSouthMargin OBJECT-TYPE
4428      SYNTAX     Integer32
4429      MAX-ACCESS read-only
4430      STATUS     current
4431      DESCRIPTION
4432          "The margin from the South edge  (see prtMarkerNorthMargin) of
4433          the medium in units identified by prtMarkerAddressabilityUnit.
4434          Printing within the area bounded by all four margins  is
4435          guaranteed for all interpreters. The value (-2) means unknown."
4436      ::= { prtMarkerEntry 12 }
4437
4438  prtMarkerWestMargin OBJECT-TYPE
4439      SYNTAX     Integer32
4440      MAX-ACCESS read-only
4441      STATUS     current
4442      DESCRIPTION
4443          "The margin from the West edge (see prtMarkerNorthMargin) of the
4444          medium in units identified by prtMarkerAddressabilityUnit.
4445          Printing within the area bounded by all four margins is
4446          guaranteed for all interpreters. The value (-2) means unknown."
4447      ::= { prtMarkerEntry 13 }
4448
4449  prtMarkerEastMargin OBJECT-TYPE
4450      SYNTAX     Integer32
4451      MAX-ACCESS read-only
4452      STATUS     current
4453      DESCRIPTION
4454          "The margin from the East edge (see prtMarkerNorthMargin) of the
4455          medium in units identified by prtMarkerAddressabilityUnit.
4456          Printing within the area bounded by all four margins is
4457          guaranteed for all interpreters. The value (-2) means unknown."
4458      ::= { prtMarkerEntry 14 }
4459
4460  prtMarkerStatus OBJECT-TYPE
4461      SYNTAX     PrtSubUnitStatusTC
4462      MAX-ACCESS read-only
```

```
4463      STATUS     current
4464      DESCRIPTION
4465          "The current status of this marker sub-unit."
4466      ::= { prtMarkerEntry 15 }
4467
4468  -- The Marker Supplies Group
4469  --
4470  -- This group is optional.  However, to claim conformance to this
4471  -- group, it is necessary to implement every object in the group.
4472
4473  prtMarkerSupplies OBJECT IDENTIFIER ::= { printmib 11 }
4474
4475  prtMarkerSuppliesTable OBJECT-TYPE
4476      SYNTAX     SEQUENCE OF PrtMarkerSuppliesEntry
4477      MAX-ACCESS not-accessible
4478      STATUS     current
4479      DESCRIPTION
4480          "A table of the marker supplies available on this printer."
4481      ::= { prtMarkerSupplies 1 }
4482
4483  prtMarkerSuppliesEntry OBJECT-TYPE
4484      SYNTAX     PrtMarkerSuppliesEntry
4485      MAX-ACCESS not-accessible
4486      STATUS     current
4487      DESCRIPTION
4488          "Attributes of a marker supply. Entries may exist in the table
4489          for each device index with a device type of 'printer'."
4490      INDEX  { hrDeviceIndex, prtMarkerSuppliesIndex }
4491      ::= { prtMarkerSuppliesTable 1 }
4492
4493  PrtMarkerSuppliesEntry ::= SEQUENCE {
4494      prtMarkerSuppliesIndex          Integer32,
4495      prtMarkerSuppliesMarkerIndex    Integer32,
4496      prtMarkerSuppliesColorantIndex  Integer32,
4497      prtMarkerSuppliesClass          PrtMarkerSuppliesClassTC,
4498      prtMarkerSuppliesType           PrtMarkerSuppliesTypeTC,
4499      prtMarkerSuppliesDescription    OCTET STRING,
4500      prtMarkerSuppliesSupplyUnit    PrtMarkerSuppliesSupplyUnitTC,
4501      prtMarkerSuppliesMaxCapacity    Integer32,
4502      prtMarkerSuppliesLevel          Integer32
4503      }
4504
4505  prtMarkerSuppliesIndex OBJECT-TYPE
4506      SYNTAX     Integer32 (1..65535)
4507      MAX-ACCESS not-accessible
4508      STATUS     current
4509      DESCRIPTION
4510          "A unique value used by the printer to identify this marker
4511          supply.  Although these values may change due to a major
4512          reconfiguration of the device (e.g. the addition of new marker
4513          supplies to the printer), values are expected to remain stable
4514          across successive power cycles."
4515      ::= { prtMarkerSuppliesEntry 1 }
4516
```

```
4517  prtMarkerSuppliesMarkerIndex OBJECT-TYPE
4518      SYNTAX     Integer32 (0..65535)
4519      MAX-ACCESS read-only
4520      STATUS     current
4521      DESCRIPTION
4522          "The value of prtMarkerIndex corresponding to the marking sub
4523          unit with which this marker supply sub-unit is associated."
4524      ::= { prtMarkerSuppliesEntry 2 }
4525
4526  prtMarkerSuppliesColorantIndex OBJECT-TYPE
4527      SYNTAX     Integer32 (0..65535)
4528      MAX-ACCESS read-only
4529      STATUS     current
4530      DESCRIPTION
4531          "The value of prtMarkerColorantIndex corresponding to the
4532          colorant with which this marker supply sub-unit is associated.
4533          This value shall be 0 if there is no colorant table or if this
4534          supply does not depend on a single specified colorant."
4535      ::= { prtMarkerSuppliesEntry 3 }
4536
4537  prtMarkerSuppliesClass OBJECT-TYPE
4538      --  This value is a type 1 enumeration
4539      SYNTAX     PrtMarkerSuppliesClassTC
4540      MAX-ACCESS read-only
4541      STATUS     current
4542      DESCRIPTION
4543          "Indicates whether this supply entity represents a supply that
4544          is consumed or a receptacle that is filled."
4545      ::= { prtMarkerSuppliesEntry 4 }
4546
4547  prtMarkerSuppliesType OBJECT-TYPE
4548      --   This value is a type 3 enumeration
4549      SYNTAX     PrtMarkerSuppliesTypeTC
4550      MAX-ACCESS read-only
4551      STATUS     current
4552      DESCRIPTION
4553          "The type of this supply."
4554      ::= { prtMarkerSuppliesEntry 5 }
4555
4556  prtMarkerSuppliesDescription OBJECT-TYPE
4557      SYNTAX     OCTET STRING (SIZE(0..255))
4558      MAX-ACCESS read-only
4559      STATUS     current
4560      DESCRIPTION
4561          "The description of this supply container/receptacle in the
4562          localization specified by prtGeneralCurrentLocalization."
4563      ::= { prtMarkerSuppliesEntry 6 }
4564
4565  prtMarkerSuppliesSupplyUnit OBJECT-TYPE
4566      -- This value is a type 1 enumeration
4567      SYNTAX     PrtMarkerSuppliesSupplyUnitTC
4568      MAX-ACCESS read-only
4569      STATUS     current
4570      DESCRIPTION
```

```
4571          "Unit of measure of this marker supply container/receptacle."
4572      ::= { prtMarkerSuppliesEntry 7 }
4573
4574  prtMarkerSuppliesMaxCapacity OBJECT-TYPE
4575      SYNTAX     Integer32
4576      MAX-ACCESS read-write
4577      STATUS     current
4578      DESCRIPTION
4579          "The maximum capacity of this supply container/receptacle
4580          expressed in prtMarkerSuppliesSupplyUnit. If this supply
4581          container/receptacle can reliably sense this value, the value is
4582          reported by the printer and is read-only; otherwise, the value
4583          may be written (by a Remote Control Panel or a Management
4584          Application). The value (-1) means other and specifically
4585          indicates that the sub-unit places no restrictions on this
4586          parameter. The value (-2) means unknown."
4587      ::= { prtMarkerSuppliesEntry 8 }
4588
4589  prtMarkerSuppliesLevel OBJECT-TYPE
4590      SYNTAX     Integer32
4591      MAX-ACCESS read-write
4592      STATUS     current
4593      DESCRIPTION
4594          "The current level if this supply is a container; remaining
4595          space if this supply is a receptacle. If this supply
4596          container/receptacle can reliably sense this value, the value is
4597          reported by the printer and is read-only; otherwise, the value
4598          may be written (by a Remote Control Panel or a Management
4599          Application). The value (-1) means other and specifically
4600          indicates that the sub-unit places no restrictions on this
4601          parameter. The value (-2) means unknown.  A value of (-3) means
4602          that the printer knows that there is some supply/remaining
4603          space, respectively."
4604      ::= { prtMarkerSuppliesEntry 9 }
4605
4606  -- The Marker Colorant Group
4607  --
4608  -- This group is optional.  However, to claim conformance to this
4609  -- group, it is necessary to implement every object in the group.
4610
4611  prtMarkerColorant OBJECT IDENTIFIER ::= { printmib 12 }
4612
4613  prtMarkerColorantTable OBJECT-TYPE
4614      SYNTAX     SEQUENCE OF PrtMarkerColorantEntry
4615      MAX-ACCESS not-accessible
4616      STATUS     current
4617      DESCRIPTION
4618          "A table of all of the colorants available on the printer."
4619      ::= { prtMarkerColorant 1 }
4620
4621  prtMarkerColorantEntry OBJECT-TYPE
4622      SYNTAX     PrtMarkerColorantEntry
4623      MAX-ACCESS not-accessible
4624      STATUS     current
```

```
4625      DESCRIPTION
4626          "Attributes of a colorant available on the printer. Entries may
4627          exist in the table for each device index with a device type of
4628          'printer'."
4629      INDEX { hrDeviceIndex, prtMarkerColorantIndex }
4630      ::= { prtMarkerColorantTable 1 }
4631
4632  PrtMarkerColorantEntry ::= SEQUENCE {
4633      prtMarkerColorantIndex          Integer32,
4634      prtMarkerColorantMarkerIndex    Integer32,
4635      prtMarkerColorantRole           PrtMarkerColorantRoleTC,
4636      prtMarkerColorantValue          OCTET STRING,
4637      prtMarkerColorantTonality       Integer32
4638      }
4639
4640  prtMarkerColorantIndex OBJECT-TYPE
4641      SYNTAX     Integer32 (1..65535)
4642      MAX-ACCESS not-accessible
4643      STATUS     current
4644      DESCRIPTION
4645          "A unique value used by the printer to identify this colorant.
4646          Although these values may change due to a major reconfiguration
4647          of the device (e.g. the addition of new colorants to the
4648          printer)."
4649      ::= { prtMarkerColorantEntry 1 }
4650
4651  prtMarkerColorantMarkerIndex OBJECT-TYPE
4652      SYNTAX     Integer32 (0..65535)
4653      MAX-ACCESS read-only
4654      STATUS     current
4655      DESCRIPTION
4656          "The value of prtMarkerIndex corresponding to the marker sub
4657          unit with which this colorant entry is associated."
4658      ::= { prtMarkerColorantEntry 2 }
4659
4660  prtMarkerColorantRole OBJECT-TYPE
4661      -- This value is a type 1 enumeration
4662      SYNTAX     PrtMarkerColorantRoleTC
4663      MAX-ACCESS read-only
4664      STATUS     current
4665      DESCRIPTION
4666          "The role played by this colorant."
4667      ::= { prtMarkerColorantEntry 3 }
4668
4669  prtMarkerColorantValue OBJECT-TYPE
4670      SYNTAX     OCTET STRING (SIZE(0..255))
4671      MAX-ACCESS read-only
4672      STATUS     current
4673      DESCRIPTION
4674          "The name of the color of this colorant using standardized
4675          string names from ISO 10175 (DPA) and ISO 10180 (SPDL) such as:
4676              other
4677              unknown
4678              white
```

```
4679             red
4680             green
4681             blue
4682             cyan
4683             magenta
4684             yellow
4685             black
4686         Implementers may add additional string values. The naming
4687         conventions in ISO 9070 are recommended in order to avoid
4688         potential name clashes"
4689     ::= { prtMarkerColorantEntry 4 }
4690
4691 prtMarkerColorantTonality OBJECT-TYPE
4692     SYNTAX     Integer32
4693     MAX-ACCESS read-only
4694     STATUS     current
4695     DESCRIPTION
4696         "The distinct levels of tonality realizable by a marking sub
4697         unit when using this colorant.  This value does not include the
4698         number of levels of tonal difference that an interpreter can
4699         obtain by techniques such as half toning. This value must be at
4700         least 2."
4701     ::= { prtMarkerColorantEntry 5 }
4702
4703 -- The Media Path Group
4704 --
4705 -- The media paths encompass the mechanisms in the printer that
4706 -- move the media through the printer and connect all other media
4707 -- related sub-units: inputs, outputs, markers and finishers. A
4708 -- printer contains one or more media paths. These are
4709 -- represented by the Media Path Group in the model. The Media
4710 -- Path group has some attributes that apply to all
4711 -- paths plus a table of the separate media paths.
4712
4713 prtMediaPath OBJECT IDENTIFIER ::= { printmib 13 }
4714
4715 prtMediaPathTable OBJECT-TYPE
4716     SYNTAX     SEQUENCE OF PrtMediaPathEntry
4717     MAX-ACCESS not-accessible
4718     STATUS     current
4719     DESCRIPTION
4720         ""
4721     ::= { prtMediaPath 4 }
4722
4723 prtMediaPathEntry OBJECT-TYPE
4724     SYNTAX     PrtMediaPathEntry
4725     MAX-ACCESS not-accessible
4726     STATUS     current
4727     DESCRIPTION
4728         "Entries may exist in the table for each device index with a
4729         device type of 'printer'."
4730     INDEX  { hrDeviceIndex, prtMediaPathIndex }
4731     ::= { prtMediaPathTable 1 }
4732
```

```
4733  PrtMediaPathEntry ::= SEQUENCE {
4734      prtMediaPathIndex               Integer32,
4735      prtMediaPathMaxSpeedPrintUnit
4736                           PrtMediaPathMaxSpeedPrintUnitTC,
4737      prtMediaPathMediaSizeUnit       PrtMediaUnitTC,
4738      prtMediaPathMaxSpeed            Integer32,
4739      prtMediaPathMaxMediaFeedDir     Integer32,
4740      prtMediaPathMaxMediaXFeedDir    Integer32,
4741      prtMediaPathMinMediaFeedDir     Integer32,
4742      prtMediaPathMinMediaXFeedDir    Integer32,
4743      prtMediaPathType                PrtMediaPathTypeTC,
4744      prtMediaPathDescription         OCTET STRING,
4745      prtMediaPathStatus              PrtSubUnitStatusTC
4746      }
4747
4748  prtMediaPathIndex OBJECT-TYPE
4749      SYNTAX     Integer32 (1..65535)
4750      MAX-ACCESS not-accessible
4751      STATUS     current
4752      DESCRIPTION
4753          "A unique value used by the printer to identify this media path.
4754          Although these values may change due to a major reconfiguration
4755          of the device (e.g. the addition of new media paths to the
4756          printer), values are expected to remain stable across successive
4757          printer power cycles."
4758      ::= { prtMediaPathEntry 1 }
4759
4760  prtMediaPathMaxSpeedPrintUnit OBJECT-TYPE
4761      -- This value is a type 1 enumeration
4762      SYNTAX PrtMediaPathMaxSpeedPrintUnitTC
4763      MAX-ACCESS read-only
4764      STATUS     current
4765      DESCRIPTION
4766          "The unit of measure used in specifying the speed of all media
4767          paths in the printer."
4768      ::= { prtMediaPathEntry 2 }
4769
4770  prtMediaPathMediaSizeUnit OBJECT-TYPE
4771      SYNTAX     PrtMediaUnitTC
4772      MAX-ACCESS read-only
4773      STATUS     current
4774      DESCRIPTION
4775          "The units of measure of media size for use in calculating and
4776          relaying dimensional values for all media paths in the printer."
4777      ::= { prtMediaPathEntry 3 }
4778
4779  prtMediaPathMaxSpeed OBJECT-TYPE
4780      SYNTAX     Integer32
4781      MAX-ACCESS read-only
4782      STATUS     current
4783      DESCRIPTION
4784          "The maximum printing speed of this media path expressed in
4785          prtMediaPathMaxSpeedUnit's.  A value of (-1) implies 'other'."
4786      ::= { prtMediaPathEntry 4 }
```

```
4787
4788  prtMediaPathMaxMediaFeedDir OBJECT-TYPE
4789      SYNTAX     Integer32
4790      MAX-ACCESS read-only
4791      STATUS     current
4792      DESCRIPTION
4793          "The maximum physical media size in the feed direction of this
4794          media path expressed in units of measure specified by
4795          PrtMediaPathMediaSizeUnit.  A value of (-1) implies 'unlimited'
4796          a value of (-2) implies 'unknown'"
4797      ::= { prtMediaPathEntry 5 }
4798
4799  prtMediaPathMaxMediaXFeedDir OBJECT-TYPE
4800      SYNTAX     Integer32
4801      MAX-ACCESS read-only
4802      STATUS     current
4803      DESCRIPTION
4804          "The maximum physical media size across the feed direction of
4805          this media path expressed in units of measure specified by
4806          prtMediaPathMediaSizeUnit.  A value of (-2) implies 'unknown'."
4807      ::= { prtMediaPathEntry 6 }
4808
4809  prtMediaPathMinMediaFeedDir OBJECT-TYPE
4810      SYNTAX     Integer32
4811      MAX-ACCESS read-only
4812      STATUS     current
4813      DESCRIPTION
4814          "The minimum physical media size in the feed direction of this
4815          media path expressed in units of measure specified by
4816          prtMediaPathMediaSizeUnit. A value of (-2) implies 'unknown'."
4817      ::= { prtMediaPathEntry 7 }
4818
4819  prtMediaPathMinMediaXFeedDir OBJECT-TYPE
4820      SYNTAX     Integer32
4821      MAX-ACCESS read-only
4822      STATUS     current
4823      DESCRIPTION
4824          "The minimum physical media size across the feed direction of
4825          this media path expressed in units of measure specified by
4826          prtMediaPathMediaSizeUnit.  A value of (-2) implies 'unknown'."
4827      ::= { prtMediaPathEntry 8 }
4828
4829  prtMediaPathType OBJECT-TYPE
4830      --   This value is a type 2 enumeration
4831      SYNTAX     PrtMediaPathTypeTC
4832      MAX-ACCESS read-only
4833      STATUS     current
4834      DESCRIPTION
4835          "The type of the media path for this media path."
4836      ::= { prtMediaPathEntry 9 }
4837
4838  prtMediaPathDescription OBJECT-TYPE
4839      SYNTAX     OCTET STRING (SIZE(0..255))
4840      MAX-ACCESS read-only
```

```
4841      STATUS     current
4842      DESCRIPTION
4843          "The manufacturer-provided description of this media path in the
4844          localization specified by prtGeneralCurrentLocalization."
4845      ::= { prtMediaPathEntry 10 }
4846
4847  prtMediaPathStatus OBJECT-TYPE
4848      SYNTAX     PrtSubUnitStatusTC
4849      MAX-ACCESS read-only
4850      STATUS     current
4851      DESCRIPTION
4852           "The current status of this media path."
4853      ::= { prtMediaPathEntry 11 }
4854
4855  -- The Print Job Delivery Channel Group
4856  --
4857  -- Implementation of every object in this group is mandatory.
4858  --
4859  -- Print Job Delivery Channels are independent sources of print
4860  -- data. Here, print data is the term used for the information
4861  -- that is used to construct printed pages and may have both data
4862  -- and control aspects. The output of a channel is in a form
4863  -- suitable for input to one of the interpreters as a
4864  -- stream. A channel may be independently enabled (allowing
4865  -- print data to flow) or disabled (stopping the flow of
4866  -- print data). A printer may have one or more channels.
4867  --
4868  -- The Print Job Delivery Channel table describes the
4869  -- capabilities of the printer and not what is currently being
4870  -- performed by the printer
4871  --
4872  -- Basically, the print job delivery channel abstraction
4873  -- describes the final processing step of getting the print data
4874  -- to an interpreter. It might include some level of
4875  -- decompression or decoding of print stream data.
4876  -- channel. All of these aspects are hidden in the channel
4877  -- abstraction.
4878  --
4879  -- There are many kinds of print job delivery channels; some of
4880  -- which are based on networks and others which are not. For
4881  -- example, a channel can be a serial (or parallel) connection;
4882  -- it can be a service, such as the UNIX Line Printer Daemon
4883  -- (LPD), offering services over a network connection; or
4884  -- it could be a disk drive into which a floppy disk with
4885  -- the print data is inserted. Each print job delivery channel is
4886  -- identified by the electronic path and/or service protocol
4887  -- used to deliver print data to a print data interpreter.
4888  --
4889  -- Channel example                  Implementation
4890  --
4891  -- serial port channel           bi-directional data channel
4892  -- parallel port channel         often uni-directional channel
4893  -- IEEE 1284 port channel        bi-directional channel
4894  -- SCSI port channel             bi-directional
```

```
4895  -- Apple PAP channel              may be based on LocalTalk,
4896  --                                Ethernet or Tokentalk
4897  -- LPD Server channel             TCP/IP based, port 515
4898  -- Netware Remote Printer         SPX/IPX based channel
4899  -- Netware Print Server           SPX/IPX based channel
4900  --
4901  -- It is easy to note that this is a mixed bag.  There are
4902  -- some physical connections over which no (or very meager)
4903  -- protocols are run (e.g. the serial or old parallel ports)
4904  -- and there are services which often have elaborate
4905  -- protocols that run over a number of protocol stacks. In
4906  -- the end, what is important is the delivery of print data
4907  -- through the channel.
4908  --
4909  -- The print job delivery channel sub-units are represented by
4910  -- the Print Job Delivery Channel Group in the Model. It has a
4911  -- current print job control language, which can be used to
4912  -- specify which interpreter is to be used for the print data and
4913  -- to query and change environment variables used by the
4914  -- interpreters (and Management Applications). There is also a
4915  -- default interpreter that is to be used if an interpreter is
4916  -- not explicitly specified using the Control Language.
4917
4918  -- The first seven items in the Print Job Delivery Channel Table
4919  -- define the "channel" itself.  A channel typically depends on
4920  -- other protocols and interfaces to provide the data that flows
4921  -- through the channel.
4922  --
4923  -- Control of a print job delivery channel is largely limited to
4924  -- enabling or disabling the entire channel itself. It is likely
4925  -- that more control of the process of accessing print data
4926  -- will be needed over time. Thus, the ChannelType will
4927  -- allow type-specific data to be associated with each
4928  -- channel (using ChannelType specific groups in a fashion
4929  -- analogous to the media specific MIBs that are associated
4930  -- with the IANAIfType in the Interfaces Table). As a first
4931  -- step in this direction, each channel will identify the
4932  -- underlying Interface on which it is based. This is the
4933  -- eighth object in each row of the table.
4934
4935  -- The Print Job Delivery Channel Table
4936  --
4937  -- The prtChannelTable represents the set of input data sources
4938  -- which can provide print data to one or more of the
4939  -- interpreters available on a printer
4940
4941  prtChannel OBJECT IDENTIFIER ::= { printmib 14 }
4942
4943  prtChannelTable OBJECT-TYPE
4944      SYNTAX     SEQUENCE OF PrtChannelEntry
4945      MAX-ACCESS not-accessible
4946      STATUS     current
4947      DESCRIPTION
4948          ""
```

```
4949      ::= { prtChannel 1 }
4950
4951  prtChannelEntry OBJECT-TYPE
4952      SYNTAX     PrtChannelEntry
4953      MAX-ACCESS not-accessible
4954      STATUS     current
4955      DESCRIPTION
4956          "Entries may exist in the table for each device index with a
4957          device type of 'printer'."
4958      INDEX  { hrDeviceIndex, prtChannelIndex }
4959      ::= { prtChannelTable 1 }
4960
4961  PrtChannelEntry ::= SEQUENCE {
4962      prtChannelIndex                     Integer32,
4963      prtChannelType                      PrtChannelTypeTC,
4964      prtChannelProtocolVersion           OCTET STRING,
4965      prtChannelCurrentJobCntlLangIndex   Integer32,
4966      prtChannelDefaultPageDescLangIndex  Integer32,
4967      prtChannelState                     PrtChannelStateTC,
4968      prtChannelIfIndex                   Integer32,
4969      prtChannelStatus                    PrtSubUnitStatusTC,
4970      prtChannelInformation               OCTET STRING
4971      }
4972
4973  prtChannelIndex OBJECT-TYPE
4974      SYNTAX     Integer32 (1..65535)
4975      MAX-ACCESS not-accessible
4976      STATUS     current
4977      DESCRIPTION
4978          "A unique value used by the printer to identify this data
4979          channel.  Although these values may change due to a major
4980          reconfiguration of the device (e.g. the addition of new data
4981          channels to the printer), values are expected to remain stable
4982          across successive printer power cycles."
4983      ::= { prtChannelEntry 1 }
4984
4985  prtChannelType OBJECT-TYPE
4986      SYNTAX     PrtChannelTypeTC
4987      MAX-ACCESS read-only
4988      STATUS     current
4989      DESCRIPTION
4990          "The type of this print data channel.  This object provides the
4991          linkage to ChannelType-specific groups that may (conceptually)
4992          extend the prtChannelTable with additional details about that
4993          channel."
4994      ::= { prtChannelEntry 2 }
4995
4996  prtChannelProtocolVersion OBJECT-TYPE
4997      SYNTAX     OCTET STRING (SIZE(0..63))
4998      MAX-ACCESS read-only
4999      STATUS     current
5000      DESCRIPTION
5001          "The version of the protocol used on this channel.  The format
5002          used for version numbering depends on prtChannelType."
```

```
5003      ::= { prtChannelEntry 3 }
5004
5005  prtChannelCurrentJobCntlLangIndex OBJECT-TYPE
5006      SYNTAX     Integer32
5007      MAX-ACCESS read-write
5008      STATUS     current
5009      DESCRIPTION
5010          "The value of prtInterpreterIndex corresponding to the Control
5011          Language Interpreter for this channel. This interpreter defines
5012          the syntax used for control functions, such as querying or
5013          changing environment variables and identifying job boundaries
5014          (e.g. PJL, PostScript, NPAP). A value of zero indicates that
5015          there is no current Job Control Language Interpreter for this
5016          channel"
5017      ::= { prtChannelEntry 4 }
5018
5019  prtChannelDefaultPageDescLangIndex OBJECT-TYPE
5020      SYNTAX     Integer32
5021      MAX-ACCESS read-write
5022      STATUS     current
5023      DESCRIPTION
5024          "The value of prtInterpreterIndex corresponding to the Page
5025          Description Language Interpreter for this channel. This
5026          interpreter defines the default Page Description Language
5027          interpreter to be used for the print data unless the Control
5028          Language is used to select a specific interpreter (e.g., PCL,
5029          PostScript Language, auto-sense). A value of zero indicates that
5030          there is no default page description language interpreter for
5031          this channel."
5032      ::= { prtChannelEntry 5 }
5033
5034  prtChannelState OBJECT-TYPE
5035      -- This value is a type 1 enumeration
5036      SYNTAX     PrtChannelStateTC
5037      MAX-ACCESS read-write
5038      STATUS     current
5039      DESCRIPTION
5040          "The state of this print data channel. The value determines
5041          whether control information and print data is allowed through
5042          this channel or not."
5043      ::= { prtChannelEntry 6 }
5044
5045  prtChannelIfIndex OBJECT-TYPE
5046      SYNTAX     Integer32
5047      MAX-ACCESS read-write
5048      STATUS     current
5049      DESCRIPTION
5050          "The value of ifIndex in the ifTable; see the interface section
5051          of MIB-II (RFC 1213 [14]) which corresponds to this channel.
5052          When more than one row of the ifTable is relevant, this is the
5053          index of the row representing the topmost layer in the interface
5054          hierarchy.  A value of zero indicates that no interface is
5055          associated with this channel."
5056      ::= { prtChannelEntry 7 }
```

```
5057
5058  prtChannelStatus OBJECT-TYPE
5059      SYNTAX     PrtSubUnitStatusTC
5060      MAX-ACCESS read-only
5061      STATUS     current
5062      DESCRIPTION
5063          "The current status of the channel."
5064      ::= { prtChannelEntry 8 }
5065
5066  prtChannelInformation OBJECT-TYPE
5067      SYNTAX     OCTET STRING (SIZE (0..255))
5068      MAX-ACCESS read-only
5069      STATUS     current
5070      DESCRIPTION
5071          "Auxiliary information to allow a printing application to use
5072          the channel for data submission to the printer.  An application
5073          capable of using a specific PrtChannelType should be able to use
5074          the combined information from the prtChannelInformation and
5075          other channel and interface group objects to 'bootstrap' its use
5076          of the channel.  prtChannelInformation is not intended to
5077          provide a general channel description, nor to provide
5078          information that is available once the channel is in use.
5079
5080          The encoding and interpretation of the prtChannelInformation
5081          object is specific to channel type.  The description of each
5082          PrtChannelType enum value for which prtChannelInformation is
5083          defined specifies the appropriate encoding and interpretation,
5084          including interaction with other objects.  For channel types
5085          that do not specify a prtChannelInformation value, its value
5086          shall be null (0 length).
5087
5088          When a new PrtChannelType enumeration value is registered, its
5089          accompanying description must specify the encoding and
5090          interpretation of the prtChannelInformation value for the
5091          channel type.  prtChannelInformation semantics for an existing
5092          PrtChannelType may be added or amended in the same manner as
5093          described in section 2.4.1 for type 2 enumeration values.
5094
5095          The prtChannelInformation specifies values for a collection of
5096          channel attributes, represented as text according to the
5097          following rules:
5098
5099          1. The prtChannelInformation is not affected by localization.
5100
5101          2. The prtChannelInformation is a list of entries representing
5102          the attribute values.  Each entry consists of the following
5103          items, in order:
5104
5105          a. A keyword, composed of alphabetic characters (A-Z, a-z)
5106          represented by their NVT ASCII [10] codes, that
5107          identifies a channel attribute,
5108
5109          b. The NVT ASCII code for an Equals Sign (=) (code 61) to
5110          delimit the keyword,
```

c. A data value encoded using rules specific to the PrtChannelType to with the prtChannelInformation applies which must in no case allow an octet with value 10 (the NVT ASCII Line Feed code),

d. the NVT ASCII code for a Line Feed character (code 10) to delimit the data value.

No other octets shall be present.

Keywords are case-sensitive. Conventionally, keywords are capitalized (including each word of a multi-word keyword) and since they occupy space in the prtChannelInformation, they are kept short.

3. If a channel attribute has multiple values, it is represented by multiple entries with the same keyword, each specifying one value. Otherwise, there shall be at most one entry for each attribute.

4. By default, entries may appear in any order. If there are ordering constraints for particular entries, these must be specified in their definitions.

5. The prtChannelInformation value by default consists of text represented by NVT ASCII graphics character codes. However, other representations may be specified:

a. In cases where the prtChannelInformation value contains information not normally coded in textual form, whatever symbolic representation is conventionally used for the information should be used for encoding the prtChannelInformation value. (For instance, a binary port value might be represented as a decimal number using NVT ASCII codes.) Such encoding must be specified in the definition of the value.

b. The value may contain textual information in a character 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

```
5165                        directly represented by NVT ASCII.
5166
5167            Status:     'Mandatory', 'Optional', or 'Conditionally
5168                        Mandatory'
5169
5170            Multiplicity: 'Single' or 'Multiple' to indicate whether the
5171                        entry may be present multiple times.
5172
5173            Description:  Description of the use of the entry, other
5174                        information required to complete the definition
5175                        (e.g.: ordering constraints, interactions between
5176                        entries).
5177
5178            Applications that interpret prtChannelInformation should ignore
5179            unrecognized entries, so they are not affected if new entry
5180            types are added."
5181
5182          ::= { prtChannelEntry 9 }
5183
5184  -- The Interpreter Group
5185  --
5186  -- The interpreter sub-units are responsible for the conversion
5187  -- of a description of intended print instances into images that
5188  -- are to be marked on the media. A printer may have one or more
5189  -- interpreters. The interpreter sub-units are represented by the
5190  -- Interpreter Group in the Model. Each interpreter is generally
5191  -- implemented with software running on the System Controller
5192  -- sub-unit. The Interpreter Table has one entry per interpreter
5193  -- where the interpreters include both Page Description Language
5194  -- (PDL) Interpreters and Control Language Interpreters.
5195  --
5196  -- Implementation of every object in this group is mandatory.
5197
5198  prtInterpreter OBJECT IDENTIFIER ::= { printmib 15 }
5199
5200  --       Interpreter Table
5201  --
5202  -- The prtInterpreterTable is a table representing the
5203  -- interpreters in the printer.  An entry shall be placed in the
5204  -- interpreter table for each interpreter on the printer.
5205
5206  prtInterpreterTable OBJECT-TYPE
5207      SYNTAX     SEQUENCE OF PrtInterpreterEntry
5208      MAX-ACCESS not-accessible
5209      STATUS     current
5210      DESCRIPTION
5211          ""
5212      ::= { prtInterpreter 1 }
5213
5214  prtInterpreterEntry OBJECT-TYPE
5215      SYNTAX     PrtInterpreterEntry
5216      MAX-ACCESS not-accessible
5217      STATUS     current
5218      DESCRIPTION
```

```
5219          "Entries may exist in the table for each device index with a
5220          device type of 'printer'."
5221      INDEX  { hrDeviceIndex, prtInterpreterIndex }
5222      ::= { prtInterpreterTable 1 }
5223
5224  PrtInterpreterEntry ::= SEQUENCE {
5225      prtInterpreterIndex                 Integer32,
5226      prtInterpreterLangFamily            PrtInterpreterLangFamilyTC,
5227      prtInterpreterLangLevel             OCTET STRING,
5228      prtInterpreterLangVersion           OCTET STRING,
5229      prtInterpreterDescription           OCTET STRING,
5230      prtInterpreterVersion               OCTET STRING,
5231      prtInterpreterDefaultOrientation    PrtPrintOrientationTC,
5232      prtInterpreterFeedAddressability    Integer32,
5233      prtInterpreterXFeedAddressability   Integer32,
5234      prtInterpreterDefaultCharSetIn      CodedCharSet,
5235      prtInterpreterDefaultCharSetOut     CodedCharSet,
5236      prtInterpreterTwoWay                PrtInterpreterTwoWayTC
5237      }
5238
5239  prtInterpreterIndex OBJECT-TYPE
5240      SYNTAX     Integer32 (1..65535)
5241      MAX-ACCESS not-accessible
5242      STATUS     current
5243      DESCRIPTION
5244          "A unique value for each PDL or control language for which there
5245          exists an interpreter or emulator in the printer. The value is
5246          used to identify this interpreter. Although these values may
5247          change due to a major reconfiguration of the device (e.g. the
5248          addition of new interpreters to the printer), values are
5249          expected to remain stable across successive printer power
5250          cycles."
5251      ::= { prtInterpreterEntry 1 }
5252
5253  prtInterpreterLangFamily OBJECT-TYPE
5254      -- This value is a type 2 enumeration
5255      SYNTAX     PrtInterpreterLangFamilyTC
5256      MAX-ACCESS read-only
5257      STATUS     current
5258      DESCRIPTION
5259          "The family name of a Page Description Language (PDL) or control
5260          language which this interpreter in the printer can interpret or
5261          emulate."
5262      ::= { prtInterpreterEntry 2 }
5263
5264  prtInterpreterLangLevel OBJECT-TYPE
5265      SYNTAX     OCTET STRING (SIZE(0..31))
5266      MAX-ACCESS read-only
5267      STATUS     current
5268      DESCRIPTION
5269          "The level of the language which this interpreter is
5270          interpreting or emulating.  This might contain a value like '5e'
5271          for an interpreter which is emulating level 5e of the PCL
5272          language. It might contain '2' for an interpreter which is
```

```
5273          emulating level 2 of the PostScript language. Similarly it might
5274          contain '2' for an interpreter which is emulating level 2 of the
5275          HPGL language."
5276      ::= { prtInterpreterEntry 3 }
5277
5278  prtInterpreterLangVersion OBJECT-TYPE
5279      SYNTAX     OCTET STRING (SIZE(0..31))
5280      MAX-ACCESS read-only
5281      STATUS     current
5282      DESCRIPTION
5283          "The date code or version of the language which this interpreter
5284          is interpreting or emulating."
5285      ::= { prtInterpreterEntry 4 }
5286
5287  prtInterpreterDescription OBJECT-TYPE
5288      SYNTAX     OCTET STRING (SIZE(0..255))
5289      MAX-ACCESS read-only
5290      STATUS     current
5291      DESCRIPTION
5292          "A string to identify this interpreter in the localization
5293          specified by prtGeneralCurrentLocalization as opposed to the
5294          language which is being interpreted.  It is anticipated that
5295          this string will allow manufacturers to unambiguously identify
5296          their interpreters."
5297      ::= { prtInterpreterEntry 5 }
5298
5299  prtInterpreterVersion OBJECT-TYPE
5300      SYNTAX     OCTET STRING (SIZE(0..31))
5301      MAX-ACCESS read-only
5302      STATUS     current
5303      DESCRIPTION
5304          "The date code, version number, or other product specific
5305          information tied to this interpreter.  This value is associated
5306          with the interpreter, rather than with the version of the
5307          language which is being interpreted or emulated."
5308      ::= { prtInterpreterEntry 6 }
5309
5310  prtInterpreterDefaultOrientation OBJECT-TYPE
5311      -- This value is a type 1 enumeration
5312      SYNTAX     PrtPrintOrientationTC
5313      MAX-ACCESS read-write
5314      STATUS     current
5315      DESCRIPTION
5316          "The current orientation default for this interpreter. This
5317          value may be overridden for a particular job (e.g., by a command
5318          in the input data stream)."
5319      ::= { prtInterpreterEntry 7 }
5320
5321  prtInterpreterFeedAddressability OBJECT-TYPE
5322      SYNTAX     Integer32
5323      MAX-ACCESS read-only
5324      STATUS     current
5325      DESCRIPTION
5326          "The maximum interpreter addressability in the feed
```

```
5327          direction in 10000 prtMarkerAddressabilityUnits (see
5328          prtMarkerAddressabilityFeedDir ) for this interpreter. The value
5329          (-1) means other and specifically indicates that the sub-unit
5330          places no restrictions on this parameter."
5331      ::= { prtInterpreterEntry 8 }
5332
5333  prtInterpreterXFeedAddressability OBJECT-TYPE
5334      SYNTAX     Integer32
5335      MAX-ACCESS read-only
5336      STATUS     current
5337      DESCRIPTION
5338          "The maximum interpreter addressability in the cross feed
5339          direction in 10000 prtMarkerAddressabilityUnits (see
5340          prtMarkerAddressabilityXFeedDir) for this interpreter. The value
5341          (-1) means other and specifically indicates that the sub-unit
5342          places no restrictions on this parameter."
5343      ::= { prtInterpreterEntry 9 }
5344
5345  prtInterpreterDefaultCharSetIn OBJECT-TYPE
5346      SYNTAX     CodedCharSet
5347      MAX-ACCESS read-write
5348      STATUS     current
5349      DESCRIPTION
5350          "The default coded character set for input octets encountered
5351          outside a context in which the Page Description Language
5352          established the interpretation of the octets. (Input octets are
5353          presented to the interpreter through a path defined in the
5354          channel group.) This value shall be (2) if there is no default."
5355       ::= { prtInterpreterEntry 10 }
5356
5357  prtInterpreterDefaultCharSetOut OBJECT-TYPE
5358      SYNTAX     CodedCharSet
5359      MAX-ACCESS read-write
5360      STATUS     current
5361      DESCRIPTION
5362          "The default character set for data coming from this interpreter
5363          through the printer's output channel (i.e. the 'backchannel').
5364          This value shall be (2) if there is no default."
5365      ::= { prtInterpreterEntry 11 }
5366
5367  prtInterpreterTwoWay OBJECT-TYPE
5368      -- This value is a type 1 enumeration
5369      SYNTAX     PrtInterpreterTwoWayTC
5370      MAX-ACCESS read-only
5371      STATUS     current
5372      DESCRIPTION
5373          "Indicates whether or not this interpreter returns information
5374          back to the host."
5375      ::= { prtInterpreterEntry 12 }
5376
5377  -- The Console Group
5378  --
5379  -- Many printers have a console on the printer, the operator
5380  -- console, that is used to display and modify the state of the
```

```
5381  -- printer. The console can be as simple as a few indicators and
5382  -- switches or as complicated as full screen displays and
5383  -- keyboards. There can be at most one such console.
5384
5385  -- Implementation of every object in this group is mandatory.
5386
5387  -- The Display Buffer Table
5388
5389  prtConsoleDisplayBuffer OBJECT IDENTIFIER ::= { printmib 16 }
5390
5391  prtConsoleDisplayBufferTable OBJECT-TYPE
5392      SYNTAX     SEQUENCE OF PrtConsoleDisplayBufferEntry
5393      MAX-ACCESS not-accessible
5394      STATUS     current
5395      DESCRIPTION
5396          "Physical display buffer for printer console display or
5397          operator panel"
5398      ::= { prtConsoleDisplayBuffer 5 }
5399
5400  prtConsoleDisplayBufferEntry OBJECT-TYPE
5401      SYNTAX     PrtConsoleDisplayBufferEntry
5402      MAX-ACCESS not-accessible
5403      STATUS     current
5404      DESCRIPTION
5405          "This table contains one entry for each physical line on
5406          the display.  Lines cannot be added or deleted. Entries may
5407          exist in the table for each device index with a device type of
5408          'printer'."
5409      INDEX  { hrDeviceIndex, prtConsoleDisplayBufferIndex }
5410      ::= { prtConsoleDisplayBufferTable 1 }
5411
5412  PrtConsoleDisplayBufferEntry ::= SEQUENCE {
5413      prtConsoleDisplayBufferIndex    Integer32,
5414      prtConsoleDisplayBufferText     OCTET STRING
5415      }
5416
5417  prtConsoleDisplayBufferIndex OBJECT-TYPE
5418      SYNTAX     Integer32 (1..65535)
5419      MAX-ACCESS not-accessible
5420      STATUS     current
5421      DESCRIPTION
5422          "A unique value for each console line in the printer. The value
5423          is used to identify this console line. Although these values may
5424          change due to a major reconfiguration of the device (e.g. the
5425          addition of new console lines to the printer). Values are
5426          normally expected to remain stable across successive printer
5427          power cycles."
5428      ::= { prtConsoleDisplayBufferEntry 1 }
5429
5430  prtConsoleDisplayBufferText OBJECT-TYPE
5431      SYNTAX     OCTET STRING (SIZE(0..255))
5432      MAX-ACCESS read-write
5433      STATUS     current
5434      DESCRIPTION
```

```
5435          "The content of a line in the logical display buffer of
5436          the operator's console of the printer.  When a write
5437          operation occurs, normally a critical message, to one of
5438          the LineText strings, the agent should make that line
5439          displayable if a physical display is present.  Writing a zero
5440          length string clears the line.  It is an implementation-specific
5441          matter as to whether the agent allows a line to be overwritten
5442          before it has been cleared. Printer generated strings shall be
5443          in the localization specified by prtConsoleLocalization.
5444          Management Application generated strings should be localized by
5445          the Management Application."
5446      ::= { prtConsoleDisplayBufferEntry 2 }
5447
5448  -- The Console Light Table
5449
5450  prtConsoleLights OBJECT IDENTIFIER ::= { printmib 17 }
5451
5452  prtConsoleLightTable OBJECT-TYPE
5453      SYNTAX     SEQUENCE OF PrtConsoleLightEntry
5454      MAX-ACCESS not-accessible
5455      STATUS     current
5456      DESCRIPTION
5457          ""
5458      ::= { prtConsoleLights 6 }
5459
5460  prtConsoleLightEntry OBJECT-TYPE
5461      SYNTAX     PrtConsoleLightEntry
5462      MAX-ACCESS not-accessible
5463      STATUS     current
5464      DESCRIPTION
5465          "Entries may exist in the table for each device index with a
5466          device type of 'printer'."
5467      INDEX  { hrDeviceIndex, prtConsoleLightIndex }
5468      ::= { prtConsoleLightTable 1 }
5469
5470  PrtConsoleLightEntry ::= SEQUENCE {
5471      prtConsoleLightIndex            Integer32,
5472      prtConsoleOnTime                Integer32,
5473      prtConsoleOffTime               Integer32,
5474      prtConsoleColor                 PrtConsoleColorTC,
5475      prtConsoleDescription           OCTET STRING
5476      }
5477
5478  prtConsoleLightIndex OBJECT-TYPE
5479      SYNTAX     Integer32 (1..65535)
5480      MAX-ACCESS not-accessible
5481      STATUS     current
5482      DESCRIPTION
5483          "A unique value used by the printer to identify this light.
5484          Although these values may change due to a major
5485          reconfiguration of the device (e.g. the addition of new lights
5486          to the printer). Values are normally expected to remain stable
5487          across successive printer power cycles."
5488      ::= { prtConsoleLightEntry 1 }
```

```
5489
5490  prtConsoleOnTime OBJECT-TYPE
5491      SYNTAX     Integer32
5492      MAX-ACCESS read-write
5493      STATUS     current
5494      DESCRIPTION
5495          "This object, in conjunction with prtConsoleOffTime, defines the
5496          current status of the light.  If both prtConsoleOnTime and
5497          prtConsoleOffTime are non-zero, the lamp is blinking and the
5498          values presented define the on time and off time, respectively,
5499          in milliseconds. If prtConsoleOnTime is zero and
5500          prtConsoleOffTime is non-zero, the lamp is off. If
5501          prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, the
5502          lamp is on. If both values are zero the lamp is off."
5503      ::= { prtConsoleLightEntry 2 }
5504
5505  prtConsoleOffTime OBJECT-TYPE
5506      SYNTAX     Integer32
5507      MAX-ACCESS read-write
5508      STATUS     current
5509      DESCRIPTION
5510          "This object, in conjunction with prtConsoleOnTime, defines the
5511          current status of the light. If both prtConsoleOnTime and
5512          prtConsoleOffTime are non-zero, the lamp is blinking and the
5513          values presented define the on time and off time, respectively,
5514          in milliseconds. If prtConsoleOnTime is zero and
5515          prtConsoleOffTime is non-zero, the lamp is off. If
5516          prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, the
5517          lamp is on. If both values are zero the lamp is off."
5518      ::= { prtConsoleLightEntry 3 }
5519
5520  prtConsoleColor OBJECT-TYPE
5521      -- This value is a type 2 enumeration
5522      SYNTAX     PrtConsoleColorTC
5523      MAX-ACCESS read-only
5524      STATUS     current
5525      DESCRIPTION
5526          "The color of this light."
5527      ::= { prtConsoleLightEntry 4 }
5528
5529  prtConsoleDescription OBJECT-TYPE
5530      SYNTAX     OCTET STRING (SIZE(0..255))
5531      MAX-ACCESS read-only
5532      STATUS     current
5533      DESCRIPTION
5534          "The vendor description or label of this light in the
5535          localization specified by prtConsoleLocalization."
5536      ::= { prtConsoleLightEntry 5 }
5537
5538  -- The Alerts Group
5539  --
5540  -- The prtAlertTable lists all the critical and non-critical
5541  -- alerts currently active in the printer.  A critical alert is
5542  -- one that stops the printer from printing immediately and
```

```
5543  -- printing can not continue until the critical alert condition
5544  -- is eliminated.  Non-critical alerts are those items that do
5545  -- not stop printing but may at some future time.
5546  -- The table contains information on the severity, component,
5547  -- detail location within the component, alert code and
5548  -- description of each critical alert that is currently active
5549  -- within the printer.  See 2.2.13 for a more complete
5550  -- description of the alerts table and its management.
5551  --
5552  -- Each parameter in the Trap PDU is a full OID which itself is
5553  -- indexed by the host resources MIB "hrDeviceIndex" object. In
5554  -- order for a management station to obtain the correct
5555  -- "hrDeviceIndex" associated with a particular Trap PDU, the
5556  -- "hrDeviceIndex" value can be extracted from the returned OID
5557  -- value in the Trap PDU when the PDU is received by the
5558  -- Management station.
5559  --
5560  -- Implementation of every object in this group is mandatory.
5561
5562  prtAlert OBJECT IDENTIFIER ::= { printmib 18 }
5563
5564  prtAlertTable OBJECT-TYPE
5565      SYNTAX     SEQUENCE OF PrtAlertEntry
5566      MAX-ACCESS not-accessible
5567      STATUS     current
5568      DESCRIPTION
5569          ""
5570      ::= { prtAlert 1 }
5571
5572  prtAlertEntry OBJECT-TYPE
5573      SYNTAX     PrtAlertEntry
5574      MAX-ACCESS not-accessible
5575      STATUS     current
5576      DESCRIPTION
5577          "Entries may exist in the table for each device
5578          index with a device type of 'printer'."
5579      INDEX  { hrDeviceIndex, prtAlertIndex }
5580      ::= { prtAlertTable 1 }
5581
5582  PrtAlertEntry ::= SEQUENCE {
5583      prtAlertIndex               Integer32,
5584      prtAlertSeverityLevel       PrtAlertSeverityLevelTC,
5585      prtAlertTrainingLevel       PrtAlertTrainingLevelTC,
5586      prtAlertGroup               PrtAlertGroupTC,
5587      prtAlertGroupIndex          Integer32,
5588      prtAlertLocation            Integer32,
5589      prtAlertCode                PrtAlertCodeTC,
5590      prtAlertDescription         OCTET STRING,
5591      prtAlertTime                TimeTicks
5592      }
5593
5594  prtAlertIndex OBJECT-TYPE
5595      SYNTAX     Integer32 (1..65535)
5596      MAX-ACCESS read-only
```

```
5597      STATUS     current
5598      DESCRIPTION
5599          "The index value used to determine which alerts have been added
5600          or removed from the alert table. This is an incrementing integer
5601          starting from zero every time the printer is reset.  When the
5602          printer adds an alert to the table, that alert is assigned the
5603          next higher integer value from the last item entered into the
5604          table.  If the index value reaches its maximum value, the next
5605          item entered will cause the index value to roll over and start
5606          at zero again.  The first event placed in the alert table after
5607          a reset of the printer shall have an index value of 1.  NOTE:
5608          The management application will read the alert table when a trap
5609          or event notification occurs or at a periodic rate and then
5610          parse the table to determine if any new entries were added by
5611          comparing the last known index value with the current highest
5612          index value. The management application will then update its
5613          copy of the alert table.  When the printer discovers that an
5614          alert is no longer active, the printer shall remove the row for
5615          that alert from the table and shall reduce the number of rows in
5616          the table.  The printer may add or delete any number of rows
5617          from the table at any time.  The management station can detect
5618          when binary change alerts have been deleted by requesting an
5619          attribute of each alert, and noting alerts as deleted when that
5620          retrieval is not possible."
5621      ::= { prtAlertEntry 1 }
5622
5623  prtAlertSeverityLevel OBJECT-TYPE
5624      -- This value is a type 1 enumeration
5625      SYNTAX     PrtAlertSeverityLevelTC
5626      MAX-ACCESS read-only
5627      STATUS     current
5628      DESCRIPTION
5629          "The level of severity of this alert table entry.  The printer
5630          determines the severity level assigned to each entry into the
5631          table."
5632      ::= { prtAlertEntry 2 }
5633
5634  prtAlertTrainingLevel OBJECT-TYPE
5635      -- This value is a type 2 enumeration
5636      SYNTAX     PrtAlertTrainingLevelTC
5637      MAX-ACCESS read-only
5638      STATUS     current
5639      DESCRIPTION
5640          "See textual convention PrtAlertTrainingLevelTC"
5641      ::= { prtAlertEntry 3 }
5642
5643  prtAlertGroup OBJECT-TYPE
5644      -- This value is a type 1 enumeration
5645      SYNTAX     PrtAlertGroupTC
5646      MAX-ACCESS read-only
5647      STATUS     current
5648      DESCRIPTION
5649          "The type of sub-unit within the printer model that this alert
5650          is related. Input, output, and markers are examples of printer
```

```
5651          model groups, i.e., examples of types of sub-units. Wherever
5652          possible, these enumerations match the sub-identifier that
5653          identifies the relevant table in the printmib."
5654      ::= { prtAlertEntry 4 }
5655
5656  prtAlertGroupIndex OBJECT-TYPE
5657      SYNTAX     Integer32
5658      MAX-ACCESS read-only
5659      STATUS     current
5660      DESCRIPTION
5661          "An index of the row within the principle table in the
5662          group identified by prtAlertGroup that represents the sub-unit
5663          of the printer that caused this alert.  The combination of the
5664          prtAlertGroup and the prtAlertGroupIndex defines exactly which
5665          printer sub-unit caused the alert; for example, Input #3, Output
5666          #2, and Marker #1. Every object in this MIB is indexed with
5667          hrDeviceIndex and optionally, another index variable.  If this
5668          other index variable is present in the table that generated the
5669          alert, it will be used as the value for this object.  Otherwise,
5670          this value shall be -1."
5671      ::= { prtAlertEntry 5 }
5672
5673  prtAlertLocation OBJECT-TYPE
5674      SYNTAX     Integer32
5675      MAX-ACCESS read-only
5676      STATUS     current
5677      DESCRIPTION
5678          "The sub-unit location that is defined by the printer
5679          manufacturer to further refine the location of this alert within
5680          the designated sub-unit.  The location is used in conjunction
5681          with the Group and GroupIndex values; for example, there is an
5682          alert in Input #2 at location number 7. The value (-2) indicates
5683          unknown"
5684      ::= { prtAlertEntry 6 }
5685
5686  prtAlertCode OBJECT-TYPE
5687      -- This value is a type 2 enumeration
5688      SYNTAX     PrtAlertCodeTC
5689      MAX-ACCESS read-only
5690      STATUS     current
5691      DESCRIPTION
5692          "See associated textual convention PrtAlertCodeTC"
5693      ::= { prtAlertEntry 7}
5694
5695  prtAlertDescription OBJECT-TYPE
5696      SYNTAX     OCTET STRING (SIZE(0..255))
5697      MAX-ACCESS read-only
5698      STATUS     current
5699      DESCRIPTION
5700          "A description of this alert entry in the localization
5701          specified by prtGeneralCurrentLocalization.  The description is
5702          provided by the printer to further elaborate on the enumerated
5703          alert or provide information in the case where the code is
5704          classified as 'other' or 'unknown'.  The printer is required to
```

```
5705          return a description string but the string may be a null
5706          string."
5707      ::= { prtAlertEntry 8 }
5708
5709  prtAlertTime OBJECT-TYPE
5710      SYNTAX     TimeTicks
5711      MAX-ACCESS read-only
5712      STATUS     current
5713      DESCRIPTION
5714          "The value of sysUpTime at the time that this alert was
5715          generated."
5716      ::= { prtAlertEntry 9 }
5717
5718  printerV1Alert OBJECT-IDENTITY
5719      STATUS  current
5720      DESCRIPTION
5721          "The value of the enterprise-specific OID in an SNMPv1 trap sent
5722          signaling a critical event in the prtAlertTable."
5723      ::= { prtAlert 2 }
5724
5725  printerV2AlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 0 }
5726
5727  printerV2Alert NOTIFICATION-TYPE
5728      OBJECTS { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
5729          prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
5730      STATUS  current
5731      DESCRIPTION
5732          "This trap is sent whenever a critical event is added to the
5733          prtAlertTable."
5734      ::= { printerV2AlertPrefix 1 }
5735
5736  -- Note that the SNMPv2 to SNMPv1 translation rules dictate that
5737  -- the preceding structure will result in SNMPv1 traps of the
5738  -- following form:
5739  --
5740  -- printerAlert TRAP-TYPE
5741  --     ENTERPRISE printerV1Alert
5742  --     VARIABLES { prtAlertIndex, prtAlertSeverityLevel,
5743  --                 prtAlertGroup, prtAlertGroupIndex,
5744  --                 prtAlertLocation, prtAlertCode }
5745  --     DESCRIPTION
5746  --        "This trap is sent whenever a critical event is added
5747  --         to the prtAlertTable."
5748  --     ::= 1
5749
5750  -- Conformance Information
5751
5752  prtMIBConformance OBJECT IDENTIFIER ::= { printmib 2 }
5753
5754  -- compliance statements
5755
5756  prtMIBCompliance MODULE-COMPLIANCE
5757      STATUS  current
5758      DESCRIPTION
```

```
5759          "The compliance statement for agents that implement the
5760          printer MIB."
5761      MODULE -- this module
5762      MANDATORY-GROUPS { prtGeneralGroup, prtInputGroup,
5763                         prtOutputGroup,
5764                         prtMarkerGroup, prtMediaPathGroup,
5765                         prtChannelGroup, prtInterpreterGroup,
5766                         prtConsoleGroup, prtAlertTableGroup }
5767      OBJECT    prtGeneralReset
5768      SYNTAX    INTEGER {
5769                    notResetting(3),
5770                    resetToNVRAM(5)
5771                    }
5772      DESCRIPTION
5773          "It is conformant to implement just these two states in this
5774          object.  Any additional states are optional."
5775
5776      OBJECT    prtGeneralCurrentLocalization
5777      MIN-ACCESS  read-only
5778      DESCRIPTION
5779          "It is conformant to implement this object as read-only"
5780
5781      OBJECT    prtGeneralCurrentOperator
5782      MIN-ACCESS  read-only
5783      DESCRIPTION
5784          "It is conformant to implement this object as read-only"
5785
5786      OBJECT    prtGeneralServicePerson
5787      MIN-ACCESS  read-only
5788      DESCRIPTION
5789          "It is conformant to implement this object as read-only"
5790
5791      OBJECT    prtAuxiliarySheetStartupPage
5792      MIN-ACCESS  read-only
5793      DESCRIPTION
5794          "It is conformant to implement this object as read-only"
5795
5796      OBJECT    prtAuxiliarySheetBannerPage
5797      MIN-ACCESS  read-only
5798      DESCRIPTION
5799          "It is conformant to implement this object as read-only"
5800
5801      OBJECT    prtGeneralPrinterName
5802      MIN-ACCESS  read-only
5803      DESCRIPTION
5804          "It is conformant to implement this object as read-only"
5805
5806      OBJECT    prtGeneralSerialNumber
5807      MIN-ACCESS  read-only
5808      DESCRIPTION
5809          "It is conformant to implement this object as read-only"
5810
5811      OBJECT    prtInputDefaultIndex
5812      MIN-ACCESS  read-only
```

```
5813      DESCRIPTION
5814          "It is conformant to implement this object as read-only"
5815
5816      OBJECT    prtInputMediaDimFeedDirDeclared
5817      MIN-ACCESS  read-only
5818      DESCRIPTION
5819          "It is conformant to implement this object as read-only"
5820
5821      OBJECT    prtInputMaxCapacity
5822      MIN-ACCESS  read-only
5823      DESCRIPTION
5824          "It is conformant to implement this object as read-only"
5825
5826      OBJECT    prtInputCurrentLevel
5827      MIN-ACCESS  read-only
5828      DESCRIPTION
5829          "It is conformant to implement this object as read-only"
5830
5831      OBJECT    prtInputMediaName
5832      MIN-ACCESS  read-only
5833      DESCRIPTION
5834          "It is conformant to implement this object as read-only"
5835
5836      OBJECT    prtInputName
5837      MIN-ACCESS  read-only
5838      DESCRIPTION
5839          "It is conformant to implement this object as read-only"
5840
5841      OBJECT    prtInputSecurity
5842      MIN-ACCESS  read-only
5843      DESCRIPTION
5844          "It is conformant to implement this object as read-only"
5845
5846      OBJECT    prtInputMediaWeight
5847      MIN-ACCESS  read-only
5848      DESCRIPTION
5849          "It is conformant to implement this object as read-only"
5850
5851      OBJECT    prtInputMediaType
5852      MIN-ACCESS  read-only
5853      DESCRIPTION
5854          "It is conformant to implement this object as read-only"
5855
5856      OBJECT    prtInputMediaColor
5857      MIN-ACCESS  read-only
5858      DESCRIPTION
5859          "It is conformant to implement this object as read-only"
5860
5861      OBJECT    prtInputMediaFormParts
5862      MIN-ACCESS  read-only
5863      DESCRIPTION
5864          "It is conformant to implement this object as read-only"
5865
5866      OBJECT    prtInputMediaLoadTimeout
```

```
5867      MIN-ACCESS  read-only
5868      DESCRIPTION
5869          "It is conformant to implement this object as read-only"
5870
5871      OBJECT    prtInputNextIndex
5872      MIN-ACCESS  read-only
5873      DESCRIPTION
5874           "It is conformant to implement this object as read-only"
5875
5876      OBJECT    prtOutputDefaultIndex
5877      MIN-ACCESS  read-only
5878      DESCRIPTION
5879          "It is conformant to implement this object as read-only"
5880
5881      OBJECT    prtOutputMaxCapacity
5882      MIN-ACCESS  read-only
5883      DESCRIPTION
5884          "It is conformant to implement this object as read-only"
5885
5886      OBJECT    prtOutputRemainingCapacity
5887      MIN-ACCESS  read-only
5888      DESCRIPTION
5889          "It is conformant to implement this object as read-only"
5890
5891      OBJECT    prtOutputName
5892      MIN-ACCESS  read-only
5893      DESCRIPTION
5894          "It is conformant to implement this object as read-only"
5895
5896      OBJECT    prtOutputSecurity
5897      MIN-ACCESS  read-only
5898      DESCRIPTION
5899          "It is conformant to implement this object as read-only"
5900
5901      OBJECT    prtOutputMaxDimFeedDir
5902      MIN-ACCESS  read-only
5903      DESCRIPTION
5904          "It is conformant to implement this object as read-only"
5905
5906      OBJECT    prtOutputMaxDimXFeedDir
5907      MIN-ACCESS  read-only
5908      DESCRIPTION
5909          "It is conformant to implement this object as read-only"
5910
5911      OBJECT    prtOutputMinDimFeedDir
5912      MIN-ACCESS  read-only
5913      DESCRIPTION
5914          "It is conformant to implement this object as read-only"
5915
5916      OBJECT    prtOutputMinDimXFeedDir
5917      MIN-ACCESS  read-only
5918      DESCRIPTION
5919          "It is conformant to implement this object as read-only"
5920
```

```
5921      OBJECT    prtOutputStackingOrder
5922      MIN-ACCESS  read-only
5923      DESCRIPTION
5924          "It is conformant to implement this object as read-only"
5925
5926      OBJECT    prtOutputPageDeliveryOrientation
5927      MIN-ACCESS  read-only
5928      DESCRIPTION
5929          "It is conformant to implement this object as read-only"
5930
5931      OBJECT    prtOutputBursting
5932      MIN-ACCESS  read-only
5933      DESCRIPTION
5934          "It is conformant to implement this object as read-only"
5935
5936      OBJECT    prtOutputDecollating
5937      MIN-ACCESS  read-only
5938      DESCRIPTION
5939          "It is conformant to implement this object as read-only"
5940
5941      OBJECT    prtOutputPageCollated
5942      MIN-ACCESS  read-only
5943      DESCRIPTION
5944          "It is conformant to implement this object as read-only"
5945
5946      OBJECT    prtOutputOffsetStacking
5947      MIN-ACCESS  read-only
5948      DESCRIPTION
5949          "It is conformant to implement this object as read-only"
5950
5951      OBJECT    prtMarkerDefaultIndex
5952      MIN-ACCESS  read-only
5953      DESCRIPTION
5954          "It is conformant to implement this object as read-only"
5955
5956      OBJECT    prtMarkerSuppliesMaxCapacity
5957      MIN-ACCESS  read-only
5958      DESCRIPTION
5959          "It is conformant to implement this object as read-only"
5960
5961      OBJECT    prtMarkerSuppliesLevel
5962      MIN-ACCESS  read-only
5963      DESCRIPTION
5964          "It is conformant to implement this object as read-only"
5965
5966      OBJECT    prtMediaPathDefaultIndex
5967      MIN-ACCESS  read-only
5968      DESCRIPTION
5969          "It is conformant to implement this object as read-only"
5970
5971      OBJECT    prtChannelCurrentJobCntlLangIndex
5972      MIN-ACCESS  read-only
5973      DESCRIPTION
5974          "It is conformant to implement this object as read-only"
```

```
5975
5976      OBJECT    prtChannelDefaultPageDescLangIndex
5977      MIN-ACCESS  read-only
5978      DESCRIPTION
5979          "It is conformant to implement this object as read-only"
5980
5981      OBJECT    prtChannelState
5982      MIN-ACCESS  read-only
5983      DESCRIPTION
5984          "It is conformant to implement this object as read-only"
5985
5986      OBJECT    prtChannelIfIndex
5987      MIN-ACCESS  read-only
5988      DESCRIPTION
5989          "It is conformant to implement this object as read-only"
5990
5991      OBJECT    prtInterpreterDefaultOrientation
5992      MIN-ACCESS  read-only
5993      DESCRIPTION
5994          "It is conformant to implement this object as read-only"
5995
5996      OBJECT    prtInterpreterDefaultCharSetIn
5997      MIN-ACCESS  read-only
5998      DESCRIPTION
5999          "It is conformant to implement this object as read-only"
6000
6001      OBJECT    prtInterpreterDefaultCharSetOut
6002      MIN-ACCESS  read-only
6003      DESCRIPTION
6004          "It is conformant to implement this object as read-only"
6005
6006      OBJECT    prtConsoleLocalization
6007      MIN-ACCESS  read-only
6008      DESCRIPTION
6009          "It is conformant to implement this object as read-only"
6010
6011      OBJECT    prtConsoleDisable
6012      MIN-ACCESS  read-only
6013      DESCRIPTION
6014          "It is conformant to implement this object as read-only"
6015
6016      OBJECT    prtConsoleDisplayBufferText
6017      MIN-ACCESS  read-only
6018      DESCRIPTION
6019          "It is conformant to implement this object as read-only"
6020
6021      OBJECT    prtConsoleOnTime
6022      MIN-ACCESS  read-only
6023      DESCRIPTION
6024          "It is conformant to implement this object as read-only"
6025
6026      OBJECT    prtConsoleOffTime
6027      MIN-ACCESS  read-only
6028      DESCRIPTION
```

```
6029          "It is conformant to implement this object as read-only"
6030
6031      GROUP    prtResponsiblePartyGroup
6032      DESCRIPTION
6033          "This group is unconditionally optional."
6034
6035      GROUP    prtExtendedInputGroup
6036      DESCRIPTION
6037          "This group is unconditionally optional."
6038
6039      GROUP    prtInputMediaGroup
6040      DESCRIPTION
6041          "This group is unconditionally optional."
6042
6043      GROUP    prtExtendedOutputGroup
6044      DESCRIPTION
6045          "This group is unconditionally optional."
6046
6047      GROUP    prtOutputDimensionsGroup
6048      DESCRIPTION
6049          "This group is unconditionally optional."
6050
6051      GROUP    prtOutputFeaturesGroup
6052      DESCRIPTION
6053          "This group is unconditionally optional."
6054
6055      GROUP    prtMarkerSuppliesGroup
6056      DESCRIPTION
6057          "This group is unconditionally optional."
6058
6059      GROUP    prtMarkerColorantGroup
6060      DESCRIPTION
6061          "This group is unconditionally optional."
6062
6063      GROUP    prtAuxiliarySheetGroup
6064      DESCRIPTION
6065          "This group is unconditionally optional."
6066
6067      GROUP    prtInputSwitchingGroup
6068      DESCRIPTION
6069          "This group is unconditionally optional."
6070
6071      ::= { prtMIBConformance 1 }
6072
6073  prtMIBGroups    OBJECT IDENTIFIER ::= { prtMIBConformance 2 }
6074
6075  prtGeneralGroup OBJECT-GROUP
6076      OBJECTS { prtGeneralConfigChanges,
6077                prtGeneralCurrentLocalization,
6078                prtGeneralReset, prtCoverDescription,
6079                prtCoverStatus,
6080                prtLocalizationLanguage, prtLocalizationCountry,
6081                prtLocalizationCharacterSet, prtStorageRefIndex,
6082                prtDeviceRefIndex, prtGeneralPrinterName,
```

```
6083                prtGeneralSerialNumber }
6084      STATUS  current
6085      DESCRIPTION
6086          "The general printer group."
6087      ::= { prtMIBGroups 1 }
6088
6089  prtResponsiblePartyGroup OBJECT-GROUP
6090      OBJECTS { prtGeneralCurrentOperator, prtGeneralServicePerson }
6091      STATUS  current
6092      DESCRIPTION
6093          "The responsible party group contains contact information for
6094          humans responsible for the printer."
6095      ::= { prtMIBGroups 2 }
6096
6097  prtInputGroup OBJECT-GROUP
6098      OBJECTS { prtInputDefaultIndex, prtInputType, prtInputDimUnit,
6099                prtInputMediaDimFeedDirDeclared,
6100                prtInputMediaDimXFeedDirDeclared,
6101                prtInputMediaDimFeedDirChosen,
6102                prtInputMediaDimXFeedDirChosen, prtInputCapacityUnit,
6103                prtInputMaxCapacity, prtInputCurrentLevel, prtInputStatus,
6104                prtInputMediaName }
6105      STATUS  current
6106      DESCRIPTION
6107          "The input group."
6108      ::= { prtMIBGroups 3 }
6109
6110  prtExtendedInputGroup OBJECT-GROUP
6111      OBJECTS { prtInputName, prtInputVendorName, prtInputModel,
6112                prtInputVersion, prtInputSerialNumber,
6113                prtInputDescription, prtInputSecurity }
6114      STATUS  current
6115      DESCRIPTION
6116          "The extended input group."
6117      ::= { prtMIBGroups 4 }
6118
6119  prtInputMediaGroup OBJECT-GROUP
6120      OBJECTS { prtInputMediaWeight, prtInputMediaType,
6121                prtInputMediaColor, prtInputMediaFormParts }
6122      STATUS  current
6123      DESCRIPTION
6124          "The input media group."
6125      ::= { prtMIBGroups 5 }
6126
6127  prtOutputGroup OBJECT-GROUP
6128      OBJECTS { prtOutputDefaultIndex, prtOutputType,
6129                prtOutputCapacityUnit, prtOutputMaxCapacity,
6130                prtOutputRemainingCapacity,  prtOutputStatus }
6131      STATUS  current
6132      DESCRIPTION
6133          "The output group."
6134      ::= { prtMIBGroups 6 }
6135
6136  prtExtendedOutputGroup OBJECT-GROUP
```

```
6137      OBJECTS { prtOutputName, prtOutputVendorName, prtOutputModel,
6138                prtOutputVersion, prtOutputSerialNumber,
6139                prtOutputDescription, prtOutputSecurity }
6140      STATUS  current
6141      DESCRIPTION
6142          "The extended output group."
6143      ::= { prtMIBGroups 7 }
6144
6145  prtOutputDimensionsGroup OBJECT-GROUP
6146      OBJECTS { prtOutputDimUnit, prtOutputMaxDimFeedDir,
6147                prtOutputMaxDimXFeedDir, prtOutputMinDimFeedDir,
6148                prtOutputMinDimXFeedDir }
6149      STATUS  current
6150      DESCRIPTION
6151          "The output dimensions group"
6152      ::= { prtMIBGroups 8 }
6153
6154  prtOutputFeaturesGroup OBJECT-GROUP
6155      OBJECTS { prtOutputStackingOrder,
6156                prtOutputPageDeliveryOrientation, prtOutputBursting,
6157                prtOutputDecollating, prtOutputPageCollated,
6158                prtOutputOffsetStacking }
6159      STATUS  current
6160      DESCRIPTION
6161          "The output features group."
6162      ::= { prtMIBGroups 9 }
6163
6164  prtMarkerGroup OBJECT-GROUP
6165      OBJECTS { prtMarkerDefaultIndex, prtMarkerMarkTech,
6166                prtMarkerCounterUnit, prtMarkerLifeCount,
6167                prtMarkerPowerOnCount, prtMarkerProcessColorants,
6168                prtMarkerSpotColorants, prtMarkerAddressabilityUnit,
6169                prtMarkerAddressabilityFeedDir,
6170                prtMarkerAddressabilityXFeedDir, prtMarkerNorthMargin,
6171                prtMarkerSouthMargin, prtMarkerWestMargin,
6172                prtMarkerEastMargin, prtMarkerStatus }
6173      STATUS  current
6174      DESCRIPTION
6175          "The marker group."
6176      ::= { prtMIBGroups 10 }
6177
6178  prtMarkerSuppliesGroup OBJECT-GROUP
6179      OBJECTS { prtMarkerSuppliesMarkerIndex,
6180                prtMarkerSuppliesColorantIndex, prtMarkerSuppliesClass,
6181                prtMarkerSuppliesType, prtMarkerSuppliesDescription,
6182                prtMarkerSuppliesSupplyUnit,
6183                prtMarkerSuppliesMaxCapacity, prtMarkerSuppliesLevel }
6184      STATUS  current
6185      DESCRIPTION
6186          "The marker supplies group."
6187      ::= { prtMIBGroups 11 }
6188
6189  prtMarkerColorantGroup OBJECT-GROUP
6190      OBJECTS { prtMarkerColorantMarkerIndex, prtMarkerColorantRole,
```

```
6191                prtMarkerColorantValue, prtMarkerColorantTonality }
6192      STATUS  current
6193      DESCRIPTION
6194          "The marker colorant group."
6195      ::= { prtMIBGroups 12 }
6196
6197  prtMediaPathGroup OBJECT-GROUP
6198      OBJECTS { prtMediaPathDefaultIndex, prtMediaPathMaxSpeedPrintUnit,
6199                prtMediaPathMediaSizeUnit, prtMediaPathMaxSpeed,
6200                prtMediaPathMaxMediaFeedDir,
6201                prtMediaPathMaxMediaXFeedDir,
6202                prtMediaPathMinMediaFeedDir,
6203                prtMediaPathMinMediaXFeedDir, prtMediaPathType,
6204                prtMediaPathDescription, prtMediaPathStatus}
6205      STATUS  current
6206      DESCRIPTION
6207          "The media path group."
6208      ::= { prtMIBGroups 13 }
6209
6210  prtChannelGroup OBJECT-GROUP
6211      OBJECTS { prtChannelType, prtChannelProtocolVersion,
6212                prtChannelCurrentJobCntlLangIndex,
6213                prtChannelDefaultPageDescLangIndex, prtChannelState,
6214                prtChannelIfIndex, prtChannelStatus, prtChannelInformation
6215                }
6216      STATUS  current
6217      DESCRIPTION
6218          "The channel group."
6219      ::= { prtMIBGroups 14 }
6220
6221  prtInterpreterGroup OBJECT-GROUP
6222      OBJECTS { prtInterpreterLangFamily, prtInterpreterLangLevel,
6223                prtInterpreterLangVersion, prtInterpreterDescription,
6224                prtInterpreterVersion, prtInterpreterDefaultOrientation,
6225                prtInterpreterFeedAddressability,
6226                prtInterpreterXFeedAddressability,
6227                prtInterpreterDefaultCharSetIn,
6228                prtInterpreterDefaultCharSetOut, prtInterpreterTwoWay }
6229      STATUS  current
6230      DESCRIPTION
6231          "The interpreter group."
6232      ::= { prtMIBGroups 15 }
6233
6234  prtConsoleGroup OBJECT-GROUP
6235      OBJECTS { prtConsoleLocalization, prtConsoleNumberOfDisplayLines,
6236                prtConsoleNumberOfDisplayChars, prtConsoleDisable,
6237                prtConsoleDisplayBufferText, prtConsoleOnTime,
6238                prtConsoleOffTime, prtConsoleColor,
6239                prtConsoleDescription }
6240      STATUS  current
6241      DESCRIPTION
6242          "The console group."
6243      ::= { prtMIBGroups 16 }
6244
```

```
prtAlertTableGroup OBJECT-GROUP
    OBJECTS { prtAlertIndex, prtAlertCriticalEvents, prtAlertAllEvents,
              prtAlertSeverityLevel, prtAlertTrainingLevel,
              prtAlertGroup, prtAlertGroupIndex, prtAlertLocation,
              prtAlertCode, prtAlertDescription, prtAlertTime }
    STATUS  current
    DESCRIPTION
        "The alert table group."
    ::= { prtMIBGroups 17 }

--
-- prtAlertTimeGroup has been DEPRECATED (prtMIBGroups 18 )
--

prtAuxiliarySheetGroup OBJECT-GROUP
    OBJECTS { prtAuxiliarySheetStartupPage,
              prtAuxiliarySheetBannerPage }
    STATUS  current
    DESCRIPTION
        "The auxiliary sheet group."
    ::= { prtMIBGroups 19 }

prtInputSwitchingGroup OBJECT-GROUP
    OBJECTS { prtInputMediaLoadTimeout, prtInputNextIndex }
    STATUS  current
    DESCRIPTION
        "The input switching group."
    ::= { prtMIBGroups 20 }

END
```

6. IANA Considerations

See section 2.4.1, 'Registering Additional Enumerated Values'.

7. Internationalization Considerations

See section 2.2.1.1, 'International Considerations'.

8. Security Considerations

The Printer MIB specifies a database and not necessarily a protocol for accessing the database. With regards to the security of the information within the database, it is anticipated that the primary vehicle for accessing this data will be through the use of the Simple Network Protocol (SNMP). There are a number of management objects defined in this MIB that have a MAX-ACCESS clause of read-write. Such objects may be considered sensitive or vulnerable in some network environments. The support for SET operations in a non-secure environment without proper protection can have a negative effect on network operations.

SNMPv1 by itself is not a secure environment. Even if the network 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 (read/change) the objects in this MIB.

It is recommended that implementers consider the security features provided by the SNMPv3 framework. Specifically, the use of the User-based Security Model (RFC 2574 [25]) and the View-based Access Control Model (RFC 2575 [26]) is recommended.

It is then a customer/user responsibility to ensure that the SNMP entity giving access to an instance of this MIB, is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET them.

Where the operational capability of the printing device are especially vulnerable or difficult to administer, certain objects within this MIB have been tagged as READ-ONLY, preventing modification. Further, for all READ-WRITE objects within the MIB, the working group has included specific conformance guidelines stating that vendors are free to implement these objects as READ-ONLY. This conformance allowance should cover cases where specific vendor vulnerabilities may differ from product to product. (See conformance section with regards to MIN-ACCESS clauses).

9. Copyright Section

10. References

Find RFCs and Internet Drafts at www.ietf.org. Find ISO, the International Organization for Standardization, at www.iso.ch.

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[2] deBry et al, "Internet Printing Protocol/1.1: Model and Semantics", Internet Draft <draft-ietf-ipp-model-v11-07.txt>, 2000.
- section 4.4.2 'uri-authentication-supported'
- section 4.4.3 'uri-security-supported'

[3] Herriot et al, "Internet Printing Protocol/1.1: Encoding and Transport", Internet Draft <draft-ietf-ipp-protocol-v11-06.txt>, 2000.
- section 5 'IPP URL Scheme'
- section 9.1 'The "version-number" Parameter'
- section 13 'Appendix A: Protocol Examples'

[4] Simonsen et al, IANA character sets registry, 2000: ftp://ftp.isi.edu/in-notes/iana/assignments/character-sets

[5] Sidhu et al, "Inside Appletalk 2nd edition", out of print. Alternate: Apple staff, "Inside MacIntosh: Networking", 1994.

[6] ANSI, "Coded Character Set - 7-bit American Standard Code for Information Interchange", ANSI X3.4-1986.

[7] ISO, "Document Printing Application (DPA)", ISO 10175, 1996.

[8] ISO, "Universal Multiple-Octet Coded Character Set (UCS) - Part 1: Architecture and Basic Multilingual Plane", ISO 10646, 1993.

[9] Crocker, "Standard for the format of ARPA Internet text messages", RFC 822, 1982.

[10] Postel & Reynolds, "Telnet Protocol Specification", RFC 854, 1983.

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Appendix A - Glossary of Terms

Addressability - On the marker, the number of distinct marking units (pels) per unit of addressability unit that can be set; for example, 300 dots per inch is expressed as 300 per 1000 Thousandths Of Inches and 4 dots per millimeter is 4 per 1000 Micrometers. Addressability is not resolution because marks that are one addressability position apart may not be independently resolvable by the eye due to factors such as gain in the area of marks so they overlap or nearly touch.

Alert - A reportable event for which there is an entry in the alert table.

Bin - An output sub-unit which may or may not be removable.

Binary Change Event - An event which comes in pairs; the leading edge event and the trailing edge event. The leading edge event enters a state from which there is only one exit. A binary change event may be critical or non-critical. See unary change event.

Bursting - The process by which continuous media is separated into individual sheets, typically by bursting along pre-formed perforations.

Channel - A term used to describe a single source of data which is presented to a printer. The model that we use in describing a printer allows for an arbitrary number of channels. Multiple channels can exist on the same physical port. This is commonly done over Ethernet ports where EtherTalk, TCP/IP, and SPX/IPX protocols can be supplying different data streams simultaneously to a single printer on the same physical port.

Collation - In multiple copy output, placing the pages from separate copies into separate ordered sets, ready for binding.

Control Language - A data syntax or language for controlling the printer through the print data channel.

Critical Alert - An alert triggered by an event which leads to a state in which printing is no longer possible; the printer is stopped.

Decollating - The process by which the individual parts within a multi-part form are separated and sorted into separate stacks for each part.

Description - Information about the configuration and capabilities of the printer and its various sub-units.

DPA - ISO 10175 Document Printing Application standard. A standard for a client server protocol for a print system, including (1) submitting print jobs to and (2) managing print jobs in a spooler.

Event - A state change in the printer.

Group - A collection of objects that represent a type of sub-unit of the printer.

Host Resources MIB - See RFC 2790 [28].

IANA - Internet Assigned Numbers Authority. See STD 2, RFC 1700 [15].

Idempotent - Idempotence is the property of an operation that results in the same state no matter how many times it is executed (at least once). This is a property that is shared by true databases in which operations on data items only change the state of the data item and do not have other side effects. Because the SNMP data model is that of operations on a database, SNMP MIB objects should be assumed to be idempotent. If a MIB object is defined in a non-idempotent way, the this data model can break in subtle ways when faced with packet loss, multiple managers, and other common conditions.

> In order to fulfill the common need for actions to result from SNMP Set operations, SNMP MIB objects can be modeled such that the change in state from one state to another has the side effect of causing an action. It is important to note that with this model, an SNMP operation that sets a value equal to its current value will cause no action. This retains the idempotence of a single command, while allowing actions to be initiated by SNMP SET requests.

Input - A tray or bin from which instances of the media are obtained and fed into the Media Path.

Interpreter - The embodiment of an algorithm that processes a data stream consisting of a Page Description Language (PDL) and/or a Control Language.

Localization - The specification of human language, country, and character set needed to present information to people in their native languages.

Management Application (a.k.a. Manager) - A program which queries and controls one or more managed nodes.

Management Station - A physical computer on which one or more management applications can run.

Media Path - The mechanisms that transport instances of the media from an input, through the marker, possibly through media buffers and duplex pathways, out to the output with optional finishing applied. The inputs and outputs are not part of the Media Path.

Non-critical Alert - An alert triggered by a reportable event which does not lead to a state in which printing is no longer possible; such an alert may lead to a state from which printing may no longer be possible in the future, such as the low toner state or the alert

may be pure informational, such as a configuration change at the printer.

Output - A bin or stacker which accepts instances of media that have been processed by a printer.

Page Description Language (PDL) - A data syntax or language for the electronic representation of a document as a sequence of page images.

Printer - A physical device that takes media from an input source, produces marks on that media according to some page description or page control language and puts the result in some output destination, possibly with finishing applied.

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.

Reportable event - An event that is deemed of interest to a management station watching the printer.

Status - Information regarding the current operating state of the printer and its various sub-units. This is an abstraction of the exact physical condition of the printer.

Sub-mechanism - A distinguishable part of a sub-unit.

Sub-unit - A part of the printer which may be a physical part, such as one of the input sources or a logical part such as an interpreter.

Tray - An input sub-unit which is typically removable.

Unary Change Event - An event that indicates a change of state of the printer, but to a state which is (often) just as valid as the state that was left, and from which no return is necessary. See binary change event.

Visible state - The portion of the state of the printer that can be examined by a management application.

Warning - A non-critical alert. See non-critical alert.

Appendix B - Media Size Names from ISO/IEC 10175 Document Printing Architecture

For the convenience of management application developers, this appendix lists the standardized media size names from ISO/IEC 10175 Document Printing Application (DPA), [7]. Management applications that present a dialogue for choosing or displaying media size are encouraged to present relevant names from this list to avoid requiring the user to remember the physical dimensions used to describe the size of the media. A printer implementing the Printer MIB has no knowledge of these names, however; all media sizes in the MIB are given in terms of media dimensions as the values of prtMediaDimFeedDir and prtInputChosenMediaDimXFeedDir.

String name	Description
other	
unknown	
na-letter or letter	North American letter size: 8.5 by 11 inches
na-legal or legal	North American legal size: 8.5 by 14 inches
na-10x13-envelope	North American 10x13 envelope size: 10 by 13 inches
na-9x12-envelope	North American 9x12 envelope size: 9 by 12 inches
na-number-10-envelope	North American number 10 business envelope size: 4.125 by 9.5 inches
na-7x9-envelope	North American 7x9 size: 7 by 9 inches
na-9x11-envelope	North American 9x11 size: 9 by 11 inches
na-10x14-envelope	North American 10x14 envelope size: 10 by 14 inches
na-number-9-envelope	North American number 9 business envelope
na-6x9-envelope	North American 6x9 envelope size: 6 by 9 inches
na-10x15-envelope	North American 10x15 envelope size: 10 by 15 inches
a	engineering A size 8.5 inches by 11 inches
b	engineering B size 11 inches by 17 inches
c	engineering C size 17 inches by 22 inches
d	engineering D size 22 inches by 34 inches
e	engineering E size 34 inches by 44 inches
iso-a0	ISO A0 size: 841 mm by 1189 mm
iso-a1	ISO A1 size: 594 mm by 841 mm
iso-a2	ISO A2 size: 420 mm by 594 mm
iso-a3	ISO A3 size: 297 mm by 420 mm
iso-a4	ISO A4 size: 210 mm by 297 mm
iso-a5	ISO A5 size: 148 mm by 210 mm
iso-a6	ISO A6 size: 105 mm by 148 mm
iso-a7	ISO A7 size: 74 mm by 105 mm
iso-a8	ISO A8 size: 52 mm by 74 mm

```
6658     iso-a9                ISO A9  size:   37 mm by   52 mm
6659     iso-a10               ISO A10 size:   26 mm by   37 mm
6660     iso-b0                ISO B0  size: 1000 mm by 1414 mm
6661     iso-b1                ISO B1  size:  707 mm by 1000 mm
6662     iso-b2                ISO B2  size:  500 mm by  707 mm
6663     iso-b3                ISO B3  size:  353 mm by  500 mm
6664     iso-b4                ISO B4  size:  250 mm by  353 mm
6665     iso-b5                ISO B5  size:  176 mm by  250 mm
6666     iso-b6                ISO B6  size:  125 mm by  176 mm
6667     iso-b7                ISO B7  size:   88 mm by  125 mm
6668     iso-b8                ISO B8  size:   62 mm by   88 mm
6669     iso-b9                ISO B9  size:   44 mm by   62 mm
6670     iso-b10               ISO B10 size:   31 mm by   44 mm
6671     iso-c0                ISO C0 size:   917 mm by 1297 mm
6672     iso-c1                ISO C1 size:   648 mm by  917 mm
6673     iso-c2                ISO C2 size:   458 mm by  648 mm
6674     iso-c3                ISO C3 size:   324 mm by  458 mm
6675     iso-c4                ISO C4 size:   229 mm by  324 mm
6676     iso-c5                ISO C5 size:   162 mm by  229 mm
6677     iso-c6                ISO C6 size:   114 mm by  162 mm
6678     iso-c7                ISO C7 size:    81 mm by  114 mm
6679     iso-c8                ISO C8 size:    57 mm by   81 mm
6680     iso-designated        ISO Designated Long
6681                                 size:   110 mm by  220 mm
6682     jis-b0                JIS B0  size  1030 mm by 1456 mm
6683     jis-b1                JIS B1  size   728 mm by 1030 mm
6684     jis-b2                JIS B2  size   515 mm by  728 mm
6685     jis-b3                JIS B3  size   364 mm by  515 mm
6686     jis-b4                JIS B4  size   257 mm by  364 mm
6687     jis-b5                JIS B5  size   182 mm by  257 mm
6688     jis-b6                JIS B6  size   128 mm by  182 mm
6689     jis-b7                JIS B7  size    91 mm by  128 mm
6690     jis-b8                JIS B8  size    64 mm by   91 mm
6691     jis-b9                JIS B9  size    45 mm by   64 mm
6692     jis-b10               JIS B10 size    32 mm by   45 mm
6693
```

Appendix C - Media Names

For the convenience of management application developers, this appendix lists the standardized media names from ISO/IEC 10175 Document Printing Application (DPA), [7]. Management applications that present a dialogue for choosing media may wish to use these names as an alternative to separately specifying, size, color, and/or type. Using standard media names will mean that a single management application dealing with printers from different vendors and under different system mangers will tend to use the same names for the same media. If selection of media by name is used, the attributes (size, type or color) implied by the name must be explicitly mapped to the appropriate object (prtInputDeclared-MediaDimFeedDir, prtInputDeclaredMediaDimXFeedDir, prtInputMediaType and prtInputMediaColor) in the MIB. The object prtInputMediaName is intended for display to an operator and is purely descriptive. The value in prtInputMediaName is not interpreted by the printer so using a standard name for this value will not change any of the other media attributes nor will it cause an alert if the media in the input sub-unit does not match the name.

Simple Name	Descriptor Text
other	
unknown	
iso-a4-white	Specifies the ISO A4 white medium with size: 210 mm by 297 mm as defined in ISO 216
iso-a4-coloured	Specifies the ISO A4 colored medium with size: 210 mm by 297 mm as defined in ISO 216
iso-a4-transparent	Specifies the ISO A4 transparent medium with size: 210 mm by 297 mm as defined in ISO 216
iso-a3-white	Specifies the ISO A3 white medium with size: 297 mm by 420 mm as defined in ISO 216
iso-a3-coloured	Specifies the ISO A3 colored medium with size: 297 mm by 420 mm as defined in ISO 216
iso-a5-white	Specifies the ISO A5 white medium with size: 148 mm by 210 mm as defined in ISO 216
iso-a5-coloured	Specifies the ISO A5 colored medium with size: 148 mm by 210 mm as defined in ISO 216
iso-b4-white	Specifies the ISO B4 white medium with size: 250 mm by 353 mm as defined in ISO 216
iso-b4-coloured	Specifies the ISO B4 colored medium with size: 250 mm by 353 mm as defined in ISO 216
iso-b5-white	Specifies the ISO B5 white medium with size: 176 mm by 250 mm as defined in ISO 216
iso-b5-coloured	Specifies the ISO B5 colored medium with size: 176 mm by 250 mm as defined in ISO 216
jis-b4-white	Specifies the JIS B4 white medium with size: 257 mm by 364 mm as defined in JIS P0138
jis-b4-coloured	Specifies the JIS B4 colored medium with size: 257 mm by 364 mm as defined in JIS P0138
jis-b5-white	Specifies the JIS B5 white medium with size: 182 mm by 257 mm as defined in JIS P0138
jis-b5-coloured	Specifies the JIS B5 colored medium with

size: 182 mm by 257 mm as defined in JIS P0138

The following standard values are defined for North American media:

na-letter-white	Specifies the North American letter white medium with size: 8.5 inches by 11 inches
na-letter-coloured	Specifies the North American letter colored medium with size: 8.5 inches by 11 inches
na-letter-transparent	Specifies the North American letter transparent medium with size: 8.5 inches by 11 inches
na-legal-white	Specifies the North American legal white medium with size: 8.5 inches by 14 inches
na-legal-coloured	Specifies the North American legal colored medium with size: 8.5 inches by 14 inches

The following standard values are defined for envelopes:

iso-b5-envelope	Specifies the ISO B5 envelope medium with size: 176 mm by 250 mm as defined in ISO 216 and ISO 269
iso-b4-envelope	Specifies the ISO B4 envelope medium with size: 250 mm by 353 mm as defined in ISO 216
iso-c4-envelope	Specifies the ISO C4 envelope medium with size: 229 mm by 324 mm as defined in ISO 216 and ISO 269
iso-c5-envelope	Specifies the ISO C5 envelope medium with size: 162 mm by 229 mm as defined in ISO 269
iso-designated-long-envelope	Specifies the ISO Designated Long envelope medium with size: 110 mm by 220 mm as defined in ISO 269
na-10x13-envelope	Specifies the North American 10x13 envelope medium with size: 10 inches by 13 inches
na-9x12-envelope	Specifies the North American 9x12 envelope medium with size: 9 inches by 12 inches
na-number-10-envelope	Specifies the North American number 10 business envelope medium with size: 4.125 inches by 9.5 inches
na-7x9-envelope	Specifies the North American 7x9 inch envelope
na-9x11-envelope	Specifies the North American 9x11 inch envelope
na-10x14-envelope	Specifies the North American 10x14 inch envelope
na-number-9-envelope	Specifies the North American number 9 business envelope
na-6x9-envelope	Specifies the North American 6x9 inch envelope

6802
6803 na-10x15-envelope Specifies the North American 10x15 inch envelope
6804
6805 The following standard values are defined for the less commonly
6806 used media (white-only):
6807
6808 iso-a0-white Specifies the ISO A0 white medium
6809 with size: 841 mm by 1189 mm
6810 as defined in ISO 216
6811 iso-a1-white Specifies the ISO A1 white medium
6812 with size: 594 mm by 841 mm
6813 as defined in ISO 216
6814 iso-a2-white Specifies the ISO A2 white medium
6815 with size: 420 mm by 594 mm
6816 as defined in ISO 216
6817 iso-a6-white Specifies the ISO A6 white medium
6818 with size: 105 mm by 148 mm
6819 as defined in ISO 216
6820 iso-a7-white Specifies the ISO A7 white medium
6821 with size: 74 mm by 105 mm
6822 as defined in ISO 216
6823 iso-a8-white Specifies the ISO A8 white medium
6824 with size: 52 mm by 74 mm
6825 as defined in ISO 216
6826 iso-a9-white Specifies the ISO A9 white medium
6827 with size: 39 mm by 52 mm
6828 as defined in ISO 216
6829 iso-10-white Specifies the ISO A10 white medium
6830 with size: 26 mm by 37 mm
6831 as defined in ISO 216
6832 iso-b0-white Specifies the ISO B0 white medium
6833 with size: 1000 mm by 1414 mm
6834 as defined in ISO 216
6835 iso-b1-white Specifies the ISO B1 white medium
6836 with size: 707 mm by 1000 mm
6837 as defined in ISO 216
6838 iso-b2-white Specifies the ISO B2 white medium
6839 with size: 500 mm by 707 mm
6840 as defined in ISO 216
6841 iso-b3-white Specifies the ISO B3 white medium
6842 with size: 353 mm by 500 mm
6843 as defined in ISO 216
6844 iso-b6-white Specifies the ISO B6 white medium
6845 with size: 125 mm by 176 mm i
6846 as defined in ISO 216
6847 iso-b7-white Specifies the ISO B7 white medium
6848 with size: 88 mm by 125 mm
6849 as defined in ISO 216
6850 iso-b8-white Specifies the ISO B8 white medium
6851 with size: 62 mm by 88 mm
6852 as defined in ISO 216
6853 iso-b9-white Specifies the ISO B9 white medium
6854 with size: 44 mm by 62 mm
6855 as defined in ISO 216

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6856     iso-b10-white Specifies the ISO B10 white medium
6857                     with size:  31 mm by 44 mm
6858                     as defined in ISO 216
6859     jis-b0-white  Specifies the JIS B0 white medium with size:
6860                     1030 mm by 1456 mm
6861     jis-b1-white  Specifies the JIS B1 white medium with size:
6862                     728 mm by 1030 mm
6863     jis-b2-white  Specifies the JIS B2 white medium with size:
6864                     515 mm by 728 mm
6865     jis-b3-white  Specifies the JIS B3 white medium with size:
6866                     364 mm by 515 mm
6867     jis-b6-white  Specifies the JIS B6 white medium with size:
6868                     257 mm by 364 mm
6869     jis-b7-white  Specifies the JIS B7 white medium with size:
6870                     182 mm by 257 mm
6871     jis-b8-white  Specifies the JIS B8 white medium with size:
6872                     128 mm by 182 mm
6873     jis-b9-white  Specifies the JIS B9 white medium with size:
6874                     91 mm by 128 mm
6875     jis-b10-white Specifies the JIS B10 white medium with size:
6876                     64 mm by 91 mm
6877
6878     The following standard values are defined for engineering media:
6879         a        Specifies the engineering A size medium with
6880                     size: 8.5 inches by 11 inches
6881         b        Specifies the engineering B size medium with
6882                     size: 11 inches by 17 inches
6883         c        Specifies the engineering C size medium with
6884                     size: 17 inches by 22 inches
6885         d        Specifies the engineering D size medium with
6886                      size: 22 inches by 34 inches
6887         e        Specifies the engineering E size medium with
6888                      size: 34 inches by 44 inches
6889
```

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.

Determining the value of a proposed object through identification of the associated human users was found to be so common that a more formalized model was required for consistent analysis. The model describing categories of human-oriented tasks is called "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

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

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

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

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

Printer job removal - Remove a job from a printer.

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

Printer configuration - Query the current configuration of a printer.

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

Print job identification - Determine the identification of a job

within a printer.

Internal printer status - Determine the current status of the printer.

Printer identification - Determine the identity of a printer.
Printer location - Determine the physical location of a printer.

Local system configuration - Determine various aspects of the current configuration of the local system involved with the operation of a printer.

These "tasks" cover a large spectrum of requirements surrounding the operation of a printer in a network environment. This list serves as the basis for defining the various Role Models described below.

Proposed Role Models

Following is the list of "Role Models" used to evaluate the requirements for any given Printer MIB object. Note that the keyword enclosed in parentheses represents an abbreviation for the particular Role Model in the matrix described later in this document.

User (USER) - A person or application that submits print jobs to the printer; typically viewed as the "end user" within the overall printing environment.

Operator (OP) - A person responsible for maintaining a printer on a day-to-day basis, including such tasks as filling empty media trays, emptying full output trays, replacing toner cartridges, clearing simple paper jams, etc.

Technician (TECH) - A person responsible for repairing a malfunctioning printer, performing routine preventive maintenance, and other tasks that typically require advanced training on the printer internals. An example of a "technician" would be a manufacturer's Field Service representative, or other person formally trained by the manufacturer or similar representative.

System Manager (MGR) - A person responsible for configuration and troubleshooting of components involved in the overall printing environment, including printers, print queues and network connectivity issues. This person is typically responsible for ensuring the overall operational integrity of the print system components, and is typically viewed as the central point of coordination among all other Role Models.

Help Desk (HELP) - A person responsible for supporting Users in their printing needs, including training Users and troubleshooting Users' printing problems.

Asset Manager (AM) - A person responsible for managing an organization's printing system assets (primarily printers). Such a person needs to be able to identify and track the location of

printing assets on an ongoing basis.

Capacity Planner (CP) - A person responsible for tracking the usage of printing resources on an ongoing basis for the purpose of planning printer acquisitions and/or placement of printers based on usage trends.

Installer (INST) - A person or application responsible for installing or configuring printing system components on a local system.

Accountant (ACCT) - A person responsible for tracking the usage of printing resources on an ongoing basis for the purpose of charging Users for resources used.

Matrix of Common Print System Tasks and Role Models

To better understand the relationship between the set of defined "Common Print System Tasks" and the various "Role Models," the following matrix is provided.

It is important to recognize that many of the tasks will appear to be applicable to many of the Role Models. However, when considering the actual context of a task, it is very important to realize that often the actual context of a task is such that the Role Model can change.

For example, it is obvious that a "System Manager" must be able to submit print jobs to a printer; however, when submitting a print job, a person identified as a "System Manager" is actually operating in the context of a "User" in this case; hence, the requirement to submit a print job is not listed as a requirement for a System Manager.

Conversely, while a "User" must be able to remove a job previously submitted to a printer, an "Operator" is often expected to be able to remove any print job from any printer; hence, print job removal is a (subtly different) requirement for both the "User" and "Operator" Role Models.

Role Models

Requirement Area	USER	OP	TECH	MGR	HELP	AM	CP	INST	ACCT
Print job status	xx	xx	xx	xx	xx				
Printer capabilities	xx			xx	xx				
Print job submission	xx								
Print job removal	xx	xx							
Notification of events		xx	xx						
Printer configuration				xx				xx	
Printer consumables		xx					xx	xx	
Print job identification		xx		xx	xx		xx		xx
Internal printer status		xx	xx	xx					
Printer identification		xx	xx	xx	xx	xx	xx	xx	
Printer location							xx		
Local system configuration				xx				xx	

Appendix E - Overall Printer Status Table

The Status Table establishes a convention for the top 25 printer errors. The table defines a suggested relationship between various printer states and the variables Printer hrDeviceStatus, hrPrinterStatus, hrPrinterDetectedErrorState, prtAlertGroup, prtAlertCode and various sub-unit status variables (prtInputStatus, prtOutputStatus, prtMarkerStatus, prtMediaPathStatus and prtChannelStatus). This table is the recommended implementation of these variables. It is provided to guide implementors of this MIB and users of the MIB by providing a sample set of states and the variable values that are expected to be produced as result of that state. This information supplements that provided in Section 2.2.13.2 "Overall Printer Status". This is not an exhaustive list rather it is a guideline.

The definition of PrtSubUnitStatusTC specifies that SubUnitStatus is an integer that is the sum of 5 distinct values/states: Availability, Critical, Non-Critical, On-line and Transitioning.
Thus when a non-critical alert or alerts are present the values for Availability, On-Line and Transitioning will be summed with the Non-Critical Alerts (8) value.

The table was generated in landscape format and is located at ftp://ftp.pwg.org/pub/pwg/pmp/contributions/Top25Errors.pdf.

Appendix F – Participants

The following people attended at least one meeting of the Printer Working Group; many attended most meetings.

Ron Bergman - Hitachi Koki
Luis Cubero - Hewlett-Packard
Jay Cummings - Novell
Andy Davidson - Tektronix
Lee Farrell - Canon
Joel Gyllenskog - Microworks
Tom Hastings - Xerox
Scott Isaacson - Novell
Binnur Al-Kazily - Hewlett-Packard
Rick Landau - Digital Equipment Corporation
David Kellerman - Northlake Software
Harry Lewis - IBM
Pete Loya - Hewlett-Packard
Jay Martin – Underscore, Inc.
Bob Pentecost - Hewlett-Packard
Dave Roach - Unisys
Stuart Rowley - Kyocera
Bob Setterbo - Adobe
Ron Smith - Texas Instruments
Mike Timperman - Lexmark
Randy Turner - 2Wire, Inc.
Bill Wagner - NETsilicon, Inc.
Chris Wellens - Interworking Labs
Craig Whittle – Sharp Labs
Don Wright - Lexmark
Lloyd Young - Lexmark
Atsushi Yuki - Kyocera
Steve Zilles - Adobe

Authors' Addresses

Gary Gocek
Xerox Corporation
800 Phillips Rd., 0128-30E
Webster, NY 14580
(716) 422-8902
Email: ggocek@crt.xerox.com

Harry Lewis
IBM
6300 Diagonal Hwy.
Boulder, CO 80301
Phone (303) 924-5337
Email: harryl@us.ibm.com

Randy Turner
2Wire, Inc.
1704 Automation Parkway
San Jose, CA 95131
Phone (408) 895-1216
Email: rturner@2wire.com

Significant contributors

Ron Bergman
Hitachi-Koki
Phone: (805) 578-4421
Email: rbergma@hitachi-hkis.com

Joel Gyllenskog
Microworks, Inc.
Phone: (208) 375-1234
Email: joelgyllen@aol.com

Thomas N. Hastings
Xerox Corporation
Phone: (310) 333-6413
Email: hastings@cp10.es.xerox.com

Scott Isaacson
Novell
Phone: (801) 861-7366
Email: sisaacson@novell.com

Binnur Al-Kazily
Hewlett-Packard, Inc.
Phone: (208) 396-6372
Email: binnur_al-kazily@hp.com

David Kellerman
Northlake Software
Phone: (503) 228-3383
Email: kellerman@nls.com

Matt King
Lexmark International
Phone: (859) 232-6907
Email: emking@lexmark.com

Jay Martin
Underscore, Inc.
Phone: (603) 889-7000
Email: jkm@underscore.com

Ira McDonald
High North Inc
Phone: +1 906-494-2434 or +1 906-494-2697
Email: imcdonald@sharplabs.com

Mike McKay
Novell, Inc.

Bob Pentecost
Hewlett-Packard
Phone: (208) 396-3312
Email: bpenteco@boi.hp.com

Stuart Rowley
Kyocera
Phone: (510) 299-7206
Email: stuart.rowley@kyocera.com

Ronald L. Smith
Texas Instruments
Phone: (817) 774-6151
Email: rlsmith@nb.ppd.ti.com

Gail Songer
Peerless Systems Networking
Phone: (650) 569-4414
Email: gsonger@peerless.com

William Wagner
NETsilicon, Inc.
Phone: 781-398-4588
Email: bwagner@digprod.com

Chris Wellens
Interworking Labs
Phone: (408) 685-3190
Email: chrisw@iwl.com

F.D. Wright
Lexmark International
Phone: (859) 232-4808
Email: don@lexmark.com

Lloyd Young
Lexmark International
Phone: (859) 232-5150
Email: lpyoung@lexmark.com

Stephen N. Zilles
Adobe Systems, Inc.
Phone: (415) 962-4766
Email: szilles@mv.us.adobe.com