Printer MIB Working Group Harry Lewis
IBM
Randy Turner
2-Wire, 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), as well as the Interfaces Group of MIB-II (RFC 1213).

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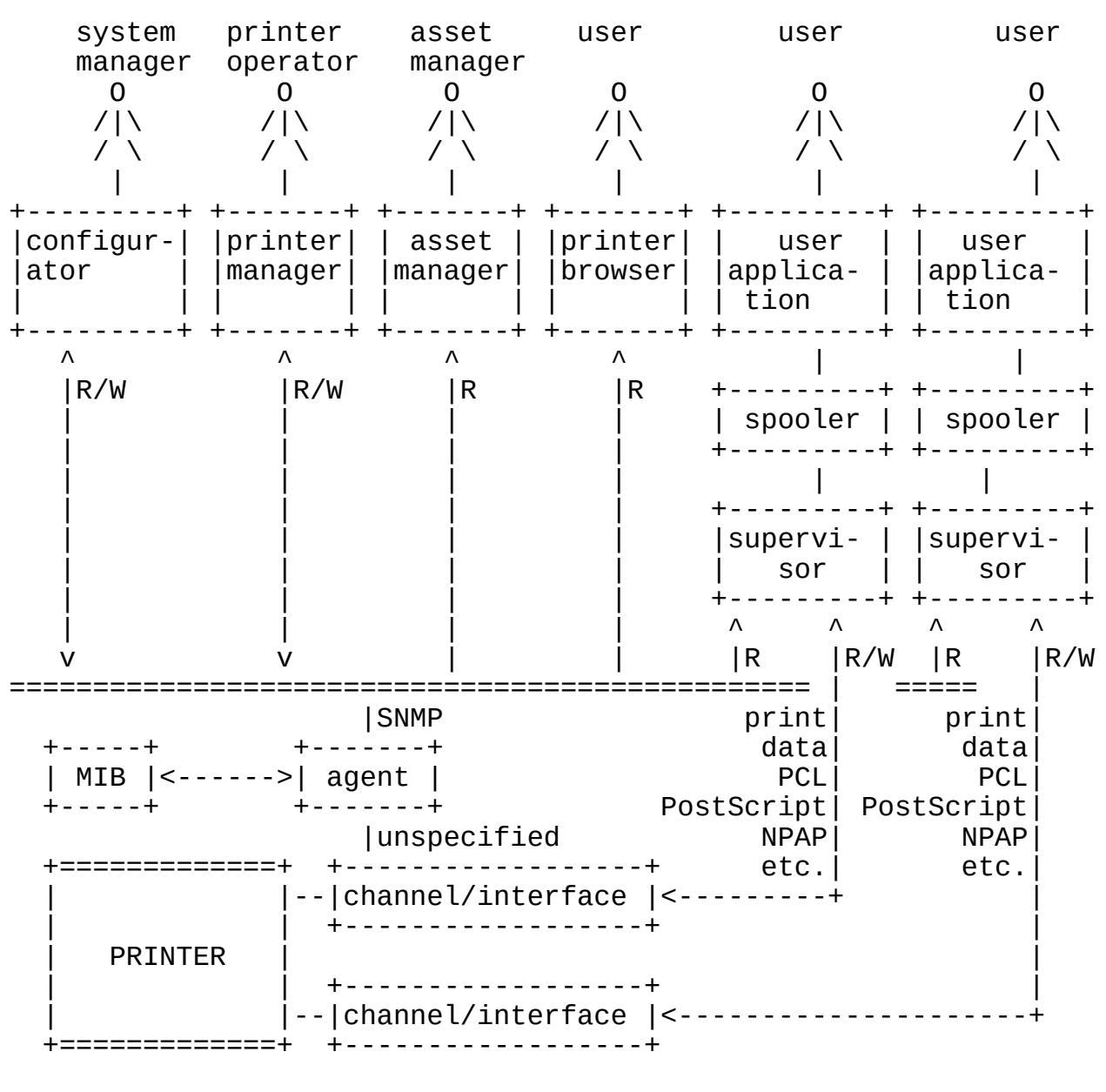
1. Introduction

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.

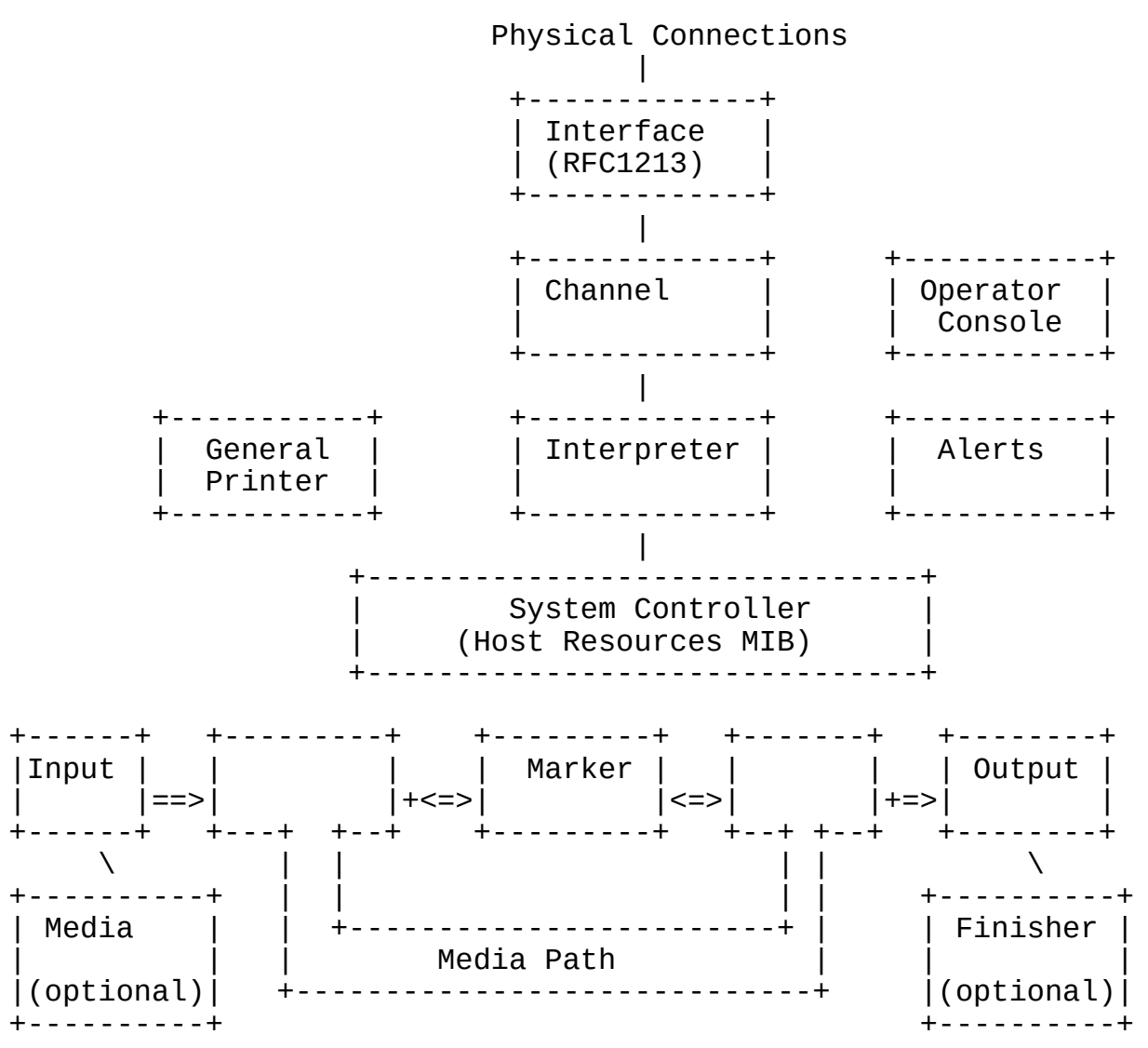
Description, status and alert information about the printer can be thought of as a database describing the printer. The management application for a printer will want to view the printer data base differently depending on how and for what purposes the information in the database is needed.

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 [US-ASCII]. The agent SHOULD return all other character strings in the UTF-8 (RFC 2279) transform of ISO 10646, to conform with the IETF Policy on Character Sets and Languages (RFC 2277 / BCP 18). 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). 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) 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	hrPrinterDetected-ErrorState
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 (RFC2790)are given below:

```
654
655   hrDeviceStatus OBJECT-TYPE
656       SYNTAX  INTEGER {
657                   unknown(1),
658                   running(2),
659                   warning(3),
660                   testing(4),
661                   down(5)
662               }
663       ACCESS  read-only
664       STATUS  mandatory
665       DESCRIPTION
666        "The current operational state of the device
667        described by this row of the table.  A value
668        unknown(1) indicates that the current state of the
669        device is unknown.  running(2) indicates that the
670        device is up and running and that no unusual error
671        conditions are known.  The warning(3) state
672        indicates that agent has been informed of an
673        unusual error condition by the operational software
674        (e.g., a disk device driver) but that the device
675        is still 'operational'.  An example would be high
676        number of soft errors on a disk.  A value of
677        testing(4), indicates that the device is not
678        available for use because it is in the testing
679        state.  The state of down(5) is used only when
680        the agent has been informed that the device is
681        not available for any use."
682       ::= { hrDeviceEntry 5 }
683
684   hrPrinterStatus OBJECT-TYPE
685       SYNTAX INTEGER {
686                  other(1),
687                  unknown(2),
688                  idle(3),
689                  printing(4),
690                  warmup(5)
691              }
692       ACCESS  read-only
693       STATUS  mandatory
694       DESCRIPTION
695        "The current status of this printer device.  When in the idle(3),
696        printing(4), or warmup(5) state, the corresponding hrDeviceStatus
697        should be running(2) or warning(3).  When in the unknown(2) state,
698        the corresponding hrDeviceStatus should be unknown(1)."
699       ::= { hrPrinterEntry 1 }
700
```

```
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 the Printer MIB specification (RFC for the Printer MIB). Additional enumerated values require a new RFC. 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) 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) 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) 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 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. 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). 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 RFC1759. 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 RFC2790

- 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 RFC2790 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 "0007140000Z"  -- 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
            "Status of a printer sub-unit.

            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
```

```
1351                Unknown                                 5       101'b
1352
1353            Non-Critical
1354                No Non-Critical Alerts                  0
1355                Non-Critical Alerts                     8
1356
1357            Critical
1358
1359                No Critical Alerts                      0
1360                Critical Alerts                        16
1361
1362            On-Line
1363
1364                State is On-Line                        0
1365                State is Off-Line                      32
1366
1367            Transitioning
1368
1369                At intended state                       0
1370                Transitioning to intended state        64"
1371
1372        SYNTAX    INTEGER (0..126)
1373
1374    PresentOnOff ::= TEXTUAL-CONVENTION
1375        -- This is a type 1 enumeration.
1376        STATUS    current
1377        DESCRIPTION
1378            "Presence and configuration of a device or feature."
1379        SYNTAX    INTEGER {
1380                      other(1),
1381                      on(3),
1382                      off(4),
1383                      notPresent(5)
1384                      }
1385
1386    CodedCharSet ::= TEXTUAL-CONVENTION
1387        -- This is a type 3 enumeration.
1388        STATUS    current
1389        DESCRIPTION
1390            "A coded character set value that specifies both a set of
1391            characters that may be used and an encoding (as one or more
1392            octets) that is used to represent the characters in the set.
1393            These values are to be used to identify the encoding employed
1394            for strings in the MIB where this is not fixed by the MIB.
1395
1396            Some objects that allow a choice of coded character set are: the
1397            prtLocalizationCharacterSet object in the LocalizationTable and
1398            prtInterpreterDefaultCharSetIn. The
1399            prtGeneralCurrentLocalization and prtConsoleLocalization objects
1400            in turn contain the index in the LocalizationTable of the
```

```
1401          current localization (country, language, and coded character
1402          set) of the 'description' objects and the console, respectively.
1403
1404          The current list of character sets and their enumerated values
1405          used to reference them are contained in the IANA Character Set
1406          registry.  The enum value is indicated by the MIBenum entry in
1407          the registry.  The enum symbol is indicated by the Alias that
1408          starts with 'cs' for character set.
1409
1410          The IANA character sets registry is available via anonymous ftp
1411          at:
1412
1413          ftp://ftp.isi.edu/in-notes/iana/assignments/character-sets
1414
1415          To add a new character set to the IANA Registry, see section 4
1416          'IANA Charset Registration Procedures' (RFC 2278 / BCP 19,
1417          January 1998)."
1418
1419      SYNTAX    INTEGER {
1420                    other(1)    -- used if the designated coded
1421                                -- character set is not currently
1422                                -- registered by IANA
1423
1424      -- See IANA Registry for registered character sets and
1425      -- use the MIBenum integer value.
1426                    }
1427
1428  --
1429  -- General Group textual-conventions
1430  --
1431
1432  PrtGeneralResetTC ::= TEXTUAL-CONVENTION
1433      -- This value is a type 3 enumeration.
1434      STATUS    current
1435      DESCRIPTION
1436          "Values for reading and writing the prtGeneralReset object.
1437
1438      If a device does not have NVRAM, the device shall none the less
1439      respond to a SET with the value resetToNVRAM(5) with some sort of
1440      warm reset that resets the device to some implementation-defined
1441      state that is preferably under control of the system administrator
1442      by some means outside the scope of this MIB specification."
1443
1444      SYNTAX    INTEGER {
1445                    notResetting(3),
1446                    powerCycleReset(4), -- Cold Start
1447                    resetToNVRAM(5), -- Warm Start
1448                    resetToFactoryDefaults(6) -- Reset contents of
1449                                              -- NVRAM to factory
1450                                              -- 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.
                    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.
                    chPort9100(11),
                        -- DEPRECATED
                        -- (see chPortTCP – 37; chBidirPortTCP – 38)
                    chAppSocket(12),
                        -- A bi-directional, LPD-like,
                        -- protocol using 9101 for
                        -- control and 9100 for data.
                        -- Adobe Systems, Inc.
                    chFTP(13),          -- RFC 959
                    chTFTP(14),         -- RFC 1350
                    chDLCLLCPort(15),
                    chIBM3270(16),      -- IBM Coax
                    chIBM5250(17),      -- IBM Twinax
                    chFax(18),
                    chIEEE1394(19),
                    chTransport1(20),
                        -- TCP port 35, see reserved TCP port list
                        -- in RFC 1700 or current "Assigned
                        -- Numbers" RFC. This RFC should also be
                        -- referenced for other channel
                        -- enumerations utilizing TCP port
                        -- numbers 0 through 1024.
                    chCPAP(21),       -- TCP port 170
                        -- Digital Equipment Corp.
                    chDCERemoteProcCall(22), -- OSF
                        -- DEPRECATED
                    chONCRemoteProcCall(23), -- SUN Microsystems
                        -- DEPRECATED
                    chOLE(24),          -- Microsoft
                        -- DEPRECATED
                    chNamedPipe(25),
                    chPCPrint(26),    -- Banyan
                    chServerMessageBlock(27),
                        -- File/Print sharing protocol used by
                        -- various network operating systems
                        -- from IBM 3Com, Microsoft and others
                        --
                        -- prtChannelInformation entry:
                        --
```

```
                        -- Service Name
                        --   Keyword:      Name
                        --   Syntax:       Name
                        --   Status:       Optional
                        --   Multiplicity: Single
                        --   Description:  The service name of
                        --                 the printer
                    chPSM(28),       -- Printing Systems
                        -- Manager, IBM
                    chDLLAPI(29), -- Microsoft
                        -- DEPRECATED
                    chVxDAPI(30), -- Microsoft
                        -- DEPRECATED
                    chSystemObjectManager(31), -- IBM
                    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 Inside AppleTalk, second
                        -- Edition, by Sidhu, Andrews and
                        -- Oppenheimer.
                    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
```

```
1751                        --
1752                        -- Node Number
1753                        --   Keyword:      Node
1754                        --   Syntax:       HexString
1755                        --   Status:       Mandatory
1756                        --   Multiplicity: Single
1757                        --   Description:  The node number
1758                        --
1759                        -- Socket Number
1760                        --   Keyword:      Socket
1761                        --   Syntax:       HexString
1762                        --   Status:       Mandatory
1763                        --   Multiplicity: Single
1764                        --   Description:  The SPX socket number
1765                        --
1766                        -- There must be exactly one "Net" and
1767                        -- one "Node" and one "Socket" entry. A
1768                        -- HexString is a binary value
1769                        -- represented as a string of
1770                        -- ASCII characters using hexadecimal
1771                        -- notation.
1772                    chPortHTTP(42),
1773                        -- Hypertext Transfer Protocol. See IETF
1774                        -- documents relating to HTTP 1.0/1.1
1775                        -- (RFCs 1945 and 2068,etc.)
1776                    chNDPS(43),
1777                        -- Novell, Inc.
1778                        --
1779                        -- prtChannelInformation entry:
1780                        --
1781                        -- Printer Agent Name
1782                        --   Keyword:      PA
1783                        --   Syntax:       Name
1784                        --   Status:       Mandatory
1785                        --   Multiplicity: Single
1786                        --   Description:  The NDPS Printer
1787                        --                 Agent Name
1788                    chIPP(44)
1789                        -- Internet Printing Protocol (IPP)
1790                        -- (IPP/1.0 - see RFC 2565/2566)
1791                        -- (also applies to all future versions of IPP)
1792                        --
1793                        -- IPP Printer URI
1794                        --   Keyword:      URI
1795                        --   Syntax:       URI(Unicode UTF-8 per
1796                        --                 RFC2396)
1797                        --   Status:       Mandatory
1798                        --   Multiplicity: Single
1799                        --   Default:      not applicable
1800                        --   Description:  URI of this IPP Printer within
```

```
1801                    --     the Internet naming scope.  Unicode
1802                    --     UTF-8 [RFC-2279] string with
1803                    --     hexadecimal escapes for any non-ASCII
1804                    --     characters (per RFC2396).
1805                    --   Conformance: An IPP Printer shall list all
1806                    --     IPP URI it supports (one per IPP Channel
1807                    --     entry). If a URI contains the 'http:'
1808                    --     scheme it MUST have an explicit port.
1809                    --   See: [RFC-2279], [RFC-2396], [RFC-2565],
1810                    --     [RFC-2566].
1811                    --
1812                    -- IPP Printer Client Authentication
1813                    --   Keyword:      Auth
1814                    --   Syntax:       Keyword
1815                    --   Status:       Optional
1816                    --   Multiplicity: Single
1817                    --   Default:      'none'
1818                    --   Description:  A client authentication
1819                    --     mechanism supported for this IPP Printer
1820                    --     URI:
1821                    --       'none'
1822                    --         no client authentication mechanism
1823                    --       'requesting-user-name'
1824                    --         authenticated user in 'requesting-
1825                    --         user-name'
1826                    --       'basic'
1827                    --         authenticated user via HTTP Basic
1828                    --         mechanism
1829                    --       'digest'
1830                    --         authenticated user via HTTP Digest
1831                    --         mechanism
1832                    --       'certificate'
1833                    --         authenticated user via certificate
1834                    --         mechanism
1835                    --   Conformance: An IPP Printer should list all
1836                    --     IPP client authentication mechanisms it
1837                    --     supports (one per IPP Channel entry).
1838                    --     See: [IPP-MOD-06], [IPP-PRO-05].
1839                    --
1840                    -- IPP Printer Security
1841                    --   Keyword:      Security
1842                    --   Syntax:       Keyword
1843                    --   Status:       Optional
1844                    --   Multiplicity: Single
1845                    --   Default:      'none'
1846                    --   Description:  A security mechanism supported
1847                    --     for this IPP Printer URI:
1848                    --     'none'
1849                    --       no security mechanism
1850                    --     'ssl3'
```

```
1851                        --       SSL3 secure communications channel
1852                        --       protocol
1853                        --     'tls'
1854                        --       TLS secure communications channel
1855                        --       protocol
1856                        --   Conformance: An IPP Printer should list all
1857                        --     IPP security mechanisms it supports
1858                        --     (one per IPP Channel entry).
1859                        --   See: [RFC-2246], [RFC-2566], [IPP-MOD-06].
1860                        --
1861                        -- IPP Printer Protocol Version
1862                        --   Keyword:      Version
1863                        --   Syntax:       Keyword
1864                        --   Status:       Optional
1865                        --   Multiplicity: Multiple
1866                        --   Default:      '1.0'
1867                        --   Description:  All of the IPP protocol
1868                        --     versions (major.minor) supported for this
1869                        --     IPP Printer URI:
1870                        --     '1.0'
1871                        --       IPP/1.0 conforming Printer
1872                        --     '1.1'
1873                        --       IPP/1.1 conforming Printer
1874                        --   Conformance:  An IPP Printer should list all
1875                        --     IPP versions it supports (all listed in
1876                        --     each IPP Channel entry). An IPP Client
1877                        --     should select the highest numbered
1878                        --     version that the client supports for use
1879                        --     in all IPP Requests (for optimum
1880                        --     interworking).
1881                        --   See: [RFC-2566], [IPP-MOD-06].
1882                        --
1883                        --   References:
1884                        --   [RFC-2246] TLS/1.0 Protocol
1885                        --     section 9 'Mandatory Cipher Suites'
1886                        --   [RFC-2279] UTF-8 Transform of ISO 10646
1887                        --     section 2 'UTF-8 Definition'
1888                        --   [RFC-2396] Generic URI Syntax
1889                        --     section 2.1 'URI and non-ASCII
1890                        --     characters'
1891                        --   [RFC-2566] IPP/1.0 Model and Semantics
1892                        --     section 4.1.5 'uri' (attribute syntax)
1893                        --     section 4.4.1 'printer-uri-supported'
1894                        --     section 4.4.2 'uri-security-supported'
1895                        --     section 4.4.14 'ipp-versions-supported'
1896                        --     section 5 'Conformance'
1897                        --   [RFC-2565] IPP/1.0 Encoding and Transport
1898                        --     section 3.3 'Version-number'
1899                        --     section 5.1 'Using IPP with SSL3'
1900                        --     section 9 'Appendix A: Protocol Examples'
```

```
                        --   [IPP-MOD-06] IPP/1.1 Model and Semantics
                        --     <draft-ietf-ipp-model-v11-04.txt>
                        --     (work-in-progress)
                        --     section 4.4.2 'uri-authentication-
                        --     supported'
                        --     section 4.4.3 'uri-security-supported'
                        --   [IPP-PRO-05] IPP/1.1 Encoding and Transport
                        --     <draft-ietf-ipp-protocol-v11-03.txt>
                        --     (work-in-progress)
                        --     section 3.3 'Version-number'
                        --     section 5 'IPP URL Scheme'
                        --     section 9 'Appendix A: Protocol Examples'
                    }
--
-- Interpreter Group textual conventions
--

PrtInterpreterLangFamilyTC ::= TEXTUAL-CONVENTION
    -- This value is a type 2 enumeration.
    STATUS    current
    DESCRIPTION
        "This enumeration indicates the type of interpreter that is
        receiving jobs."
    SYNTAX    INTEGER {
        other(1),
        unknown(2),
        langPCL(3),          -- PCL.  Starting with PCL version 5,
                             -- HP-GL/2 is included as part of the
                             -- PCL language.
                             -- PCL and HP-GL/2 are registered
                             -- trademarks of Hewlett-Packard
                             -- Company.
        langHPGL(4),         -- Hewlett-Packard Graphics Language.
                             -- HP-GL is a registered trademark of
                             -- Hewlett-Packard Company.
        langPJL(5),          -- Peripheral Job Language. Appears in
                             -- the data stream between data intended
                             -- for a page description language.
                             -- Hewlett-Packard Co.
        langPS(6),           -- PostScript (tm) Language
                             -- Postscript - a trademark of Adobe
                             -- Systems Incorporated which may be
                             -- registered in certain jurisdictions
        langIPDS(7),         -- Intelligent Printer Data Stream
                             -- Bi-directional print data stream for
                             -- documents consisting of data objects
                             -- (text, image, graphics, bar codes),
                             -- resources (fonts, overlays) and page,
                             -- form and finishing instructions.
                             -- Facilitates system level device
```

```
1951                                -- control, document tracking and error
1952                                -- recovery throughout the print
1953                                -- process.
1954                                -- IBM Corporation.
1955            langPPDS(8),        -- IBM Personal Printer Data Stream.
1956                                -- Originally called IBM ASCII, the name
1957                                -- was changed to PPDS when the Laser
1958                                -- Printer was introduced in 1989.
1959                                -- Lexmark International, Inc.
1960            langEscapeP(9),     -- Epson Corp.
1961            langEpson(10),
1962            langDDIF(11),       -- Digital Document Interchange Format
1963                                -- Digital Equipment Corp., Maynard MA
1964            langInterpress(12),
1965                                -- Xerox Corp.
1966            langISO6429(13),    -- ISO 6429.  Control functions for
1967                                -- Coded Character Sets (has ASCII
1968                                -- control characters, plus additional
1969                                -- controls for
1970                                -- character imaging devices.)
1971                                -- ISO Standard, Geneva, Switzerland
1972            langLineData(14),   -- line-data:  Lines of data as
1973                                -- separate ASCII or EBCDIC records
1974                                -- and containing no control functions
1975                                -- (no CR, LF, HT, FF, etc.)
1976                                -- For use with traditional line
1977                                -- printers.  May use CR and/or LF to
1978                                -- delimit lines, instead of records.
1979                                -- See ISO 10175 Document Printing
1980                                -- Application(DPA)
1981                                -- ISO standard, Geneva, Switzerland
1982            langMODCA(15),      -- Mixed Object Document Content
1983                                -- Architecture
1984                                -- Definitions that allow the
1985                                -- composition, interchange, and
1986                                -- presentation of final form
1987                                -- documents as a collection of data
1988                                -- objects (text, image, graphics, bar
1989                                -- codes), resources (fonts, overlays)
1990                                -- and page, form and finishing
1991                                -- instructions.
1992                                -- IBM Corporation.
1993            langREGIS(16),      -- Remote Graphics Instruction Set,
1994                                -- Digital Equipment Corp., Maynard MA
1995            langSCS(17),        -- SNA Character String
1996                                -- Bi-directional print data stream for
1997                                -- SNA LU-1 mode of communication.
1998                                -- IBM
1999            langSPDL(18),       -- ISO 10180 Standard Page Description
2000                                -- 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)
                                -- ISO standard, Geneva, Switzerland
        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
```

```
2101                                -- language features for printing, and
2102                                -- printer control.
2103                                -- Hewlett-Packard Co.
2104            langART(48),        -- Advanced Rendering Tools (ART).
2105                                -- Page Description language
2106                                -- originally developed for the Laser
2107                                -- Press printers.
2108                                -- Technical reference manual: "ART IV
2109                                -- Reference Manual", No F33M.
2110                                -- Fuji Xerox Co., Ltd.
2111            langTIPSI(49),      -- Transport Independent Printer
2112                                -- System Interface (ref. IEEE Std.
2113                                -- 1284.1)
2114            langPrescribe(50),
2115                                -- Page description and printer
2116                                -- control language. It can be
2117                                -- described with ordinary ASCII
2118                                -- Technical reference manual:
2119                                -- "PRESCRIBE II Programming Manual"
2120            langLinePrinter(51),
2121                                -- A simple-text character stream which
2122                                -- supports the control codes LF, VT,
2123                                -- FF, and plus Centronics or
2124                                -- Dataproducts Vertical Format Unit
2125                                -- (VFU) language is commonly used on
2126                                -- many older model line and matrix
2127                                -- printers.
2128            langIDP(52),        -- Imaging Device Protocol
2129                                -- Apple Computer.
2130            langXJCL(53),       -- Xerox Job Control Language (JCL).
2131                                -- A Job Control language originally
2132                                -- developed for the LaserPress printers
2133                                -- and is capable of switching PDLs.
2134                                -- Technical reference manual:
2135                                -- "ART IV Reference Manual", No F33M.
2136                                -- Fuji Xerox Co., Ltd.
2137            langPDF(54),        -- Adobe Portable Document Format
2138                                -- Adobe Systems, Inc.
2139            langRPDL(55),       -- Ricoh Page Description Language for
2140                                -- printers.
2141                                -- Technical manual "RPDL command
2142                                -- reference" No.307029
2143                                -- RICOH, Co. LTD
2144            langIntermecIPL(56),
2145                                -- Intermec Printer Language for label
2146                                -- printers.
2147                                -- Technical Manual: "IPL Programmers
2148                                -- Reference Manual"
2149                                -- Intermec Corporation
2150            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)
                  }

PrtOutputTypeTC ::= TEXTUAL-CONVENTION
    -- This is a type 2 enumeration.
    STATUS    current
    DESCRIPTION
        "The Type of technology supported by this output sub-unit."
    SYNTAX    INTEGER {
                  other(1),
                  unknown(2),
                  removableBin(3),
                  unRemovableBin(4),
                  continuousRollDevice(5),
```

```
                    mailBox(6),
                    continuousFanFold(7)
                    }

    PrtOutputStackingOrderTC ::= TEXTUAL-CONVENTION
        -- This is a type 1 enumeration.
        STATUS    current
        DESCRIPTION
            "The current state of the stacking order for the associated
            output sub-unit. 'firstToLast' means that as pages are output,
            the front of the next page is placed against the back of the
            previous page. 'lastToFirst' means that as pages are output, the
            back of the next page is placed against the front of the
            previous page."
        SYNTAX    INTEGER {
                    unknown(2),
                    firstToLast(3),
                    lastToFirst(4)
                    }

    PrtOutputPageDeliveryOrientationTC ::= TEXTUAL-CONVENTION
        -- This is a type 1 enumeration.
        STATUS    current
        DESCRIPTION
            "The reading surface that will be 'up' when pages are delivered
            to the associated output sub-unit. Values are Face-Up and Face
            Down (Note: interpretation of these values is, in general,
            context-dependent based on locale; presentation of these values
            to an end-user should be normalized to the expectations of the
            user."
        SYNTAX    INTEGER {
                    faceUp(3),
                    faceDown(4)
                    }

    --
    -- Marker Group Textual Conventions
    --

    PrtMarkerMarkTechTC ::= TEXTUAL-CONVENTION
        -- This value is a type 2 enumeration.
        STATUS    current
        DESCRIPTION
            "The type of marking technology used for this marking sub-unit"
        SYNTAX    INTEGER {
                    other(1),
                    unknown(2),
                    electrophotographicLED(3),
                    electrophotographicLaser(4),
                    electrophotographicOther(5),
```

```
                    impactMovingHeadDotMatrix9pin(6),
                    impactMovingHeadDotMatrix24pin(7),
                    impactMovingHeadDotMatrixOther(8),
                    impactMovingHeadFullyFormed(9),
                    impactBand(10),
                    impactOther(11),
                    inkjetAqueous(12),
                    inkjetSolid(13),
                    inkjetOther(14),
                    pen(15),
                    thermalTransfer(16),
                    thermalSensitive(17),
                    thermalDiffusion(18),
                    thermalOther(19),
                    electroerosion(20),
                    electrostatic(21),
                    photographicMicrofiche(22),
                    photographicImagesetter(23),
                    photographicOther(24),
                    ionDeposition(25),
                    eBeam(26),
                    typesetter(27)
                    }

PrtMarkerCounterUnitTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration.
    STATUS    current
    DESCRIPTION
        "The unit that will be used by the printer when reporting
        counter values for this marking sub-unit.  The
        time units of measure are provided for a device like a
        strip recorder that does not or cannot track the physical
        dimensions of the media and does not use characters,
        lines or sheets."

    SYNTAX    INTEGER {
                    tenThousandthsOfInches(3),  -- .0001
                    micrometers(4),
                    characters(5),
                    lines(6),
                    impressions(7),
                    sheets(8),
                    dotRow(9),
                    hours(11),
                    feet(16),
                    meters(17)
                    }

PrtMarkerSuppliesTypeTC ::= TEXTUAL-CONVENTION
    -- This value is a type 3 enumeration.
```

```
2301        STATUS    current
2302        DESCRIPTION
2303            "The type of this supply."
2304        SYNTAX    INTEGER {
2305                      other(1),
2306                      unknown(2),
2307                      toner(3),
2308                      wasteToner(4),
2309                      ink(5),
2310                      inkCartridge(6),
2311                      inkRibbon(7),
2312                      wasteInk(8),
2313                      opc(9), -- photo conductor
2314                      developer(10),
2315                      fuserOil(11),
2316                      solidWax(12),
2317                      ribbonWax(13),
2318                      wasteWax(14),
2319                      fuser(15),
2320                      coronaWire(16),
2321                      fuserOilWick(17),
2322                      cleanerUnit(18),
2323                      fuserCleaningPad(19),
2324                      transferUnit(20),
2325                      tonerCartridge(21),
2326                      fuserOiler(22),
2327                    -- Values for Finisher MIB
2328                      water(23),
2329                      wasteWater(24),
2330                      glueWaterAdditive(25),
2331                      wastePaper(26),
2332                      bindingSupply(27),
2333                      bandingSupply(28),
2334                      stitchingWire(29),
2335                      shrinkWrap(30),
2336                      paperWrap(31),
2337                      staples(32),
2338                      inserts(33),
2339                      covers(34)
2340                    -- End of values for Finisher MIB
2341                      }
2342
2343    PrtMarkerSuppliesSupplyUnitTC ::= TEXTUAL-CONVENTION
2344        -- This value is a type 1 enumeration.
2345        STATUS    current
2346        DESCRIPTION
2347            "Unit of this marker supply container/receptacle."
2348        SYNTAX    INTEGER {
2349                      tenThousandthsOfInches(3),  -- .0001
2350                      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
--
```

```
2401
2402  PrtMediaPathMaxSpeedPrintUnitTC ::= TEXTUAL-CONVENTION
2403      -- This value is a type 1 enumeration.
2404      STATUS    current
2405      DESCRIPTION
2406          "The unit of measure used in specifying the speed of all
2407          media paths in the printer."
2408      SYNTAX    INTEGER {
2409                    tenThousandthsOfInchesPerHour(3),-- .0001/hour
2410                    micrometersPerHour(4),
2411                    charactersPerHour(5),
2412                    linesPerHour(6),
2413                    impressionsPerHour(7),
2414                    sheetsPerHour(8),
2415                    dotRowPerHour(9),
2416                    feetPerHour(16),
2417                    metersPerHour(17)
2418                   }
2419
2420  PrtMediaPathTypeTC ::= TEXTUAL-CONVENTION
2421      -- This value is a type 2 enumeration.
2422      STATUS    current
2423      DESCRIPTION
2424          "The type of the media path for this media path."
2425      SYNTAX    INTEGER {
2426                    other(1),
2427                    unknown(2),
2428                    longEdgeBindingDuplex(3),
2429                    shortEdgeBindingDuplex(4),
2430                    simplex(5)
2431                   }
2432
2433  --
2434  -- Interpreter Group Textual Conventions
2435  --
2436
2437  PrtInterpreterTwoWayTC ::= TEXTUAL-CONVENTION
2438      -- This is a type 1 enumeration.
2439      STATUS    current
2440      DESCRIPTION
2441          "Indicates whether or not this interpreter returns information
2442          back to the host."
2443      SYNTAX    INTEGER {
2444                    yes(3),
2445                    no(4)
2446                    }
2447
2448  --
2449  -- Console Group Textual Conventions
2450  --
```

```
2451
2452  PrtConsoleColorTC ::= TEXTUAL-CONVENTION
2453      -- This value is a type 2 enumeration.
2454      STATUS     current
2455      DESCRIPTION
2456          "The color of this light."
2457      SYNTAX    INTEGER {
2458                    other(1),
2459                    unknown(2),
2460                    white(3),
2461                    red(4),
2462                    green(5),
2463                    blue(6),
2464                    cyan(7),
2465                    magenta(8),
2466                    yellow(9),
2467                    orange(10)
2468                    }
2469
2470  PrtConsoleDisableTC ::= TEXTUAL-CONVENTION
2471      -- This value is a type 2 enumeration.
2472      STATUS     current
2473      DESCRIPTION
2474          "This value indicates whether or not input is accepted from
2475          the operator console.  A value of 'operatorConsoleEnabled'
2476          indicates that input is accepted from the console, and a value
2477          of 'operatorConsoleDisabled' indicates that input is not
2478          accepted from the console.  The other values indicate that
2479          limited input is accepted from the console, and the limitations
2480          are product specific. Limitations are generally less restrictive
2481          for operatorConsoleEnabledLevel1 than for
2482          operatorConsoleEnabledLeve2, which is less restrictive than
2483          operatorConsoleEnabledLevel3."
2484      SYNTAX    INTEGER {
2485                    operatorConsoleEnabled (3),
2486                    operatorConsoleDisabled (4),
2487                    operatorConsoleEnabledLevel1 (5),
2488                    operatorConsoleEnabledLevel2 (6),
2489                    operatorConsoleEnabledLevel3 (7)
2490                    }
2491
2492  --
2493  -- Alert Group Textual Conventions
2494  --
2495
2496  PrtAlertSeverityLevelTC ::= TEXTUAL-CONVENTION
2497      -- This value is a type 1 enumeration.
2498      STATUS    current
2499      DESCRIPTION
2500          "The level of severity of this alert table entry.  The printer
```

```
2501          determines the severity level assigned to each entry in the
2502          table. A critical alert is binary by nature and definition. A
2503          warning is defined to be a non-critical alert. The original and
2504          most common warning is unary. The binary warning was added later
2505          and given a more distinguished name."
2506      SYNTAX    INTEGER {
2507                    other(1),
2508                    critical(3),
2509                    warning(4),
2510                    warningBinaryChangeEvent(5)
2511                    }
2512
2513   PrtAlertTrainingLevelTC ::= TEXTUAL-CONVENTION
2514       -- This value is a type 2 enumeration.
2515       STATUS    current
2516       DESCRIPTION
2517           "The level of training required to handle this alert, if human
2518           intervention is required. The noInterventionRequired value
2519           should be used if the event does not require any human
2520           intervention. The training level is an enumeration that is
2521           determined and assigned by the printer manufacturer based on the
2522           information or the training required to handle this alert.  The
2523           printer will break alerts into these different training levels.
2524           It is the responsibility of the management application in the
2525           system to determine how a particular alert is handled and how
2526           and to whom that alert is routed.  The following are the four
2527           training levels of alerts:
2528
2529           Field Service - Alerts that typically require advanced
2530               training and technical knowledge of the printer and its sub
2531               units. An example of a technical person would be a
2532               manufacturer's Field Service representative, or other person
2533               formally trained by the manufacturer or similar
2534               representative.
2535           Trained - Alerts that require an intermediate or moderate level
2536               of knowledge of the printer and its sub-units. A typical
2537               examples of alerts that a trained operator can handle is
2538               replacing toner cartridges.
2539           Untrained -     Alerts that can be fixed without prior
2540               training either because the action to correct the alert is
2541               obvious or the printer can help the untrained person fix the
2542               problem. A typical example of such an alert is reloading
2543               paper trays and emptying output bins on a low end printer.
2544           Management -    Alerts that have to do with overall operation of
2545               and configuration of the printer. Examples of management
2546               events are configuration change of sub-units."
2547       SYNTAX    INTEGER {
2548                     other(1),
2549                     unknown(2),
2550                     untrained(3),
```

```
                    trained(4),
                    fieldService(5),
                    management(6),
                    noInterventionRequired(7)
                   }

PrtAlertGroupTC ::= TEXTUAL-CONVENTION
    -- This value is a type 1 enumeration for values in the range
    -- 1 to 29.
    -- Values of 30 and greater are type 2 enumerations and are
    -- for use in other MIBs that augment tables in the Printer
    -- MIB. Therefore, other MIBs may assign alert codes of 30 or
    -- higher to use the alert table from the Printer MIB without
    -- requiring revising and re-publishing this document.
    STATUS    current
    DESCRIPTION
        "The type of sub-unit within the printer model that this alert
        is related.  Input, output, and markers are examples of printer
        model groups, i.e., examples of types of sub-units. Wherever
        possible, these enumerations match the sub-identifier that
        identifies the relevant table in the printer MIB.

        NOTE: Alert type codes have been added for the host resources
        MIB storage table and device table. These additional types are
        for situations in which the printer's storage and device objects
        must generate alerts (and possibly traps for critical alerts)."
    SYNTAX    INTEGER {
                    other(1),
                    hostResourcesMIBStorageTable(3),
                    hostResourcesMIBDeviceTable(4),
                    generalPrinter(5),
                    cover(6),
                    localization(7),
                    input(8),
                    output(9),
                    marker(10),
                    markerSupplies(11),
                    markerColorant(12),
                    mediaPath(13),
                    channel(14),
                    interpreter(15),
                    consoleDisplayBuffer(16),
                    consoleLights(17),
                    alert(18),
                  -- Values for Finisher MIB
                    finDevice(30),
                    finSupply(31),
                    finSupplyMediaInput(32),
                    finAttributeTable(33)
                  -- End of values for Finisher MIB
```

```
                }

PrtAlertCodeTC ::= TEXTUAL-CONVENTION
    -- This value is a type 2 enumeration.
    STATUS    current
    DESCRIPTION
        "The code that describes the type of alert for this entry in the
        table. Binary change event alerts describe states of the subunit
        while unary change event alerts describe a single event. The
        same alert code can be used for a binary change event or a unary
        change event, depending on implementation. Also, the same alert
        code can be used to indicate a critical or a non-critical
        (warning) alert, depending on implementation. The value of
        prtAlertSeverityLevel specifies binary vs. unary and critical
        vs. non-critical for each event for the implementation.

        While there are some specific codes for many subunits, the
        generic codes should be used for most subunit alerts. The
        network management station can then query the subunit specified
        by prtAlertGroup to determine further subunit status and other
        subunit information.

        An agent shall not add two entries to the alert table for the
        same event, one containing a generic event code and the other
        containing a specific event code; the agent shall add only one
        entry in the alert table for each event; either generic
        (preferred) or specific, not both.

        Implementation of the unary change event
        alertRemovalOfBinaryChangeEntry(1801) is optional. When
        implemented, this alert code shall indicate to network
        management stations that the trailing edge of a binary change
        event has occurred and the corresponding alert entry has been
        removed from the alert table. As with all events, the
        alertRemovalOfBinaryChangeEntry(1801) alert shall be placed at
        the end of the alert table. Such an alert table entry shall
        specify the following information:

        prtAlertSeverityLevel    warningUnaryChangeEvent(4)
        prtAlertTrainingLevel    noInterventionRequired(7)
        prtAlertGroup            alert(18)
        prtAlertGroupIndex       the index of the row in the
                                 alert table of the binary
                                 change event that this event
                                 has removed.
        prtAlertLocation         unknown (-2)
        prtAlertCode             alertRemovalOfBinaryChangeEntry(1801)
        prtAlertDescription      <description or null string>
        prtAlertTime             the value of sysUpTime at
                                 the time of the removal of the
```

```
                                    binary change event from the
                                    alert table.

        Optionally, the agent may generate a trap coincident with
        removing the binary change event and placing the unary change
        event alertRemovalOfBinaryChangeEntry(1801) in the alert table.
        For such a trap, the prtAlertIndex sent with the above trap
        parameters shall be the index of the
        alertRemovalOfBinaryChangeEvent row that was added to the
        prtAlertTable; not the index of the row that was removed from
        the prtAlertTable."
    SYNTAX    INTEGER {
                  other(1),
                      -- an event that is not represented
                      -- by one of the alert codes
                      -- specified below.
                  unknown(2),
                      -- The following generic codes are common to
                      -- multiple groups. The NMS may
                      -- examine the prtAlertGroup object to determine
                      -- what group to query for further information.
                  coverOpen(3),
                  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),
```

```
2701                    subunitUnrecoverableFailure(30),
2702                    subunitRecoverableStorageError(31),
2703                    subunitUnrecoverableStorageError(32),
2704                    subunitMotorFailure(33),
2705                    subunitMemoryExhausted(34),
2706                    subunitUnderTemperature(35),
2707                    subunitOverTemperature(36),
2708                    subunitTimingFailure(37),
2709                    subunitThermistorFailure(38),
2710                  -- general Printer group
2711                    doorOpen(501),    -- DEPRECATED
2712                                      -- Use coverOpened(3)
2713                    doorClosed(502),  -- DEPRECATED
2714                                      -- Use coverClosed(4)
2715                    powerUp(503),
2716                    powerDown(504),
2717                    printerNMSReset(505),
2718                        -- The printer has been reset by some
2719                        -- network management station(NMS)
2720                        -- writing into 'prtGeneralReset'.
2721                    printerManualReset(506),
2722                        -- The printer has been reset manually.
2723                    printerReadyToPrint(507),
2724                        -- The printer is ready to print. (i.e.,
2725                        -- not warming up, not in power save
2726                        -- state, not adjusting print quality,
2727                        -- etc.).
2728
2729                  -- Input Group
2730                    inputMediaTrayMissing(801),
2731                    inputMediaSizeChange(802),
2732                    inputMediaWeightChange(803),
2733                    inputMediaTypeChange(804),
2734                    inputMediaColorChange(805),
2735                    inputMediaFormPartsChange(806),
2736                    inputMediaSupplyLow(807),
2737                    inputMediaSupplyEmpty(808),
2738                    inputMediaChangeRequest(809),
2739                        -- An interpreter has detected that a
2740                        -- different medium is need in this input
2741                        -- tray subunit. The prtAlertDescription may
2742                        -- be used to convey a human readable
2743                        -- description of the medium required to
2744                        -- satisfy the request.
2745                    inputManualInputRequest(810),
2746                        -- An interpreter has detected that manual
2747                        -- input is required in this subunit. The
2748                        -- prtAlertDescription may be used to convey
2749                        -- a human readable description of the medium
2750                        -- required to satisfy the request.
```

```
2751                    inputTrayPositionFailure(811),
2752                        -- The input tray failed to position correctly.
2753                    inputTrayElevationFailure(812),
2754                    inputCannotFeedSizeSelected(813),
2755                  -- Output Group
2756                    outputMediaTrayMissing(901),
2757                    outputMediaTrayAlmostFull(902),
2758                    outputMediaTrayFull(903),
2759                    outputMailboxSelectFailure(904),
2760                  -- Marker group
2761                    markerFuserUnderTemperature(1001),
2762                    markerFuserOverTemperature(1002),
2763                    markerFuserTimingFailure(1003),
2764                    markerFuserThermistorFailure(1004),
2765                    markerAdjustingPrintQuality(1005),
2766                  -- Marker Supplies group
2767                    markerTonerEmpty(1101),
2768                    markerInkEmpty(1102),
2769                    markerPrintRibbonEmpty(1103),
2770                    markerTonerAlmostEmpty(1104),
2771                    markerInkAlmostEmpty(1105),
2772                    markerPrintRibbonAlmostEmpty(1106),
2773                    markerWasteTonerReceptacleAlmostFull(1107),
2774                    markerWasteInkReceptacleAlmostFull(1108),
2775                    markerWasteTonerReceptacleFull(1109),
2776                    markerWasteInkReceptacleFull(1110),
2777                    markerOpcLifeAlmostOver(1111),
2778                    markerOpcLifeOver(1112),
2779                    markerDeveloperAlmostEmpty(1113),
2780                    markerDeveloperEmpty(1114),
2781                    markerTonerCartridgeMissing(1115),
2782                  -- Media Path Device Group
2783                    mediaPathMediaTrayMissing(1301),
2784                    mediaPathMediaTrayAlmostFull(1302),
2785                    mediaPathMediaTrayFull(1303),
2786                    mediaPathcannotDuplexMediaSelected(1304),
2787                  -- Interpreter Group
2788                    interpreterMemoryIncrease(1501),
2789                    interpreterMemoryDecrease(1502),
2790                    interpreterCartridgeAdded(1503),
2791                    interpreterCartridgeDeleted(1504),
2792                    interpreterResourceAdded(1505),
2793                    interpreterResourceDeleted(1506),
2794                    interpreterResourceUnavailable(1507),
2795                    interpreterComplexPageEncountered(1509),
2796                        -- The interpreter has encountered a page
2797                      -- that is too complex for the resources that
2798                      -- are available.
2799                  -- Alert Group
2800                    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
        resources MIB device table with a device type of 'printer'"
    INDEX    { hrDeviceIndex }
    ::= { prtGeneralTable 1 }

PrtGeneralEntry ::= SEQUENCE {
    -- Note that not all of the objects in this sequence are in
    -- the general printer group. The group to which an
    -- object belongs is tagged with a label "General", "Input"
    -- "Output", etc. after each entry in the following sequence.
    --
    prtGeneralConfigChanges         Counter32, -- General
    prtGeneralCurrentLocalization   Integer32, -- General
    prtGeneralReset                 PrtGeneralResetTC,
                                            -- General
    prtGeneralCurrentOperator       OCTET STRING,
```

```
                                                -- Responsible Party
    prtGeneralServicePerson         OCTET STRING,
                                                -- Responsible Party
    prtInputDefaultIndex            Integer32, -- Input
    prtOutputDefaultIndex           Integer32, -- Output
    prtMarkerDefaultIndex           Integer32, -- Marker
    prtMediaPathDefaultIndex        Integer32, -- Media Path
    prtConsoleLocalization          Integer32, -- Console
    prtConsoleNumberOfDisplayLines  Integer32, -- Console
    prtConsoleNumberOfDisplayChars  Integer32, -- Console
    prtConsoleDisable               PrtConsoleDisableTC,
                                                -- Console,
    prtAuxiliarySheetStartupPage    PresentOnOff,
                                                -- AuxiliarySheet
    prtAuxiliarySheetBannerPage     PresentOnOff,
                                                -- AuxiliarySheet,
    prtGeneralPrinterName           OCTET STRING,
                                                -- General
    prtGeneralSerialNumber          OCTET STRING,
                                                -- General
    prtAlertCriticalEvents          Counter32, -- Alert
    prtAlertAllEvents               Counter32  -- Alert
    }

prtGeneralConfigChanges OBJECT-TYPE
    SYNTAX     Counter32
    MAX-ACCESS read-only
    STATUS     current
    DESCRIPTION
        "Counts configuration changes within the printer. A
        configuration change is defined to be an action that results in
        a change to any MIB object other than those that reflect status
        or level, or those that act as counters or gauges. In addition,
        any action that results in a row being added or deleted from any
        table in the Printer MIB is considered a configuration change.
        Such changes will often affect the capability of the printer to
        service certain types of print jobs. Management applications may
        cache infrequently changed configuration information about sub
        units within the printer. This object should be incremented
        whenever the agent wishes to notify management applications that
        any cached configuration information for this device is to be
        considered 'stale'. At this point, the management application
        should flush any configuration information cached about this
        device and fetch new configuration information.

        The following are examples of actions that would cause the
        prtGeneralConfigChanges object to be incremented:

        - Adding an output bin
        - Changing the media in a sensing input tray
```

```
2901            - Changing the value of prtInputMediaType
2902
2903            Note that the prtGeneralConfigChanges counter would not be
2904            incremented when an input tray is removed, or the level of an
2905            input device changes."
2906
2907        ::= { prtGeneralEntry 1 }
2908
2909    prtGeneralCurrentLocalization OBJECT-TYPE
2910        SYNTAX     Integer32 (1..65535)
2911        MAX-ACCESS read-write
2912        STATUS     current
2913        DESCRIPTION
2914            "The value of the prtLocalizationIndex corresponding to the
2915            current language, country, and character set to be used for
2916            localized string values that are identified as being dependent
2917            on the value of this object.  Note that this object does not
2918            apply to localized strings in the prtConsole group or to any
2919            object that is not explicitly identified as being localized
2920            according to prtGeneralCurrentLocalization."
2921        ::= { prtGeneralEntry 2 }
2922
2923    prtGeneralReset OBJECT-TYPE
2924        -- This value is a type 3 enumeration.
2925        SYNTAX     PrtGeneralResetTC
2926        MAX-ACCESS read-write
2927        STATUS     current
2928        DESCRIPTION
2929            "Setting this value to 'powerCycleReset', 'resetToNVRAM', or
2930            'resetToFactoryDefaults' will result in the resetting of the
2931            printer.  When read, this object will always have the value
2932            'notResetting(3)', and a SET of the value 'notResetting' shall
2933            have no effect on the printer.  Some of the defined values are
2934            optional.  However, every implementation must support at least
2935            the values 'notResetting' and 'resetToNVRAM'."
2936        ::= { prtGeneralEntry 3 }
2937
2938    -- The Responsible Party group
2939    --
2940    -- This group is optional.  However, to claim conformance to this
2941    -- group, it is necessary to implement every object in the group.
2942
2943    prtGeneralCurrentOperator OBJECT-TYPE
2944        SYNTAX     OCTET STRING (SIZE(0..127))
2945        MAX-ACCESS read-write
2946        STATUS     current
2947        DESCRIPTION
2948            "The name of the person who is responsible for operating
2949            this printer. It is suggested that this string include
2950            information that would enable other humans to reach the
```

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

```
3001          This value shall be -1 if there is no default input subunit
3002          specified for the printer as a whole.  In this case, the actual
3003          default input subunit may be specified by means outside the
3004          scope of this MIB, such as by each interpreter in a printer with
3005          multiple interpreters."
3006
3007      ::= { prtGeneralEntry 6 }
3008
3009  prtOutputDefaultIndex OBJECT-TYPE
3010      SYNTAX     Integer32
3011      MAX-ACCESS read-write
3012      STATUS     current
3013      DESCRIPTION
3014          "The value of prtOutputIndex corresponding to the default output
3015          sub-unit; that is, this object selects the default output
3016          destination.
3017
3018          This value shall be -1 if there is no default output subunit
3019          specified for the printer as a whole.  In this case, the actual
3020          default output subunit may be specified by means outside the
3021          scope of this MIB, such as by each interpreter in a printer with
3022          multiple interpreters."
3023
3024      ::= { prtGeneralEntry 7 }
3025
3026  prtMarkerDefaultIndex OBJECT-TYPE
3027      SYNTAX     Integer32 (1..65535)
3028      MAX-ACCESS read-write
3029      STATUS     current
3030      DESCRIPTION
3031          "The value of prtMarkerIndex corresponding to the
3032          default marker sub-unit; that is, this object selects the
3033          default marker."
3034      ::= { prtGeneralEntry 8 }
3035
3036  prtMediaPathDefaultIndex OBJECT-TYPE
3037      SYNTAX     Integer32 (1..65535)
3038      MAX-ACCESS read-write
3039      STATUS     current
3040      DESCRIPTION
3041          "The value of prtMediaPathIndex corresponding to
3042          the default media path; that is, the selection of the
3043          default media path."
3044      ::= { prtGeneralEntry 9 }
3045
3046  -- Console general section
3047  --
3048  -- The following four objects describe overall parameters of the
3049  -- printer console subsystem.
3050
```

```
3051  prtConsoleLocalization OBJECT-TYPE
3052      SYNTAX     Integer32 (1..65535)
3053      MAX-ACCESS read-write
3054      STATUS     current
3055      DESCRIPTION
3056          "The value of the prtLocalizationIndex corresponding to
3057          the language, country, and character set to be used for the
3058          console.  This localization applies both to the actual display
3059          on the console as well as the encoding of these console objects
3060          in management operations."
3061      ::= { prtGeneralEntry 10 }
3062
3063  prtConsoleNumberOfDisplayLines OBJECT-TYPE
3064      SYNTAX     Integer32 (0..65535)
3065      MAX-ACCESS read-only
3066      STATUS     current
3067      DESCRIPTION
3068          "The number of lines on the printer's physical
3069          display.  This value is 0 if there are no lines on the
3070          physical display or if there is no physical display"
3071      ::= { prtGeneralEntry 11 }
3072
3073  prtConsoleNumberOfDisplayChars OBJECT-TYPE
3074      SYNTAX     Integer32 (0..65535)
3075      MAX-ACCESS read-only
3076      STATUS     current
3077      DESCRIPTION
3078          "The number of characters per line displayed on the physical
3079          display. This value is 0 if there are no lines on the physical
3080          display or if there is no physical display"
3081      ::= { prtGeneralEntry 12 }
3082
3083  prtConsoleDisable OBJECT-TYPE
3084      SYNTAX     PrtConsoleDisableTC
3085      MAX-ACCESS read-write
3086      STATUS     current
3087      DESCRIPTION
3088          "This value indicates how input is (or is not) accepted from
3089          the operator console."
3090      ::= { prtGeneralEntry 13 }
3091
3092  -- The Auxiliary Sheet Group
3093  --
3094  -- The auxiliary sheet group allows the administrator to control
3095  -- the production of auxiliary sheets by the printer. This group
3096  -- contains only the "prtAuxiliarySheetStartupPage" and
3097  -- "prtAuxiliarySheetBannerPage" objects.
3098  --
3099  -- This group is optional. However, to claim conformance to this
3100  -- group it is necessary to implement every object in the group.
```

```
3101
3102  prtAuxiliarySheetStartupPage OBJECT-TYPE
3103      SYNTAX     PresentOnOff
3104      MAX-ACCESS read-write
3105      STATUS     current
3106      DESCRIPTION
3107          "Used to enable or disable printing a startup page. If enabled,
3108          a startup page will be printed shortly after power-up, when the
3109          device is ready. Typical startup pages include test patterns
3110          and/or printer configuration information."
3111      ::= { prtGeneralEntry 14 }
3112
3113  prtAuxiliarySheetBannerPage OBJECT-TYPE
3114      SYNTAX     PresentOnOff
3115      MAX-ACCESS read-write
3116      STATUS     current
3117      DESCRIPTION
3118          "Used to enable or disable printing banner pages at the
3119          beginning of jobs. This is a master switch which applies to all
3120          jobs, regardless of interpreter."
3121       ::= { prtGeneralEntry 15 }
3122
3123  -- Administrative section
3124  --
3125  -- The following two objects are used to specify administrative
3126  -- information assigned to the printer.
3127
3128  prtGeneralPrinterName OBJECT-TYPE
3129      SYNTAX     OCTET STRING (SIZE (0..127))
3130      MAX-ACCESS read-write
3131      STATUS     current
3132      DESCRIPTION
3133          "An administrator-specified name for this printer. Depending
3134          upon implementation of this printer, the value of this object
3135          may or may not be same as the value for the MIB-II 'SysName'
3136          object."
3137       ::= { prtGeneralEntry 16 }
3138
3139  prtGeneralSerialNumber OBJECT-TYPE
3140      SYNTAX     OCTET STRING (SIZE (0..255))
3141      MAX-ACCESS read-write
3142      STATUS     current
3143      DESCRIPTION
3144          "A recorded serial number for this device that indexes some type
3145          device catalog or inventory. This value is usually set by the
3146          device manufacturer but the MIB supports the option of writing
3147          for this object for site-specific administration of device
3148          inventory or tracking."
3149      ::= { prtGeneralEntry 17 }
3150
```

```
3151  -- General alert table section
3152  --
3153  -- The following two objects are used to specify counters
3154  -- associated with the Alert Table.
3155
3156  prtAlertCriticalEvents OBJECT-TYPE
3157      SYNTAX     Counter32
3158      MAX-ACCESS read-only
3159      STATUS     current
3160      DESCRIPTION
3161          "A running counter of the number of critical alert events that
3162          have been recorded in the alert table. The value of this object
3163          is RESET in the event of a power cycle operation (i.e., the
3164          value is not persistent."
3165      ::= { prtGeneralEntry 18 }
3166
3167  prtAlertAllEvents OBJECT-TYPE
3168      SYNTAX     Counter32
3169      MAX-ACCESS read-only
3170      STATUS     current
3171      DESCRIPTION
3172          "A running counter of the total number of alert event entries
3173          (critical and non-critical) that have been recorded in the alert
3174          table"
3175      ::= { prtGeneralEntry 19 }
3176
3177  -- The Cover Table
3178  --
3179  -- The cover portion of the General print sub-unit describes the
3180  -- covers and interlocks of the printer.  The Cover Table has an
3181  -- entry for each cover and interlock.
3182
3183  prtCover OBJECT IDENTIFIER ::= { printmib 6 }
3184
3185  prtCoverTable OBJECT-TYPE
3186      SYNTAX     SEQUENCE OF PrtCoverEntry
3187      MAX-ACCESS not-accessible
3188      STATUS     current
3189      DESCRIPTION
3190          "A table of the covers and interlocks of the printer."
3191      ::= { prtCover 1 }
3192
3193  prtCoverEntry OBJECT-TYPE
3194      SYNTAX     PrtCoverEntry
3195      MAX-ACCESS not-accessible
3196      STATUS     current
3197      DESCRIPTION
3198          "Information about a cover or interlock.
3199          Entries may exist in the table for each device
3200          index with a device type of 'printer'."
```

```
3201      INDEX  { hrDeviceIndex, prtCoverIndex }
3202      ::= { prtCoverTable 1 }
3203
3204  PrtCoverEntry ::= SEQUENCE {
3205      prtCoverIndex            Integer32,
3206      prtCoverDescription      OCTET STRING,
3207      prtCoverStatus           PrtCoverStatusTC
3208      }
3209
3210  prtCoverIndex OBJECT-TYPE
3211      SYNTAX     Integer32 (1..65535)
3212      MAX-ACCESS not-accessible
3213      STATUS     current
3214      DESCRIPTION
3215          "A unique value used by the printer to identify this Cover sub
3216          unit.  Although these values may change due to a major
3217          reconfiguration of the device (e.g. the addition of new cover
3218          sub-units to the printer), values are expected to remain stable
3219          across successive printer power cycles."
3220      ::= { prtCoverEntry 1 }
3221
3222  prtCoverDescription OBJECT-TYPE
3223      SYNTAX     OCTET STRING (SIZE(0..255))
3224      MAX-ACCESS read-only
3225      STATUS     current
3226      DESCRIPTION
3227          "The manufacturer provided cover sub-mechanism name in the
3228          localization specified by prtGeneralCurrentLocalization."
3229      ::= { prtCoverEntry 2 }
3230
3231  prtCoverStatus  OBJECT-TYPE
3232      --  This value is a type 2 enumeration
3233      SYNTAX     PrtCoverStatusTC
3234      MAX-ACCESS read-only
3235      STATUS     current
3236      DESCRIPTION
3237          "The status of this cover sub-unit."
3238      ::= { prtCoverEntry 3 }
3239
3240  -- The Localization Table
3241  --
3242  -- The localization portion of the General printer sub-unit is
3243  -- responsible for identifying the natural language, country, and
3244  -- character set in which character strings are expressed. There
3245  -- may be one or more localizations supported per printer. The
3246  -- available localizations are represented by the Localization
3247  -- table.
3248
3249  prtLocalization  OBJECT IDENTIFIER ::= { printmib 7 }
3250
```

```
3251  prtLocalizationTable OBJECT-TYPE
3252      SYNTAX     SEQUENCE OF PrtLocalizationEntry
3253      MAX-ACCESS not-accessible
3254      STATUS     current
3255      DESCRIPTION
3256          "The available localizations in this printer."
3257      ::= { prtLocalization 1 }
3258
3259  prtLocalizationEntry OBJECT-TYPE
3260      SYNTAX     PrtLocalizationEntry
3261      MAX-ACCESS not-accessible
3262      STATUS     current
3263      DESCRIPTION
3264          "A description of a localization.
3265          Entries may exist in the table for each device
3266          index with a device type of 'printer'."
3267      INDEX  { hrDeviceIndex, prtLocalizationIndex }
3268      ::= { prtLocalizationTable 1 }
3269
3270  PrtLocalizationEntry ::= SEQUENCE {
3271      prtLocalizationIndex          Integer32,
3272      prtLocalizationLanguage       DisplayString,
3273      prtLocalizationCountry        DisplayString,
3274      prtLocalizationCharacterSet   CodedCharSet
3275      }
3276
3277  prtLocalizationIndex OBJECT-TYPE
3278      SYNTAX     Integer32 (1..65535)
3279      MAX-ACCESS not-accessible
3280      STATUS     current
3281      DESCRIPTION
3282          "A unique value used by the printer to identify this
3283          localization entry.  Although these values may change due to a
3284          major reconfiguration of the device (e.g., the addition of new
3285          localization data to the printer), values are expected to remain
3286          stable across successive printer power cycles."
3287      ::= { prtLocalizationEntry 1 }
3288
3289  prtLocalizationLanguage OBJECT-TYPE
3290      SYNTAX     DisplayString (SIZE(0..2))
3291      MAX-ACCESS read-only
3292      STATUS     current
3293      DESCRIPTION
3294          "A two character language code from ISO 639.  Examples en, gb,
3295          ca, fr, de."
3296      ::= { prtLocalizationEntry 2 }
3297
3298  prtLocalizationCountry OBJECT-TYPE
3299      SYNTAX     DisplayString (SIZE(0..2))
3300      MAX-ACCESS read-only
```

```
3301        STATUS     current
3302        DESCRIPTION
3303            "A two character country code from ISO 3166, a blank string (two
3304            space characters) shall indicate that the country is not
3305            defined.  Examples: US, FR, DE, ..."
3306        ::= { prtLocalizationEntry 3 }
3307
3308    prtLocalizationCharacterSet OBJECT-TYPE
3309        SYNTAX     CodedCharSet
3310        MAX-ACCESS read-only
3311        STATUS     current
3312        DESCRIPTION
3313          "The coded character set used for this localization."
3314        ::= { prtLocalizationEntry 4 }
3315
3316    -- The System Resources Tables
3317    --
3318    -- The Printer MIB makes use of the Host Resources MIB to
3319    -- define system resources by referencing the storage
3320    -- and device groups of the print group.  In order to
3321    -- determine, amongst multiple printers serviced by
3322    -- one agent, which printer owns a particular resource,
3323    -- the prtStorageRef and prtDeviceRef tables associate
3324    -- particular storage and device entries to printers.
3325
3326    prtStorageRefTable OBJECT-TYPE
3327        SYNTAX     SEQUENCE OF PrtStorageRefEntry
3328        MAX-ACCESS not-accessible
3329        STATUS     current
3330        DESCRIPTION
3331            ""
3332        ::= { prtGeneral 2 }
3333
3334    prtStorageRefEntry OBJECT-TYPE
3335        SYNTAX     PrtStorageRefEntry
3336        MAX-ACCESS not-accessible
3337        STATUS     current
3338        DESCRIPTION
3339            "This table will have an entry for each entry in the Host
3340            Resources MIB storage table that represents storage associated
3341            with a printer managed by this agent."
3342        INDEX      { hrStorageIndex, prtStorageRefSeqNumber }
3343        ::= { prtStorageRefTable 1 }
3344
3345    PrtStorageRefEntry ::= SEQUENCE {
3346        prtStorageRefSeqNumber  Integer32,
3347        prtStorageRefIndex      Integer32
3348        }
3349
3350    prtStorageRefSeqNumber OBJECT-TYPE
```

```
3351        SYNTAX     Integer32 (1..65535)
3352        MAX-ACCESS not-accessible
3353        STATUS     current
3354        DESCRIPTION
3355            "This value will be unique amongst all entries with a common
3356            value of hrStorageIndex. This object allows a storage entry to
3357            point to the multiple printer devices with which it is
3358            associated."
3359        ::= { prtStorageRefEntry 1 }
3360
3361    prtStorageRefIndex OBJECT-TYPE
3362        SYNTAX     Integer32 (1..65535)
3363        MAX-ACCESS read-only
3364        STATUS     current
3365        DESCRIPTION
3366            "The value of the hrDeviceIndex of the printer device that this
3367            storageEntry is associated with."
3368        ::= { prtStorageRefEntry 2 }
3369
3370    prtDeviceRefTable OBJECT-TYPE
3371        SYNTAX     SEQUENCE OF PrtDeviceRefEntry
3372        MAX-ACCESS not-accessible
3373        STATUS     current
3374        DESCRIPTION
3375            ""
3376        ::= { prtGeneral 3 }
3377
3378    prtDeviceRefEntry OBJECT-TYPE
3379        SYNTAX     PrtDeviceRefEntry
3380        MAX-ACCESS not-accessible
3381        STATUS     current
3382        DESCRIPTION
3383            "This table will have an entry for each entry in the Host
3384            Resources MIB device table that represents a device associated
3385            with a printer managed by this agent."
3386        INDEX      { hrDeviceIndex, prtDeviceRefSeqNumber }
3387        ::= { prtDeviceRefTable 1 }
3388
3389    PrtDeviceRefEntry ::= SEQUENCE {
3390        prtDeviceRefSeqNumber   Integer32,
3391        prtDeviceRefIndex       Integer32
3392        }
3393
3394    prtDeviceRefSeqNumber OBJECT-TYPE
3395        SYNTAX     Integer32 (1..65535)
3396        MAX-ACCESS not-accessible
3397        STATUS     current
3398        DESCRIPTION
3399            "This value will be unique amongst all entries with a common
3400            value of hrDeviceIndex. This object allows a device entry to
```

```
3401          point to the multiple printer devices with which it is
3402          associated."
3403      ::= { prtDeviceRefEntry 1 }
3404
3405  prtDeviceRefIndex OBJECT-TYPE
3406      SYNTAX     Integer32 (1..65535)
3407      MAX-ACCESS read-only
3408      STATUS     current
3409      DESCRIPTION
3410          "The value of the hrDeviceIndex of the printer device that this
3411          deviceEntry is associated with."
3412      ::= { prtDeviceRefEntry 2 }
3413
3414  -- The Input Group
3415  --
3416  -- Input sub-units are managed as a tabular, indexed collection
3417  -- of possible devices capable of providing media for input to
3418  -- the printing process. Input sub-units typically have a
3419  -- location, a type, an identifier, a set of constraints on
3420  -- possible media sizes and potentially other media
3421  -- characteristics, and may be capable of indicating current
3422  -- status or capacity.
3423  --
3424  -- Implementation of every object in this group is mandatory.
3425
3426  prtInput   OBJECT IDENTIFIER ::= { printmib 8 }
3427
3428  prtInputTable OBJECT-TYPE
3429      SYNTAX     SEQUENCE OF PrtInputEntry
3430      MAX-ACCESS not-accessible
3431      STATUS     current
3432      DESCRIPTION
3433          "A table of the devices capable of providing media for input to
3434          the printing process."
3435      ::= { prtInput 2 }
3436
3437  prtInputEntry OBJECT-TYPE
3438      SYNTAX     PrtInputEntry
3439      MAX-ACCESS not-accessible
3440      STATUS     current
3441      DESCRIPTION
3442          "Attributes of a device capable of providing media for input to
3443          the printing process. Entries may exist in the table for each
3444          device index with a device type of 'printer'."
3445      INDEX  { hrDeviceIndex, prtInputIndex }
3446      ::= { prtInputTable 1 }
3447
3448  PrtInputEntry ::= SEQUENCE {
3449      prtInputIndex                    Integer32,
3450      prtInputType                     PrtInputTypeTC,
```

```
3451        prtInputDimUnit                     PrtMediaUnitTC,
3452        prtInputMediaDimFeedDirDeclared     Integer32,
3453        prtInputMediaDimXFeedDirDeclared    Integer32,
3454        prtInputMediaDimFeedDirChosen       Integer32,
3455        prtInputMediaDimXFeedDirChosen      Integer32,
3456        prtInputCapacityUnit                PrtCapacityUnitTC,
3457        prtInputMaxCapacity                 Integer32,
3458        prtInputCurrentLevel                Integer32,
3459        prtInputStatus                      PrtSubUnitStatusTC,
3460        prtInputMediaName                   OCTET STRING,
3461        prtInputName                        OCTET STRING,
3462        prtInputVendorName                  OCTET STRING,
3463        prtInputModel                       OCTET STRING,
3464        prtInputVersion                     OCTET STRING,
3465        prtInputSerialNumber                OCTET STRING,
3466        prtInputDescription                 OCTET STRING,
3467        prtInputSecurity                    PresentOnOff,
3468        prtInputMediaWeight                 Integer32,
3469        prtInputMediaType                   OCTET STRING,
3470        prtInputMediaColor                  OCTET STRING,
3471        prtInputMediaFormParts              Integer32,
3472        prtInputMediaLoadTimeout            Integer32,
3473        prtInputNextIndex                   Integer32
3474        }
3475
3476    prtInputIndex OBJECT-TYPE
3477        SYNTAX     Integer32 (1..65535)
3478        MAX-ACCESS not-accessible
3479        STATUS     current
3480        DESCRIPTION
3481            "A unique value used by the printer to identify this input sub
3482            unit.  Although these values may change due to a major
3483            reconfiguration of the device (e.g. the addition of n input sub-
3484            units to the printer), values are expected to remain stable
3485            across successive printer power cycles."
3486        ::= { prtInputEntry 1 }
3487
3488    prtInputType OBJECT-TYPE
3489        SYNTAX     PrtInputTypeTC
3490        MAX-ACCESS read-only
3491        STATUS     current
3492        DESCRIPTION
3493            "The type of technology (discriminated primarily according to
3494            feeder mechanism type) employed by the input sub-unit.  Note,
3495            the Optional Input Class provides for a descriptor field to
3496            further qualify the other choice."
3497        ::= { prtInputEntry 2 }
3498
3499    prtInputDimUnit OBJECT-TYPE
3500        SYNTAX     PrtMediaUnitTC
```

```
3501        MAX-ACCESS read-only
3502        STATUS     current
3503        DESCRIPTION
3504            "The unit of measurement for use calculating and relaying
3505             dimensional values for this input sub-unit."
3506        ::= { prtInputEntry 3 }
3507
3508    prtInputMediaDimFeedDirDeclared OBJECT-TYPE
3509        SYNTAX     Integer32
3510        MAX-ACCESS read-write
3511        STATUS     current
3512        DESCRIPTION
3513            "This object provides the value of the declared dimension, in
3514            the feed direction, of the media that is (or, if empty, was or
3515            will be) in this input sub-unit.  The feed direction is the
3516            direction in which the media is fed on this sub-unit.  This
3517            dimension is measured in input sub-unit dimensional units
3518            (prtInputDimUnit).  If this input sub-unit can reliably sense
3519            this value, the value is sensed by the printer and may not be
3520            changed by management requests.  Otherwise, the value may be
3521            changed. The value (-1) means other and specifically means that
3522            this sub-unit places no restriction on this parameter.
3523
3524            The value (-2) indicates unknown."
3525        ::= { prtInputEntry 4 }
3526
3527    prtInputMediaDimXFeedDirDeclared OBJECT-TYPE
3528        SYNTAX     Integer32
3529        MAX-ACCESS read-write
3530        STATUS     current
3531        DESCRIPTION
3532            "This object provides the value of the declared dimension, in
3533            the cross feed direction, of the media that is (or, if empty,
3534            was or will be) in this input sub-unit.  The cross  feed
3535            direction is ninety degrees relative to the feed direction
3536            associated with this sub-unit. This dimension is measured in
3537            input sub-unit dimensional units (prtInputDimUnit).  If this
3538            input sub-unit can reliably sense this value, the value is
3539            sensed by the printer and may not be changed by management
3540            requests. Otherwise, the value may be changed. The value (-1)
3541            means other and specifically means that this sub-unit places no
3542            restriction on this parameter. The value (-2) indicates
3543            unknown."
3544        ::= { prtInputEntry 5 }
3545
3546    prtInputMediaDimFeedDirChosen OBJECT-TYPE
3547        SYNTAX     Integer32
3548        MAX-ACCESS read-only
3549        STATUS     current
3550        DESCRIPTION
```

```
3551            "The printer will act as if media of the chosen dimension (in
3552            the feed direction) is present in this input source.  Note that
3553            this value will be used even if the input tray is empty. Feed
3554            dimension measurements are taken relative to the feed direction
3555            associated with that sub-unit and are in input sub-unit
3556            dimensional units (MediaUnit). If the printer supports the
3557            declared dimension, the granted dimension is the same as the
3558            declared dimension. If not, the granted dimension is set to the
3559            closest dimension that the printer supports when the declared
3560            dimension is set. The value (-1) means other and specifically
3561            indicates that this sub-unit places no restriction on this
3562            parameter. The value (-2) indicates unknown."
3563        ::= { prtInputEntry 6 }
3564
3565    prtInputMediaDimXFeedDirChosen OBJECT-TYPE
3566        SYNTAX     Integer32
3567        MAX-ACCESS read-only
3568        STATUS     current
3569        DESCRIPTION
3570            "The printer will act as if media of the chosen dimension (in
3571            the cross feed direction) is present in this input source. Note
3572            that this value will be used even if the input tray is empty.
3573            The cross feed direction is ninety degrees relative to the feed
3574            direction associated with this sub-unit. This dimension is
3575            measured in input sub-unit dimensional units (MediaUnit).  If
3576            the printer supports the declare dimension, the granted
3577            dimension is the same as the declared dimension. If not, the
3578            granted dimension is set to the closest dimension that the
3579            printer supports when the declared dimension is set. The value
3580            (-1) means other and specifically indicates that this sub-unit
3581            places no restriction on this parameter.  The value (-2)
3582            indicates unknown."
3583        ::= { prtInputEntry 7 }
3584
3585    prtInputCapacityUnit OBJECT-TYPE
3586        SYNTAX     PrtCapacityUnitTC
3587        MAX-ACCESS read-only
3588        STATUS     current
3589        DESCRIPTION
3590            "The unit of measurement for use in calculating and relaying
3591            capacity values for this input sub-unit."
3592        ::= { prtInputEntry 8 }
3593
3594    prtInputMaxCapacity OBJECT-TYPE
3595        SYNTAX     Integer32
3596        MAX-ACCESS read-write
3597        STATUS     current
3598        DESCRIPTION
3599            "The maximum capacity of the input sub-unit in input sub-unit
3600            capacity units (PrtCapacityUnitTC).  There is no convention
```

```
3601          associated with the media itself so this value reflects claimed
3602          capacity. If this input sub-unit can reliably sense this value,
3603          the value is sensed by the printer and may not be changed by
3604          management requests; otherwise, the value may be written (by a
3605          Remote Control Panel or a Management Application). The value
3606          (-1) means other and specifically indicates that the sub-unit
3607          places no restrictions on this parameter.  The value (-2) means
3608          unknown."
3609      ::= { prtInputEntry 9 }
3610
3611  prtInputCurrentLevel OBJECT-TYPE
3612      SYNTAX     Integer32 --    in capacity units
3613                           --   (PrtCapacityUnitTC).
3614      MAX-ACCESS read-write
3615      STATUS     current
3616      DESCRIPTION
3617          "The current capacity of the input sub-unit in input sub-unit
3618          capacity units (PrtCapacityUnitTC). If this input sub-unit can
3619          reliably sense this value, the value is sensed by the printer
3620          and may not be changed by management requests; otherwise, the
3621          value may be written (by a Remote Control Panel or a Management
3622          Application).  The value (-1) means other and specifically
3623          indicates that the sub-unit places no restrictions on this
3624          parameter. The value (-2) means unknown. The value (-3) means
3625          that the printer knows that at least one unit remains."
3626      ::= { prtInputEntry 10 }
3627
3628  prtInputStatus OBJECT-TYPE
3629      SYNTAX     PrtSubUnitStatusTC
3630      MAX-ACCESS read-only
3631      STATUS     current
3632      DESCRIPTION
3633          "The current status of this input sub-unit."
3634      ::= { prtInputEntry 11 }
3635
3636  prtInputMediaName OBJECT-TYPE
3637      SYNTAX     OCTET STRING (SIZE(0..63))
3638      MAX-ACCESS read-write
3639      STATUS     current
3640      DESCRIPTION
3641          "A description of the media contained in this input sub-unit;
3642          This description is intended for display to a human operator.
3643          This description is not processed by the printer.  It is used to
3644          provide information not expressible in terms of the other media
3645          attributes (e.g. prtInputMediaDimFeedDirChosen,
3646          prtInputMediaDimXFeedDirChosen, prtInputMediaWeight,
3647          prtInputMediaType). An example would be 'legal tender bond
3648          paper'."
3649      REFERENCE
3650           "See Appendix C, 'Media Names'."
```

```
3651      ::= { prtInputEntry 12 }
3652
3653  --              INPUT MEASUREMENT
3654  --
3655  --     _______ |                |
3656  --      ^      |                |
3657  --      |      |                |                  |
3658  --      |      |_ _ _ _ _ _ _ _ | _______________  |direction
3659  --      |      |                |      ^           v
3660  -- MaxCapacity |    Sheets      |      |
3661  --      |      |     left       | CurrentLevel
3662  --      |      |      in        |      |
3663  --      v      |     tray       |      v
3664  --     _______ +________________+ _______
3665
3666  -- The Extended Input Group
3667  --
3668  -- This group is optional.  However, to claim conformance to this
3669  -- group, it is necessary to implement every object in the group.
3670
3671  prtInputName OBJECT-TYPE
3672      SYNTAX     OCTET STRING (SIZE(0..63))
3673      MAX-ACCESS read-write
3674      STATUS     current
3675      DESCRIPTION
3676          "The name assigned to this input sub-unit."
3677      ::= { prtInputEntry 13 }
3678
3679  prtInputVendorName OBJECT-TYPE
3680      SYNTAX     OCTET STRING (SIZE(0..63))
3681      MAX-ACCESS read-only
3682      STATUS     current
3683      DESCRIPTION
3684          "The vendor name of this input sub-unit."
3685      ::= { prtInputEntry 14 }
3686
3687  prtInputModel OBJECT-TYPE
3688      SYNTAX     OCTET STRING (SIZE(0..63))
3689      MAX-ACCESS read-only
3690      STATUS     current
3691      DESCRIPTION
3692          "The model name of this input sub-unit."
3693      ::= { prtInputEntry 15 }
3694
3695  prtInputVersion OBJECT-TYPE
3696      SYNTAX     OCTET STRING (SIZE(0..63))
3697      MAX-ACCESS read-only
3698      STATUS     current
3699      DESCRIPTION
3700          "The version of this input sub-unit."
```

```
3701        ::= { prtInputEntry 16 }
3702
3703    prtInputSerialNumber OBJECT-TYPE
3704        SYNTAX     OCTET STRING (SIZE(0..63))
3705        MAX-ACCESS read-only
3706        STATUS     current
3707        DESCRIPTION
3708            "The serial number assigned to this input sub-unit."
3709        ::= { prtInputEntry 17 }
3710
3711    prtInputDescription OBJECT-TYPE
3712        SYNTAX     OCTET STRING (SIZE(0..255))
3713        MAX-ACCESS read-only
3714        STATUS     current
3715        DESCRIPTION
3716            "A free-form text description of this input sub-unit in the
3717            localization specified by  prtGeneralCurrentLocalization."
3718        ::= { prtInputEntry 18 }
3719
3720    prtInputSecurity OBJECT-TYPE
3721        SYNTAX     PresentOnOff
3722        MAX-ACCESS read-write
3723        STATUS     current
3724        DESCRIPTION
3725            "Indicates if this input sub-unit has some security associated
3726            with it."
3727        ::= { prtInputEntry 19 }
3728
3729    -- The Input Media Group
3730    --
3731    -- The Input Media Group supports identification of media
3732    -- installed or available for use on a printing device.
3733    -- Medium resources are identified by name, and include a
3734    -- collection of characteristic attributes that may further be
3735    -- used for selection and management of them.
3736    -- The Input Media group consists of a set of optional
3737    -- "columns" in the Input Table. In this manner, a minimally
3738    -- conforming implementation may choose to not support reporting
3739    -- of media resources if it cannot do so.
3740    --
3741    -- This group is optional.  However, to claim conformance to this
3742    -- group, it is necessary to implement every object in the group.
3743
3744    prtInputMediaWeight  OBJECT-TYPE
3745        SYNTAX     Integer32
3746        MAX-ACCESS read-write
3747        STATUS     current
3748        DESCRIPTION
3749            "The weight of the medium associated with this input sub-unit in
3750            grams / per meter squared. The value (-2) means unknown."
```

```
3751        ::= { prtInputEntry 20 }
3752
3753    prtInputMediaType OBJECT-TYPE
3754        SYNTAX     OCTET STRING (SIZE(0..63))
3755        MAX-ACCESS read-write
3756        STATUS     current
3757        DESCRIPTION
3758            "The name of the type of medium associated with this input sub
3759            unit. This name need not be processed by the printer; it might
3760            simply be displayed to an operator. The standardized string
3761            values from ISO 10175 (DPA) and ISO 10180 (SPDL) are:
3762
3763            stationery       Separately cut sheets of an opaque
3764                             material
3765            transparency     Separately cut sheets of a transparent
3766                             material
3767            envelope         Envelopes that can be used for
3768                             conventional mailing purposes
3769            envelope-plain   Envelopes that are not preprinted and
3770                             have no windows
3771            envelope-window  Envelopes that have windows for
3772                             addressing purposes
3773            continuous-long  Continuously connected sheets of an
3774                             opaque material connected along the
3775                             long edge
3776            continuous-short Continuously connected sheets of an
3777                             opaque material connected along the
3778                             short edge
3779            tab-stock        Media with tabs
3780            multi-part-form  Form medium composed of multiple layers
3781                             not pre-attached to one another; each
3782                             sheet may be drawn separately from an
3783                             input source
3784            labels           Label stock
3785            multi-layer      Form medium composed of multiple layers
3786                             which are pre-attached to one another;
3787                             e.g., for use with impact printers.
3788
3789            Implementers may add additional string values. The naming
3790            conventions in ISO 9070 are recommended in order to avoid
3791            potential name clashes."
3792        ::= { prtInputEntry 21 }
3793
3794    prtInputMediaColor OBJECT-TYPE
3795        SYNTAX     OCTET STRING (SIZE(0..63))
3796        MAX-ACCESS read-write
3797        STATUS     current
3798        DESCRIPTION
3799            "The name of the color of the medium associated with
3800            this input sub-unit using standardized string values
```

```
3801          from ISO 10175 (DPA) and ISO 10180 (SPDL) such as:
3802
3803          other
3804          unknown
3805          white
3806          pink
3807          yellow
3808          buff
3809          goldenrod
3810          blue
3811          green
3812          transparent
3813
3814          Implementers may add additional string values. The naming
3815          conventions in ISO 9070 are recommended in order to avoid
3816          potential name clashes."
3817      ::= { prtInputEntry 22 }
3818
3819  prtInputMediaFormParts OBJECT-TYPE
3820      SYNTAX     Integer32
3821      MAX-ACCESS read-write
3822      STATUS     current
3823      DESCRIPTION
3824          "The number of parts associated with the medium
3825          associated with this input sub-unit if the medium is a
3826          multi-part form.  The value (-1) means other and
3827          specifically indicates that the device places no
3828          restrictions on this parameter.  The value (-2) means
3829          unknown."
3830      ::= { prtInputEntry 23 }
3831
3832  -- The Input Switching Group
3833  --
3834  -- The input switching group allows the administrator to set the
3835  -- input subunit time-out for the printer and to control the
3836  -- automatic input subunit switching by the printer when an input
3837  -- subunit becomes empty.
3838  --
3839  -- This group is optional. However, to claim conformance to this
3840  -- group, it is required to implement every object in the group.
3841
3842  prtInputMediaLoadTimeout OBJECT-TYPE
3843     SYNTAX     Integer32
3844     MAX-ACCESS read-write
3845     STATUS     current
3846     DESCRIPTION
3847          "When the printer is not able to print due to a subunit being
3848          empty or the requested media must be manually loaded, the
3849          printer will wait for the duration (in seconds) specified by
3850          this object. Upon expiration of the time-out, the printer will
```

```
3851          take the action specified by prtInputNextIndex.
3852
3853          The event which causes the printer to enter the waiting state is
3854          product specific. If the printer is not waiting for manually fed
3855          media, it may switch from an empty subunit to a different
3856          subunit without waiting for the time-out to expire.
3857
3858          A value of (-1) implies 'other' or 'infinite' which translates
3859          to 'wait forever'. The action which causes printing to continue
3860          is product specific. A value of (-2) implies 'unknown'."
3861      ::= { prtInputEntry 24 }
3862
3863  prtInputNextIndex OBJECT-TYPE
3864      SYNTAX     Integer32
3865      MAX-ACCESS read-write
3866      STATUS     current
3867      DESCRIPTION
3868          "The value of prtInputIndex corresponding to the input subunit
3869          which will be used when this input subunit is emptied and the
3870          time-out specified by prtInputMediaLoadTimeout expires. A value
3871          of zero(0) indicates that auto input switching will not occur
3872          when this input subunit is emptied. If the time-out specified by
3873          prtInputLoadMediaTimeout expires and this value is zero(0), the
3874          job will be aborted. A value of (-1) means other. The value (-2)
3875          means 'unknown' and specifically indicates that an
3876          implementation specific method will determine the next input
3877          subunit to use at the time this subunit is emptied and the time
3878          out expires. The value(-3) means input switching is not
3879          supported for this subunit."
3880      ::= { prtInputEntry 25 }
3881
3882  -- The Output Group
3883  --
3884  -- Output sub-units are managed as a tabular, indexed collection
3885  -- of possible devices capable of receiving media delivered from
3886  -- the printing process.  Output sub-units typically have a
3887  -- location, a type, an identifier, a set of constraints on
3888  -- possible media sizes and potentially other characteristics,
3889  -- and may be capable of indicating current status or capacity.
3890  --
3891  -- Implementation of every object in this group is mandatory.
3892
3893  prtOutput  OBJECT IDENTIFIER ::= { printmib 9 }
3894
3895  prtOutputTable OBJECT-TYPE
3896      SYNTAX     SEQUENCE OF PrtOutputEntry
3897      MAX-ACCESS not-accessible
3898      STATUS     current
3899      DESCRIPTION
3900          "A table of the devices capable of receiving media delivered
```

```
3901          from the printing process."
3902      ::= { prtOutput 2 }
3903
3904  prtOutputEntry OBJECT-TYPE
3905      SYNTAX     PrtOutputEntry
3906      MAX-ACCESS not-accessible
3907      STATUS     current
3908      DESCRIPTION
3909          "Attributes of a device capable of receiving media delivered
3910          from the printing process. Entries may exist in the table for
3911          each device index with a device type of 'printer'."
3912      INDEX  { hrDeviceIndex, prtOutputIndex }
3913      ::= { prtOutputTable 1 }
3914
3915  PrtOutputEntry ::= SEQUENCE {
3916      prtOutputIndex                    Integer32,
3917      prtOutputType                     PrtOutputTypeTC,
3918      prtOutputCapacityUnit             PrtCapacityUnitTC,
3919      prtOutputMaxCapacity              Integer32,
3920      prtOutputRemainingCapacity        Integer32,
3921      prtOutputStatus                   PrtSubUnitStatusTC,
3922      prtOutputName                     OCTET STRING,
3923      prtOutputVendorName               OCTET STRING,
3924      prtOutputModel                    OCTET STRING,
3925      prtOutputVersion                  OCTET STRING,
3926      prtOutputSerialNumber             OCTET STRING,
3927      prtOutputDescription              OCTET STRING,
3928      prtOutputSecurity                 PresentOnOff,
3929      prtOutputDimUnit                  PrtMediaUnitTC,
3930      prtOutputMaxDimFeedDir            Integer32,
3931      prtOutputMaxDimXFeedDir           Integer32,
3932      prtOutputMinDimFeedDir            Integer32,
3933      prtOutputMinDimXFeedDir           Integer32,
3934      prtOutputStackingOrder        PrtOutputStackingOrderTC,
3935      prtOutputPageDeliveryOrientation
3936                            PrtOutputPageDeliveryOrientationTC,
3937      prtOutputBursting                 PresentOnOff,
3938      prtOutputDecollating              PresentOnOff,
3939      prtOutputPageCollated             PresentOnOff,
3940      prtOutputOffsetStacking           PresentOnOff
3941      }
3942
3943  prtOutputIndex OBJECT-TYPE
3944      SYNTAX     Integer32 (1..65535)
3945      MAX-ACCESS not-accessible
3946      STATUS     current
3947      DESCRIPTION
3948          "A unique value used by this printer to identify this
3949          output sub-unit. Although these values may change due
3950          to a major reconfiguration of the sub-unit (e.g.  the
```

```
3951          addition of new output devices to the printer), values
3952          are expected to remain stable across successive printer
3953          power cycles."
3954      ::= { prtOutputEntry 1 }
3955
3956  prtOutputType OBJECT-TYPE
3957      -- This value is a type 2 enumeration
3958      SYNTAX     PrtOutputTypeTC
3959      MAX-ACCESS read-only
3960      STATUS     current
3961      DESCRIPTION
3962          "The type of technology supported by this output sub-unit."
3963      ::= { prtOutputEntry 2 }
3964
3965  prtOutputCapacityUnit OBJECT-TYPE
3966      SYNTAX     PrtCapacityUnitTC
3967      MAX-ACCESS read-only
3968      STATUS     current
3969      DESCRIPTION
3970          "The unit of measurement for use in calculating and relaying
3971          capacity values for this output sub-unit."
3972      ::= { prtOutputEntry 3 }
3973
3974  prtOutputMaxCapacity OBJECT-TYPE
3975      SYNTAX     Integer32
3976      MAX-ACCESS read-write
3977      STATUS     current
3978      DESCRIPTION
3979          "The maximum capacity of this output sub-unit in output sub-unit
3980          capacity units (PrtCapacityUnitTC). There is no convention
3981          associated with the media itself so this value essentially
3982          reflects claimed capacity. If this output sub-unit can reliably
3983          sense this value, the value is sensed by the printer and may not
3984          be changed by management requests; otherwise, the value may be
3985          written (by a Remote Control Panel or a Management Application).
3986          The value (-1) means other and specifically indicates that the
3987          sub-unit places no restrictions on this parameter. The value
3988          (-2) means unknown."
3989      ::= { prtOutputEntry 4 }
3990
3991  prtOutputRemainingCapacity OBJECT-TYPE
3992      SYNTAX     Integer32
3993      MAX-ACCESS read-write
3994      STATUS     current
3995      DESCRIPTION
3996          "The remaining capacity of the possible output sub-unit capacity
3997          in output sub-unit capacity units (PrtCapacityUnitTC)of this
3998          output sub-unit. If this output sub-unit can reliably sense this
3999          value, the value is sensed by the printer and may not be
4000          modified by management requests; otherwise, the value may be
```

```
4001          written (by a Remote Control Panel or a Management Application).
4002          The value (-1) means other and specifically indicates that the
4003          sub-unit places no restrictions on this parameter.  The value
4004          (-2) means unknown.  The value (-3) means that the printer knows
4005          that there remains capacity for at least one unit."
4006      ::= { prtOutputEntry 5 }
4007
4008  prtOutputStatus OBJECT-TYPE
4009      SYNTAX     PrtSubUnitStatusTC
4010      MAX-ACCESS read-only
4011      STATUS     current
4012      DESCRIPTION
4013          "The current status of this output sub-unit."
4014      ::= { prtOutputEntry 6 }
4015
4016  --             OUTPUT MEASUREMENT
4017  --
4018  --    _______  |                | ________
4019  --       ^     |                |     ^
4020  --       |     |                |     |
4021  --       |     |                |RemainingCapacity
4022  --  MaxCapacity|                |     |
4023  --       |     |                |     v           ^
4024  --       |     |_ _ _ _ _ _ _ _ | _______________ |direction
4025  --       |     |    Sheets      |                 |
4026  --       |     |      in        |
4027  --       v     |    Output      |
4028  --    _______  +________________+
4029
4030  -- The Extended Output Group
4031  --
4032  -- This group is optional.  However, to claim conformance to this
4033  -- group, it is necessary to implement every object in the group.
4034
4035  prtOutputName OBJECT-TYPE
4036      SYNTAX     OCTET STRING (SIZE(0..63))
4037      MAX-ACCESS read-write
4038      STATUS     current
4039      DESCRIPTION
4040          "The name assigned to this output sub-unit."
4041      ::= { prtOutputEntry 7 }
4042
4043  prtOutputVendorName OBJECT-TYPE
4044      SYNTAX     OCTET STRING (SIZE(0..63))
4045      MAX-ACCESS read-only
4046      STATUS     current
4047      DESCRIPTION
4048          "The vendor name of this output sub-unit."
4049      ::= { prtOutputEntry 8 }
4050
```

```
4051  prtOutputModel OBJECT-TYPE
4052      SYNTAX     OCTET STRING (SIZE(0..63))
4053      MAX-ACCESS read-only
4054      STATUS     current
4055      DESCRIPTION
4056          "The model name assigned to this output sub-unit."
4057      ::= { prtOutputEntry 9 }
4058
4059  prtOutputVersion OBJECT-TYPE
4060      SYNTAX     OCTET STRING (SIZE(0..63))
4061      MAX-ACCESS read-only
4062      STATUS     current
4063      DESCRIPTION
4064          "The version of this output sub-unit."
4065      ::= { prtOutputEntry 10 }
4066
4067  prtOutputSerialNumber OBJECT-TYPE
4068      SYNTAX     OCTET STRING (SIZE(0..63))
4069      MAX-ACCESS read-only
4070      STATUS     current
4071      DESCRIPTION
4072          "The serial number assigned to this output sub-unit."
4073      ::= { prtOutputEntry 11 }
4074
4075  prtOutputDescription OBJECT-TYPE
4076      SYNTAX     OCTET STRING (SIZE(0..255))
4077      MAX-ACCESS read-only
4078      STATUS     current
4079      DESCRIPTION
4080          "A free-form text description of this output sub-unit in the
4081          localization specified by prtGeneralCurrentLocalization."
4082      ::= { prtOutputEntry 12 }
4083
4084  prtOutputSecurity OBJECT-TYPE
4085      SYNTAX     PresentOnOff
4086      MAX-ACCESS read-write
4087      STATUS     current
4088      DESCRIPTION
4089          "Indicates if this output sub-unit has some security associated
4090          with it and if that security is enabled or not."
4091      ::= { prtOutputEntry 13 }
4092
4093  -- The Output Dimensions Group
4094  --
4095  -- This group is optional.  However, to claim conformance to this
4096  -- group, it is necessary to implement every object in the group.
4097
4098  prtOutputDimUnit OBJECT-TYPE
4099      SYNTAX     PrtMediaUnitTC
4100      MAX-ACCESS read-only
```

```
4101        STATUS     current
4102        DESCRIPTION
4103            "The unit of measurement for use in calculating and relaying
4104            dimensional values for this output sub-unit."
4105        ::= { prtOutputEntry 14 }
4106
4107    prtOutputMaxDimFeedDir OBJECT-TYPE
4108        SYNTAX     Integer32
4109        MAX-ACCESS read-write
4110        STATUS     current
4111        DESCRIPTION
4112            "The maximum dimensions supported by this output sub-unit
4113            for measurements taken parallel relative to the feed
4114            direction associated with that sub-unit in output
4115            sub-unit dimensional units (MediaUnit). If this output
4116            sub-unit can reliably sense this value, the value is
4117            sensed by the printer and may not be changed with
4118            management protocol operations."
4119        ::= { prtOutputEntry 15 }
4120
4121    prtOutputMaxDimXFeedDir OBJECT-TYPE
4122        SYNTAX     Integer32
4123        MAX-ACCESS read-write
4124        STATUS     current
4125        DESCRIPTION
4126            "The maximum dimensions supported by this output sub-unit
4127            for measurements taken ninety degrees relative to the
4128            feed direction associated with that sub-unit in output
4129            sub-unit dimensional units (MediaUnit). If this output
4130            sub-unit can reliably sense this value, the value is
4131            sensed by the printer and may not be changed with
4132            management protocol operations."
4133        ::= { prtOutputEntry 16 }
4134
4135    prtOutputMinDimFeedDir OBJECT-TYPE
4136        SYNTAX     Integer32
4137        MAX-ACCESS read-write
4138        STATUS     current
4139        DESCRIPTION
4140            "The minimum dimensions supported by this output sub-unit
4141            for measurements taken parallel relative to the feed
4142            direction associated with that sub-unit in output
4143            sub-unit dimensional units (DimUnit).  If this output
4144            sub-unit can reliably sense this value, the value is
4145            sensed by the printer and may not be changed with
4146            management protocol operations."
4147        ::= { prtOutputEntry 17 }
4148
4149    prtOutputMinDimXFeedDir OBJECT-TYPE
4150        SYNTAX     Integer32
```

```
4151        MAX-ACCESS read-write
4152        STATUS     current
4153        DESCRIPTION
4154            "The minimum dimensions supported by this output sub-unit
4155            for measurements taken ninety degrees relative to the
4156            feed direction associated with that sub-unit in output
4157            sub-unit dimensional units (DimUnit). If this output
4158            sub-unit can reliably sense this value, the value is
4159            sensed by the printer and may not be changed with
4160            management protocol operations."
4161        ::= { prtOutputEntry 18 }
4162
4163    -- The Output Features Group
4164    --
4165    -- This group is optional.  However, to claim conformance to this
4166    -- group, it is necessary to implement every object in the group.
4167
4168    prtOutputStackingOrder OBJECT-TYPE
4169        --  This value is a type 1 enumeration
4170        SYNTAX     PrtOutputStackingOrderTC
4171        MAX-ACCESS read-write
4172        STATUS     current
4173        DESCRIPTION
4174            "The current state of the stacking order for the
4175            associated output sub-unit. 'FirstToLast' means
4176            that as pages are output the front of the next page is
4177            placed against the back of the previous page.
4178            'LasttoFirst' means that as pages are output the back
4179            of the next page is placed against the front of the
4180            previous page."
4181        ::= { prtOutputEntry 19 }
4182
4183    prtOutputPageDeliveryOrientation OBJECT-TYPE
4184        --   This value is a type 1 enumeration
4185        SYNTAX     PrtOutputPageDeliveryOrientationTC
4186        MAX-ACCESS read-write
4187        STATUS     current
4188        DESCRIPTION
4189            "The reading surface that will be 'up' when pages are
4190            delivered to the associated output sub-unit. Values are
4191            faceUp and faceDown. (Note: interpretation of these
4192            values is in general context-dependent based on locale;
4193            presentation of these values to an end-user should be
4194            normalized to the expectations of the user)."
4195        ::= { prtOutputEntry 20 }
4196
4197    prtOutputBursting OBJECT-TYPE
4198        SYNTAX     PresentOnOff
4199        MAX-ACCESS read-write
4200        STATUS     current
```

```
4201        DESCRIPTION
4202            "This object indicates that the outputting sub-unit supports
4203            bursting, and if so, whether the feature is enabled. Bursting is
4204            the process by which continuous media is separated into
4205            individual sheets, typically by bursting along pre-formed
4206            perforations."
4207        ::= { prtOutputEntry 21 }
4208
4209    prtOutputDecollating OBJECT-TYPE
4210        SYNTAX     PresentOnOff
4211        MAX-ACCESS read-write
4212        STATUS     current
4213        DESCRIPTION
4214            "This object indicates that the output supports decollating, and
4215            if so, whether the feature is enabled. Decollating is the
4216            process by which the individual parts within a multi-part form
4217            are separated and sorted into separate stacks for each part."
4218        ::= { prtOutputEntry 22 }
4219
4220    prtOutputPageCollated OBJECT-TYPE
4221        SYNTAX     PresentOnOff
4222        MAX-ACCESS read-write
4223        STATUS     current
4224        DESCRIPTION
4225            "This object indicates that the output sub-unit supports page
4226            collation, and if so, whether the feature is enabled. See
4227            glossary for definition of how this document defines collation."
4228        ::= { prtOutputEntry 23 }
4229
4230    prtOutputOffsetStacking OBJECT-TYPE
4231        SYNTAX     PresentOnOff
4232        MAX-ACCESS read-write
4233        STATUS     current
4234        DESCRIPTION
4235            "This object indicates that the output supports offset stacking,
4236            and if so, whether the feature is enabled. See glossary for how
4237            Offset Stacking is defined by this document."
4238        ::= { prtOutputEntry 24 }
4239
4240    -- The Marker Group
4241    --
4242    -- A marker is the mechanism that produces marks on the print
4243    -- media. The marker sub-units and their associated supplies are
4244    -- represented by the Marker Group in the model.  A printer can
4245    -- contain one or more marking mechanisms.  Some examples of
4246    -- multiple marker sub-units are: a printer
4247    -- with separate markers for normal and magnetic ink or an
4248    -- imagesetter that can output to both a proofing device and
4249    -- final film. Each marking device can have its own set of
4250    -- characteristics associated with it, such as marking technology
```

```
4251  -- and resolution.
4252  --
4253  -- Implementation of every object in this group is mandatory.
4254
4255  prtMarker OBJECT IDENTIFIER ::= { printmib 10 }
4256
4257  -- The printable area margins as listed below define an area of
4258  -- the print media which is guaranteed to be printable for all
4259  -- combinations of input, media paths, and interpreters for this
4260  -- marker.
4261
4262  prtMarkerTable OBJECT-TYPE
4263      SYNTAX     SEQUENCE OF PrtMarkerEntry
4264      MAX-ACCESS not-accessible
4265      STATUS     current
4266      DESCRIPTION
4267          ""
4268      ::= { prtMarker 2 }
4269
4270  prtMarkerEntry OBJECT-TYPE
4271      SYNTAX     PrtMarkerEntry
4272      MAX-ACCESS not-accessible
4273      STATUS     current
4274      DESCRIPTION
4275          "Entries may exist in the table for each device index with a
4276          device type of 'printer'."
4277      INDEX  { hrDeviceIndex, prtMarkerIndex }
4278      ::= { prtMarkerTable 1 }
4279
4280  PrtMarkerEntry ::= SEQUENCE {
4281      prtMarkerIndex                  Integer32,
4282      prtMarkerMarkTech               PrtMarkerMarkTechTC,
4283      prtMarkerCounterUnit            PrtMarkerCounterUnitTC,
4284      prtMarkerLifeCount              Counter32,
4285      prtMarkerPowerOnCount           Counter32,
4286      prtMarkerProcessColorants       Integer32,
4287      prtMarkerSpotColorants          Integer32,
4288      prtMarkerAddressabilityUnit     PrtMarkerAddressabilityUnitTC,
4289      prtMarkerAddressabilityFeedDir  Integer32,
4290      prtMarkerAddressabilityXFeedDir Integer32,
4291      prtMarkerNorthMargin            Integer32,
4292      prtMarkerSouthMargin            Integer32,
4293      prtMarkerWestMargin             Integer32,
4294      prtMarkerEastMargin             Integer32,
4295      prtMarkerStatus                 PrtSubUnitStatusTC
4296      }
4297
4298  prtMarkerIndex OBJECT-TYPE
4299      SYNTAX     Integer32 (1..65535)
4300      MAX-ACCESS not-accessible
```

```
4301        STATUS     current
4302        DESCRIPTION
4303            "A unique value used by the printer to identify this marking
4304            SubUnit.  Although these values may change due to a major
4305            reconfiguration of the device (e.g. the addition of new marking
4306            sub-units to the printer), values are expected to remain stable
4307            across successive printer power cycles."
4308        ::= { prtMarkerEntry 1 }
4309
4310    prtMarkerMarkTech OBJECT-TYPE
4311        -- This value is a type 2 enumeration
4312        SYNTAX     PrtMarkerMarkTechTC
4313        MAX-ACCESS read-only
4314        STATUS     current
4315        DESCRIPTION
4316            "The type of marking technology used for this marking sub-unit."
4317        ::= { prtMarkerEntry 2 }
4318
4319    prtMarkerCounterUnit OBJECT-TYPE
4320        -- This value is a type 1 enumeration
4321        SYNTAX     PrtMarkerCounterUnitTC
4322        MAX-ACCESS read-only
4323        STATUS     current
4324        DESCRIPTION
4325            "The unit that will be used by the printer when reporting
4326            counter values for this marking sub-unit.  The time units of
4327            measure are provided for a device like a strip recorder that
4328            does not or cannot track the physical dimensions of the media
4329            and does not use characters, lines or sheets."
4330        ::= { prtMarkerEntry 3}
4331
4332    prtMarkerLifeCount OBJECT-TYPE
4333        SYNTAX     Counter32
4334        MAX-ACCESS read-only
4335        STATUS     current
4336        DESCRIPTION
4337            "The count of the number of units of measure counted during the
4338            life of printer using units of measure as specified by
4339            prtMarkerCounterUnit."
4340        ::= { prtMarkerEntry 4 }
4341
4342    prtMarkerPowerOnCount OBJECT-TYPE
4343        SYNTAX     Counter32
4344        MAX-ACCESS read-only
4345        STATUS     current
4346        DESCRIPTION
4347            "The count of the number of units of measure counted since the
4348            equipment was most recently powered on using units of measure as
4349            specified by prtMarkerCounterUnit."
4350        ::= { prtMarkerEntry 5 }
```

```
4351
4352  prtMarkerProcessColorants OBJECT-TYPE
4353      SYNTAX     Integer32 (0..65535)
4354      MAX-ACCESS read-only
4355      STATUS     current
4356      DESCRIPTION
4357          "The number of process colors supported by this marker.  A
4358          process color of 1 implies monochrome.  The value of this object
4359          and prtMarkerSpotColorants cannot both be 0.  The value of
4360          prtMarkerProcessColorants must be 0 or greater."
4361      ::= { prtMarkerEntry 6 }
4362
4363  prtMarkerSpotColorants OBJECT-TYPE
4364      SYNTAX     Integer32 (0..65535)
4365      MAX-ACCESS read-only
4366      STATUS     current
4367      DESCRIPTION
4368          "The number of spot colors supported by this marker. The value
4369          of this object and prtMarkerProcessColorants cannot both be 0.
4370          Must be 0 or greater."
4371      ::= { prtMarkerEntry 7 }
4372
4373  prtMarkerAddressabilityUnit OBJECT-TYPE
4374      --   This value is a type 1 enumeration
4375      SYNTAX     PrtMarkerAddressabilityUnitTC
4376      MAX-ACCESS read-only
4377      STATUS     current
4378      DESCRIPTION
4379          "The unit of measure of distances, as applied to the marker's
4380          resolution."
4381      ::= { prtMarkerEntry 8 }
4382
4383  prtMarkerAddressabilityFeedDir OBJECT-TYPE
4384      SYNTAX     Integer32
4385      MAX-ACCESS read-only
4386      STATUS     current
4387      DESCRIPTION
4388          "The maximum number of addressable marking positions in the feed
4389          direction per 10000 units of measure specified by
4390          prtMarkerAddressabilityUnit.  A value of (-1) implies 'other' or
4391          'infinite' while a value of (-2) implies 'unknown'."
4392      ::= { prtMarkerEntry 9 }
4393
4394  prtMarkerAddressabilityXFeedDir OBJECT-TYPE
4395      SYNTAX     Integer32
4396      MAX-ACCESS read-only
4397      STATUS     current
4398      DESCRIPTION
4399          "The maximum number of addressable marking positions in the
4400          cross feed direction in 10000 units of measure specified by
```

```
4401            prtMarkerAddressabilityUnit.  A value of (-1) implies 'other' or
4402            'infinite' while a value of (-2) implies 'unknown'."
4403        ::= { prtMarkerEntry 10 }
4404
4405    prtMarkerNorthMargin OBJECT-TYPE
4406        SYNTAX     Integer32
4407        MAX-ACCESS read-only
4408        STATUS     current
4409        DESCRIPTION
4410            "The margin, in units identified by prtMarkerAddressabilityUnit,
4411            from the leading edge of the medium as the medium flows through
4412            the marking engine with the side to be imaged facing the
4413            observer. The leading edge is the North edge and the other edges
4414            are defined by the normal compass layout of  directions with the
4415            compass facing the observer.  Printing within the area bounded
4416            by all four margins is guaranteed for all interpreters.   The
4417            value (-2) means unknown."
4418        ::= { prtMarkerEntry 11 }
4419
4420    prtMarkerSouthMargin OBJECT-TYPE
4421        SYNTAX     Integer32
4422        MAX-ACCESS read-only
4423        STATUS     current
4424        DESCRIPTION
4425            "The margin from the South edge  (see prtMarkerNorthMargin) of
4426            the medium in units identified by prtMarkerAddressabilityUnit.
4427            Printing within the area bounded by all four margins  is
4428            guaranteed for all interpreters. The value (-2) means unknown."
4429        ::= { prtMarkerEntry 12 }
4430
4431    prtMarkerWestMargin OBJECT-TYPE
4432        SYNTAX     Integer32
4433        MAX-ACCESS read-only
4434        STATUS     current
4435        DESCRIPTION
4436            "The margin from the West edge (see prtMarkerNorthMargin) of the
4437            medium in units identified by prtMarkerAddressabilityUnit.
4438            Printing within the area bounded by all four margins is
4439            guaranteed for all interpreters. The value (-2) means unknown."
4440        ::= { prtMarkerEntry 13 }
4441
4442    prtMarkerEastMargin OBJECT-TYPE
4443        SYNTAX     Integer32
4444        MAX-ACCESS read-only
4445        STATUS     current
4446        DESCRIPTION
4447            "The margin from the East edge (see prtMarkerNorthMargin) of the
4448            medium in units identified by prtMarkerAddressabilityUnit.
4449            Printing within the area bounded by all four margins is
4450            guaranteed for all interpreters. The value (-2) means unknown."
```

```
4451      ::= { prtMarkerEntry 14 }
4452
4453  prtMarkerStatus OBJECT-TYPE
4454      SYNTAX     PrtSubUnitStatusTC
4455      MAX-ACCESS read-only
4456      STATUS     current
4457      DESCRIPTION
4458          "The current status of this marker sub-unit."
4459      ::= { prtMarkerEntry 15 }
4460
4461  -- The Marker Supplies Group
4462  --
4463  -- This group is optional.  However, to claim conformance to this
4464  -- group, it is necessary to implement every object in the group.
4465
4466  prtMarkerSupplies OBJECT IDENTIFIER ::= { printmib 11 }
4467
4468  prtMarkerSuppliesTable OBJECT-TYPE
4469      SYNTAX     SEQUENCE OF PrtMarkerSuppliesEntry
4470      MAX-ACCESS not-accessible
4471      STATUS     current
4472      DESCRIPTION
4473          "A table of the marker supplies available on this printer."
4474      ::= { prtMarkerSupplies 1 }
4475
4476  prtMarkerSuppliesEntry OBJECT-TYPE
4477      SYNTAX     PrtMarkerSuppliesEntry
4478      MAX-ACCESS not-accessible
4479      STATUS     current
4480      DESCRIPTION
4481          "Attributes of a marker supply. Entries may exist in the table
4482          for each device index with a device type of 'printer'."
4483      INDEX  { hrDeviceIndex, prtMarkerSuppliesIndex }
4484      ::= { prtMarkerSuppliesTable 1 }
4485
4486  PrtMarkerSuppliesEntry ::= SEQUENCE {
4487      prtMarkerSuppliesIndex          Integer32,
4488      prtMarkerSuppliesMarkerIndex    Integer32,
4489      prtMarkerSuppliesColorantIndex  Integer32,
4490      prtMarkerSuppliesClass          PrtMarkerSuppliesClassTC,
4491      prtMarkerSuppliesType           PrtMarkerSuppliesTypeTC,
4492      prtMarkerSuppliesDescription    OCTET STRING,
4493      prtMarkerSuppliesSupplyUnit    PrtMarkerSuppliesSupplyUnitTC,
4494      prtMarkerSuppliesMaxCapacity    Integer32,
4495      prtMarkerSuppliesLevel          Integer32
4496      }
4497
4498  prtMarkerSuppliesIndex OBJECT-TYPE
4499      SYNTAX     Integer32 (1..65535)
4500      MAX-ACCESS not-accessible
```

```
4501        STATUS     current
4502        DESCRIPTION
4503            "A unique value used by the printer to identify this marker
4504            supply.  Although these values may change due to a major
4505            reconfiguration of the device (e.g. the addition of new marker
4506            supplies to the printer), values are expected to remain stable
4507            across successive power cycles."
4508        ::= { prtMarkerSuppliesEntry 1 }
4509
4510    prtMarkerSuppliesMarkerIndex OBJECT-TYPE
4511        SYNTAX     Integer32 (0..65535)
4512        MAX-ACCESS read-only
4513        STATUS     current
4514        DESCRIPTION
4515            "The value of prtMarkerIndex corresponding to the marking sub
4516            unit with which this marker supply sub-unit is associated."
4517        ::= { prtMarkerSuppliesEntry 2 }
4518
4519    prtMarkerSuppliesColorantIndex OBJECT-TYPE
4520        SYNTAX     Integer32 (0..65535)
4521        MAX-ACCESS read-only
4522        STATUS     current
4523        DESCRIPTION
4524            "The value of prtMarkerColorantIndex corresponding to the
4525            colorant with which this marker supply sub-unit is associated.
4526            This value shall be 0 if there is no colorant table or if this
4527            supply does not depend on a single specified colorant."
4528        ::= { prtMarkerSuppliesEntry 3 }
4529
4530    prtMarkerSuppliesClass OBJECT-TYPE
4531        --  This value is a type 1 enumeration
4532        SYNTAX     PrtMarkerSuppliesClassTC
4533        MAX-ACCESS read-only
4534        STATUS     current
4535        DESCRIPTION
4536            "Indicates whether this supply entity represents a supply that
4537            is consumed or a receptacle that is filled."
4538        ::= { prtMarkerSuppliesEntry 4 }
4539
4540    prtMarkerSuppliesType OBJECT-TYPE
4541        --   This value is a type 3 enumeration
4542        SYNTAX     PrtMarkerSuppliesTypeTC
4543        MAX-ACCESS read-only
4544        STATUS     current
4545        DESCRIPTION
4546            "The type of this supply."
4547        ::= { prtMarkerSuppliesEntry 5 }
4548
4549    prtMarkerSuppliesDescription OBJECT-TYPE
4550        SYNTAX     OCTET STRING (SIZE(0..255))
```

```
4551        MAX-ACCESS read-only
4552        STATUS     current
4553        DESCRIPTION
4554            "The description of this supply container/receptacle in the
4555            localization specified by prtGeneralCurrentLocalization."
4556        ::= { prtMarkerSuppliesEntry 6 }
4557
4558    prtMarkerSuppliesSupplyUnit OBJECT-TYPE
4559        -- This value is a type 1 enumeration
4560        SYNTAX     PrtMarkerSuppliesSupplyUnitTC
4561        MAX-ACCESS read-only
4562        STATUS     current
4563        DESCRIPTION
4564            "Unit of measure of this marker supply container/receptacle."
4565        ::= { prtMarkerSuppliesEntry 7 }
4566
4567    prtMarkerSuppliesMaxCapacity OBJECT-TYPE
4568        SYNTAX     Integer32
4569        MAX-ACCESS read-write
4570        STATUS     current
4571        DESCRIPTION
4572            "The maximum capacity of this supply container/receptacle
4573            expressed in prtMarkerSuppliesSupplyUnit. If this supply
4574            container/receptacle can reliably sense this value, the value is
4575            reported by the printer and is read-only; otherwise, the value
4576            may be written (by a Remote Control Panel or a Management
4577            Application). The value (-1) means other and specifically
4578            indicates that the sub-unit places no restrictions on this
4579            parameter. The value (-2) means unknown."
4580        ::= { prtMarkerSuppliesEntry 8 }
4581
4582    prtMarkerSuppliesLevel OBJECT-TYPE
4583        SYNTAX     Integer32
4584        MAX-ACCESS read-write
4585        STATUS     current
4586        DESCRIPTION
4587            "The current level if this supply is a container; remaining
4588            space if this supply is a receptacle. If this supply
4589            container/receptacle can reliably sense this value, the value is
4590            reported by the printer and is read-only; otherwise, the value
4591            may be written (by a Remote Control Panel or a Management
4592            Application). The value (-1) means other and specifically
4593            indicates that the sub-unit places no restrictions on this
4594            parameter. The value (-2) means unknown.  A value of (-3) means
4595            that the printer knows that there is some supply/remaining
4596            space, respectively."
4597        ::= { prtMarkerSuppliesEntry 9 }
4598
4599    -- The Marker Colorant Group
4600    --
```

```
4601  -- This group is optional.  However, to claim conformance to this
4602  -- group, it is necessary to implement every object in the group.
4603
4604  prtMarkerColorant OBJECT IDENTIFIER ::= { printmib 12 }
4605
4606  prtMarkerColorantTable OBJECT-TYPE
4607      SYNTAX     SEQUENCE OF PrtMarkerColorantEntry
4608      MAX-ACCESS not-accessible
4609      STATUS     current
4610      DESCRIPTION
4611          "A table of all of the colorants available on the printer."
4612      ::= { prtMarkerColorant 1 }
4613
4614  prtMarkerColorantEntry OBJECT-TYPE
4615      SYNTAX     PrtMarkerColorantEntry
4616      MAX-ACCESS not-accessible
4617      STATUS     current
4618      DESCRIPTION
4619          "Attributes of a colorant available on the printer. Entries may
4620          exist in the table for each device index with a device type of
4621          'printer'."
4622      INDEX { hrDeviceIndex, prtMarkerColorantIndex }
4623      ::= { prtMarkerColorantTable 1 }
4624
4625  PrtMarkerColorantEntry ::= SEQUENCE {
4626      prtMarkerColorantIndex          Integer32,
4627      prtMarkerColorantMarkerIndex    Integer32,
4628      prtMarkerColorantRole           PrtMarkerColorantRoleTC,
4629      prtMarkerColorantValue          OCTET STRING,
4630      prtMarkerColorantTonality       Integer32
4631      }
4632
4633  prtMarkerColorantIndex OBJECT-TYPE
4634      SYNTAX     Integer32 (1..65535)
4635      MAX-ACCESS not-accessible
4636      STATUS     current
4637      DESCRIPTION
4638          "A unique value used by the printer to identify this colorant.
4639          Although these values may change due to a major reconfiguration
4640          of the device (e.g. the addition of new colorants to the
4641          printer)."
4642      ::= { prtMarkerColorantEntry 1 }
4643
4644  prtMarkerColorantMarkerIndex OBJECT-TYPE
4645      SYNTAX     Integer32 (0..65535)
4646      MAX-ACCESS read-only
4647      STATUS     current
4648      DESCRIPTION
4649          "The value of prtMarkerIndex corresponding to the marker sub
4650          unit with which this colorant entry is associated."
```

```
4651      ::= { prtMarkerColorantEntry 2 }
4652
4653  prtMarkerColorantRole OBJECT-TYPE
4654      -- This value is a type 1 enumeration
4655      SYNTAX     PrtMarkerColorantRoleTC
4656      MAX-ACCESS read-only
4657      STATUS     current
4658      DESCRIPTION
4659          "The role played by this colorant."
4660      ::= { prtMarkerColorantEntry 3 }
4661
4662  prtMarkerColorantValue OBJECT-TYPE
4663      SYNTAX     OCTET STRING (SIZE(0..255))
4664      MAX-ACCESS read-only
4665      STATUS     current
4666      DESCRIPTION
4667          "The name of the color of this colorant using standardized
4668          string names from ISO 10175 (DPA) and ISO 10180 (SPDL) such as:
4669              other
4670              unknown
4671              white
4672              red
4673              green
4674              blue
4675              cyan
4676              magenta
4677              yellow
4678              black
4679          Implementers may add additional string values. The naming
4680          conventions in ISO 9070 are recommended in order to avoid
4681          potential name clashes"
4682      ::= { prtMarkerColorantEntry 4 }
4683
4684  prtMarkerColorantTonality OBJECT-TYPE
4685      SYNTAX     Integer32
4686      MAX-ACCESS read-only
4687      STATUS     current
4688      DESCRIPTION
4689          "The distinct levels of tonality realizable by a marking sub
4690          unit when using this colorant.  This value does not include the
4691          number of levels of tonal difference that an interpreter can
4692          obtain by techniques such as half toning. This value must be at
4693          least 2."
4694      ::= { prtMarkerColorantEntry 5 }
4695
4696  -- The Media Path Group
4697  --
4698  -- The media paths encompass the mechanisms in the printer that
4699  -- move the media through the printer and connect all other media
4700  -- related sub-units: inputs, outputs, markers and finishers. A
```

```
4701  -- printer contains one or more media paths. These are
4702  -- represented by the Media Path Group in the model. The Media
4703  -- Path group has some attributes that apply to all
4704  -- paths plus a table of the separate media paths.
4705
4706  prtMediaPath OBJECT IDENTIFIER ::= { printmib 13 }
4707
4708  prtMediaPathTable OBJECT-TYPE
4709      SYNTAX     SEQUENCE OF PrtMediaPathEntry
4710      MAX-ACCESS not-accessible
4711      STATUS     current
4712      DESCRIPTION
4713          ""
4714      ::= { prtMediaPath 4 }
4715
4716  prtMediaPathEntry OBJECT-TYPE
4717      SYNTAX     PrtMediaPathEntry
4718      MAX-ACCESS not-accessible
4719      STATUS     current
4720      DESCRIPTION
4721          "Entries may exist in the table for each device index with a
4722          device type of 'printer'."
4723      INDEX  { hrDeviceIndex, prtMediaPathIndex }
4724      ::= { prtMediaPathTable 1 }
4725
4726  PrtMediaPathEntry ::= SEQUENCE {
4727      prtMediaPathIndex               Integer32,
4728      prtMediaPathMaxSpeedPrintUnit
4729                              PrtMediaPathMaxSpeedPrintUnitTC,
4730      prtMediaPathMediaSizeUnit       PrtMediaUnitTC,
4731      prtMediaPathMaxSpeed            Integer32,
4732      prtMediaPathMaxMediaFeedDir     Integer32,
4733      prtMediaPathMaxMediaXFeedDir    Integer32,
4734      prtMediaPathMinMediaFeedDir     Integer32,
4735      prtMediaPathMinMediaXFeedDir    Integer32,
4736      prtMediaPathType                PrtMediaPathTypeTC,
4737      prtMediaPathDescription         OCTET STRING,
4738      prtMediaPathStatus              PrtSubUnitStatusTC
4739      }
4740
4741  prtMediaPathIndex OBJECT-TYPE
4742      SYNTAX     Integer32 (1..65535)
4743      MAX-ACCESS not-accessible
4744      STATUS     current
4745      DESCRIPTION
4746          "A unique value used by the printer to identify this media path.
4747          Although these values may change due to a major reconfiguration
4748          of the device (e.g. the addition of new media paths to the
4749          printer), values are expected to remain stable across successive
4750          printer power cycles."
```

```
4751      ::= { prtMediaPathEntry 1 }
4752
4753  prtMediaPathMaxSpeedPrintUnit OBJECT-TYPE
4754      -- This value is a type 1 enumeration
4755      SYNTAX PrtMediaPathMaxSpeedPrintUnitTC
4756      MAX-ACCESS read-only
4757      STATUS     current
4758      DESCRIPTION
4759          "The unit of measure used in specifying the speed of all media
4760          paths in the printer."
4761      ::= { prtMediaPathEntry 2 }
4762
4763  prtMediaPathMediaSizeUnit OBJECT-TYPE
4764      SYNTAX     PrtMediaUnitTC
4765      MAX-ACCESS read-only
4766      STATUS     current
4767      DESCRIPTION
4768          "The units of measure of media size for use in calculating and
4769          relaying dimensional values for all media paths in the printer."
4770      ::= { prtMediaPathEntry 3 }
4771
4772  prtMediaPathMaxSpeed OBJECT-TYPE
4773      SYNTAX     Integer32
4774      MAX-ACCESS read-only
4775      STATUS     current
4776      DESCRIPTION
4777          "The maximum printing speed of this media path expressed in
4778          prtMediaPathMaxSpeedUnit's.  A value of (-1) implies 'other'."
4779      ::= { prtMediaPathEntry 4 }
4780
4781  prtMediaPathMaxMediaFeedDir OBJECT-TYPE
4782      SYNTAX     Integer32
4783      MAX-ACCESS read-only
4784      STATUS     current
4785      DESCRIPTION
4786          "The maximum physical media size in the feed direction of this
4787          media path expressed in units of measure specified by
4788          PrtMediaPathMediaSizeUnit.  A value of (-1) implies 'unlimited'
4789          a value of (-2) implies 'unknown'"
4790      ::= { prtMediaPathEntry 5 }
4791
4792  prtMediaPathMaxMediaXFeedDir OBJECT-TYPE
4793      SYNTAX     Integer32
4794      MAX-ACCESS read-only
4795      STATUS     current
4796      DESCRIPTION
4797          "The maximum physical media size across the feed direction of
4798          this media path expressed in units of measure specified by
4799          prtMediaPathMediaSizeUnit.  A value of (-2) implies 'unknown'."
4800      ::= { prtMediaPathEntry 6 }
```

```
4801
4802  prtMediaPathMinMediaFeedDir OBJECT-TYPE
4803      SYNTAX     Integer32
4804      MAX-ACCESS read-only
4805      STATUS     current
4806      DESCRIPTION
4807          "The minimum physical media size in the feed direction of this
4808          media path expressed in units of measure specified by
4809          prtMediaPathMediaSizeUnit. A value of (-2) implies 'unknown'."
4810      ::= { prtMediaPathEntry 7 }
4811
4812  prtMediaPathMinMediaXFeedDir OBJECT-TYPE
4813      SYNTAX     Integer32
4814      MAX-ACCESS read-only
4815      STATUS     current
4816      DESCRIPTION
4817          "The minimum physical media size across the feed direction of
4818          this media path expressed in units of measure specified by
4819          prtMediaPathMediaSizeUnit.  A value of (-2) implies 'unknown'."
4820      ::= { prtMediaPathEntry 8 }
4821
4822  prtMediaPathType OBJECT-TYPE
4823      --   This value is a type 2 enumeration
4824      SYNTAX     PrtMediaPathTypeTC
4825      MAX-ACCESS read-only
4826      STATUS     current
4827      DESCRIPTION
4828          "The type of the media path for this media path."
4829      ::= { prtMediaPathEntry 9 }
4830
4831  prtMediaPathDescription OBJECT-TYPE
4832      SYNTAX     OCTET STRING (SIZE(0..255))
4833      MAX-ACCESS read-only
4834      STATUS     current
4835      DESCRIPTION
4836          "The manufacturer-provided description of this media path in the
4837          localization specified by prtGeneralCurrentLocalization."
4838      ::= { prtMediaPathEntry 10 }
4839
4840  prtMediaPathStatus OBJECT-TYPE
4841      SYNTAX     PrtSubUnitStatusTC
4842      MAX-ACCESS read-only
4843      STATUS     current
4844      DESCRIPTION
4845           "The current status of this media path."
4846      ::= { prtMediaPathEntry 11 }
4847
4848  -- The Print Job Delivery Channel Group
4849  --
4850  -- Implementation of every object in this group is mandatory.
```

```
4851   --
4852   -- Print Job Delivery Channels are independent sources of print
4853   -- data. Here, print data is the term used for the information
4854   -- that is used to construct printed pages and may have both data
4855   -- and control aspects. The output of a channel is in a form
4856   -- suitable for input to one of the interpreters as a
4857   -- stream. A channel may be independently enabled (allowing
4858   -- print data to flow) or disabled (stopping the flow of
4859   -- print data). A printer may have one or more channels.
4860   --
4861   -- The Print Job Delivery Channel table describes the
4862   -- capabilities of the printer and not what is currently being
4863   -- performed by the printer
4864   --
4865   -- Basically, the print job delivery channel abstraction
4866   -- describes the final processing step of getting the print data
4867   -- to an interpreter. It might include some level of
4868   -- decompression or decoding of print stream data.
4869   -- channel. All of these aspects are hidden in the channel
4870   -- abstraction.
4871   --
4872   -- There are many kinds of print job delivery channels; some of
4873   -- which are based on networks and others which are not. For
4874   -- example, a channel can be a serial (or parallel) connection;
4875   -- it can be a service, such as the UNIX Line Printer Daemon
4876   -- (LPD), offering services over a network connection; or
4877   -- it could be a disk drive into which a floppy disk with
4878   -- the print data is inserted. Each print job delivery channel is
4879   -- identified by the electronic path and/or service protocol
4880   -- used to deliver print data to a print data interpreter.
4881   --
4882   -- Channel example                  Implementation
4883   --
4884   -- serial port channel            bi-directional data channel
4885   -- parallel port channel          often uni-directional channel
4886   -- IEEE 1284 port channel         bi-directional channel
4887   -- SCSI port channel              bi-directional
4888   -- Apple PAP channel              may be based on LocalTalk,
4889   --                                Ethernet or Tokentalk
4890   -- LPD Server channel             TCP/IP based, port 515
4891   -- Netware Remote Printer         SPX/IPX based channel
4892   -- Netware Print Server           SPX/IPX based channel
4893   --
4894   -- It is easy to note that this is a mixed bag.  There are
4895   -- some physical connections over which no (or very meager)
4896   -- protocols are run (e.g. the serial or old parallel ports)
4897   -- and there are services which often have elaborate
4898   -- protocols that run over a number of protocol stacks. In
4899   -- the end, what is important is the delivery of print data
4900   -- through the channel.
```

```
4901  --
4902  -- The print job delivery channel sub-units are represented by
4903  -- the Print Job Delivery Channel Group in the Model. It has a
4904  -- current print job control language, which can be used to
4905  -- specify which interpreter is to be used for the print data and
4906  -- to query and change environment variables used by the
4907  -- interpreters (and Management Applications). There is also a
4908  -- default interpreter that is to be used if an interpreter is
4909  -- not explicitly specified using the Control Language.
4910
4911  -- The first seven items in the Print Job Delivery Channel Table
4912  -- define the "channel" itself.  A channel typically depends on
4913  -- other protocols and interfaces to provide the data that flows
4914  -- through the channel.
4915  --
4916  -- Control of a print job delivery channel is largely limited to
4917  -- enabling or disabling the entire channel itself. It is likely
4918  -- that more control of the process of accessing print data
4919  -- will be needed over time. Thus, the ChannelType will
4920  -- allow type-specific data to be associated with each
4921  -- channel (using ChannelType specific groups in a fashion
4922  -- analogous to the media specific MIBs that are associated
4923  -- with the IANAIfType in the Interfaces Table). As a first
4924  -- step in this direction, each channel will identify the
4925  -- underlying Interface on which it is based. This is the
4926  -- eighth object in each row of the table.
4927
4928  -- The Print Job Delivery Channel Table
4929  --
4930  -- The prtChannelTable represents the set of input data sources
4931  -- which can provide print data to one or more of the
4932  -- interpreters available on a printer
4933
4934  prtChannel OBJECT IDENTIFIER ::= { printmib 14 }
4935
4936  prtChannelTable OBJECT-TYPE
4937      SYNTAX     SEQUENCE OF PrtChannelEntry
4938      MAX-ACCESS not-accessible
4939      STATUS     current
4940      DESCRIPTION
4941          ""
4942      ::= { prtChannel 1 }
4943
4944  prtChannelEntry OBJECT-TYPE
4945      SYNTAX     PrtChannelEntry
4946      MAX-ACCESS not-accessible
4947      STATUS     current
4948      DESCRIPTION
4949          "Entries may exist in the table for each device index with a
4950          device type of 'printer'."
```

```
4951        INDEX  { hrDeviceIndex, prtChannelIndex }
4952        ::= { prtChannelTable 1 }
4953
4954    PrtChannelEntry ::= SEQUENCE {
4955        prtChannelIndex                     Integer32,
4956        prtChannelType                      PrtChannelTypeTC,
4957        prtChannelProtocolVersion           OCTET STRING,
4958        prtChannelCurrentJobCntlLangIndex   Integer32,
4959        prtChannelDefaultPageDescLangIndex  Integer32,
4960        prtChannelState                     PrtChannelStateTC,
4961        prtChannelIfIndex                   Integer32,
4962        prtChannelStatus                    PrtSubUnitStatusTC,
4963        prtChannelInformation               OCTET STRING
4964        }
4965
4966    prtChannelIndex OBJECT-TYPE
4967        SYNTAX     Integer32 (1..65535)
4968        MAX-ACCESS not-accessible
4969        STATUS     current
4970        DESCRIPTION
4971            "A unique value used by the printer to identify this data
4972            channel.  Although these values may change due to a major
4973            reconfiguration of the device (e.g. the addition of new data
4974            channels to the printer), values are expected to remain stable
4975            across successive printer power cycles."
4976        ::= { prtChannelEntry 1 }
4977
4978    prtChannelType OBJECT-TYPE
4979        SYNTAX     PrtChannelTypeTC
4980        MAX-ACCESS read-only
4981        STATUS     current
4982        DESCRIPTION
4983            "The type of this print data channel.  This object provides the
4984            linkage to ChannelType-specific groups that may (conceptually)
4985            extend the prtChannelTable with additional details about that
4986            channel."
4987        ::= { prtChannelEntry 2 }
4988
4989    prtChannelProtocolVersion OBJECT-TYPE
4990        SYNTAX     OCTET STRING (SIZE(0..63))
4991        MAX-ACCESS read-only
4992        STATUS     current
4993        DESCRIPTION
4994            "The version of the protocol used on this channel.  The format
4995            used for version numbering depends on prtChannelType."
4996        ::= { prtChannelEntry 3 }
4997
4998    prtChannelCurrentJobCntlLangIndex OBJECT-TYPE
4999        SYNTAX     Integer32
5000        MAX-ACCESS read-write
```

```
5001        STATUS     current
5002        DESCRIPTION
5003            "The value of prtInterpreterIndex corresponding to the Control
5004            Language Interpreter for this channel. This interpreter defines
5005            the syntax used for control functions, such as querying or
5006            changing environment variables and identifying job boundaries
5007            (e.g. PJL, PostScript, NPAP). A value of zero indicates that
5008            there is no current Job Control Language Interpreter for this
5009            channel"
5010        ::= { prtChannelEntry 4 }
5011
5012    prtChannelDefaultPageDescLangIndex OBJECT-TYPE
5013        SYNTAX     Integer32
5014        MAX-ACCESS read-write
5015        STATUS     current
5016        DESCRIPTION
5017            "The value of prtInterpreterIndex corresponding to the Page
5018            Description Language Interpreter for this channel. This
5019            interpreter defines the default Page Description Language
5020            interpreter to be used for the print data unless the Control
5021            Language is used to select a specific interpreter (e.g., PCL,
5022            PostScript Language, auto-sense). A value of zero indicates that
5023            there is no default page description language interpreter for
5024            this channel."
5025        ::= { prtChannelEntry 5 }
5026
5027    prtChannelState OBJECT-TYPE
5028        -- This value is a type 1 enumeration
5029        SYNTAX     PrtChannelStateTC
5030        MAX-ACCESS read-write
5031        STATUS     current
5032        DESCRIPTION
5033            "The state of this print data channel. The value determines
5034            whether control information and print data is allowed through
5035            this channel or not."
5036        ::= { prtChannelEntry 6 }
5037
5038    prtChannelIfIndex OBJECT-TYPE
5039        SYNTAX     Integer32
5040        MAX-ACCESS read-write
5041        STATUS     current
5042        DESCRIPTION
5043            "The value of ifIndex (in the ifTable; see the interface section
5044            of MIB-2/RFC 1213) which corresponds to this channel. When more
5045            than one row of the ifTable is relevant, this is the index of
5046            the row representing the topmost layer in the interface
5047            hierarchy.  A value of zero indicates that no interface is
5048            associated with this channel."
5049        ::= { prtChannelEntry 7 }
5050
```

```
5051  prtChannelStatus OBJECT-TYPE
5052      SYNTAX     PrtSubUnitStatusTC
5053      MAX-ACCESS read-only
5054      STATUS     current
5055      DESCRIPTION
5056          "The current status of the channel."
5057      ::= { prtChannelEntry 8 }
5058
5059  prtChannelInformation OBJECT-TYPE
5060      SYNTAX     OCTET STRING (SIZE (0..255))
5061      MAX-ACCESS read-only
5062      STATUS     current
5063      DESCRIPTION
5064          "Auxiliary information to allow a printing application to use
5065          the channel for data submission to the printer.  An application
5066          capable of using a specific PrtChannelType should be able to use
5067          the combined information from the prtChannelInformation and
5068          other channel and interface group objects to 'bootstrap' its use
5069          of the channel.  prtChannelInformation is not intended to
5070          provide a general channel description, nor to provide
5071          information that is available once the channel is in use.
5072
5073          The encoding and interpretation of the prtChannelInformation
5074          object is specific to channel type.  The description of each
5075          PrtChannelType enum value for which prtChannelInformation is
5076          defined specifies the appropriate encoding and interpretation,
5077          including interaction with other objects.  For channel types
5078          that do not specify a prtChannelInformation value, its value
5079          shall be null (0 length).
5080
5081          When a new PrtChannelType enumeration value is registered, its
5082          accompanying description must specify the encoding and
5083          interpretation of the prtChannelInformation value for the
5084          channel type.  prtChannelInformation semantics for an existing
5085          PrtChannelType may be added or amended in the same manner as
5086          described in section 2.4.1 for type 2 enumeration values.
5087
5088          The prtChannelInformation specifies values for a collection of
5089          channel attributes, represented as text according to the
5090          following rules:
5091
5092          1. The prtChannelInformation is not affected by localization.
5093
5094          2. The prtChannelInformation is a list of entries representing
5095          the attribute values.  Each entry consists of the following
5096          items, in order:
5097
5098          a. A keyword, composed of alphabetic characters (A-Z, a-z)
5099          represented by their NVT ASCII [NVT ASCII] codes, that
5100          identifies a channel attribute,
```

b. The NVT ASCII code for an Equals Sign (=) (code 61) to 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:

```
5151
5152          Title:        Brief description phrase, e.g.: 'Port name',
5153                        'Service Name', etc.
5154
5155          Keyword:      The keyword value, e.g.: 'Port' or 'Service'
5156
5157          Syntax:       The encoding of the entry value if it cannot be
5158                        directly represented by NVT ASCII.
5159
5160          Status:       'Mandatory', 'Optional', or 'Conditionally
5161                        Mandatory'
5162
5163          Multiplicity: 'Single' or 'Multiple' to indicate whether the
5164                        entry may be present multiple times.
5165
5166          Description:  Description of the use of the entry, other
5167                        information required to complete the definition
5168                        (e.g.: ordering constraints, interactions between
5169                        entries).
5170
5171          Applications that interpret prtChannelInformation should ignore
5172          unrecognized entries, so they are not affected if new entry
5173          types are added."
5174
5175        ::= { prtChannelEntry 9 }
5176
5177    -- The Interpreter Group
5178    --
5179    -- The interpreter sub-units are responsible for the conversion
5180    -- of a description of intended print instances into images that
5181    -- are to be marked on the media. A printer may have one or more
5182    -- interpreters. The interpreter sub-units are represented by the
5183    -- Interpreter Group in the Model. Each interpreter is generally
5184    -- implemented with software running on the System Controller
5185    -- sub-unit. The Interpreter Table has one entry per interpreter
5186    -- where the interpreters include both Page Description Language
5187    -- (PDL) Interpreters and Control Language Interpreters.
5188    --
5189    -- Implementation of every object in this group is mandatory.
5190
5191    prtInterpreter OBJECT IDENTIFIER ::= { printmib 15 }
5192
5193    --       Interpreter Table
5194    --
5195    -- The prtInterpreterTable is a table representing the
5196    -- interpreters in the printer.  An entry shall be placed in the
5197    -- interpreter table for each interpreter on the printer.
5198
5199    prtInterpreterTable OBJECT-TYPE
5200        SYNTAX     SEQUENCE OF PrtInterpreterEntry
```

```
5201      MAX-ACCESS not-accessible
5202      STATUS     current
5203      DESCRIPTION
5204          ""
5205      ::= { prtInterpreter 1 }
5206
5207  prtInterpreterEntry OBJECT-TYPE
5208      SYNTAX     PrtInterpreterEntry
5209      MAX-ACCESS not-accessible
5210      STATUS     current
5211      DESCRIPTION
5212          "Entries may exist in the table for each device index with a
5213          device type of 'printer'."
5214      INDEX  { hrDeviceIndex, prtInterpreterIndex }
5215      ::= { prtInterpreterTable 1 }
5216
5217  PrtInterpreterEntry ::= SEQUENCE {
5218      prtInterpreterIndex                 Integer32,
5219      prtInterpreterLangFamily            PrtInterpreterLangFamilyTC,
5220      prtInterpreterLangLevel             OCTET STRING,
5221      prtInterpreterLangVersion           OCTET STRING,
5222      prtInterpreterDescription           OCTET STRING,
5223      prtInterpreterVersion               OCTET STRING,
5224      prtInterpreterDefaultOrientation    PrtPrintOrientationTC,
5225      prtInterpreterFeedAddressability    Integer32,
5226      prtInterpreterXFeedAddressability   Integer32,
5227      prtInterpreterDefaultCharSetIn      CodedCharSet,
5228      prtInterpreterDefaultCharSetOut     CodedCharSet,
5229      prtInterpreterTwoWay                PrtInterpreterTwoWayTC
5230      }
5231
5232  prtInterpreterIndex OBJECT-TYPE
5233      SYNTAX     Integer32 (1..65535)
5234      MAX-ACCESS not-accessible
5235      STATUS     current
5236      DESCRIPTION
5237          "A unique value for each PDL or control language for which there
5238          exists an interpreter or emulator in the printer. The value is
5239          used to identify this interpreter. Although these values may
5240          change due to a major reconfiguration of the device (e.g. the
5241          addition of new interpreters to the printer), values are
5242          expected to remain stable across successive printer power
5243          cycles."
5244      ::= { prtInterpreterEntry 1 }
5245
5246  prtInterpreterLangFamily OBJECT-TYPE
5247      -- This value is a type 2 enumeration
5248      SYNTAX     PrtInterpreterLangFamilyTC
5249      MAX-ACCESS read-only
5250      STATUS     current
```

```
5251        DESCRIPTION
5252            "The family name of a Page Description Language (PDL) or control
5253            language which this interpreter in the printer can interpret or
5254            emulate."
5255        ::= { prtInterpreterEntry 2 }
5256
5257    prtInterpreterLangLevel OBJECT-TYPE
5258        SYNTAX     OCTET STRING (SIZE(0..31))
5259        MAX-ACCESS read-only
5260        STATUS     current
5261        DESCRIPTION
5262            "The level of the language which this interpreter is
5263            interpreting or emulating.  This might contain a value like '5e'
5264            for an interpreter which is emulating level 5e of the PCL
5265            language. It might contain '2' for an interpreter which is
5266            emulating level 2 of the PostScript language. Similarly it might
5267            contain '2' for an interpreter which is emulating level 2 of the
5268            HPGL language."
5269        ::= { prtInterpreterEntry 3 }
5270
5271    prtInterpreterLangVersion OBJECT-TYPE
5272        SYNTAX     OCTET STRING (SIZE(0..31))
5273        MAX-ACCESS read-only
5274        STATUS     current
5275        DESCRIPTION
5276            "The date code or version of the language which this interpreter
5277            is interpreting or emulating."
5278        ::= { prtInterpreterEntry 4 }
5279
5280    prtInterpreterDescription OBJECT-TYPE
5281        SYNTAX     OCTET STRING (SIZE(0..255))
5282        MAX-ACCESS read-only
5283        STATUS     current
5284        DESCRIPTION
5285            "A string to identify this interpreter in the localization
5286            specified by prtGeneralCurrentLocalization as opposed to the
5287            language which is being interpreted.  It is anticipated that
5288            this string will allow manufacturers to unambiguously identify
5289            their interpreters."
5290        ::= { prtInterpreterEntry 5 }
5291
5292    prtInterpreterVersion OBJECT-TYPE
5293        SYNTAX     OCTET STRING (SIZE(0..31))
5294        MAX-ACCESS read-only
5295        STATUS     current
5296        DESCRIPTION
5297            "The date code, version number, or other product specific
5298            information tied to this interpreter.  This value is associated
5299            with the interpreter, rather than with the version of the
5300            language which is being interpreted or emulated."
```

```
5301        ::= { prtInterpreterEntry 6 }
5302
5303    prtInterpreterDefaultOrientation OBJECT-TYPE
5304        -- This value is a type 1 enumeration
5305        SYNTAX     PrtPrintOrientationTC
5306        MAX-ACCESS read-write
5307        STATUS     current
5308        DESCRIPTION
5309            "The current orientation default for this interpreter. This
5310            value may be overridden for a particular job (e.g., by a command
5311            in the input data stream)."
5312        ::= { prtInterpreterEntry 7 }
5313
5314    prtInterpreterFeedAddressability OBJECT-TYPE
5315        SYNTAX     Integer32
5316        MAX-ACCESS read-only
5317        STATUS     current
5318        DESCRIPTION
5319            "The maximum interpreter addressability in the feed
5320            direction in 10000 prtMarkerAddressabilityUnits (see
5321            prtMarkerAddressabilityFeedDir ) for this interpreter. The value
5322            (-1) means other and specifically indicates that the sub-unit
5323            places no restrictions on this parameter."
5324        ::= { prtInterpreterEntry 8 }
5325
5326    prtInterpreterXFeedAddressability OBJECT-TYPE
5327        SYNTAX     Integer32
5328        MAX-ACCESS read-only
5329        STATUS     current
5330        DESCRIPTION
5331            "The maximum interpreter addressability in the cross feed
5332            direction in 10000 prtMarkerAddressabilityUnits (see
5333            prtMarkerAddressabilityXFeedDir) for this interpreter. The value
5334            (-1) means other and specifically indicates that the sub-unit
5335            places no restrictions on this parameter."
5336        ::= { prtInterpreterEntry 9 }
5337
5338    prtInterpreterDefaultCharSetIn OBJECT-TYPE
5339        SYNTAX     CodedCharSet
5340        MAX-ACCESS read-write
5341        STATUS     current
5342        DESCRIPTION
5343            "The default coded character set for input octets encountered
5344            outside a context in which the Page Description Language
5345            established the interpretation of the octets. (Input octets are
5346            presented to the interpreter through a path defined in the
5347            channel group.) This value shall be (2) if there is no default."
5348         ::= { prtInterpreterEntry 10 }
5349
5350    prtInterpreterDefaultCharSetOut OBJECT-TYPE
```

```
5351        SYNTAX     CodedCharSet
5352        MAX-ACCESS read-write
5353        STATUS     current
5354        DESCRIPTION
5355            "The default character set for data coming from this interpreter
5356            through the printer's output channel (i.e. the 'backchannel').
5357            This value shall be (2) if there is no default."
5358        ::= { prtInterpreterEntry 11 }
5359
5360    prtInterpreterTwoWay OBJECT-TYPE
5361        -- This value is a type 1 enumeration
5362        SYNTAX     PrtInterpreterTwoWayTC
5363        MAX-ACCESS read-only
5364        STATUS     current
5365        DESCRIPTION
5366            "Indicates whether or not this interpreter returns information
5367            back to the host."
5368        ::= { prtInterpreterEntry 12 }
5369
5370    -- The Console Group
5371    --
5372    -- Many printers have a console on the printer, the operator
5373    -- console, that is used to display and modify the state of the
5374    -- printer. The console can be as simple as a few indicators and
5375    -- switches or as complicated as full screen displays and
5376    -- keyboards. There can be at most one such console.
5377
5378    -- Implementation of every object in this group is mandatory.
5379
5380    -- The Display Buffer Table
5381
5382    prtConsoleDisplayBuffer OBJECT IDENTIFIER ::= { printmib 16 }
5383
5384    prtConsoleDisplayBufferTable OBJECT-TYPE
5385        SYNTAX     SEQUENCE OF PrtConsoleDisplayBufferEntry
5386        MAX-ACCESS not-accessible
5387        STATUS     current
5388        DESCRIPTION
5389            "Physical display buffer for printer console display or
5390            operator panel"
5391        ::= { prtConsoleDisplayBuffer 5 }
5392
5393    prtConsoleDisplayBufferEntry OBJECT-TYPE
5394        SYNTAX     PrtConsoleDisplayBufferEntry
5395        MAX-ACCESS not-accessible
5396        STATUS     current
5397        DESCRIPTION
5398            "This table contains one entry for each physical line on
5399            the display.  Lines cannot be added or deleted. Entries may
5400            exist in the table for each device index with a device type of
```

```
5401            'printer'."
5402        INDEX  { hrDeviceIndex, prtConsoleDisplayBufferIndex }
5403        ::= { prtConsoleDisplayBufferTable 1 }
5404
5405    PrtConsoleDisplayBufferEntry ::= SEQUENCE {
5406        prtConsoleDisplayBufferIndex    Integer32,
5407        prtConsoleDisplayBufferText     OCTET STRING
5408        }
5409
5410    prtConsoleDisplayBufferIndex OBJECT-TYPE
5411        SYNTAX     Integer32 (1..65535)
5412        MAX-ACCESS not-accessible
5413        STATUS     current
5414        DESCRIPTION
5415            "A unique value for each console line in the printer. The value
5416            is used to identify this console line. Although these values may
5417            change due to a major reconfiguration of the device (e.g. the
5418            addition of new console lines to the printer). Values are
5419            normally expected to remain stable across successive printer
5420            power cycles."
5421        ::= { prtConsoleDisplayBufferEntry 1 }
5422
5423    prtConsoleDisplayBufferText OBJECT-TYPE
5424        SYNTAX     OCTET STRING (SIZE(0..255))
5425        MAX-ACCESS read-write
5426        STATUS     current
5427        DESCRIPTION
5428            "The content of a line in the logical display buffer of
5429            the operator's console of the printer.  When a write
5430            operation occurs, normally a critical message, to one of
5431            the LineText strings, the agent should make that line
5432            displayable if a physical display is present.  Writing a zero
5433            length string clears the line.  It is an implementation-specific
5434            matter as to whether the agent allows a line to be overwritten
5435            before it has been cleared. Printer generated strings shall be
5436            in the localization specified by prtConsoleLocalization.
5437            Management Application generated strings should be localized by
5438            the Management Application."
5439        ::= { prtConsoleDisplayBufferEntry 2 }
5440
5441    -- The Console Light Table
5442
5443    prtConsoleLights OBJECT IDENTIFIER ::= { printmib 17 }
5444
5445    prtConsoleLightTable OBJECT-TYPE
5446        SYNTAX     SEQUENCE OF PrtConsoleLightEntry
5447        MAX-ACCESS not-accessible
5448        STATUS     current
5449        DESCRIPTION
5450            ""
```

```
5451      ::= { prtConsoleLights 6 }
5452
5453  prtConsoleLightEntry OBJECT-TYPE
5454      SYNTAX     PrtConsoleLightEntry
5455      MAX-ACCESS not-accessible
5456      STATUS     current
5457      DESCRIPTION
5458          "Entries may exist in the table for each device index with a
5459          device type of 'printer'."
5460      INDEX  { hrDeviceIndex, prtConsoleLightIndex }
5461      ::= { prtConsoleLightTable 1 }
5462
5463  PrtConsoleLightEntry ::= SEQUENCE {
5464      prtConsoleLightIndex            Integer32,
5465      prtConsoleOnTime                Integer32,
5466      prtConsoleOffTime               Integer32,
5467      prtConsoleColor                 PrtConsoleColorTC,
5468      prtConsoleDescription           OCTET STRING
5469      }
5470
5471  prtConsoleLightIndex OBJECT-TYPE
5472      SYNTAX     Integer32 (1..65535)
5473      MAX-ACCESS not-accessible
5474      STATUS     current
5475      DESCRIPTION
5476          "A unique value used by the printer to identify this light.
5477          Although these values may change due to a major
5478          reconfiguration of the device (e.g. the addition of new lights
5479          to the printer). Values are normally expected to remain stable
5480          across successive printer power cycles."
5481      ::= { prtConsoleLightEntry 1 }
5482
5483  prtConsoleOnTime OBJECT-TYPE
5484      SYNTAX     Integer32
5485      MAX-ACCESS read-write
5486      STATUS     current
5487      DESCRIPTION
5488          "This object, in conjunction with prtConsoleOffTime, defines the
5489          current status of the light.  If both prtConsoleOnTime and
5490          prtConsoleOffTime are non-zero, the lamp is blinking and the
5491          values presented define the on time and off time, respectively,
5492          in milliseconds. If prtConsoleOnTime is zero and
5493          prtConsoleOffTime is non-zero, the lamp is off. If
5494          prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, the
5495          lamp is on. If both values are zero the lamp is off."
5496      ::= { prtConsoleLightEntry 2 }
5497
5498  prtConsoleOffTime OBJECT-TYPE
5499      SYNTAX     Integer32
5500      MAX-ACCESS read-write
```

```
5501        STATUS     current
5502        DESCRIPTION
5503            "This object, in conjunction with prtConsoleOnTime, defines the
5504            current status of the light. If both prtConsoleOnTime and
5505            prtConsoleOffTime are non-zero, the lamp is blinking and the
5506            values presented define the on time and off time, respectively,
5507            in milliseconds. If prtConsoleOnTime is zero and
5508            prtConsoleOffTime is non-zero, the lamp is off. If
5509            prtConsoleOffTime is zero and prtConsoleOnTime is non-zero, the
5510            lamp is on. If both values are zero the lamp is off."
5511        ::= { prtConsoleLightEntry 3 }
5512
5513    prtConsoleColor OBJECT-TYPE
5514        -- This value is a type 2 enumeration
5515        SYNTAX     PrtConsoleColorTC
5516        MAX-ACCESS read-only
5517        STATUS     current
5518        DESCRIPTION
5519            "The color of this light."
5520        ::= { prtConsoleLightEntry 4 }
5521
5522    prtConsoleDescription OBJECT-TYPE
5523        SYNTAX     OCTET STRING (SIZE(0..255))
5524        MAX-ACCESS read-only
5525        STATUS     current
5526        DESCRIPTION
5527            "The vendor description or label of this light in the
5528            localization specified by prtConsoleLocalization."
5529        ::= { prtConsoleLightEntry 5 }
5530
5531    -- The Alerts Group
5532    --
5533    -- The prtAlertTable lists all the critical and non-critical
5534    -- alerts currently active in the printer.  A critical alert is
5535    -- one that stops the printer from printing immediately and
5536    -- printing can not continue until the critical alert condition
5537    -- is eliminated.  Non-critical alerts are those items that do
5538    -- not stop printing but may at some future time.
5539    -- The table contains information on the severity, component,
5540    -- detail location within the component, alert code and
5541    -- description of each critical alert that is currently active
5542    -- within the printer.  See 2.2.13 for a more complete
5543    -- description of the alerts table and its management.
5544    --
5545    -- Each parameter in the Trap PDU is a full OID which itself is
5546    -- indexed by the host resources MIB "hrDeviceIndex" object. In
5547    -- order for a management station to obtain the correct
5548    -- "hrDeviceIndex" associated with a particular Trap PDU, the
5549    -- "hrDeviceIndex" value can be extracted from the returned OID
5550    -- value in the Trap PDU when the PDU is received by the
```

```
5551  -- Management station.
5552  --
5553  -- Implementation of every object in this group is mandatory.
5554
5555  prtAlert OBJECT IDENTIFIER ::= { printmib 18 }
5556
5557  prtAlertTable OBJECT-TYPE
5558      SYNTAX     SEQUENCE OF PrtAlertEntry
5559      MAX-ACCESS not-accessible
5560      STATUS     current
5561      DESCRIPTION
5562          ""
5563      ::= { prtAlert 1 }
5564
5565  prtAlertEntry OBJECT-TYPE
5566      SYNTAX     PrtAlertEntry
5567      MAX-ACCESS not-accessible
5568      STATUS     current
5569      DESCRIPTION
5570          "Entries may exist in the table for each device
5571          index with a device type of 'printer'."
5572      INDEX  { hrDeviceIndex, prtAlertIndex }
5573      ::= { prtAlertTable 1 }
5574
5575  PrtAlertEntry ::= SEQUENCE {
5576      prtAlertIndex               Integer32,
5577      prtAlertSeverityLevel       PrtAlertSeverityLevelTC,
5578      prtAlertTrainingLevel       PrtAlertTrainingLevelTC,
5579      prtAlertGroup               PrtAlertGroupTC,
5580      prtAlertGroupIndex          Integer32,
5581      prtAlertLocation            Integer32,
5582      prtAlertCode                PrtAlertCodeTC,
5583      prtAlertDescription         OCTET STRING,
5584      prtAlertTime                TimeTicks
5585      }
5586
5587  prtAlertIndex OBJECT-TYPE
5588      SYNTAX     Integer32 (1..65535)
5589      MAX-ACCESS read-only
5590      STATUS     current
5591      DESCRIPTION
5592          "The index value used to determine which alerts have been added
5593          or removed from the alert table. This is an incrementing integer
5594          starting from zero every time the printer is reset.  When the
5595          printer adds an alert to the table, that alert is assigned the
5596          next higher integer value from the last item entered into the
5597          table.  If the index value reaches its maximum value, the next
5598          item entered will cause the index value to roll over and start
5599          at zero again.  The first event placed in the alert table after
5600          a reset of the printer shall have an index value of 1.  NOTE:
```

```
5601          The management application will read the alert table when a trap
5602          or event notification occurs or at a periodic rate and then
5603          parse the table to determine if any new entries were added by
5604          comparing the last known index value with the current highest
5605          index value. The management application will then update its
5606          copy of the alert table.  When the printer discovers that an
5607          alert is no longer active, the printer shall remove the row for
5608          that alert from the table and shall reduce the number of rows in
5609          the table.  The printer may add or delete any number of rows
5610          from the table at any time.  The management station can detect
5611          when binary change alerts have been deleted by requesting an
5612          attribute of each alert, and noting alerts as deleted when that
5613          retrieval is not possible."
5614      ::= { prtAlertEntry 1 }
5615
5616  prtAlertSeverityLevel OBJECT-TYPE
5617      -- This value is a type 1 enumeration
5618      SYNTAX     PrtAlertSeverityLevelTC
5619      MAX-ACCESS read-only
5620      STATUS     current
5621      DESCRIPTION
5622          "The level of severity of this alert table entry.  The printer
5623          determines the severity level assigned to each entry into the
5624          table."
5625      ::= { prtAlertEntry 2 }
5626
5627  prtAlertTrainingLevel OBJECT-TYPE
5628      -- This value is a type 2 enumeration
5629      SYNTAX     PrtAlertTrainingLevelTC
5630      MAX-ACCESS read-only
5631      STATUS     current
5632      DESCRIPTION
5633          "See textual convention PrtAlertTrainingLevelTC"
5634      ::= { prtAlertEntry 3 }
5635
5636  prtAlertGroup OBJECT-TYPE
5637      -- This value is a type 1 enumeration
5638      SYNTAX     PrtAlertGroupTC
5639      MAX-ACCESS read-only
5640      STATUS     current
5641      DESCRIPTION
5642          "The type of sub-unit within the printer model that this alert
5643          is related. Input, output, and markers are examples of printer
5644          model groups, i.e., examples of types of sub-units. Wherever
5645          possible, these enumerations match the sub-identifier that
5646          identifies the relevant table in the printmib."
5647      ::= { prtAlertEntry 4 }
5648
5649  prtAlertGroupIndex OBJECT-TYPE
5650      SYNTAX     Integer32
```

```
5651        MAX-ACCESS read-only
5652        STATUS     current
5653        DESCRIPTION
5654            "An index of the row within the principle table in the
5655            group identified by prtAlertGroup that represents the sub-unit
5656            of the printer that caused this alert.  The combination of the
5657            prtAlertGroup and the prtAlertGroupIndex defines exactly which
5658            printer sub-unit caused the alert; for example, Input #3, Output
5659            #2, and Marker #1. Every object in this MIB is indexed with
5660            hrDeviceIndex and optionally, another index variable.  If this
5661            other index variable is present in the table that generated the
5662            alert, it will be used as the value for this object.  Otherwise,
5663            this value shall be -1."
5664        ::= { prtAlertEntry 5 }
5665
5666    prtAlertLocation OBJECT-TYPE
5667        SYNTAX     Integer32
5668        MAX-ACCESS read-only
5669        STATUS     current
5670        DESCRIPTION
5671            "The sub-unit location that is defined by the printer
5672            manufacturer to further refine the location of this alert within
5673            the designated sub-unit.  The location is used in conjunction
5674            with the Group and GroupIndex values; for example, there is an
5675            alert in Input #2 at location number 7. The value (-2) indicates
5676            unknown"
5677        ::= { prtAlertEntry 6 }
5678
5679    prtAlertCode OBJECT-TYPE
5680        -- This value is a type 2 enumeration
5681        SYNTAX     PrtAlertCodeTC
5682        MAX-ACCESS read-only
5683        STATUS     current
5684        DESCRIPTION
5685            "See associated textual convention PrtAlertCodeTC"
5686        ::= { prtAlertEntry 7}
5687
5688    prtAlertDescription OBJECT-TYPE
5689        SYNTAX     OCTET STRING (SIZE(0..255))
5690        MAX-ACCESS read-only
5691        STATUS     current
5692        DESCRIPTION
5693            "A description of this alert entry in the localization
5694            specified by prtGeneralCurrentLocalization.  The description is
5695            provided by the printer to further elaborate on the enumerated
5696            alert or provide information in the case where the code is
5697            classified as 'other' or 'unknown'.  The printer is required to
5698            return a description string but the string may be a null
5699            string."
5700        ::= { prtAlertEntry 8 }
```

```
5701
5702  prtAlertTime OBJECT-TYPE
5703      SYNTAX     TimeTicks
5704      MAX-ACCESS read-only
5705      STATUS     current
5706      DESCRIPTION
5707          "The value of sysUpTime at the time that this alert was
5708          generated."
5709      ::= { prtAlertEntry 9 }
5710
5711  printerV1Alert OBJECT-IDENTITY
5712      STATUS  current
5713      DESCRIPTION
5714          "The value of the enterprise-specific OID in an SNMPv1 trap sent
5715          signaling a critical event in the prtAlertTable."
5716      ::= { prtAlert 2 }
5717
5718  printerV2AlertPrefix OBJECT IDENTIFIER ::= { printerV1Alert 0 }
5719
5720  printerV2Alert NOTIFICATION-TYPE
5721      OBJECTS { prtAlertIndex, prtAlertSeverityLevel, prtAlertGroup,
5722          prtAlertGroupIndex, prtAlertLocation, prtAlertCode }
5723      STATUS  current
5724      DESCRIPTION
5725          "This trap is sent whenever a critical event is added to the
5726          prtAlertTable."
5727      ::= { printerV2AlertPrefix 1 }
5728
5729  -- Note that the SNMPv2 to SNMPv1 translation rules dictate that
5730  -- the preceding structure will result in SNMPv1 traps of the
5731  -- following form:
5732  --
5733  -- printerAlert TRAP-TYPE
5734  --     ENTERPRISE printerV1Alert
5735  --     VARIABLES { prtAlertIndex, prtAlertSeverityLevel,
5736  --                 prtAlertGroup, prtAlertGroupIndex,
5737  --                 prtAlertLocation, prtAlertCode }
5738  --     DESCRIPTION
5739  --        "This trap is sent whenever a critical event is added
5740  --         to the prtAlertTable."
5741  --     ::= 1
5742  --
5743
5744  -- Conformance Information
5745
5746  prtMIBConformance OBJECT IDENTIFIER ::= { printmib 2 }
5747
5748  -- compliance statements
5749
5750  prtMIBCompliance MODULE-COMPLIANCE
```

```
5751      STATUS  current
5752      DESCRIPTION
5753          "The compliance statement for agents that implement the
5754          printer MIB."
5755      MODULE -- this module
5756      MANDATORY-GROUPS { prtGeneralGroup, prtInputGroup,
5757                         prtOutputGroup,
5758                         prtMarkerGroup, prtMediaPathGroup,
5759                         prtChannelGroup, prtInterpreterGroup,
5760                         prtConsoleGroup, prtAlertTableGroup }
5761      OBJECT    prtGeneralReset
5762      SYNTAX    INTEGER {
5763                    notResetting(3),
5764                    resetToNVRAM(5)
5765                    }
5766      DESCRIPTION
5767          "It is conformant to implement just these two states in this
5768          object.  Any additional states are optional."
5769
5770      OBJECT    prtGeneralCurrentLocalization
5771      MIN-ACCESS  read-only
5772      DESCRIPTION
5773          "It is conformant to implement this object as read-only"
5774
5775      OBJECT    prtGeneralCurrentOperator
5776      MIN-ACCESS  read-only
5777      DESCRIPTION
5778          "It is conformant to implement this object as read-only"
5779
5780      OBJECT    prtGeneralServicePerson
5781      MIN-ACCESS  read-only
5782      DESCRIPTION
5783          "It is conformant to implement this object as read-only"
5784
5785      OBJECT    prtAuxiliarySheetStartupPage
5786      MIN-ACCESS  read-only
5787      DESCRIPTION
5788          "It is conformant to implement this object as read-only"
5789
5790      OBJECT    prtAuxiliarySheetBannerPage
5791      MIN-ACCESS  read-only
5792      DESCRIPTION
5793          "It is conformant to implement this object as read-only"
5794
5795      OBJECT    prtGeneralPrinterName
5796      MIN-ACCESS  read-only
5797      DESCRIPTION
5798          "It is conformant to implement this object as read-only"
5799
5800      OBJECT    prtGeneralSerialNumber
```

```
5801        MIN-ACCESS  read-only
5802        DESCRIPTION
5803            "It is conformant to implement this object as read-only"
5804
5805        OBJECT    prtInputDefaultIndex
5806        MIN-ACCESS  read-only
5807        DESCRIPTION
5808            "It is conformant to implement this object as read-only"
5809
5810        OBJECT    prtInputMediaDimFeedDirDeclared
5811        MIN-ACCESS  read-only
5812        DESCRIPTION
5813            "It is conformant to implement this object as read-only"
5814
5815        OBJECT    prtInputMaxCapacity
5816        MIN-ACCESS  read-only
5817        DESCRIPTION
5818            "It is conformant to implement this object as read-only"
5819
5820        OBJECT    prtInputCurrentLevel
5821        MIN-ACCESS  read-only
5822        DESCRIPTION
5823            "It is conformant to implement this object as read-only"
5824
5825        OBJECT    prtInputMediaName
5826        MIN-ACCESS  read-only
5827        DESCRIPTION
5828            "It is conformant to implement this object as read-only"
5829
5830        OBJECT    prtInputName
5831        MIN-ACCESS  read-only
5832        DESCRIPTION
5833            "It is conformant to implement this object as read-only"
5834
5835        OBJECT    prtInputSecurity
5836        MIN-ACCESS  read-only
5837        DESCRIPTION
5838            "It is conformant to implement this object as read-only"
5839
5840        OBJECT    prtInputMediaWeight
5841        MIN-ACCESS  read-only
5842        DESCRIPTION
5843            "It is conformant to implement this object as read-only"
5844
5845        OBJECT    prtInputMediaType
5846        MIN-ACCESS  read-only
5847        DESCRIPTION
5848            "It is conformant to implement this object as read-only"
5849
5850        OBJECT    prtInputMediaColor
```

```
5851      MIN-ACCESS  read-only
5852      DESCRIPTION
5853          "It is conformant to implement this object as read-only"
5854
5855      OBJECT    prtInputMediaFormParts
5856      MIN-ACCESS  read-only
5857      DESCRIPTION
5858          "It is conformant to implement this object as read-only"
5859
5860      OBJECT    prtInputMediaLoadTimeout
5861      MIN-ACCESS  read-only
5862      DESCRIPTION
5863          "It is conformant to implement this object as read-only"
5864
5865      OBJECT    prtInputNextIndex
5866      MIN-ACCESS  read-only
5867      DESCRIPTION
5868           "It is conformant to implement this object as read-only"
5869
5870      OBJECT    prtOutputDefaultIndex
5871      MIN-ACCESS  read-only
5872      DESCRIPTION
5873          "It is conformant to implement this object as read-only"
5874
5875      OBJECT    prtOutputMaxCapacity
5876      MIN-ACCESS  read-only
5877      DESCRIPTION
5878          "It is conformant to implement this object as read-only"
5879
5880      OBJECT    prtOutputRemainingCapacity
5881      MIN-ACCESS  read-only
5882      DESCRIPTION
5883          "It is conformant to implement this object as read-only"
5884
5885      OBJECT    prtOutputName
5886      MIN-ACCESS  read-only
5887      DESCRIPTION
5888          "It is conformant to implement this object as read-only"
5889
5890      OBJECT    prtOutputSecurity
5891      MIN-ACCESS  read-only
5892      DESCRIPTION
5893          "It is conformant to implement this object as read-only"
5894
5895      OBJECT    prtOutputMaxDimFeedDir
5896      MIN-ACCESS  read-only
5897      DESCRIPTION
5898          "It is conformant to implement this object as read-only"
5899
5900      OBJECT    prtOutputMaxDimXFeedDir
```

```
5901        MIN-ACCESS  read-only
5902        DESCRIPTION
5903            "It is conformant to implement this object as read-only"
5904
5905        OBJECT    prtOutputMinDimFeedDir
5906        MIN-ACCESS  read-only
5907        DESCRIPTION
5908            "It is conformant to implement this object as read-only"
5909
5910        OBJECT    prtOutputMinDimXFeedDir
5911        MIN-ACCESS  read-only
5912        DESCRIPTION
5913            "It is conformant to implement this object as read-only"
5914
5915        OBJECT    prtOutputStackingOrder
5916        MIN-ACCESS  read-only
5917        DESCRIPTION
5918            "It is conformant to implement this object as read-only"
5919
5920        OBJECT    prtOutputPageDeliveryOrientation
5921        MIN-ACCESS  read-only
5922        DESCRIPTION
5923            "It is conformant to implement this object as read-only"
5924
5925        OBJECT    prtOutputBursting
5926        MIN-ACCESS  read-only
5927        DESCRIPTION
5928            "It is conformant to implement this object as read-only"
5929
5930        OBJECT    prtOutputDecollating
5931        MIN-ACCESS  read-only
5932        DESCRIPTION
5933            "It is conformant to implement this object as read-only"
5934
5935        OBJECT    prtOutputPageCollated
5936        MIN-ACCESS  read-only
5937        DESCRIPTION
5938            "It is conformant to implement this object as read-only"
5939
5940        OBJECT    prtOutputOffsetStacking
5941        MIN-ACCESS  read-only
5942        DESCRIPTION
5943            "It is conformant to implement this object as read-only"
5944
5945        OBJECT    prtMarkerDefaultIndex
5946        MIN-ACCESS  read-only
5947        DESCRIPTION
5948            "It is conformant to implement this object as read-only"
5949
5950        OBJECT    prtMarkerSuppliesMaxCapacity
```

```
5951      MIN-ACCESS  read-only
5952      DESCRIPTION
5953          "It is conformant to implement this object as read-only"
5954
5955      OBJECT    prtMarkerSuppliesLevel
5956      MIN-ACCESS  read-only
5957      DESCRIPTION
5958          "It is conformant to implement this object as read-only"
5959
5960      OBJECT    prtMediaPathDefaultIndex
5961      MIN-ACCESS  read-only
5962      DESCRIPTION
5963          "It is conformant to implement this object as read-only"
5964
5965      OBJECT    prtChannelCurrentJobCntlLangIndex
5966      MIN-ACCESS  read-only
5967      DESCRIPTION
5968          "It is conformant to implement this object as read-only"
5969
5970      OBJECT    prtChannelDefaultPageDescLangIndex
5971      MIN-ACCESS  read-only
5972      DESCRIPTION
5973          "It is conformant to implement this object as read-only"
5974
5975      OBJECT    prtChannelState
5976      MIN-ACCESS  read-only
5977      DESCRIPTION
5978          "It is conformant to implement this object as read-only"
5979
5980      OBJECT    prtChannelIfIndex
5981      MIN-ACCESS  read-only
5982      DESCRIPTION
5983          "It is conformant to implement this object as read-only"
5984
5985      OBJECT    prtInterpreterDefaultOrientation
5986      MIN-ACCESS  read-only
5987      DESCRIPTION
5988          "It is conformant to implement this object as read-only"
5989
5990      OBJECT    prtInterpreterDefaultCharSetIn
5991      MIN-ACCESS  read-only
5992      DESCRIPTION
5993          "It is conformant to implement this object as read-only"
5994
5995      OBJECT    prtInterpreterDefaultCharSetOut
5996      MIN-ACCESS  read-only
5997      DESCRIPTION
5998          "It is conformant to implement this object as read-only"
5999
6000      OBJECT    prtConsoleLocalization
```

```
6001        MIN-ACCESS  read-only
6002        DESCRIPTION
6003            "It is conformant to implement this object as read-only"
6004
6005        OBJECT    prtConsoleDisable
6006        MIN-ACCESS  read-only
6007        DESCRIPTION
6008            "It is conformant to implement this object as read-only"
6009
6010        OBJECT    prtConsoleDisplayBufferText
6011        MIN-ACCESS  read-only
6012        DESCRIPTION
6013            "It is conformant to implement this object as read-only"
6014
6015        OBJECT    prtConsoleOnTime
6016        MIN-ACCESS  read-only
6017        DESCRIPTION
6018            "It is conformant to implement this object as read-only"
6019
6020        OBJECT    prtConsoleOffTime
6021        MIN-ACCESS  read-only
6022        DESCRIPTION
6023            "It is conformant to implement this object as read-only"
6024
6025        GROUP    prtResponsiblePartyGroup
6026        DESCRIPTION
6027            "This group is unconditionally optional."
6028
6029        GROUP    prtExtendedInputGroup
6030        DESCRIPTION
6031            "This group is unconditionally optional."
6032
6033        GROUP    prtInputMediaGroup
6034        DESCRIPTION
6035            "This group is unconditionally optional."
6036
6037        GROUP    prtExtendedOutputGroup
6038        DESCRIPTION
6039            "This group is unconditionally optional."
6040
6041        GROUP    prtOutputDimensionsGroup
6042        DESCRIPTION
6043            "This group is unconditionally optional."
6044
6045        GROUP    prtOutputFeaturesGroup
6046        DESCRIPTION
6047            "This group is unconditionally optional."
6048
6049        GROUP    prtMarkerSuppliesGroup
6050        DESCRIPTION
```

```
6051            "This group is unconditionally optional."
6052
6053        GROUP    prtMarkerColorantGroup
6054        DESCRIPTION
6055            "This group is unconditionally optional."
6056
6057        GROUP    prtAuxiliarySheetGroup
6058        DESCRIPTION
6059            "This group is unconditionally optional."
6060
6061        GROUP    prtInputSwitchingGroup
6062        DESCRIPTION
6063            "This group is unconditionally optional."
6064
6065        ::= { prtMIBConformance 1 }
6066
6067    prtMIBGroups    OBJECT IDENTIFIER ::= { prtMIBConformance 2 }
6068
6069    prtGeneralGroup OBJECT-GROUP
6070        OBJECTS { prtGeneralConfigChanges,
6071                  prtGeneralCurrentLocalization,
6072                  prtGeneralReset, prtCoverDescription,
6073                  prtCoverStatus,
6074                  prtLocalizationLanguage, prtLocalizationCountry,
6075                  prtLocalizationCharacterSet, prtStorageRefIndex,
6076                  prtDeviceRefIndex, prtGeneralPrinterName,
6077                  prtGeneralSerialNumber }
6078        STATUS  current
6079        DESCRIPTION
6080            "The general printer group."
6081        ::= { prtMIBGroups 1 }
6082
6083    prtResponsiblePartyGroup OBJECT-GROUP
6084        OBJECTS { prtGeneralCurrentOperator, prtGeneralServicePerson }
6085        STATUS  current
6086        DESCRIPTION
6087            "The responsible party group contains contact information for
6088            humans responsible for the printer."
6089        ::= { prtMIBGroups 2 }
6090
6091    prtInputGroup OBJECT-GROUP
6092        OBJECTS { prtInputDefaultIndex, prtInputType, prtInputDimUnit,
6093                  prtInputMediaDimFeedDirDeclared,
6094                  prtInputMediaDimXFeedDirDeclared,
6095                  prtInputMediaDimFeedDirChosen,
6096                  prtInputMediaDimXFeedDirChosen, prtInputCapacityUnit,
6097                  prtInputMaxCapacity, prtInputCurrentLevel, prtInputStatus,
6098                  prtInputMediaName }
6099        STATUS  current
6100        DESCRIPTION
```

```
6101            "The input group."
6102        ::= { prtMIBGroups 3 }
6103
6104    prtExtendedInputGroup OBJECT-GROUP
6105        OBJECTS { prtInputName, prtInputVendorName, prtInputModel,
6106                  prtInputVersion, prtInputSerialNumber,
6107                  prtInputDescription, prtInputSecurity }
6108        STATUS  current
6109        DESCRIPTION
6110            "The extended input group."
6111        ::= { prtMIBGroups 4 }
6112
6113    prtInputMediaGroup OBJECT-GROUP
6114        OBJECTS { prtInputMediaWeight, prtInputMediaType,
6115                  prtInputMediaColor, prtInputMediaFormParts }
6116        STATUS  current
6117        DESCRIPTION
6118            "The input media group."
6119        ::= { prtMIBGroups 5 }
6120
6121    prtOutputGroup OBJECT-GROUP
6122        OBJECTS { prtOutputDefaultIndex, prtOutputType,
6123                  prtOutputCapacityUnit, prtOutputMaxCapacity,
6124                  prtOutputRemainingCapacity,  prtOutputStatus }
6125        STATUS  current
6126        DESCRIPTION
6127            "The output group."
6128        ::= { prtMIBGroups 6 }
6129
6130    prtExtendedOutputGroup OBJECT-GROUP
6131        OBJECTS { prtOutputName, prtOutputVendorName, prtOutputModel,
6132                  prtOutputVersion, prtOutputSerialNumber,
6133                  prtOutputDescription, prtOutputSecurity }
6134        STATUS  current
6135        DESCRIPTION
6136            "The extended output group."
6137        ::= { prtMIBGroups 7 }
6138
6139    prtOutputDimensionsGroup OBJECT-GROUP
6140        OBJECTS { prtOutputDimUnit, prtOutputMaxDimFeedDir,
6141                  prtOutputMaxDimXFeedDir, prtOutputMinDimFeedDir,
6142                  prtOutputMinDimXFeedDir }
6143        STATUS  current
6144        DESCRIPTION
6145            "The output dimensions group"
6146        ::= { prtMIBGroups 8 }
6147
6148    prtOutputFeaturesGroup OBJECT-GROUP
6149        OBJECTS { prtOutputStackingOrder,
6150                  prtOutputPageDeliveryOrientation, prtOutputBursting,
```

```
6151                prtOutputDecollating, prtOutputPageCollated,
6152                prtOutputOffsetStacking }
6153        STATUS  current
6154        DESCRIPTION
6155            "The output features group."
6156        ::= { prtMIBGroups 9 }
6157
6158    prtMarkerGroup OBJECT-GROUP
6159        OBJECTS { prtMarkerDefaultIndex, prtMarkerMarkTech,
6160                  prtMarkerCounterUnit, prtMarkerLifeCount,
6161                  prtMarkerPowerOnCount, prtMarkerProcessColorants,
6162                  prtMarkerSpotColorants, prtMarkerAddressabilityUnit,
6163                  prtMarkerAddressabilityFeedDir,
6164                  prtMarkerAddressabilityXFeedDir, prtMarkerNorthMargin,
6165                  prtMarkerSouthMargin, prtMarkerWestMargin,
6166                  prtMarkerEastMargin, prtMarkerStatus }
6167        STATUS  current
6168        DESCRIPTION
6169            "The marker group."
6170        ::= { prtMIBGroups 10 }
6171
6172    prtMarkerSuppliesGroup OBJECT-GROUP
6173        OBJECTS { prtMarkerSuppliesMarkerIndex,
6174                  prtMarkerSuppliesColorantIndex, prtMarkerSuppliesClass,
6175                  prtMarkerSuppliesType, prtMarkerSuppliesDescription,
6176                  prtMarkerSuppliesSupplyUnit,
6177                  prtMarkerSuppliesMaxCapacity, prtMarkerSuppliesLevel }
6178        STATUS  current
6179        DESCRIPTION
6180            "The marker supplies group."
6181        ::= { prtMIBGroups 11 }
6182
6183    prtMarkerColorantGroup OBJECT-GROUP
6184        OBJECTS { prtMarkerColorantMarkerIndex, prtMarkerColorantRole,
6185                  prtMarkerColorantValue, prtMarkerColorantTonality }
6186        STATUS  current
6187        DESCRIPTION
6188            "The marker colorant group."
6189        ::= { prtMIBGroups 12 }
6190
6191    prtMediaPathGroup OBJECT-GROUP
6192        OBJECTS { prtMediaPathDefaultIndex, prtMediaPathMaxSpeedPrintUnit,
6193                  prtMediaPathMediaSizeUnit, prtMediaPathMaxSpeed,
6194                  prtMediaPathMaxMediaFeedDir,
6195                  prtMediaPathMaxMediaXFeedDir,
6196                  prtMediaPathMinMediaFeedDir,
6197                  prtMediaPathMinMediaXFeedDir, prtMediaPathType,
6198                  prtMediaPathDescription, prtMediaPathStatus}
6199        STATUS  current
6200        DESCRIPTION
```

```
6201          "The media path group."
6202      ::= { prtMIBGroups 13 }
6203
6204  prtChannelGroup OBJECT-GROUP
6205      OBJECTS { prtChannelType, prtChannelProtocolVersion,
6206                prtChannelCurrentJobCntlLangIndex,
6207                prtChannelDefaultPageDescLangIndex, prtChannelState,
6208                prtChannelIfIndex, prtChannelStatus, prtChannelInformation
6209                }
6210      STATUS  current
6211      DESCRIPTION
6212          "The channel group."
6213      ::= { prtMIBGroups 14 }
6214
6215  prtInterpreterGroup OBJECT-GROUP
6216      OBJECTS { prtInterpreterLangFamily, prtInterpreterLangLevel,
6217                prtInterpreterLangVersion, prtInterpreterDescription,
6218                prtInterpreterVersion, prtInterpreterDefaultOrientation,
6219                prtInterpreterFeedAddressability,
6220                prtInterpreterXFeedAddressability,
6221                prtInterpreterDefaultCharSetIn,
6222                prtInterpreterDefaultCharSetOut, prtInterpreterTwoWay }
6223      STATUS  current
6224      DESCRIPTION
6225          "The interpreter group."
6226      ::= { prtMIBGroups 15 }
6227
6228  prtConsoleGroup OBJECT-GROUP
6229      OBJECTS { prtConsoleLocalization, prtConsoleNumberOfDisplayLines,
6230                prtConsoleNumberOfDisplayChars, prtConsoleDisable,
6231                prtConsoleDisplayBufferText, prtConsoleOnTime,
6232                prtConsoleOffTime, prtConsoleColor,
6233                prtConsoleDescription }
6234      STATUS  current
6235      DESCRIPTION
6236          "The console group."
6237      ::= { prtMIBGroups 16 }
6238
6239  prtAlertTableGroup OBJECT-GROUP
6240      OBJECTS { prtAlertIndex, prtAlertCriticalEvents, prtAlertAllEvents,
6241                prtAlertSeverityLevel, prtAlertTrainingLevel,
6242                prtAlertGroup, prtAlertGroupIndex, prtAlertLocation,
6243                prtAlertCode, prtAlertDescription, prtAlertTime }
6244      STATUS  current
6245      DESCRIPTION
6246          "The alert table group."
6247      ::= { prtMIBGroups 17 }
6248
6249  --
6250  -- 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 2274 [12] and the View-based Access Control Model RFC 2275 [15] 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

[NVT ASCII] J. Postel, J. Reynolds, "TELENET PROTOCOL SPECIFICATION", RFC 854, May 1983.

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

[HOST RESOURCES MIB] S. Waldbusser, P. Grillo, “HOST RESOURCES MIB”, RFC 2790, March 2000.

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.

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

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). 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

```
6547   iso-a5                ISO A5  size:  148 mm by  210 mm
6548   iso-a6                ISO A6  size:  105 mm by  148 mm
6549   iso-a7                ISO A7  size:   74 mm by  105 mm
6550   iso-a8                ISO A8  size:   52 mm by   74 mm
6551   iso-a9                ISO A9  size:   37 mm by   52 mm
6552   iso-a10               ISO A10 size:   26 mm by   37 mm
6553   iso-b0                ISO B0  size: 1000 mm by 1414 mm
6554   iso-b1                ISO B1  size:  707 mm by 1000 mm
6555   iso-b2                ISO B2  size:  500 mm by  707 mm
6556   iso-b3                ISO B3  size:  353 mm by  500 mm
6557   iso-b4                ISO B4  size:  250 mm by  353 mm
6558   iso-b5                ISO B5  size:  176 mm by  250 mm
6559   iso-b6                ISO B6  size:  125 mm by  176 mm
6560   iso-b7                ISO B7  size:   88 mm by  125 mm
6561   iso-b8                ISO B8  size:   62 mm by   88 mm
6562   iso-b9                ISO B9  size:   44 mm by   62 mm
6563   iso-b10               ISO B10 size:   31 mm by   44 mm
6564   iso-c0                ISO C0 size:   917 mm by 1297 mm
6565   iso-c1                ISO C1 size:   648 mm by  917 mm
6566   iso-c2                ISO C2 size:   458 mm by  648 mm
6567   iso-c3                ISO C3 size:   324 mm by  458 mm
6568   iso-c4                ISO C4 size:   229 mm by  324 mm
6569   iso-c5                ISO C5 size:   162 mm by  229 mm
6570   iso-c6                ISO C6 size:   114 mm by  162 mm
6571   iso-c7                ISO C7 size:    81 mm by  114 mm
6572   iso-c8                ISO C8 size:    57 mm by   81 mm
6573   iso-designated        ISO Designated Long
6574                                 size:   110 mm by  220 mm
6575   jis-b0                JIS B0  size  1030 mm by 1456 mm
6576   jis-b1                JIS B1  size   728 mm by 1030 mm
6577   jis-b2                JIS B2  size   515 mm by  728 mm
6578   jis-b3                JIS B3  size   364 mm by  515 mm
6579   jis-b4                JIS B4  size   257 mm by  364 mm
6580   jis-b5                JIS B5  size   182 mm by  257 mm
6581   jis-b6                JIS B6  size   128 mm by  182 mm
6582   jis-b7                JIS B7  size    91 mm by  128 mm
6583   jis-b8                JIS B8  size    64 mm by   91 mm
6584   jis-b9                JIS B9  size    45 mm by   64 mm
6585   jis-b10               JIS B10 size    32 mm by   45 mm
6586
```

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). 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
```

```
6687    na-7x9-envelope     Specifies the North American 7x9 inch
6688                          envelope
6689
6690    na-9x11-envelope    Specifies the North American 9x11 inch
6691                          envelope
6692
6693    na-10x14-envelope   Specifies the North American 10x14 inch
6694                          envelope
6695
6696    na-number-9-envelope
6697                        Specifies the North American number 9
6698                          business envelope
6699    na-6x9-envelope     Specifies the North American 6x9 inch
6700                          envelope
6701
6702    na-10x15-envelope   Specifies the North American 10x15 inch
6703                          envelope
6704
6705  The following standard values are defined for the less commonly
6706  used media (white-only):
6707
6708    iso-a0-white  Specifies the ISO A0 white medium
6709                    with size:  841 mm by 1189 mm
6710                    as defined in ISO 216
6711    iso-a1-white  Specifies the ISO A1 white medium
6712                    with size:  594 mm by 841 mm
6713                    as defined in ISO 216
6714    iso-a2-white  Specifies the ISO A2 white medium
6715                    with size:  420 mm by 594 mm
6716                    as defined in ISO 216
6717    iso-a6-white  Specifies the ISO A6 white medium
6718                    with size:  105 mm by 148 mm
6719                    as defined in ISO 216
6720    iso-a7-white  Specifies the ISO A7 white medium
6721                    with size:  74 mm by 105 mm
6722                    as defined in ISO 216
6723    iso-a8-white  Specifies the ISO A8 white medium
6724                    with size:  52 mm by 74 mm
6725                    as defined in ISO 216
6726    iso-a9-white  Specifies the ISO A9 white medium
6727                    with size:  39 mm by 52 mm
6728                    as defined in ISO 216
6729    iso-10-white  Specifies the ISO A10 white medium
6730                    with size:  26 mm by 37 mm
6731                    as defined in ISO 216
6732    iso-b0-white  Specifies the ISO B0 white medium
6733                    with size: 1000 mm by 1414 mm
6734                    as defined in ISO 216
6735    iso-b1-white  Specifies the ISO B1 white medium
6736                    with size:  707 mm by 1000 mm
```

```
6737                    as defined in ISO 216
6738      iso-b2-white  Specifies the ISO B2 white medium
6739                    with size:  500 mm by 707 mm
6740                    as defined in ISO 216
6741      iso-b3-white  Specifies the ISO B3 white medium
6742                    with size:  353 mm by 500 mm
6743                    as defined in ISO 216
6744      iso-b6-white  Specifies the ISO B6 white medium
6745                    with size:  125 mm by 176 mm i
6746                    as defined in ISO 216
6747      iso-b7-white  Specifies the ISO B7 white medium
6748                    with size:  88 mm by 125 mm
6749                    as defined in ISO 216
6750      iso-b8-white  Specifies the ISO B8 white medium
6751                    with size:  62 mm by 88 mm
6752                    as defined in ISO 216
6753      iso-b9-white  Specifies the ISO B9 white medium
6754                    with size:  44 mm by 62 mm
6755                    as defined in ISO 216
6756      iso-b10-white Specifies the ISO B10 white medium
6757                    with size:  31 mm by 44 mm
6758                    as defined in ISO 216
6759      jis-b0-white  Specifies the JIS B0 white medium with size:
6760                    1030 mm by 1456 mm
6761      jis-b1-white  Specifies the JIS B1 white medium with size:
6762                    728 mm by 1030 mm
6763      jis-b2-white  Specifies the JIS B2 white medium with size:
6764                    515 mm by 728 mm
6765      jis-b3-white  Specifies the JIS B3 white medium with size:
6766                    364 mm by 515 mm
6767      jis-b6-white  Specifies the JIS B6 white medium with size:
6768                    257 mm by 364 mm
6769      jis-b7-white  Specifies the JIS B7 white medium with size:
6770                    182 mm by 257 mm
6771      jis-b8-white  Specifies the JIS B8 white medium with size:
6772                    128 mm by 182 mm
6773      jis-b9-white  Specifies the JIS B9 white medium with size:
6774                    91 mm by 128 mm
6775      jis-b10-white Specifies the JIS B10 white medium with size:
6776                    64 mm by 91 mm
6777
```

The following standard values are defined for engineering media:

- a — Specifies the engineering A size medium with size: 8.5 inches by 11 inches
- b — Specifies the engineering B size medium with size: 11 inches by 17 inches
- c — Specifies the engineering C size medium with size: 17 inches by 22 inches
- d — Specifies the engineering D size medium with size: 22 inches by 34 inches
- e — Specifies the engineering E size medium with size: 34 inches by 44 inches

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

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

With significant contributions from the following individuals

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

Gary Gocek (final editor, this document)
Xerox Corporation
(716) 422-8902
Email: ggocek@crt.xerox.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