Printer Finishing MIB

Status of this Memo

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Abstract

   This document defines a MIB module for the management of printer
   finishing device subunits. The finishing device subunits applicable
   to this MIB are an integral part of the Printer System. This MIB
   applies only to a Finisher Device that is connected to a Printer
   System.

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1. Introduction

   This document describes an SNMP Management Information Base (MIB) to
   provide for the management of in-line post-processing in a fashion
   that is currently provided for printers, using the Printer MIB
   [RFC3805]. The Printer Finishing MIB includes the following
   features:

   - Provides the status of the finishing device.
   - Queries and controls the features and configuration of the
      finishing device.
   - Enables and disables the finishing processes.
   - Allows unsolicited status from the finishing device.

   The Finisher MIB is defined as an extension of the Printer MIB
   [RFC3805] and it is expected that the information defined in this
   document will be incorporated into a future update of the Printer
   MIB.

1.1. Scope

   This document provides a robust set of finishing devices, features,
   and functions, based upon today's state of the art of in-line
   finishing. Since finishing typically accompanies higher speed
   network printers and copiers, in contrast to simple desktop devices,
   no attempt is made to limit the scope to "bare minimum". On the
   other hand, the Printer Finishing MIB does not duplicate the
   production mail preparation, custom insertion, franking, and reprints
   that are covered by the DMTF Large Mailing Operations standard [LMO].

   Information supplied by the Printer Finishing MIB may be utilized by
   printer and finisher management applications engaged in monitoring
   status and managing configuration, and also used by print and
   finishing submission applications which are engaged in:

   - print-job-level finishing processes that are applied to a complete
      print job,

   - document-level finishing processes that are applied individually
      to each document in the print job,

   - document-level finishing processes that are applied to a selected
      document in the print job.

   Note that not all combinations of finishing processes are permitted.
   Compatible combinations of finishing processes are implementation
   specific. The MIB allows invalid combinations to be identified.

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

1.2. Rational

The Printer MIB [RFC3805] is now successfully deployed in a large segment of the network printer market. SNMP and/or HTTP enabled printers and software management applications are growing in numbers.

There is an increase in the availability of network printers and copiers that include in-line finishing processes. Thus a well defined and ordered set of finishing objects is now necessary for printer management.

The printer model defined in the Printer MIB includes finishing processes and the MIB was designed to later incorporate finisher objects or to be referenced by a future Finisher MIB.

1.3. The Internet-Standard Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP). Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

1.4. Read-Write Objects

Some objects in the Finisher MIB reflect the existence or amount of a given resource within the finisher. Some examples of such resources are the size and number of sheets in an inserter tray or the existence of certain finisher options. Some finishers have automatic sensors for these resources. Most finishers lack sensors for every property of every resource. The management application is allowed to write into objects that hold descriptive or existence values for finishers 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 an implementation might only permit a management application to change

the value if the finisher 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 Finisher MIB
specification if:

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

2. The finisher will behave differently if the installation of the
   resource is reported than 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 finisher, i.e., not a "sticky-note".
   Another way of saying this is that the finisher believes that
   information given it and acts as if the information were true.

3. The finisher 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 finisher may either assume that a property,
   such as the size of paper in the tray, has not changed or the
   finisher 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 finisher 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.

2. Terminology

   Where appropriate, the Printer Finishing MIB will conform to the
   terminology, syntax, and semantics from the DMTF Large Mailing
   Operations standard [LMO], the Internet Printing Protocol [RFC2911],
   and/or the ISO Document Printing Application [DPA].

2.1. General Terminology

   Finisher Input: An input tray on the finisher and not otherwise
   associated with the printer. An example of a finisher input is a
   tray that holds finishing "inserts".

```
                        ^ Y
                        |
                        |<---- Reference Edge
                        |
                        |   |<--- Finishing Process Axis
                        |   |
                   --->|   |<--- Finishing Process Offset
                        |   |
   Head                 +=======================+ (X2,Y4)
   Locations            # |                     #
                +-----#----+                    #
   -----Y3--|-----#--O |  <--+- Head            #
   ^         +-----#----+     |  Mechanisms      #
   |              # |         |                  #
   |              # |         |                  #
   |              # |         |                  #
   |              # |         |                  #
   |         +-----#----+     |                  #
   |  ---Y2--|-----#--O |  <--+                  #
   |  ^      +-----#----+     |                  #
   |  |           # |         |                  #
   |  |           # |         |                  #
   |  |           # |         |                  #
   |  |           # |         |                  #
   |  |      +-----#----+     |                  #
   |  | -Y1--|-----#--O |  <--+                  #
   |  | ^    +-----#----+     bottom right #
   |  | |         # |                 corner #    X
   -------------- +==+=====================+ ---->
           (0,0)  (X1,0)
```
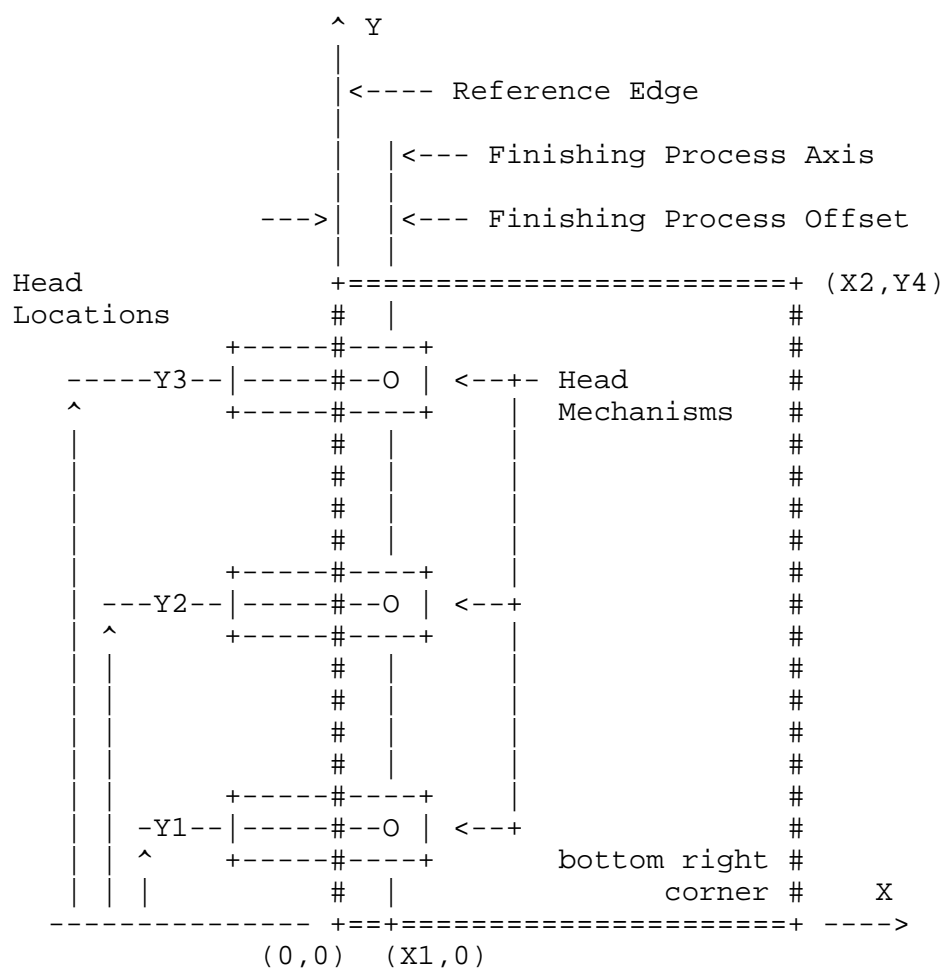
Figure 1 - Finishing Process Axis Parallel to Y Axis

```
      ^  Y
      |             Head Locations
      |<---------------->|---X2
      |<---->|---X1        |
      |      |           |
      |    +-|-+       +-|-+
      |    | | |       | | |  (X3,Y2)
      +======|==========|======+
      #    | | |       | | |    # Finishing Process Axis
      #----| O |-------| O |----#----- Y1
      #    +---+       +---+    #  ^
      #      ^           ^      #  |
      #      |           |      #  |
      #      +-----------+      #  |
      #      |                  #  |
      #      Head               #  |
      #      Mechanisms         #  |
      #                         #  |
      #                         # Finishing Process Offset
      #                         #  |
      #                         #  |
      #                         #  |
      #                         #  |
      #                         #  |
      #                         #  |
      #           bottom right  #  |
      #                 corner  #  v   X
      +=========================+ ------>
     (0,0)              Reference Edge
```
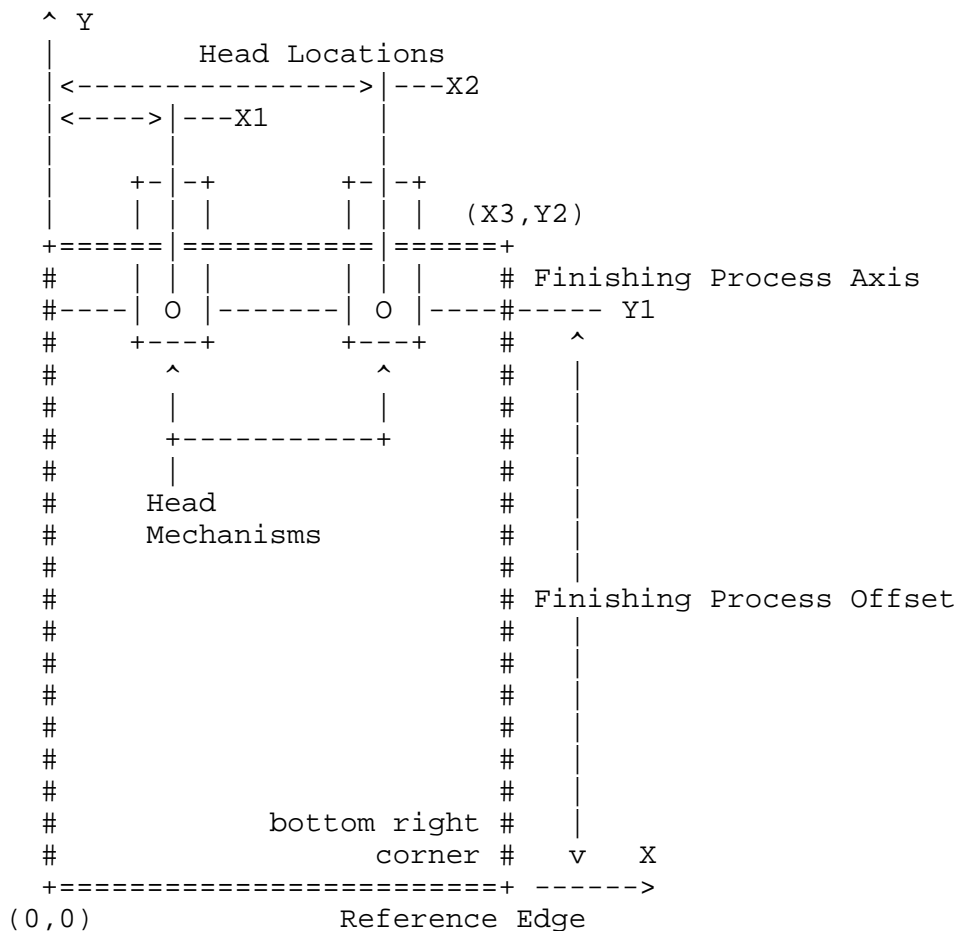
        Figure 2 - Finishing Process Axis Parallel to X Axis

     Finisher Output: The output of the finisher. Because processing is
      in-line, the finisher outputs are a direct extension of the set of
      printer outputs.

     Media Orientation: All Finishing Processes are defined relative to a
      portrait orientation of the medium, regardless of the orientation of
      the printed image or the direction of feed. The 'X' and 'Y' axis,
      therefore, will always reference the medium as shown in figures 1
      and 2, with the 'X' axis always along the short edge of the medium.
      All edges and corners are also defined with the medium orientation
      as shown using the syntax top, bottom, left, and right. Thus the
      bottom edge of the medium is at Y = 0, the left edge is at X = 0,
      and the bottom right corner is at (X2,0) as shown in the figure 1
      and at (X3,0) as shown in figure 2.

   Finishing: Defined by DPA as an operation on a document following
     the completion of the image process. Finishing processes defined
     within this document are those applied to one or more instances of
     rectangular paper sheet media.

   Finishing Process: Defined by DPA as an operation applied by a
     machine such as trimming a document, folding the sheets in a
     document, and applying a binding to a document.

   Finishing Specification: Defined by DPA as the specific sequence of
     operations for a serial combination of finishing processes. The
     exact sequential order of the processes, in many cases, is critical
     to the obtaining the desired result. For example, a folding
     operation followed by trimming could provide a very different result
     than if the trimming was followed by the folding.

   Finishing Process Parameters: This parameter set is used to create a
     detailed definition of the finishing process. Generic Finishing
     Process Parameters are applicable to any Finishing Specification.

   - Head Mechanism: Defined by DPA as the physical mechanism that is
      used to perform a finishing process. The head position may be
      fixed or variable depending upon the capabilities of the device.

   - Reference Edge: Defined by DPA as the edge of the document
      relative to the axis to which the finishing process is applied.
      The edge of the medium defined to be the Reference Edge may be
      either the 'X' or the 'Y' axis, depending upon the finishing
      process to be performed.

      Note that the Reference Edge may change from one finishing process
      to another for one of two reasons. First, a subsequent process
      may require a different Reference Edge. Second, the actual
      dimensions of the document may change, for example as a result of
      a folding or a trimming operation.

   - Jog Edge: Defined by DPA as one of the two edges that is
      perpendicular to the Reference Edge. Specifying the Jog Edge
      parameter indicates the edges of all sheets which correspond to
      the Jog Edge are aligned.

   - Finishing Process Axis: Defined by DPA as the axis which some
      finishing processes are applied to or referenced from by the Head
      Mechanism. Examples are the axis for a fold process or the axis
      for a punch process.

   - Head Locations: Defined by DPA as the position of the Heads on
      the Finishing Process Axis.

- Finishing Process Offset: The offset from the Reference Edge to
   the Finishing Process Axis at which the finishing process takes
   place or is applied.

2.2. Process Specific Terminology

   FOLDING:

   Z Fold: A fold in which two folds are placed in the sheet in
      opposite directions. The first fold is located at 25% of the sheet
      length, and the second is located at 50% of the sheet length (i.e.,
      the center of the sheet). Z Folding is often used on 11x17 inch or
      A3 size sheets, when they are included in sets containing 8.5x11
      inch or A4 size sheets.

   Half Fold: To fold a sheet in half so that one of the resulting
      dimensions are exactly half the original sheet. Often used for
      signatures or booklets.

   Letter Fold: Folding a sheet roughly in thirds. Usually performed
      on 8.5x11 inch or A4 size sheets for insertion into an envelope.

   Signature: The process by which images are placed on a large sheet
      of paper in correct panel areas and in the proper orientation such
      that when the sheet is folded it will produce a booklet with each
      page in the proper order and orientation.

   BINDING:

   Adhesive Binding: A method of attaching sheets together to form a
      book or booklet using glue or adhesive. Some adhesive binding
      methods apply the glue to sheets individually, before merging them
      together for form a book, but most methods involve the application
      of adhesive to an entire book of sheets.

   Comb Binding: A method of binding in which a series of small
      rectangular holes is placed along the bind edge of the sheets. The
      sheets are then held together using a tube shaped plastic binding
      strip with comb like fingers that fit through the holes in the
      sheets.

   Spiral Binding: Sometimes referred to as wire binding, this binding
      method is a mechanical bind in which the individual leaves are held
      together by a wire or plastic spiral that is fed through small
      holes in the paper binding edge.

   Padding: Applying a non-penetrating adhesive to the edge of a stack
      of sheets such that the sheets can be easily peeled off one at a
      time. Frequently used for forms.

   Velo Binding: A bind formed by punching holes into the edge of the
      sheets, placing a two piece plastic strip (one side formed with
      plastic pins that pass through the holes) along the edge and then
      staking the two pieces together.

   Perfect Binding: A method of binding in which all pages are cut and
      roughed up at the back or binding edge and held together by an
      adhesive.

   Tape Binding: The act of placing tape over the bind edge of a set.
      Sometimes contains adhesive to provide a functional bind to the
      set, and sometimes done for decorative purposes on a set that has
      been edge stapled.

   SLITTING/CUTTING/TRIMMING:

   Trim: To cut the edges of a sheet or set of sheets.

   Face Trim: To cut the edges of a set of sheets on a booklet of
      sheets that have been folded to eliminate the "creep" or edge
      shingling that results from the folding process.

   Gutter Trim: To cut a larger sheet into smaller sheets eliminating
      the gutter between adjacent images. This operation requires a
      minimum of two cuts for each gutter.

   Tab Cutting: The act of cutting the edge of a sheet to form an index
      tab, thereby allowing quick identification and access. The
      external tabs are sequentially placed along the book edge for
      visibility and ease of grasping.

   Perforating: The act of cutting a series of very small, closely
      spaced holes or slots into a sheet to allow for ease of separation
      of a portion of the sheet. Sometimes also used to ease
      bending/hinging of heavy weight papers.

   Scoring: A means of applying small linear grooves or impressions
      along a sheet to allow easy folding. Often used on heavy weight
      sheets and book covers.

   Slitting: The action of cutting apart a large sheet to form smaller
      sheets. Usually done using a sharp circular roll system.

STITCHING/STAPLING:

Staple: The process of binding a set of sheets together using a 'U'
  shaped piece of metal wire that is punched through the set. The
  ends of the metal staple are then bent over, or 'clinched' to hold
  the staple in place. Technically the term 'stapler' refers to
  devices that use pre-cut metal staples, but the term is also
  commonly used to refer to devices that use wire spools and then
  cut/form the staple. (see the definition of Stitch)

Stitch: The process of binding a set of sheets together using a 'U'
  shaped piece of metal wire that is punched through the set. The
  wire used to form the staple is cut and formed into a 'U' shape in
  the stitcher head, and the staple 'leg' length is often varied
  depending on the number of sheets to be bound together. The ends
  of the metal staple are bent over, or 'clinched' to hold the staple
  in place.

  Stitching can also refer to the process of sewing the edges of the
  signatures of a book together.

Saddle Stitch: The process of stapling a set along its center line
  as part of a booklet making process. Usually 2 or 3 staples are
  used.

Dual Stapling: The process of placing 2 staples along the bind edge
  of a set. The staples are typically located at 25% and 75% of the
  length of the bind edge. Although dual stapling is often performed
  on the long edge of a set, legal documents are frequently dual
  stapled along the top, or short edge of the set.

Triple Stapling: Same as above, but using 3 staples along the bind
  edge, and usually applies to the long edge only.

WRAPPING:

Shrink Wrap: A wrap of thin plastic which when heated will shrink
  and wrap tightly around the stack thus preparing it for shipment.
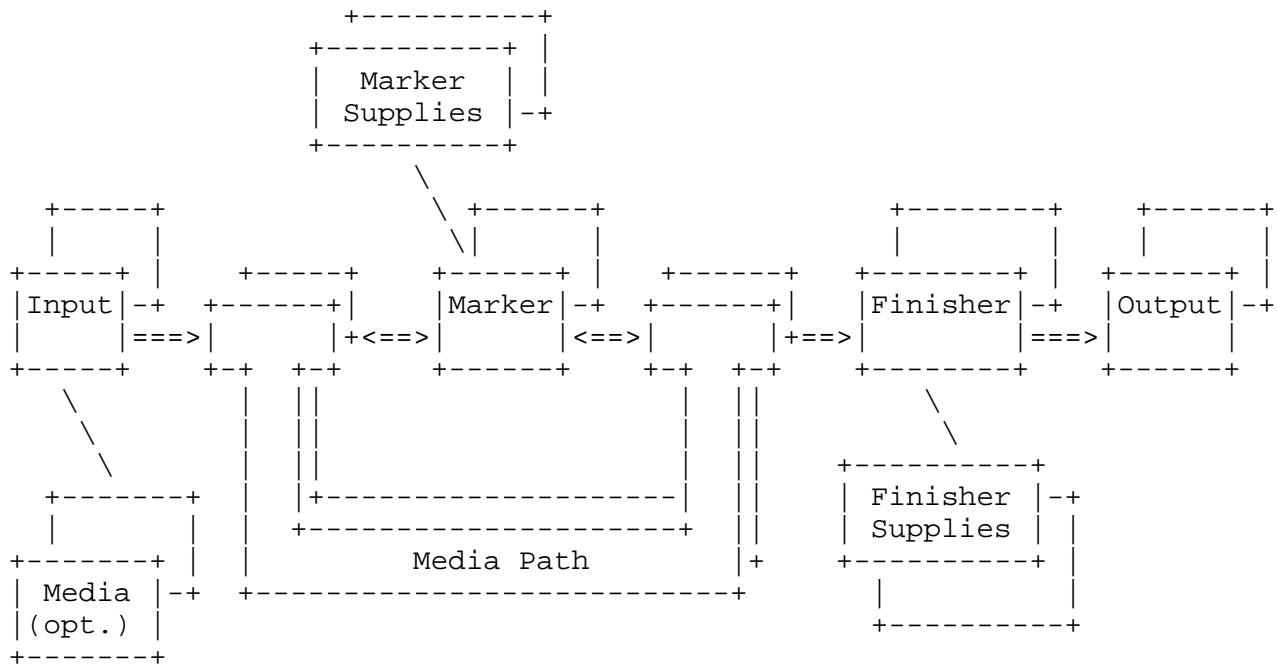
BANDING:

Band Wrap: Bundling a finished stack to prepare for shipment. Also
  known as Strap Wrap.

ROTATING:

Sheet Rotator: A device that rotates each sheet as received from the
  Media Path to the proper orientation for the finisher processing.

3. Finisher Subunits Integrated Into The Printer Model

   The Printer Finisher Device subunits receive media from one or more
   Printer Media Path subunits and deliver the media to one or more
   Printer Output subunits after the completion of the finishing
   processes. The Printer Model, as described in the Printer MIB
   [RFC3805], is modified adding the finisher subunit(s) and finisher
   supplies between the media path and output subunits as follows:

```
                         +----------+
                       +----------+ |
                       |  Marker  | |
                       | Supplies |-+
                       +----------+
                                  \
       +-----+                     \ +------+                      +--------+     +------+
       |     |                      \|      |                      |        |     |      |
  +-----+ |       +-----+      +------+ |      +------+      +--------+ |    +------+ |
  |Input|-+  +------+|     |Marker|-+  +------+|      |Finisher|-+    |Output|-+
  |     |===>|      |+<==>|      |<==>|      |+==>|        |===>|      |
  +-----+    +-+  +-+     +------+    +-+  +-+    +--------+     +------+
       \         |  ||                       |  ||          \
        \        |  ||                       |  ||           \
         \       |  ||                       |  ||     +----------+
          +-------+  |  |+-------------------|  ||     | Finisher |-+
          |       |  |  +-------------------+  ||     | Supplies | |
  +-------+ |  |        Media Path        |+    +----------+ |
  | Media |-+  +------------------------+         |          |
  |(opt.) |                                       +----------+
  +-------+
```

4. Finishing Specifications

   The Finisher MIB is able to provide most of the information that is
   required to generate a Finishing Specification. This includes;

   1. Finishing operations that can be performed on media that are
      associated with a specific printer media path and output subunit.

   2. Combinations of operations that cannot be performed.

   3. The location of the operation on the medium, if applicable.

   4. The physical characteristics of the result of the operation. For
      example, the size and shape of a punched hole, or if a fold
      operation creates a letter fold or a "Z" fold.

The Finisher MIB permits an agent to describe the order that
operations can be performed.

4.1. Multiple finDeviceTable Entries

Each finishing operation supported by the printer is represented by
one or more entries in the finDeviceTable. Each entry in this table
defines a "logical" finishing device, since the function of several
table entries may be performed by a single finisher mechanism.
Multiple entries may also exist in the table as a result of the
existence of multiple finisher mechanisms that perform the same type
of operation.

One example of possible multiple entries for a single finisher
device, is a hole punch operation that creates more than one hole.
This could be performed using a single die punch that moves to each
required position or a multi-die punch that simultaneously creates
all holes. In either case, each defined hole position may be defined
as a separate table entry.

In both cases, if the punch positions can be individually selected, a
table entry for each position would be necessary.

For the multi-die punch, each head mechanism may have a different
hole pattern or size. If these differences are to be properly
disclosed, a table entry for each head mechanism would be required.

4.2. Implicit Parameters

Finishing operations that are specified by an enum define a standard
operation and in many cases an implicit set of physical
characteristics is to be included when specifying the enum. If
explicit values for these characteristics are not provided in the
attributes table, the values defined in this section are to be
implied.

4.2.1. FinPunchPatternTC

```
   enum pattern        |Reference| Reference | Hole spacing
                       | Edge    |Axis Offset| (see note 1)
   -------------------+---------+-----------+-------------------------
   twoHoleUSTop(4)     | topEdge |   note 2  | 2.75 inches
   threeHoleUS(5)      |  note 3 |   note 2  | 4.25 inches
   twoHoleDIN(6)       |  note 4 |   note 5  | 80 mm
   fourHoleDIN(7)      |  note 4 |   note 5  | 80 mm
   twentyTwoHoleUS(8)  |  note 3 |   note 2  | .5 inches
   nineteenHoleUS(9)   |  note 3 |   note 9  | .5625 inches
   twoHoleMetric(10)   |  note 6 |   note 5  | 80 mm
   swedish4Hole(11)    |  note 4 |   note 5  | 21, 70, 21 mm
   twoHoleUSSide(12)   |  note 3 |   note 2  | 2.75 inches
   fiveHoleUS(13)      |  note 3 |   note 2  | 2, 2.25, 2.25, 2 in
   sevenHoleUS(14)     |  note 3 |   note 2  | 1, 1, 2.25, 2.25, 1, 1 in
   mixed7H4S(15)       |  note 4 |   note 5  | note 7
   norweg6Hole(16)     |  note 4 |   note 5  | note 8
   metric26Hole(17)    |  note 6 |   note 5  | 9.5 mm
   metric30Hole(18)    |  note 4 |   note 5  | 9.5 mm
```

   Notes:

   1. All hole to hole patterns are centered along the process edge.

   2. Offset is 0.18 inches to 0.51 inches.

   3. Reference edge is leftEdge(5) for letter and topEdge(3) for
      ledger.

   4. Reference edge is leftEdge(5) for A4 and topEdge(3) for A3.

   5. Offset is 4.5 mm to 13 mm.

   6. Reference edge is leftEdge(5) for B5 and topEdge(3) for B4.

   7. 7 holes and 4 slots are punched in a H-S-H-H-S-H-S-H-H-S-H pattern
      with 15, 25, 23, 20, 37, 37, 20, 23, 25, 15 mm spacing.

   8. 4 holes and 2 slots are punched in a H-H-S-S-H-H pattern with a
      64, 18.5, 75, 18.5, 64 mm spacing.

   9. Offset is .188 inches.

4.2.2 FinPunchHoleTypeTC, punchHoleSizeMaxDim, punchHoleSizeMinDim

```
   enum pattern          | Hole Description
   -------------------+----------------------------------------
   twoHoleUSTop(4)       | round(3), .2 - .32 inch diameter
   threeHoleUS(5)        | round(3), .2 - .32 inch diameter
   twoHoleDIN(6)         | round(3),  5 - 8 mm diameter
   fourHoleDIN(7)        | round(3),  5 - 8 mm diameter
   twentyTwoHoleUS(8)    | round(3), .2 - .32 inch diameter
   nineteenHoleUS(9)     | rectang(6), .313 inches X .125 inches
   twoHoleMetric(10)     | round(3),  5 - 8 mm diameter
   swedish4Hole(11)      | round(3),  5 - 8 mm diameter
   twoHoleUSSide(12)     | round(3), .2 - .32 inch diameter
   fiveHoleUS(13)        | round(3), .2 - .32 inch diameter
   sevenHoleUS(14)       | round(3), .2 - .32 inch diameter
   mixed7H4S(15)         | round(3),  5 - 8 mm diameter
                         | rectang(6),  12 mm X 6 mm
   norweg6Hole(16)       | round(3),  5 - 8 mm diameter
                         | rectang(6),  10 mm  X 5.5 mm
   metric26Hole(17)      | round(3),  5 - 8 mm
   metric30Hole(18)      | round(3),  5 - 8 mm
```

   Note: Hole size ranges are typical and are provided as a reference
   only. Exact tolerances should be site defined.

5. The Attribute Mechanism

   Attributes provide a function similar to information objects, except
   that attributes are identified by an enum, instead of an OID. Thus
   new attributes may be registered without requiring a change to the
   MIB. In addition, an implementation that does not have the
   functionality represented by the attribute can omit the attribute
   entirely, rather than having to return a distinguished value. The
   agent is free to create an attribute in the Attribute Table as soon
   as the agent is aware of the value of the attribute.

   The agent materializes finishing subunit attributes in a four-indexed
   finDeviceAttributeTable:

   1. hrDeviceIndex - which device in the host

   2. finDeviceIndex - which finisher subunit in the printer device

   3. finDeviceAttributeTypeIndex - which attribute

   4. finDeviceAttributeInstanceIndex - which attribute instance for
      those attributes that can have multiple values per finishing
      subunit.

5.1. Conformance of Attribute Implementation

   An agent SHALL implement any attribute if (1) the device supports the
   functionality represented by the attribute and (2) the information is
   available to the agent. The agent MAY create the attribute row in
   the finDeviceAttributeTable when the information is available or MAY
   create the row earlier with the designated 'unknown' value
   appropriate for that attribute. See next section.

   If the device does not implement or does not provide access to the
   information about an attribute, the agent SHOULD NOT create the
   corresponding row in the finDeviceAttributeTable.

5.2. Useful, 'Unknown', and 'Other' Values for Objects and Attributes

   Some attributes have a 'useful' Integer32 value, some have a 'useful'
   OCTET STRING value, some MAY have either or both depending on
   implementation, and some MUST have both. See the
   finDeviceAttributeTypeTC textual convention for the specification of
   each attribute.

   NOTE: In some instances, objects with a MAX-ACCESS of read-write will
   result in an SNMPv1 error or SNMPv2 exception during a write
   operation. The administrative security policy may restrict a class
   of users to read-only or, more importantly, the implementation may
   implement a subset of read-write objects as read-only. This should
   be expected to be the case for a device that can properly sense the
   value of an object and does not want the value to be externally
   modified.

   In general, values for objects and attributes have been chosen so
   that a management application will be able to determine whether a
   'useful', 'unknown', or 'other' value is available. When a useful
   value is not available for an object that agent SHALL return a zero-
   length string for octet strings, the value 'unknown(2)' for enums, a
   '0' value for an object that represents an index in another table,
   and a value '-2' for counting integers.

   Since each attribute is represented by a row consisting of both the
   finDeviceAttributeValueAsInteger and finDeviceAttributeValueAsOctets
   MANDATORY objects, SNMP requires that the agent SHALL always create
   an attribute row with both objects specified. However, for most
   attributes the agent SHALL return a "useful" value for one of the
   objects and SHALL return the 'other' value for the other object. For
   integer only attributes, the agent SHALL always return a zero-length
   string value for the finDeviceAttributeValueAsOctets object. For
   octet string only attributes, the agent SHALL always return a '-1'
   value for the finDeviceAttributeValueAsInteger object.

5.3. Data Sub-types and Attribute Naming Conventions

   Many attributes are sub-typed to give a more specific data type than
   Integer32 or OCTET STRING. The data sub-type of each attribute is
   indicated on the first line(s) of the description. Some attributes
   have several different data sub-type representations. When an
   attribute has both an Integer32 data sub-type and an OCTET STRING
   data sub-type, the attribute can be represented in a single row in
   the finDeviceAttributeTable. In this case, the data sub-type name is
   not included as the last part of the name of the attribute. When the
   data sub-types cannot be represented by a single row in the
   finDeviceAttributeTable, each such representation is considered a
   separate attribute and is assigned a separate name and enum value.
   For these attributes, the name of the data sub-type is the last part
   of the name of the attribute.

5.4. Single-Value (Row) Versus Multi-Value (MULTI-ROW) Attributes

   Most attributes shall have only one row per finishing subunit.
   However, a few attributes can have multiple values per finishing
   subunit, where each value is a separate row in the
   finDeviceAttributeTable. Unless indicated with 'MULTI-ROW:' in the
   finDeviceAttributeTypeTC description, an agent SHALL ensure that each
   attribute occurs only once in the finDeviceAttributeTable for a
   finishing subunit. Most of the 'MULTI-ROW' attributes do not allow
   duplicate values, i.e., the agent SHALL ensure that each value occurs
   only once for a finishing subunit. Only if the specification of the
   'MULTI-ROW' attribute also says "There is no restriction on the same
   xxx occurring in multiple rows" can the agent allow duplicate values
   to occur for a single finishing subunit.

5.5. Linked MUTI-ROW Values

   Some MULTI-ROW attributes are intended to go together. Thus a set of
   value instances represent a single instance. For example, the
   puncher attributes indicate the location, maximum size, minimum size
   and shape of the various holes that the puncher can produce. So the
   first set of values could represent one kind of hole, and the second
   set another kind of hole, etc.

5.6. Index Value Attributes

   A number of attributes are indexes in other tables. Such attribute
   names end with the word 'Index'. If the agent has not (yet) assigned
   an index value for a particular index attribute for a finishing
   subunit, the agent shall either: (1) return the value 0 or (2) not
   add this attribute to the finDeviceAttributeTable until the index

value is assigned. In the interests of brevity, the semantics for 0
is specified once here and is not repeated for each index attribute
specification and a DEFVAL of 0 is indicated.

5.7. Attribute Specifications

This section specifies the set of attributes that are enumerated in
finAttributeTypeTC. The data type tag definitions 'INTEGER:' or
'OCTETS', indicate if the attribute can be represented using the
object finDeviceAttributeAsInteger or the object
finDeviceAttributeAsOctets, respectively. In some cases, a choice
between the two data types is possible and for a few attributes both
objects may be required at the same time to properly present the
value.

NOTE - The enum assignments are grouped logically with values
assigned in groups of 10, so that additional values may be registered
in the future and assigned a value that is part of their logical
grouping.

Values in the range 2**30 to 2**31-1 are reserved for private or
experimental usage. This range corresponds to the same range
reserved in IPP. Implementers are warned that use of such values may
conflict with other implementations. Implementers are encouraged to
request registration of enum values following the procedures in
Section 6.1.

The attribute types defined at the time of completion of this
specification are:

```
finAttributeTypeIndex              Data type
---------------------              ---------
other(1),                          Integer32
                                   AND/OR
                                   OCTET STRING (SIZE(0..63))
   INTEGER: and/or OCTETS:  An attribute that is not currently
     approved and registered.
```

A. Generic finisher subunit attributes that apply to all finisher
   subunit types. (3..)

```
   deviceName(3),                     OCTET STRING (SIZE(0..63))
     OCTETS:  The name assigned to this finisher device subunit.

   deviceVendorName(4),               OCTET STRING (SIZE(0..63))
     OCTETS:  The name of the vendor of this finisher device
        subunit.
```

       deviceModel(5),   OCTET STRING (SIZE(0..63))
          OCTETS: The model name of this finisher device subunit.

       deviceVersion(6),   OCTET STRING (SIZE(0..63))
          OCTETS: The version string for this finisher device
             subunit.

       deviceSerialNumber(7),   OCTET STRING (SIZE(0..63))
          OCTETS: The serial number assigned to this finisher device
             subunit.

       maximumSheets(8),   Integer32 (-2..32767)
          INTEGER: Defines the maximum number of media sheets that a
             finisher device is able to process.

       finProcessOffsetUnits(9),   PrtMediaUnitTC
          INTEGER: An enumeration which defines the units of measure
             for the attributes finAxisOffset, finHeadLocation,
             punchHoleSizeLongDim, and punchHoleSizeShortDim.

       finReferenceEdge(10),   FinEdgeTC
          INTEGER: An enumeration which defines which edge of the
             form is the reference for this finishing process. The
             Finishing Process Axis will be parallel to this axis.

       finAxisOffset(11),   Integer32 (-2..2147483647)
          INTEGER: Defines the offset of the Finishing Process
             Axis from the parallel Reference Edge. For a value of
             finEdgeTC equal to TopEdge or RightEdge, the value
             given is to interpreted as a negative offset from the
             reference edge. The units of measure are defined by the
             attribute finProcessOffsetUnits.

       finJogEdge(12),   FinEdgeTC
          INTEGER: An enumeration which defines a second edge of the
             document to which the media is aligned. The jog edge must
             be perpendicular to the edge defined by finReferenceEdge.

       finHeadLocation(13),   Integer32 (-2..2147483647)
          INTEGER: MULTI-ROW: Defines the position of the Head
             Mechanism relative to the axis, 'X' or 'Y', that is
             perpendicular to the Process Axis. The units of measure
             are defined by the attribute finProcessOffsetUnits.

       finOperationRestrictions(14),   Integer32 (0..65535)
          INTEGER: MULTI-ROW: Defines the finDeviceIndex of a
             finishing process which cannot be combined with the
             process defined by the finDeviceIndex for this

        finDeviceAttributeTable instance. When this condition
        occurs this attribute SHALL be presented in the
        attribute tables for both finishing processes that cannot
        be combined.

    finNumberOfPositions(15),   Integer32 (0..65535)
       INTEGER: Defines the total number of head positions for
        this finishing process. Each position many be realized by
        a unique head mechanism or a single head mechanism may be
        automatically moved to each position.

    namedConfiguration(16),   OCTET STRING (SIZE(0..63))
       OCTETS: Contains an administratively define name to define
        the finishing specification configured for this device.

    finMediaTypeRestriction(17),   OCTET STRING (SIZE(0..63))
       OCTETS: MULTI-ROW: Defines the media type which cannot be
        combined with the process defined by the finDeviceIndex
        for this finDeviceAttributeTable instance. Values are the
        same as defined for finSupplyMediaInputMediaName.

    finPrinterInputTraySupported(18), Integer32 (0..65535)
       INTEGER: MULTI-ROW: Defines the value of prtInputIndex
        corresponding to the printer input tray that can be used
        with the process defined by the finDeviceIndex for this
        finDeviceAttributeTable instance. If this attribute is
        not present, this process can be used with any input tray
        in the printer. For example, this attribute can indicate
        the current stapling capabilities for a stapler device
        for the input trays that depend upon the size and feed
        orientation. So if there were two letter trays, one with
        A size and the other with B size, a two position stapler
        might specify in one row: upper-left and upper-right for
        the input tray with A size, but only upper-left for the
        one with B size.

    finPreviousFinishingOperation(19),   Integer32 (0..65535)
       INTEGER: Defines the finDeviceIndex of the previous
        finishing process for implementations in which the
        finishing processes are performed in a prescribed order.
        Each finishing process in the fixed sequence is either
        performed or not performed according to the finishing
        instructions submitted with the job. A value of 0
        indicates that this finishing process is the first in a
        sequence. Finishing processes which are not part of a
        fixed sequence SHALL NOT have this attribute.

         finNextFinishingOperation(20),   Integer32 (0..65535)
            INTEGER: Defines the finDeviceIndex of the next finishing
               process for implementations in which the finishing
               processes are performed in a prescribed order. Each
               finishing process in the fixed sequence is either
               performed or not performed according to the finishing
               instructions submitted with the job. A value of 0
               indicates that this finishing process is the last in a
               sequence. Finishing processes which are not part of a
               fixed sequence SHALL NOT have this attribute.

      B. Stitcher type-specific attributes (30..)

         stitchingType(30),   FinStitchingTypeTC
            INTEGER: MULTI-ROW: Provides additional information
               regarding the stitching operation.

         stitchingDirection(31),   FinStitchingDirTypeTC
            INTEGER: Defines the orientation of the stitching
               process.

         stitchingAngle(32),   FinStitchingAngleTypeTC
            INTEGER: Defines enumerations that describe the angular
               orientation of the stitching process relative to the 'X'
               axis.

      C. Folder type-specific attributes (40..)

         foldingType(40),   FinFoldingTypeTC
            INTEGER: Provides additional information regarding the
               folding process.

      D. Binder type-specific attributes (50..)

         bindingType(50),   FinBindingTypeTC
            INTEGER: Provides additional information regarding the
               binding process.

      E. Trimmer type-specific attributes (60..)

      F. Die cutter type-specific attributes (70..)

      G. Puncher type-specific attributes (80..)

         punchHoleType(80),   FinPunchHoleTypeTC
            INTEGER: Provides information regarding the shape of the
               punched hole.

     punchHoleSizeLongDim(81),   Integer32 (-2..2147483647)
       INTEGER: Defines the size of the punched hole in the
        longest dimension. This dimension is typically measured
        parallel to either the long edge or the short edge of the
        media and the longest dimension will always be measured 90
        degrees from the shortest dimension. For a symmetrical
        hole, such as a round or square hole, the shortest and
        longest dimensions will be identical. The units of measure
        are defined by the attribute finProcessOffsetUnits.

     punchHoleSizeShortDim(82),   Integer32 (-2..2147483647)
       INTEGER: Defines the size of the punched hole in the
        shortest dimension. This dimension is typically measured
        parallel to either the long edge or the short edge of the
        media and the shortest dimension will always be measured
        90 degrees from the longest dimension. For a symmetrical
        hole, such as a round or square hole, the shortest and
        longest dimensions will be identical. The units of measure
        are defined by the attribute finProcessOffsetUnits.

     punchPattern(83),   FinPunchPatternTC
       INTEGER: Defines the hole pattern produced by the punch
        process.

  H. Perforator type-specific attributes (90..)

  I. Slitter type-specific attributes (100..)

     slittingType(100),   FinSlittingTypeTC
       INTEGER: Provides additional information regarding the
        slitting process.

  J. Separation cutter type-specific attributes (110..)

  K. Imprinter type-specific attributes (120..)

  L. Wrapper type-specific attributes (130..)

     wrappingType(130),   FinWrappingTypeTC
       INTEGER: Provides additional information regarding the
        wrapping process.

  M. Bander type-specific attributes (140..)

  N. Make Envelopes type-specific attributes (150..)

  O. Stacker type-specific attributes (160..)

```
stackOutputType(160)            FinStackOutputTypeTC
   INTEGER:  Defines the job-to-job orientation produced by
      the stacker.

stackOffset(161)                Integer32 (-2..2147483647)
   INTEGER:  Defines the copy-to-copy output stack offset as
      a positive offset distance.  The units of measure are
      defined by finProcessOffsetUnits.

stackRotation(162)              Integer32 (-2..180)
   INTEGER:  Defines the copy-to-copy output stack rotation
      measured in degrees.  The value is the positive
      copy-to-copy rotation."
```

6. Enumerations

   Enumerations (enums) are sets of symbolic values defined for use with
   one or more objects. Commonly used enumeration sets are assigned a
   symbolic data type name (textual convention), rather than being
   specified in the SYNTAX clause of each individual object definition.

   Textual conventions defined in the Finisher MIB or the companion IANA
   Finisher MIB are extensible by RFC publication or Designated Expert
   Review (see 'IANA Considerations' section of this Finisher MIB and
   the DESCRIPTION clause in MODULE-IDENTITY of IANA Finisher MIB). All
   of these textual conventions are:

   a) used more than once in the Finisher MIB itself; or

   b) imported and used in any other, including vendor private, MIB
      modules.

   The Finisher MIB has also defined the following special values for
   use with objects of the syntax "Integer32" to define conditions that
   are outside of the normal numeric range: other(-1), unknown(-2), and
   partial(-3). The 'partial' value means that there is some supply
   remaining (but the amount is indeterminate) or there is some capacity
   remaining (but the amount is indeterminate). The Integer32 range
   field indicates in which objects these special values are valid.

6.1. Registering Additional Enumerated Values

   The Finisher MIB and the companion IANA Finisher MIB each defines one
   category of textual convention, according to the process employed to
   control the addition of new enumerations:

Type 1 - All of the legal values are defined in the Finisher MIB.
Additional enumerated values require the publication of a new
Finisher MIB.

Type 2 - All of the legal values are registered in the IANA
Finisher MIB. Additional enumerated values require a Designated
Expert Review defined in "Guidelines for Writing an IANA
Considerations Section in RFCs" [RFC2434]. The Designated Expert
will be selected by the IETF Area Director(s) of the Applications
Area.

7. IANA Printer Finishing MIB Specification

```
IANA-FINISHER-MIB DEFINITIONS ::= BEGIN
 -- http://www.iana.org/assignments/ianafinisher-mib

IMPORTS
    MODULE-IDENTITY,
        mib-2
            FROM SNMPv2-SMI                              -- [RFC2578]
    TEXTUAL-CONVENTION
            FROM SNMPv2-TC;                              -- [RFC2579]

ianafinisherMIB MODULE-IDENTITY
    LAST-UPDATED  "200406020000Z" -- June 2, 2004
    ORGANIZATION  "IANA"
    CONTACT-INFO  "Internet Assigned Numbers Authority

                  Postal: ICANN
                          4676 Admiralty Way, Suite 330
                          Marina del Rey, CA 90292

                  Tel:    +1 310 823 9358
                  E-Mail: iana@iana.org"

    DESCRIPTION   "This MIB module defines a set of finishing-related
                  TEXTUAL-CONVENTIONs for use in Finisher MIB (RFC 3806)
                  and other MIBs which need to specify finishing
                  mechanism details.

                  Any additions or changes to the contents of this MIB
                  module require either publication of an RFC, or
                  Designated Expert Review as defined in RFC 2434,
                  Guidelines for Writing an IANA Considerations Section
                  in RFCs.  The Designated Expert will be selected by
                  the IESG Area Director(s) of the Applications Area.

                  Copyright (C) The Internet Society (2004). The
```

```
                  initial version of this MIB module was published
                  in RFC 3806. For full legal notices see the RFC
                  itself or see:
                  http://www.ietf.org/copyrights/ianamib.html"

     REVISION        "200406020000Z"  -- June 2, 2004
     DESCRIPTION     "Original version, published in coordination
                      with Finisher MIB (RFC 3806)."

     ::= { mib-2 110 }

-- TEXTUAL-CONVENTIONs for this MIB module

FinDeviceTypeTC ::= TEXTUAL-CONVENTION
     STATUS          current
     DESCRIPTION
       "The defined finishing device subunit process
        enumerations."
     SYNTAX          INTEGER {
          other(1),
          unknown(2),
          stitcher(3),
          folder(4),
          binder(5),
          trimmer(6),
          dieCutter(7),
          puncher(8),
          perforater(9),
          slitter(10),
          separationCutter(11),
          imprinter(12),
          wrapper(13),
          bander(14),
          makeEnvelope(15),
          stacker(16),
          sheetRotator(17),
          inserter(18)
         }

FinAttributeTypeTC  ::= TEXTUAL-CONVENTION
     STATUS     current
     DESCRIPTION
         "This TEXTUAL-CONVENTION defines the set of enums for use in
          the finDeviceAttributeTable.  See section 5.7 for the complete
          specification of each attribute."
     SYNTAX          INTEGER {
          other(1),
          deviceName(3),
```

```
         deviceVendorName(4),
         deviceModel(5),
         deviceVersion(6),
         deviceSerialNumber(7),
         maximumSheets(8),
         finProcessOffsetUnits(9),
         finReferenceEdge(10),
         finAxisOffset(11),
         finJogEdge(12),
         finHeadLocation(13),
         finOperationRestrictions(14),
         finNumberOfPositions(15),
         namedConfiguration(16),
         finMediaTypeRestriction(17),
         finPrinterInputTraySupported(18),
         finPreviousFinishingOperation(19),
         finNextFinishingOperation(20),
         stitchingType(30),
         stitchingDirection(31),
         foldingType(40),
         bindingType(50),
         punchHoleType(80),
         punchHoleSizeLongDim(81),
         punchHoleSizeShortDim(82),
         punchPattern(83),
         slittingType(100),
         wrappingType(130),
         stackOutputType(160),
         stackOffset(161),
         stackRotation(162)
        }

FinEdgeTC ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
      "Specifies an edge for a Finishing Process."
    SYNTAX      INTEGER {
        topEdge(3),
        bottomEdge(4),
        leftEdge(5),
        rightEdge(6)
        }

FinStitchingTypeTC ::= TEXTUAL-CONVENTION
    STATUS      current
    DESCRIPTION
      "The defined stitching type enumerations.  For the edgeStitch and
       stapleDual enums, the finReferenceEdge attribute is recommended
```

```
       to define the edge to which the operation applies."
     SYNTAX        INTEGER {
         other(1),          -- More information in other attributes
         unknown(2),
         stapleTopLeft(4),
         stapleBottomLeft(5),
         stapleTopRight(6),
         stapleBottomRight(7),
         saddleStitch(8),
         edgeStitch(9),
         stapleDual(10)
        }

FinStitchingDirTypeTC ::= TEXTUAL-CONVENTION
     STATUS        current
     DESCRIPTION
       "Defines the direction, relative to the top sheet in the output
        subunit, that the stitching operation was performed.  For a
        topDown(3) process, the staple will be clinched on the bottom
        of the stack.  This parameter can be used to determine what
        order the pages of a booklet are to be printed such that the
        staple clinch will be on the inside of the resulting booklet."
     SYNTAX        INTEGER {
         unknown(2),
         topDown(3),
         bottomUp(4)
        }

FinStitchingAngleTypeTC ::= TEXTUAL-CONVENTION
     STATUS        current
     DESCRIPTION
       "This enumeration provides a description of the angular
        orientation of each stitch in a single or multiple stitching
        operation, relative to the 'X' axis.  As with all finishing
        operations, the 'X' axis is always relative to the portrait
        orientation of the document regardless of the orientation
        of the printed image.  This enum is primarily applicable to
        corner stitching operations."
     SYNTAX        INTEGER {
         unknown(2),
         horizontal(3),
         vertical(4),
         slanted(5)
        }

FinFoldingTypeTC ::= TEXTUAL-CONVENTION
   STATUS        current
   DESCRIPTION
```

```
        "The defined folding device process enumerations."
    SYNTAX          INTEGER {
         other(1),           -- More information in other attributes
         unknown(2),
         zFold(3),
         halfFold(4),
         letterFold(5)
         }

FinBindingTypeTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
      "The defined binding type enumerations."
    SYNTAX          INTEGER {
         other(1),            -- More information in other attributes
         unknown(2),
         tape(4),
         plastic(5),
         velo(6),
         perfect(7),
         spiral(8),
         adhesive(9),
         comb(10),
         padding(11)
         }

FinPunchHoleTypeTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
      "The defined hole type punch process enumerations."
    SYNTAX          INTEGER {
         other(1),           -- More information in other attributes
         unknown(2),
         round(3),
         oblong(4),
         square(5),
         rectangular(6),
         star(7)
         }

FinPunchPatternTC ::= TEXTUAL-CONVENTION
    STATUS          current
    DESCRIPTION
      "The defined hole pattern punch process enumerations."
    SYNTAX          INTEGER {
         other(1),            --Pattern to be defined in other attributes
         unknown(2),
         twoHoleUSTop(4),    --Letter/legal, 8.5 inch edge
```

```
             threeHoleUS(5),      --Letter/ledger, 11 inch edge
             twoHoleDIN(6),       --A4/A3, 297 mm edge
             fourHoleDIN(7),      --A4/A3, 297 mm edge
             twentyTwoHoleUS(8),  --Letter/ledger, 11 inch edge
             nineteenHoleUS(9),   --Letter/ledger, 11 inch edge
             twoHoleMetric(10),   --B5/B4, 257 mm edge
             swedish4Hole(11),    --A4/A3, 297 mm edge
             twoHoleUSSide(12),   --Letter/ledger, 11 inch edge
             fiveHoleUS(13),      --Letter/ledger, 11 inch edge
             sevenHoleUS(14),     --Letter/ledger, 11 inch edge
             mixed7H4S(15),       --A4/A3, 297 mm edge
             norweg6Hole(16),     --A4/A3, 297 mm edge
             metric26Hole(17),    --B5/B4, 257 mm edge
             metric30Hole(18)     --A4/A3, 297 mm edge
            }

FinSlittingTypeTC ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
      "The defined slitting type enumerations."
    SYNTAX       INTEGER {
        other(1),           -- More information in other attributes
        unknown(2),
        slitAndSeparate(4),
        slitAndMerge(5)
        }

FinWrappingTypeTC ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
      "The defined wrapping device process enumerations."
    SYNTAX       INTEGER {
        other(1),           -- More information in other attributes
        unknown(2),
        shrinkWrap(4),
        paperWrap(5)
        }

FinStackOutputTypeTC ::= TEXTUAL-CONVENTION
    STATUS       current
    DESCRIPTION
      "The defined stack output type enumerations."
    SYNTAX       INTEGER {
        other(1),         -- More information in other attributes
        unknown(2),
        straight(4),      -- No offset, one on top of another
        offset(5),
        crissCross(6)     -- Rotated
```

        }
END

8. Printer Finishing MIB Specification

Finisher-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-TYPE, Integer32, mib-2
        FROM SNMPv2-SMI   -- [RFC2578]
    MODULE-COMPLIANCE, OBJECT-GROUP
        FROM SNMPv2-CONF   -- [RFC2580]
    hrDeviceIndex
        FROM HOST-RESOURCES-MIB   -- [RFC2790]
    PrtInputTypeTC, PrtMarkerSuppliesTypeTC
        FROM IANA-PRINTER-MIB   -- [RFC3805]
    printmib, PrtSubUnitStatusTC, PrtLocalizedDescriptionStringTC,
        PrtMarkerSuppliesSupplyUnitTC, PrtMediaUnitTC,
        PrtCapacityUnitTC, PrtMarkerSuppliesClassTC,
        PresentOnOff, prtMIBConformance
        FROM Printer-MIB   -- [RFC3805]
    FinDeviceTypeTC, FinAttributeTypeTC
        FROM IANA-FINISHER-MIB;

finisherMIB MODULE-IDENTITY
    LAST-UPDATED "200406020000Z"
    ORGANIZATION "PWG IEEE/ISTO Printer Working Group"
    CONTACT-INFO

        "Harry Lewis
        IBM
        Phone (303) 924-5337
        Email: harryl@us.ibm.com

        Send comments to the printmib WG using the Finisher MIB
        Project (FIN) Mailing List: fin@pwg.org

        For further information, access the PWG web page under 'Finisher
        MIB':   http://www.pwg.org/

        Implementers of this specification are encouraged to join the
        fin mailing list in order to participate in discussions on any
        clarifications needed and registration proposals being reviewed
        in order to achieve consensus."
    DESCRIPTION
        "The MIB module for management of printers.
         Copyright (C) The Internet Society (2004). This
         version of this MIB module was published

          in RFC 3806. For full legal notices see the RFC itself."
     REVISION "200406020000Z"
     DESCRIPTION
         "The original version of this MIB."
     ::= { mib-2 111 }

 -- Finisher Device Group (Mandatory)
--
-- A printer may support zero or more finishing subunits. A
-- finishing device subunit may be associated with one or more
-- output subunits and one or more media path subunits.

finDevice OBJECT IDENTIFIER ::= { printmib 30 }

finDeviceTable OBJECT-TYPE
    SYNTAX   SEQUENCE OF FinDeviceEntry
    MAX-ACCESS not-accessible
    STATUS   current
    DESCRIPTION
      "This table defines the finishing device subunits,
       including information regarding possible configuration
       options and the status for each finisher device subunit."
    ::= { finDevice 1 }

finDeviceEntry OBJECT-TYPE
    SYNTAX   FinDeviceEntry
    MAX-ACCESS not-accessible
    STATUS   current
    DESCRIPTION
      "There is an entry in the finishing device table for each
       possible finisher process. Each individual finisher process is
       implemented by a finishing device represented in this table."
    INDEX { hrDeviceIndex, finDeviceIndex }
    ::= { finDeviceTable 1 }

FinDeviceEntry ::= SEQUENCE {
     finDeviceIndex   Integer32,
     finDeviceType   FinDeviceTypeTC,
     finDevicePresentOnOff   PresentOnOff,
     finDeviceCapacityUnit   PrtCapacityUnitTC,
     finDeviceMaxCapacity   Integer32,
     finDeviceCurrentCapacity   Integer32,
     finDeviceAssociatedMediaPaths OCTET STRING,
     finDeviceAssociatedOutputs   OCTET STRING,
     finDeviceStatus   PrtSubUnitStatusTC,
     finDeviceDescription   PrtLocalizedDescriptionStringTC
     }

```
finDeviceIndex OBJECT-TYPE
    SYNTAX        Integer32 (1..65535)
    MAX-ACCESS    not-accessible
    STATUS        current
    DESCRIPTION
      "A unique value used to identify a finisher process.
       Although these values may change due to a major
       reconfiguration of the printer system (e.g., the addition
       of new finishing processes), the values are normally
       expected to remain stable across successive power cycles."
    ::= { finDeviceEntry 1 }

finDeviceType OBJECT-TYPE
    SYNTAX        FinDeviceTypeTC
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
      "Defines the type of finishing process associated with this
       table row entry."
    ::= { finDeviceEntry 2 }

finDevicePresentOnOff OBJECT-TYPE
    SYNTAX        PresentOnOff
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
      "Indicates if this finishing device subunit is available
       and whether the device subunit is enabled."
    DEFVAL        { notPresent }
    ::= { finDeviceEntry 3 }

finDeviceCapacityUnit OBJECT-TYPE
    SYNTAX        PrtCapacityUnitTC
    MAX-ACCESS    read-only
    STATUS        current
    DESCRIPTION
      "The unit of measure for specifying the capacity of this
       finisher device subunit."
    ::= { finDeviceEntry 4 }

finDeviceMaxCapacity OBJECT-TYPE
    SYNTAX        Integer32 (-2..2147483647)
    MAX-ACCESS    read-write
    STATUS        current
    DESCRIPTION
      "The maximum capacity of this finisher device subunit in
       finDeviceCapacityUnits.  If the device can reliably sense
       this value, the value is sensed by the finisher device
```

          and is read-only: otherwise the value may be written by a
          management or control console application. The value (-1)
          means other and specifically indicates that the device
          places no restrictions on this parameter. The value (-2)
          means unknown."
     DEFVAL   { -2 }   -- unknown
     ::= { finDeviceEntry 5 }

finDeviceCurrentCapacity OBJECT-TYPE
     SYNTAX   Integer32 (-2..2147483647)
     MAX-ACCESS   read-write
     STATUS   current
     DESCRIPTION
       "The current capacity of this finisher device subunit in
        finDeviceCapacityUnits. If the device can reliably sense
        this value, the value is sensed by the finisher and is
        read-only: otherwise the value may be written by a
        management or control console application. The value (-1)
        means other and specifically indicates that the device
        places no restrictions on this parameter. The value (-2)
        means unknown."
     DEFVAL   { -2 }   -- unknown
     ::= { finDeviceEntry 6 }

finDeviceAssociatedMediaPaths OBJECT-TYPE
     SYNTAX   OCTET STRING (SIZE(1..63))
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
       "Indicates the media paths which can supply media for this
        finisher device. The value of this object is a bit map in an
        octet string with each position representing the value of a
        prtMediaPathIndex. For a media path that can be a source
        for this finisher device subunit, the bit position equal
        to one less than the value of prtMediaPathIndex will be set.
        The 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 of the second byte
        being bit 8, and so on."
     ::= { finDeviceEntry 7 }

finDeviceAssociatedOutputs OBJECT-TYPE
     SYNTAX   OCTET STRING (SIZE(1..63))
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
       "Indicates the printer output subunits this finisher device
        subunit services. The value of this object is a bit map in an

          octet string with each position representing the value of a
          prtOutputIndex. For an output subunit that is serviced
          by this finisher device subunit, the bit position equal
          to one less than the value of prtOutputIndex will be set.
          The 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 of the second byte
          being bit 8, and so on."
     ::= { finDeviceEntry 8 }

finDeviceStatus OBJECT-TYPE
     SYNTAX   PrtSubUnitStatusTC
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
       "Indicates the current status of this finisher device
       subunit."
     DEFVAL   { 5 }   -- unknown
     ::= { finDeviceEntry 9 }

finDeviceDescription OBJECT-TYPE
     SYNTAX   PrtLocalizedDescriptionStringTC
     MAX-ACCESS   read-only
     STATUS   current
     DESCRIPTION
       "A free form text description of this device subunit in the
       localization specified by prtGeneralCurrentLocalization."
     ::= { finDeviceEntry 10 }

-- Finisher Supply Group (Mandatory)
--
-- A finisher device, but not all finisher devices, may have one or more
-- supplies associated with it. For example a finisher may use both
-- binding tape and stitching wire supplies. A finisher may also have
-- more than one source for a given type of supply e.g., multiple supply
-- sources of ink for imprinters.

finSupply OBJECT IDENTIFIER ::= { printmib 31 }

finSupplyTable OBJECT-TYPE
     SYNTAX   SEQUENCE OF FinSupplyEntry
     MAX-ACCESS not-accessible
     STATUS   current
     DESCRIPTION
       "Each unique source of supply is an entry in the finisher
       supply table. Each supply entry has its own
       characteristics associated with it such as colorant and

```
      current supply level."
    ::= { finSupply 1 }


finSupplyEntry OBJECT-TYPE
    SYNTAX      FinSupplyEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
      "A list of finisher devices, with their associated
       supplies and supplies characteristics."
    INDEX  { hrDeviceIndex, finSupplyIndex }
    ::= { finSupplyTable 1 }


FinSupplyEntry ::= SEQUENCE {
      finSupplyIndex              Integer32,
      finSupplyDeviceIndex        Integer32,
      finSupplyClass              PrtMarkerSuppliesClassTC,
      finSupplyType               PrtMarkerSuppliesTypeTC,
      finSupplyDescription        PrtLocalizedDescriptionStringTC,
      finSupplyUnit               PrtMarkerSuppliesSupplyUnitTC,
      finSupplyMaxCapacity        Integer32,
      finSupplyCurrentLevel       Integer32,
      finSupplyColorName          OCTET STRING
     }

finSupplyIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..65535)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
      "A unique value used by a finisher to identify this supply
       container/receptacle.  Although these values may change
       due to a major reconfiguration of the finisher (e.g., the
       addition of new supply sources to the finisher), values
       are normally expected to remain stable across successive
       power cycles."
    ::= { finSupplyEntry 1 }

finSupplyDeviceIndex OBJECT-TYPE
    SYNTAX      Integer32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The value of finDeviceIndex corresponding to the finishing
       device subunit with which this finisher supply is associated.
       The value zero indicates the associated finishing device is
       Unknown."
    ::= { finSupplyEntry 2 }
```

    finSupplyClass OBJECT-TYPE
        SYNTAX   PrtMarkerSuppliesClassTC
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
          "This value indicates whether this supply entity
           represents a supply that is consumed or a container that
           is filled."
        ::= { finSupplyEntry 3 }

    finSupplyType OBJECT-TYPE
        SYNTAX   PrtMarkerSuppliesTypeTC
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
          "The type of this supply."
        ::= { finSupplyEntry 4 }

    finSupplyDescription OBJECT-TYPE
        SYNTAX   PrtLocalizedDescriptionStringTC
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
          "The description of this supply/receptacle in text useful
           for operators and management applications and in the
           localization specified by prtGeneralCurrentLocalization."
        ::= { finSupplyEntry 5 }

    finSupplyUnit OBJECT-TYPE
        SYNTAX   PrtMarkerSuppliesSupplyUnitTC
        MAX-ACCESS   read-only
        STATUS   current
        DESCRIPTION
          "Unit of measure of this finisher supply container or
           receptacle."
        ::= { finSupplyEntry 6 }

    finSupplyMaxCapacity OBJECT-TYPE
        SYNTAX   Integer32 (-2..2147483647)
        MAX-ACCESS   read-write
        STATUS   current
        DESCRIPTION
          "The maximum capacity of this supply container/receptacle
           expressed in Supply Units. If this supply container/
           receptacle can reliably sense this value, the value is
           sensed and is read-only; otherwise the value may be
           written by a control panel or management application. The
           value (-1) means other and places no restrictions on this

```
         parameter.  The value (-2) means unknown."
    DEFVAL       { -2 }        -- unknown
    ::= { finSupplyEntry 7 }

finSupplyCurrentLevel OBJECT-TYPE
    SYNTAX       Integer32 (-3..2147483647)
    MAX-ACCESS   read-write
    STATUS       current
    DESCRIPTION
      "The current level if this supply is a container; the
       remaining space if this supply is a receptacle. If this
       supply container/receptacle can reliably sense this value,
       the value is sensed and is read-only; otherwise the value
       may be written by a control panel or management
       application.  The value (-1) means other and places no
       restrictions on this parameter. The value (-2) means
       unknown.  A value of (-3) means that the printer knows there
       is some supply or remaining space."
    DEFVAL       { -2 }        -- unknown
    ::= { finSupplyEntry 8 }


--                 Capacity Attribute Relationships
--
--                    MEDIA INPUT MEASUREMENT
--
--         _____  |                  |
--        |        | |                  |
--        |        | |                  |                     |
--        |        | |_ _ _ _ _ _ _ _ _ _| _____   |direction
--        |        | |                  |   |              |   v
-- MaxCapacity     | |                  |   |
--        |        | |  Sheets remaining |  CurrentLevel
--        |        | |                  |   |
--        v        | |                  |   v
--        _____ +_____+ _____


finSupplyColorName OBJECT-TYPE
    SYNTAX       OCTET STRING (SIZE(0..63))
    MAX-ACCESS   read-only
    STATUS       current
    DESCRIPTION
      "The name of the color associated with this supply."

    REFERENCE
       "The PWG Standardized Media Names specification [PWGMEDIA],
        section 4 Media Color Names, contains the recommended values
```

          for this object. Implementers may add additional string values.
          The naming conventions in ISO 9070 are recommended in order to
          avoid potential name clashes."
      ::= { finSupplyEntry 9 }

-- Finisher Supply, Media Input Group (Conditionally Mandatory)
--
-- A finisher device may have one or more associated supply media
-- inputs. Each entry in this table defines an input for a
-- supply media type such as inserts, covers, etc.
--
-- This group is mandatory only if the printer system contains a
-- finisher device that requires a media supply used exclusively by a
-- finishing process. Examples are inserts or covers that are not
-- supplied by an input subunit that provides media to the marker.

finSupplyMediaInput OBJECT IDENTIFIER ::= { printmib 32 }

finSupplyMediaInputTable OBJECT-TYPE
    SYNTAX   SEQUENCE OF FinSupplyMediaInputEntry
    MAX-ACCESS not-accessible
    STATUS   current
    DESCRIPTION
      "The input subunits associated with a finisher supply media
       are each represented by an entry in this table."
::= { finSupplyMediaInput 1 }

finSupplyMediaInputEntry OBJECT-TYPE
    SYNTAX   FinSupplyMediaInputEntry
    MAX-ACCESS not-accessible
    STATUS   current
    DESCRIPTION
      "A list of finisher supply media input subunit features and
       characteristics."
    INDEX { hrDeviceIndex, finSupplyMediaInputIndex }
    ::= { finSupplyMediaInputTable 1 }

FinSupplyMediaInputEntry ::= SEQUENCE {
      finSupplyMediaInputIndex   Integer32,
      finSupplyMediaInputDeviceIndex   Integer32,
      finSupplyMediaInputSupplyIndex   Integer32,
      finSupplyMediaInputType   PrtInputTypeTC,
      finSupplyMediaInputDimUnit   PrtMediaUnitTC,
      finSupplyMediaInputMediaDimFeedDir Integer32,
      finSupplyMediaInputMediaDimXFeedDir Integer32,
      finSupplyMediaInputStatus   PrtSubUnitStatusTC,
      finSupplyMediaInputMediaName   OCTET STRING,

```
      finSupplyMediaInputName            OCTET STRING,
      finSupplyMediaInputDescription     PrtLocalizedDescriptionStringTC,
      finSupplyMediaInputSecurity        PresentOnOff,
      finSupplyMediaInputMediaWeight     Integer32,
      finSupplyMediaInputMediaThickness Integer32,
      finSupplyMediaInputMediaType       OCTET STRING
     }

finSupplyMediaInputIndex OBJECT-TYPE
    SYNTAX      Integer32 (1..65535)
    MAX-ACCESS  not-accessible
    STATUS      current
    DESCRIPTION
      "A unique value used by a finisher to identify this supply
      media input subunit.  Although these values may change
      due to a major reconfiguration of the finisher (e.g., the
      addition of new supply media input sources to the
      finisher), values are normally expected to remain stable
      across successive power cycles."
    ::= { finSupplyMediaInputEntry 1 }

finSupplyMediaInputDeviceIndex OBJECT-TYPE
    SYNTAX      Integer32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The value of finDeviceIndex corresponding to the finishing
      device subunit with which this finisher media supply is
      associated.  The value zero indicates the associated device
      is unknown."
    ::= { finSupplyMediaInputEntry 2 }

finSupplyMediaInputSupplyIndex OBJECT-TYPE
    SYNTAX      Integer32 (0..65535)
    MAX-ACCESS  read-only
    STATUS      current
    DESCRIPTION
      "The value of finSupplyIndex corresponding to the finishing
      supply subunit with which this finisher media supply is
      associated.  The value zero indicates the associated finishing
      supply is unknown or there is no applicable finisher supply
      table entry."
    ::= { finSupplyMediaInputEntry 3 }

finSupplyMediaInputType OBJECT-TYPE
    SYNTAX      PrtInputTypeTC
    MAX-ACCESS  read-only
    STATUS      current
```

```
     DESCRIPTION
       "The type of technology (discriminated primarily according
        to the feeder mechanism type) employed by the input
        subunit."
     ::= { finSupplyMediaInputEntry 4 }

finSupplyMediaInputDimUnit OBJECT-TYPE
     SYNTAX       PrtMediaUnitTC
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
       "The unit of measure for specifying dimensional values for
        this input device."
     ::= { finSupplyMediaInputEntry 5 }

finSupplyMediaInputMediaDimFeedDir OBJECT-TYPE
     SYNTAX       Integer32 (-2..2147483647)
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
       "This object provides the value of the dimension in the
        feed direction of the media that is placed or will be
        placed in this input device.  Feed dimension measurements
        are taken parallel to the feed direction of the device and
        measured in finSupplyMediaInputDimUnits.  If this input
        device can reliably sense this value, the value is sensed
        and is read-only access. Otherwise the value is read-write
        access and may be written by management or control panel
        applications. The value (-1) means other and specifically
        indicates that this device places no restrictions on this
        parameter. The value (-2) indicates unknown. "
     ::= { finSupplyMediaInputEntry 6 }

finSupplyMediaInputMediaDimXFeedDir OBJECT-TYPE
     SYNTAX       Integer32 (-2..2147483647)
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
       "This object provides the value of the dimension across the
        feed direction of the media that is placed or will be
        placed in this input device.  The cross feed direction is
        ninety degrees relative to the feed direction on this
        device and measured in finSupplyMediaInputDimUnits.  If
        this input device can reliably sense this value, the value
        is sensed and is read-only access. Otherwise the value is
        read-write access and may be written by management or
        control panel applications. The value (-1) means other and
        specifically indicates that this device places no
```

```
        restrictions on this parameter. The value (-2) indicates
        unknown. "
     ::= { finSupplyMediaInputEntry 7 }


finSupplyMediaInputStatus OBJECT-TYPE
     SYNTAX       PrtSubUnitStatusTC
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
       "This value indicates the current status of this input
       device."
     DEFVAL       { 5 }      -- unknown
     ::= { finSupplyMediaInputEntry 8 }


finSupplyMediaInputMediaName OBJECT-TYPE
     SYNTAX       OCTET STRING (SIZE(0..63))
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
       "The name of the current media contained in this input
       device. Examples are Engineering Manual Cover, Section A Tab
       Divider or any ISO standard names."
     ::= { finSupplyMediaInputEntry 9 }


finSupplyMediaInputName OBJECT-TYPE
     SYNTAX       OCTET STRING (SIZE(0..63))
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
       "The name assigned to this input subunit."
     ::= { finSupplyMediaInputEntry 10 }


finSupplyMediaInputDescription OBJECT-TYPE
     SYNTAX       PrtLocalizedDescriptionStringTC
     MAX-ACCESS   read-only
     STATUS       current
     DESCRIPTION
       "A free form text description of this input subunit in the
       localization specified by prtGeneralCurrentLocalization."
     ::= { finSupplyMediaInputEntry 11 }


finSupplyMediaInputSecurity OBJECT-TYPE
     SYNTAX       PresentOnOff
     MAX-ACCESS   read-write
     STATUS       current
     DESCRIPTION
       "Indicates if this subunit has some security associated
       with it."
```

```
       ::= { finSupplyMediaInputEntry 12 }

finSupplyMediaInputMediaWeight OBJECT-TYPE
    SYNTAX      Integer32
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "The weight of the media associated with this Input device
       in grams per meter squared.  The value (-1) means other
       and specifically indicates that the device places no
       restriction on this parameter.  The value (-2) means
       unknown.  This object can be used to calculate the weight
       of individual pages processed by the document finisher.
       This value, when multiplied by the number of pages in a
       finished set, can be used to calculate the weight of a set
       before it is inserted into a mailing envelope."
       ::= { finSupplyMediaInputEntry 13 }

finSupplyMediaInputMediaThickness OBJECT-TYPE
    SYNTAX      Integer32 (-2..2147483647)
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "This object identifies the thickness of the input media
       processed by this document input subunit measured in
       micrometers.  This value may be used by devices (or
       operators) to set up proper machine tolerances for the
       feeder operation.  The value (-2) indicates that the media
       thickness is unknown or not used in the setup for this
       input subunit."
       ::= { finSupplyMediaInputEntry 14 }

finSupplyMediaInputMediaType OBJECT-TYPE
    SYNTAX      OCTET STRING (SIZE(0..63))
    MAX-ACCESS  read-write
    STATUS      current
    DESCRIPTION
      "The name of the type of medium associated with this input
       subunit. "

    REFERENCE
      "The PWG Standardized Media Names specification [PWGMEDIA],
       section 3 Media Type Names, contains the recommended values
       for this object. Implementers may add additional string values.
       The naming conventions in ISO 9070 are recommended in order to
       avoid potential name clashes."
       ::= { finSupplyMediaInputEntry 15 }
```

```
-- Finisher Device Attribute Group (Mandatory)
--
-- A finisher device subunit may have one or more parameters that
-- cannot be specified by any other objects in the MIB.  The
-- Device Attribute group facilitates the definition of these
-- parameters.  The objects which define the attributes are
-- read-write, to allow both Set and Get operations.
--
-- At least one table entry must exist for each finisher device defined
-- by the MIB.  If no other entry is possible for a finisher device, the
-- deviceName(3) attribute MUST be returned.

finDeviceAttribute  OBJECT IDENTIFIER  ::=  { printmib 33 }

finDeviceAttributeTable OBJECT-TYPE
    SYNTAX      SEQUENCE OF FinDeviceAttributeEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
      "The attribute table defines special parameters that are
       applicable only to a minority of the finisher devices.
       An attribute table entry is used, rather than unique
       objects, to minimize the number of MIB objects and to
       allow for expansion without the addition of MIB objects.
       Each finisher device is represented by a separate row
       in the device subunit attribute table."
::= { finDeviceAttribute 1 }

finDeviceAttributeEntry OBJECT-TYPE
    SYNTAX      FinDeviceAttributeEntry
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
      "Each entry defines a finisher function parameter that
       cannot be represented by an object in the finisher
       device subunit table."
    INDEX  { hrDeviceIndex, finDeviceIndex,
             finDeviceAttributeTypeIndex,
             finDeviceAttributeInstanceIndex }
::= { finDeviceAttributeTable 1 }

FinDeviceAttributeEntry ::= SEQUENCE {
     finDeviceAttributeTypeIndex       FinAttributeTypeTC,
     finDeviceAttributeInstanceIndex   Integer32,
     finDeviceAttributeValueAsInteger  Integer32,
     finDeviceAttributeValueAsOctets   OCTET STRING
     }
```

finDeviceAttributeTypeIndex OBJECT-TYPE
    SYNTAX   FinAttributeTypeTC
    MAX-ACCESS   not-accessible
    STATUS   current
    DESCRIPTION
      "Defines the attribute type represented by this row."
    ::= { finDeviceAttributeEntry 1 }

finDeviceAttributeInstanceIndex OBJECT-TYPE
    SYNTAX   Integer32 (1..65535)
    MAX-ACCESS   not-accessible
    STATUS   current
    DESCRIPTION
      "An index that allows the discrimination of an attribute
       instance when the same attribute occurs multiple times for
       a specific instance of a finisher function. The value of
       this index shall be 1 if only a single instance of the
       attribute occurs for the specific finisher function.
       Additional values shall be assigned in a contiguous manner."
    ::= { finDeviceAttributeEntry 2 }

finDeviceAttributeValueAsInteger OBJECT-TYPE
    SYNTAX   Integer32 (-2..2147483647)
    MAX-ACCESS   read-write
    STATUS   current
    DESCRIPTION
      "Defines the integer value of the attribute. The value of
       the attribute is represented as an integer if the
       finAttributeTypeTC description for the attribute has the
       tag 'INTEGER:'.

       Depending upon the attribute enum definition, this object
       may be either an integer, a counter, an index, or an enum.
       Attributes for which the concept of an integer value is
       not meaningful SHALL return a value of -1 for this
       attribute."
    DEFVAL   { -2 }   -- unknown
    ::= { finDeviceAttributeEntry 3 }

finDeviceAttributeValueAsOctets OBJECT-TYPE
    SYNTAX   OCTET STRING (SIZE(0..63))
    MAX-ACCESS   read-write
    STATUS   current
    DESCRIPTION
      "Contains the octet string value of the attribute. The
       value of the attribute is represented as a string if the
       finAttributeTypeTC description for the attribute has the
       tag 'OCTETS:'.

        Depending upon the attribute enum definition, this object
        may be either a coded character set string (text) or a
        binary octet string. Attributes for which the concept of
        an octet string value is not meaningful SHALL contain a
        zero length string."
    DEFVAL   { ''H }   -- empty string
     ::= { finDeviceAttributeEntry 4 }

-- Conformance Information

-- compliance statements

finMIBCompliance MODULE-COMPLIANCE
    STATUS   current
    DESCRIPTION
        "The compliance statement for agents that implement the
        finisher MIB."
    MODULE -- this module
    MANDATORY-GROUPS { finDeviceGroup, finSupplyGroup,
                       finDeviceAttributeGroup }

        OBJECT   finDevicePresentOnOff
        MIN-ACCESS read-only
        DESCRIPTION
            "It is conformant to implement this object as read-only."

        OBJECT   finDeviceMaxCapacity
        MIN-ACCESS read-only
        DESCRIPTION
            "It is conformant to implement this object as read-only."

        OBJECT   finDeviceCurrentCapacity
        MIN-ACCESS read-only
        DESCRIPTION
            "It is conformant to implement this object as read-only."

        OBJECT   finSupplyMaxCapacity
        MIN-ACCESS read-only
        DESCRIPTION
            "It is conformant to implement this object as read-only."

        OBJECT   finSupplyCurrentLevel
        MIN-ACCESS read-only
        DESCRIPTION
            "It is conformant to implement this object as read-only."

        OBJECT   finSupplyMediaInputMediaDimFeedDir

```
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputMediaDimXFeedDir
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputMediaName
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputName
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputSecurity
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputMediaWeight
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputMediaThickness
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finSupplyMediaInputMediaType
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finDeviceAttributeValueAsInteger
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."

        OBJECT       finDeviceAttributeValueAsOctets
        MIN-ACCESS  read-only
        DESCRIPTION
           "It is conformant to implement this object as read-only."
```

        GROUP   finSupplyMediaInputGroup
        DESCRIPTION
            "This group is conditionally mandatory and must be included
             if a finisher device requires a media supply that is used
             exclusively by a finishing process."

    ::= { prtMIBConformance 5 }

finMIBGroups   OBJECT IDENTIFIER ::= { prtMIBConformance 6 }

finDeviceGroup OBJECT-GROUP
    OBJECTS { finDeviceType, finDevicePresentOnOff,
              finDeviceCapacityUnit, finDeviceMaxCapacity,
              finDeviceCurrentCapacity, finDeviceAssociatedMediaPaths,
              finDeviceAssociatedOutputs, finDeviceStatus,
              finDeviceDescription }
    STATUS current
    DESCRIPTION
        "The finisher device group."
    ::= { finMIBGroups 1 }

finSupplyGroup OBJECT-GROUP
    OBJECTS { finSupplyDeviceIndex, finSupplyClass, finSupplyType,
              finSupplyDescription, finSupplyUnit, finSupplyMaxCapacity,
              finSupplyCurrentLevel, finSupplyColorName }
    STATUS current
    DESCRIPTION
        "The finisher supply group."
    ::= { finMIBGroups 2 }

finSupplyMediaInputGroup OBJECT-GROUP
    OBJECTS { finSupplyMediaInputDeviceIndex,
              finSupplyMediaInputSupplyIndex, finSupplyMediaInputType,
              finSupplyMediaInputDimUnit,
              finSupplyMediaInputMediaDimFeedDir,
              finSupplyMediaInputMediaDimXFeedDir,
              finSupplyMediaInputStatus, finSupplyMediaInputMediaName,
              finSupplyMediaInputName, finSupplyMediaInputDescription,
              finSupplyMediaInputSecurity,
              finSupplyMediaInputMediaWeight,
              finSupplyMediaInputMediaThickness,
              finSupplyMediaInputMediaType }
    STATUS current
    DESCRIPTION
        "The finisher supply, media input group."
    ::= { finMIBGroups 3 }

```
finDeviceAttributeGroup OBJECT-GROUP
    OBJECTS { finDeviceAttributeValueAsInteger,
              finDeviceAttributeValueAsOctets }
    STATUS   current
    DESCRIPTION
       "The finisher device attribute group.  This group is mandatory
        for a finisher device that contains an inserter subunit."
    ::= { finMIBGroups 4 }

END
```

9. IANA Considerations

   The initial version of the IANA Finisher MIB defined in section 7 of
   this document is to be archived by IANA and subsequently maintained
   according to the Process specified in section 6.1 of this document.
   The most current and authoritative version of the IANA Finisher MIB
   is available at:

        http://www.iana.org/assignments/ianafinisher-mib

10. Internationalization Considerations

   See the Printer MIB [RFC3805] section 2.2.1.1, 'International
   Considerations'.

11. References

11.1. Normative References

   [DPA]   ISO/IEC 10175 Document Printing Application (DPA). See
               ftp://ftp.pwg.org/pub/pwg/dpa/

   [LMO]   Large Mailing Operations Specification, DMTF. See
               http://www.dmtf.org/tech/apps.html

   [PWGMEDIA] IEEE-ISTO PWG "The Printer Working Group Standard for
               Media Standardized Names", IEEE-ISTO PWG 5101.1-2002.

   [RFC2119]   Bradner, S., "Key words for use in RFCs to Indicate
               Requirement Levels", BCP 14, RFC 2119, March 1997.

   [RFC2434]   Narten, T. and H. Alvestrand, "Guidelines for Writing an
               IANA Considerations Section in RFCs", BCP 26, RFC 2434,
               October 1998.

   [RFC2578]   McCloghrie, K., Perkins, D., and J. Schoenwaelder,
               "Structure of Management Information Version 2 (SMIv2)",
               STD 58, RFC 2578, April 1999.

   [RFC2579]   McCloghrie, K., Perkins, D., and J. Schoenwaelder,
               "Textual Conventions for SMIv2", STD 58, RFC 2579, April
               1999.

   [RFC2580]   McCloghrie, K., Perkins, D., and J. Schoenwaelder,
               "Conformance Statements for SMIv2", STD 58, RFC 2580,
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   [RFC2790]   Waldbusser, S. and P. Grillo, "Host Resources MIB", RFC
               2790, March 2000.

   [RFC3805]   Bergman, R., Lewis, H., and I. McDonald, "The Printer MIB
               v2", RFC 3805, June 2004.

11.2. Informative References

   [RFC2911]   Hastings, T. Ed., Herriot, R., deBry, R., Issacson, S.,
               and P. Powell, "Internet Printing Protocol/1.1: Model and
               Semantics", RFC 2911, September 2000.

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               "Introduction and Applicability Statements for Internet-
               Standard Management Framework", RFC 3410, December 2002.

12. Security Considerations

   There are a number of management objects defined in this MIB module
   with a MAX-ACCESS clause of read-write and/or read-create. 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. These are the tables and objects and their
   sensitivity/vulnerability:

   finDeviceTable:
      finDevicePresentOnOff -Possible severe inconvenience
      finDeviceMaxCapacity -Possible minor inconvenience
      finDeviceCurrentCapacity -Possible minor inconvenience
   finSupplyTable:
      finSupplyMaxCapacity -Possible minor inconvenience

```
         finSupplyCurrentLevel -Possible minor inconvenience
      finSupplyMediaInputTable
         finSupplyMediaInputMediaDimFeedDir -Possible severe inconvenience
         finSupplyMediaInputMediaDimXFeedDir -Possible severe inconvenience
         finSupplyMediaInputMediaName -Possible Minor inconvenience
         finSupplyMediaInputName -Possible Minor inconvenience
         finSupplyMediaInputSecurity -Possible Minor inconvenience
         finSupplyMediaInputMediaWeight -Possible Minor inconvenience
         finSupplyMediaInputMediaThickness -Possible Minor inconvenience
         finSupplyMediaInputMediaType -Possible Minor inconvenience
      finDeviceAttributeTable
         finDeviceAttributeValueAsInteger -Possible Minor inconvenience
         finDeviceAttributeValueAsOctets -Possible Minor inconvenience
```

SNMP versions prior to SNMPv3 did not include adequate security.
Even if the network itself is secure (for example by using IPSec),
even then, there is no control as to who on the secure network is
allowed to access and GET/SET (read/change/create/delete) the objects
in this MIB module.

It is RECOMMENDED that implementers consider the security features as
provided by the SNMPv3 framework (see [RFC3410], section 8),
including full support for the SNMPv3 cryptographic mechanisms (for
authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT
RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to
enable cryptographic security. It is then a customer/operator
responsibility to ensure that the SNMP entity giving access to an
instance of this MIB module is properly configured to give access to
the objects only to those principals (users) that have legitimate
rights to indeed GET or SET (change/create/delete) 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 certain 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).

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Acknowledgement