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4 Working Draft



10 The Printer Working Group

13 **Internet Printing Protocol (IPP)**
14 **Printer State Extensions v1.0**

16 **Status: Stable Draft**

19 **Abstract:** This document defines the new IPP Printer attributes "printer-alert" and "printer-alert-
20 description" plus extensions to the IPP Printer attribute "printer-state-reasons" (defined in RFC 2911) and
21 to the IANA Printer MIB textual convention "PrtAlertCodeTC" (originally published in RFC 3805) as
22 follows:

23 (a) A standard encoding of all of the machine-readable columnar objects in the 'prtAlertTable'
24 defined in IETF Printer MIB v2 (RFC 3805) into substrings of values of the new IPP Printer
25 "printer-alert" attribute defined in this document.

26 (b) A standard encoding of the localized 'prtAlertDescription' columnar object in the 'prtAlertTable'
27 defined in IETF Printer MIB v2 (RFC 3805) into values of the new IPP Printer "printer-alert-
28 description" attribute defined in this document.

29 (c) A standard mapping between the device errors and warnings in the 'PrtAlertCodeTC' textual
30 convention defined in IANA Printer MIB and existing or new values (as needed) of the IPP Printer
31 "printer-state-reasons" attribute defined in IPP/1.1.

32 (d) A standard mapping between the finishing subunit types in the 'FinDeviceTypeTC' textual
33 convention defined in IANA Finisher MIB (originally published in RFC 3806) and new specific
34 values of the 'PrtAlertCodeTC' textual convention defined in IANA Printer MIB and new values of
35 the IPP Printer "printer-state-reasons" attribute defined in IPP/1.1, for high fidelity support of
36 finishing alerts.

37

38 This document is a PWG Working Draft. For a definition of a "PWG Working Draft", see

39 <ftp://ftp.pwg.org/pub/pwg/general/process/pwg-process30.pdf>

40 This document is available electronically at:

41 <ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippstate10-20090603pdf>

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89 document implicitly mean "The Printer Working Group, a Program of the IEEE ISTO." The PWG is
90 chartered to make printers and the applications and operating systems supporting them work together
91 better. In order to meet this objective, the PWG will document the results of their work as open standards
92 that define print related protocols, interfaces, data models, procedures and conventions. Printer
93 manufacturers and vendors of printer related software would benefit from the interoperability provided by
94 voluntary conformance to these standards.

95 In general, a PWG standard is a specification that is stable, well understood, and is technically
96 competent, has multiple, independent and interoperable implementations with substantial operational
97 experience, and enjoys significant public support.

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106 Instructions for subscribing to the IPP mailing list can be found at the following link:

107 <http://www.pwg.org/mailhelp.html>

108 Members of the PWG and interested parties are encouraged to join the PWG and IPP WG mailing lists in
109 order to participate in discussions, clarifications and review of the IPP Working Group product.

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192 **1 Introduction**

193 **1.1 Scope**

194 This document defines two new IPP Printer attributes "printer-alert" and "printer-alert-description" plus
195 extensions to the IPP Printer attribute "printer-state-reasons" (defined in RFC 2911) and to the IANA
196 Printer MIB textual convention "PrtAlertCodeTC" (originally published in RFC 3805) as follows:

- 197 1) A standard encoding of all of the machine-readable columnar objects in the 'prtAlertTable'
198 defined in IETF Printer MIB v2 (RFC 3805) into substrings of values of the new IPP Printer
199 "printer-alert" attribute defined in this document.
- 200 2) A standard encoding of the localized 'prtAlertDescription' columnar object in the
201 'prtAlertTable' defined in IETF Printer MIB v2 (RFC 3805) into values of the new IPP Printer
202 "printer-alert-description" attribute defined in this document.
- 203 3) A standard mapping between the device errors and warnings in the 'PrtAlertCodeTC' textual
204 convention defined in IANA Printer MIB and existing or new values (as needed) of the IPP
205 Printer "printer-state-reasons" attribute defined in IPP/1.1.
- 206 4) A standard mapping between the finishing subunit types in the 'FinDeviceTypeTC' textual
207 convention defined in IANA Finisher MIB (originally published in RFC 3806) and new specific
208 values of the 'PrtAlertCodeTC' textual convention defined in IANA Printer MIB and new
209 values of the IPP Printer "printer-state-reasons" attribute defined in IPP/1.1, for high fidelity
210 support of finishing alerts.

211 **1.2 Problem Statement**

212 When deploying printers in enterprise networks, customers often disable SNMPv1 (RFC 1157), based on
213 local security policy - and secure SNMPv3 (RFC 3414) is not widely supported by current printers.
214 Therefore, alternative support for secure queries for printer device alerts is required to manage, provision,
215 and service these non-SNMP network printers. IPP/1.1 (RFC 2911) can be securely deployed in
216 enterprise networks, using TLS/1.0 (RFC 2246) and HTTP/1.1 Upgrade (RFC 2817), so an IPP solution to
217 this requirement is attractive.

218 The IPP "printer-state-reasons" attribute was defined in IPP/1.1 (RFC 2911), but the mapping of printer
219 device alerts from the 'prtAlertCode' object defined in Printer MIB v1/v2 (RFC 1759/3805) was very
220 sparse.

221 **2 Terminology**

222 **2.1 Conformance Terminology**

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

225 **2.2 Printing Terminology**

226 Normative definitions and semantics of printing terms are imported from IETF Printer MIB v2 [RFC3805],
227 IETF Finisher MIB [RFC3806], and IETF IPP/1.1 [RFC2911].

228

229 This document also defines the following protocol roles in order to specify unambiguous conformance
230 requirements:

231 IPP Client - Initiator of outgoing IPP session requests and sender of outgoing IPP operation requests
232 (HTTP/1.0 Client [RFC1957] / HTTP/1.1 Client [RFC2616]).

233 IPP Printer - Listener for incoming IPP session requests and receiver of incoming IPP operation requests
234 (HTTP/1.0 Server [RFC1957] / HTTP/1.1 Server [RFC2616]).

235 Printer MIB Agent - Receiver of incoming SNMP operation requests (SNMPv1 Agent [RFC1157] /
236 SNMPv3 Command Responder [RFC3411]).

237 Printer MIB Client - Sender of outgoing SNMP operation requests (SNMPv1 Manager [RFC1157] /
238 SNMPv3 Command Generator [RFC3411]).

239 **3 Industry Standard Printing Model**

240 **3.1 Standard Model - ISO DPA**

241 The industry standard printing model was first defined during the development of ISO Document Printing
242 Application (DPA) [ISO10175]. All subsequent open printing standards refer extensively to ISO DPA for
243 the semantics of printing attributes.

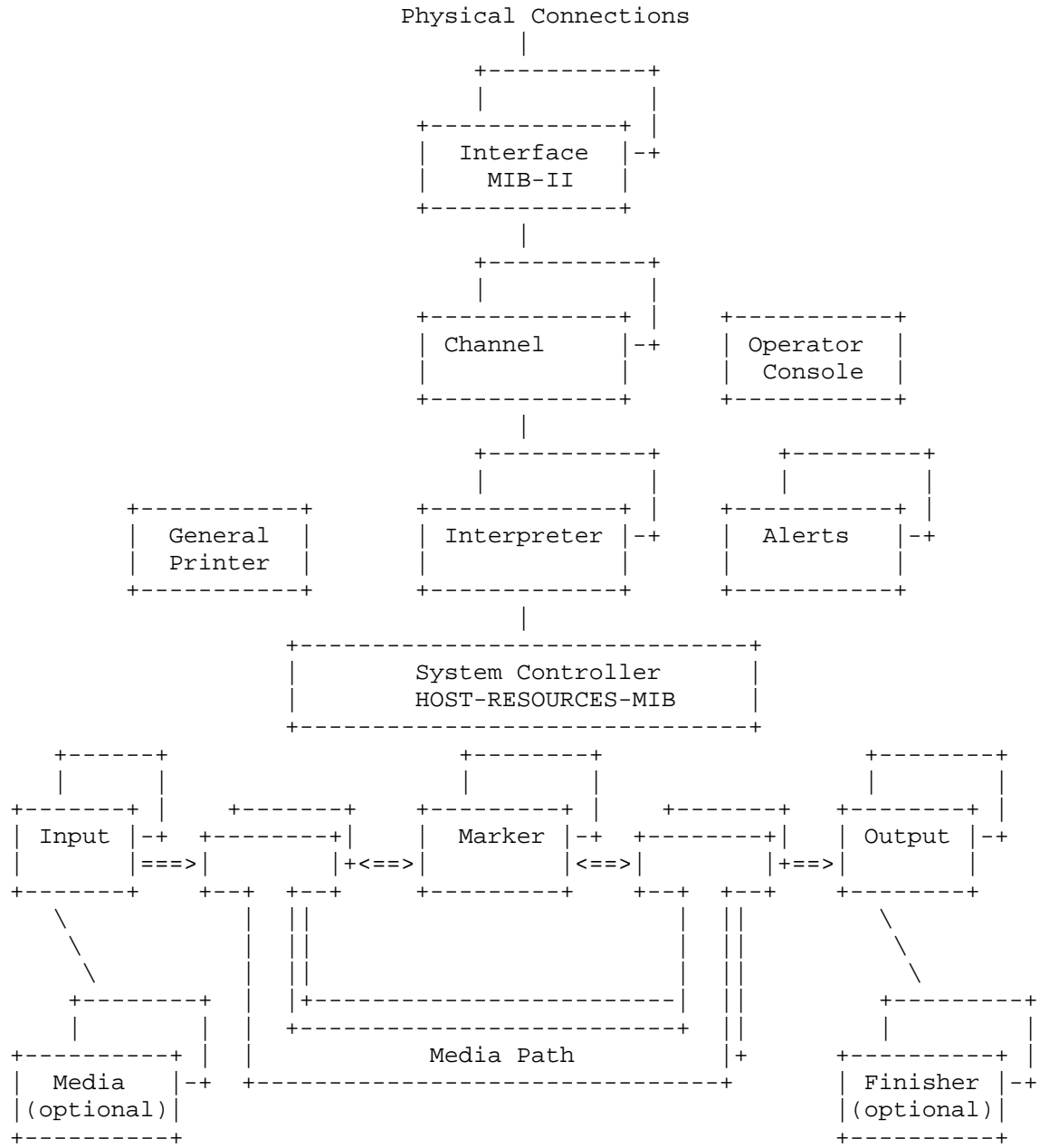
244 WARNING: In ISO DPA, the abstract Printer object has two distinct 'realizations', to wit, Physical Printer
245 (device) and Logical Printer (service). As a result, the term 'Printer' was used to mean a Physical Print
246 Device in the IETF Printer MIB v1/v2 [RFC1759] [RFC3805] and later ambiguously used to mean `_either_`
247 a Logical Print Service or a Physical Print Device in IETF IPP/1.1 [RFC2911].

248 **3.2 Print Device - Printer MIB**

249 The Print Device was first described in the IETF Host Resources MIB v1 [RFC1514] (September 1993)
250 which defined the 'hrDevicePrinter' OID value for the 'hrDeviceType' element of the 'hrDeviceTable' and
251 defined the 'hrPrinterTable' containing the 'hrPrinterStatus' (enumeration) and
252 'hrPrinterDetectedErrorState' (bit-mask) elements.

253 The industry standard Print Device model was later defined in section 2 of the IETF Printer MIB v1
254 [RFC1759] (March 1995) and is preserved without change in the IETF Printer MIB v2 [RFC3805] (June
255 2004). The block diagram is excerpted below.

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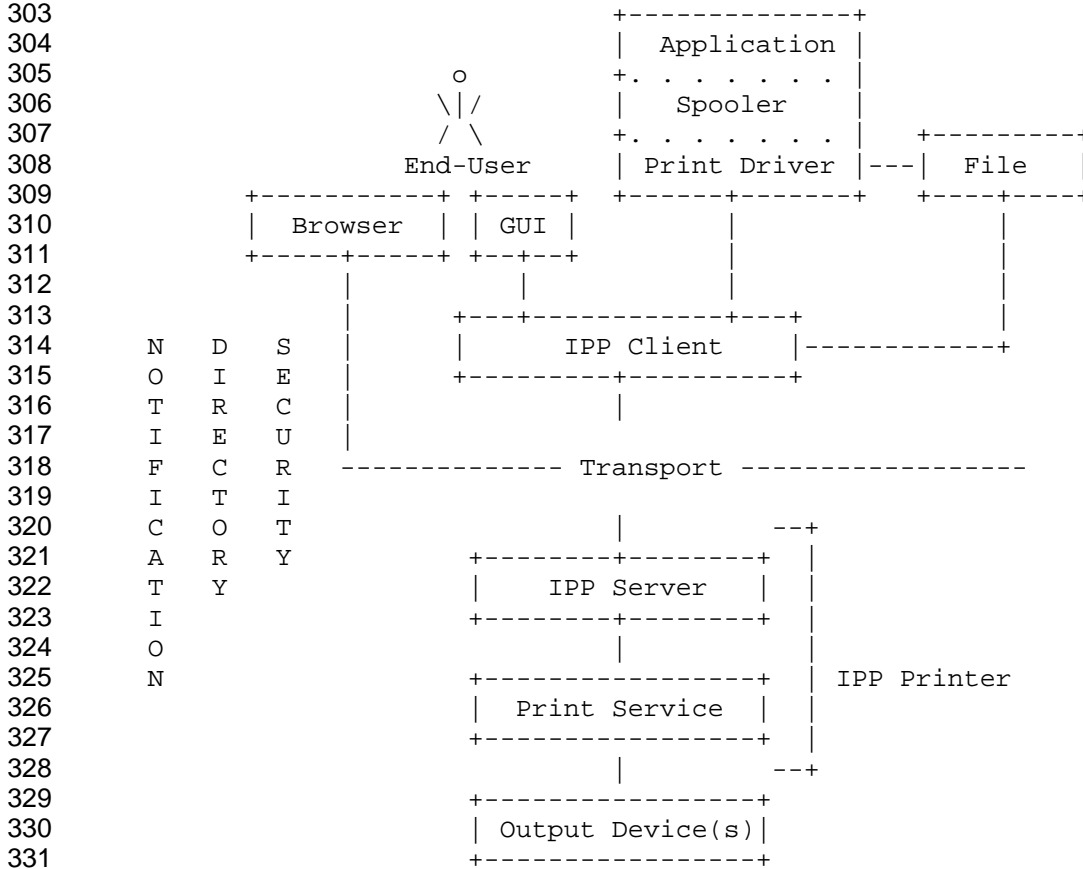


299

Figure 1 - Printer Block Diagram

300 **3.3 Print Service and Print Device - IPP**

301 A simplified printing model was defined in section 1.1 of IETF IPP/1.1 [RFC2911], based on ISO DPA
 302 [ISO10175]. The block diagram is excerpted below.



332 **Figure 2 - Simplified Printing Model**

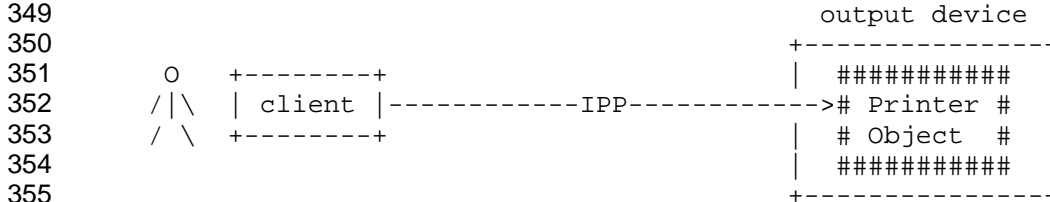
333

334 A simplified Print Service model and Print Device model was defined in section 2.1 of IETF IPP/1.1
 335 [RFC2911], based on the logical and physical 'realizations' of the Printer object originally defined in ISO
 336 DPA [ISO10175]. The term Printer was ambiguously used to mean _either_ a Logical Print Service or a
 337 Physical Print Device in IETF IPP/1.1 [RFC2911]. The block diagrams are excerpted below.

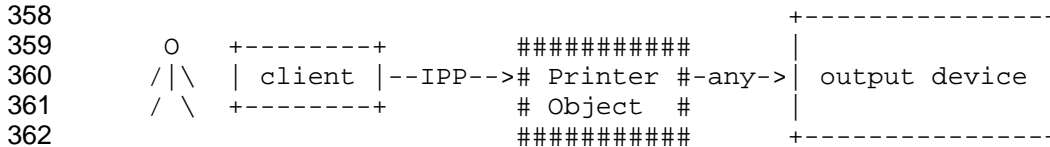
338

339 Legend:
 340 ##### indicates a Printer object which is
 341 either embedded in an output device or is
 342 hosted in a server. The Printer object
 343 might or might not be capable of queuing/spooling.
 344
 345 any indicates any network protocol or direct
 346 connect, including IPP

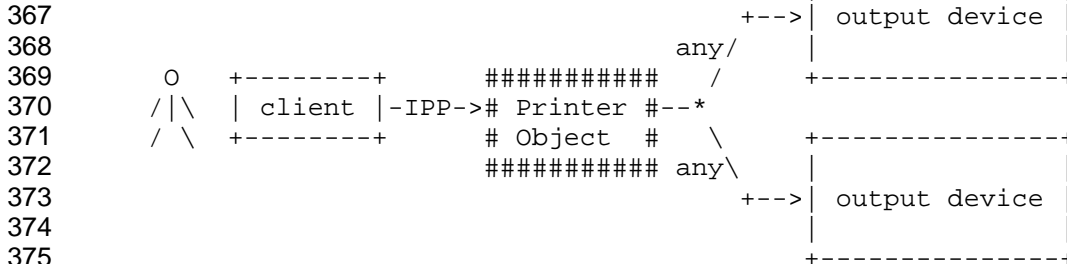
347 embedded printer:



356 hosted printer:



365 fan out:



376

Figure 3 - Simplified Print Service and Print Device

377 4 Requirements

378 Per the PWG Process, this section specifies the formal rationale for developing an IPP Printer State
379 Extensions (PSX) specification, based on existing printing industry standards. This section also describes
380 simple use models for IPP PSX environments.

381 4.1 Rationale for IPP PSX

382 IETF and PWG standards for the printing industry define:

- 383 a) A rationale for an abstract model of printing (to support alternate encodings and protocols) in
384 section 3 of the IETF IPP Rationale [RFC2568].
- 385 b) A set of design goals for status monitoring in a printing protocol in section 3.1.3 'Viewing the
386 status and capabilities of a printer' (for End User), section 3.2.1 'Alerting' (for Operator), and
387 section 3.3 'Administrator' (the bullet requirement to 'administrate billing or other charge-back
388 mechanisms') of the IETF IPP Design Goals [RFC2567].
- 389 c) An abstract model of a Print Service (i.e., ISO DPA Logical Printer) and a Print Device (i.e., ISO
390 DPA Physical Printer) in section 2.1 of IETF IPP/1.1 [RFC2911].
- 391 d) A partial set of Print Device alerts in the "printer-state-reasons" attribute in section 4.4.12 of IETF
392 IPP/1.1 [RFC2911].
- 393 e) An abstract model of a Print Device and contained Subunits in section 2.2 of the IETF Printer MIB
394 v2 [RFC3805].
- 395 f) A set of Print Device and Subunit types in the 'PrtAlertGroupTC' textual convention in IANA
396 Printer MIB [IANAPRT], originally published in section 5 of the IETF Printer MIB v2 [RFC3805].
- 397 g) A set of Print Device and Subunit alerts in the 'PrtAlertCodeTC' textual convention in IANA Printer
398 MIB [IANAPRT], originally published in section 5 of the IETF Printer MIB v2 [RFC3805].
- 399 h) An abstract model of Finishing Subunits integrated into the Printer Model (from [RFC3805]) in
400 section 3 of the IETF Finisher MIB [RFC3806].
- 401 i) A set of Finishing Subunit types in the 'FinDeviceTypeTC' textual convention in IANA Finisher
402 MIB [IANAFIN], originally published in section 7 of the IETF Finisher MIB [RFC3806].

403 When deploying printers in enterprise networks, customers often disable SNMPv1 (RFC 1157), based on
404 local security policy - and secure SNMPv3 (RFC 3414) is not widely supported by current printers.

405 Therefore an IPP PSX specification SHOULD:

- 406 a) Standardize non-SNMP alternative support for secure queries for network printer device alerts;
- 407 b) Standardize capabilities to manage, provision, and service these non-SNMP network printers;
- 408 c) Encourage adoption of modern IPP-based printing infrastructures.

409 The IPP "printer-state-reasons" attribute was defined in IPP/1.1 (RFC 2911), but the mapping of printer
410 device alerts from the 'prtAlertCode' object defined in Printer MIB v1/v2 (RFC 1759/3805) was very
411 sparse.

412 To support monitoring, maintenance, and administration of these network printers, this document defines:

- 413 (1) New enumerated values of the "PrtAlertCodeTC" textual convention for alerts for every
414 Finishing Subunit type in the 'FinDeviceTypeTC' textual convention, for high fidelity alert mapping.
- 415 (2) New keyword values for the "printer-state-reasons" attribute to complete the mapping for
416 every Print Device and Subunit alert in the 'PrtAlertCodeTC' textual convention.

417 (3) New keyword values for the new "printer-alert" attribute to encode all of the machine-readable
418 columnar objects in 'prtAlertTable', for high fidelity alert mapping.

419 (4) A new "printer-alert-description" attribute to encode the localized 'prtAlertDescription' object in
420 'prtAlertTable', to complete the Printer MIB to IPP Printer mapping.

421 **4.2 Use Models for IPP PSX**

422 **4.2.1 Service Providers - Monitoring**

423 Outside service providers may lease and maintain network printers in remote customer enterprise
424 networks in different administrative domains.

425 Note: Typically monitoring proxies within customer enterprise networks are required for scalability of this
426 use model. However, the deployment of monitoring proxies and of security credentials is outside the
427 scope of this document.

- 428 1) To support reordering of supplies, outside service providers may read Device and Subunit alerts
429 in "printer-state-reasons" from network printers that support IPP/1.1 (e.g., every day).
- 430 2) To support preventive maintenance, outside service providers may read Device and Subunit
431 alerts in "printer-state-reasons" from network printers that support IPP/1.1 (e.g., every hour).
- 432 3) To support downtime guarantees, outside service providers may periodically read Device and
433 Subunit alerts in "printer-state-reasons" from network printers that support IPP/1.1 (e.g., every 10
434 minutes).

435 **4.2.2 System Administrators - Network Management**

436 Network system administrators configure and manage Print Devices in local enterprise networks.

- 437 1) To support network management, network system administrators may subscribe to Print Device
438 events from network printers that support IPP/1.1.
- 439 2) To support preventive maintenance, network system administrators may read Device and Subunit
440 alerts in "printer-state-reasons" from network printers that support IPP/1.1 (e.g., every hour).
- 441 3) To support emergency maintenance, network system administrators may read Device and
442 Subunit alerts in "printer-state-reasons", especially configuration changes and critical alerts, from
443 network printers that support IPP/1.1 (e.g., every 10 minutes).

444 **4.2.3 System Operators - Monitoring**

445 Network system operators monitor Print Devices and manage Print Jobs in local enterprise networks.

- 446 1) To support Print Job management, network system operators may subscribe to Print Device and
447 Print Job events from network printers that support IPP/1.1.
- 448 2) To support Print Device monitoring, network system operators may read Device and Subunit
449 alerts in "printer-state-reasons", especially for low or empty supplies, from network printers that
450 support IPP/1.1 (e.g., every hour).
- 451 3) To support Print Device availability, network system operators may read Device and Subunit
452 alerts in "printer-state-reasons", especially for paper jams and other simple alerts, from network
453 printers that support IPP/1.1 (e.g., every 10 minutes).

454 4.3 Design Requirements for IPP PSX

- 455 (1) The IPP PSX design MUST follow the naming conventions defined in IETF IPP/1.1
456 [RFC2911], including keyword value case (lower) and hyphenation requirements.
- 457 (2) The IPP PSX design MUST define a complete mapping between Print Device and Subunit
458 existing values of 'PrtAlertCodeTC' in IANA Printer MIB [IANAPRT] and existing values or new
459 values (as needed) of "printer-state-reasons".
- 460 (3) The IPP PSX design MUST define Finishing Subunit-specific new values of 'PrtAlertCodeTC'
461 for registration in IANA Printer MIB [IANAPRT] for every value of 'FinDeviceTypeTC' in IANA
462 Finisher MIB [IANAFIN].
- 463 (4) The IPP PSX design MUST define a standard encoding for all of the machine-readable
464 columnar objects defined in the 'prtAlertTable' in IETF Printer MIB v2 (RFC 3805) as substrings of
465 values of a new "printer-alert" attribute.
- 466 (5) The IPP PSX design MUST define a standard encoding for the localized 'prtAlertDescription'
467 columnar object defined in the 'prtAlertTable' in IETF Printer MIB v2 (RFC 3805) as text values of
468 a new "printer-alert-description" attribute.

469 5 IPP Printer Attributes

470 5.1 printer-state-reasons (1setOf type2 keyword)

471 This section defines clarifications and extensions for the existing multi-valued IPP Printer "printer-state-
472 reasons" attribute originally specified in IETF IPP/1.1 [RFC2911]. This IPP Printer attribute is REQUIRED
473 for implementations that conform to this specification. Specific values and mappings to/from the IETF
474 Printer MIB v2 [RFC3805] are defined in detail below.

475 5.1.1 Severity Suffixes Interoperability

476 The severity suffixes ('-report', '-error', and '-warning') for values of the existing IPP Printer "printer-state-
477 reasons" attribute are defined in section 4.4.12 of [RFC2911]. These values have NOT been IANA-
478 registered because:

479 1) They are not valid for the attribute syntax 'keyword' defined in section 4.1.3 of [RFC2911].

480 2) They are structurally incompatible with the IANA IPP Registry [IANAIPP] as defined in section 6 of
481 [RFC2911].

482 5.1.1.1 Conformance

483 1) For interoperability, IPP implementations that claim conformance to this specification SHOULD
484 implement special-case parsing and validation for the severity suffixes for "printer-state-reasons"
485 defined in [RFC2911].

486 5.1.2 Existing Printer State Reasons for Alert Codes

487 The table below shows existing values of "printer-state-reasons" [RFC2911] and their mapping from
488 existing values of 'PrtAlertCodeTC' [IANAPRT].

489 Deprecated Mappings: Existing values of "printer-state-reasons" in Table 5-1 that are enclosed in
490 parentheses are DEPRECATED because they define non-unique mappings and SHOULD NOT be
491 implemented. Instead, the new specific mappings defined in Table 5-2 SHOULD be implemented.

492 **Table 5-1 - Existing Printer State Reasons for Alert Codes**

493	<u>PrtAlertCodeTC</u>	<u>printer-state-reasons</u>
494	-- RFC 1759 Generic codes	
495	other(1)	other
496	unknown(2)	
497	coverOpen(3)	cover-open
498	coverClosed(4)	
499	interlockOpen(5)	interlock-open
500	interlockClosed(6)	
501	configurationChange(7)	
502	jam(8)	media-jam
503		
504	-- RFC 3805 Generic codes	
505	subunitMissing(9)	
506	subunitLifeAlmostOver(10)	
507	subunitLifeOver(11)	
508	subunitAlmostEmpty(12)	
509	subunitEmpty(13)	
510	subunitAlmostFull(14)	
511	subunitFull(15)	
512	subunitNearLimit(16)	
513	subunitAtLimit(17)	
514	subunitOpened(18)	
515	subunitClosed(19)	
516	subunitTurnedOn(20)	
517	subunitTurnedOff(21)	
518	subunitOffline(22)	
519	subunitPowerSaver(23)	
520	subunitWarmingUp(24)	
521	subunitAdded(25)	
522	subunitRemoved(26)	
523	subunitResourceAdded(27)	
524	subunitResourceRemoved(28)	
525	subunitRecoverableFailure(29)	
526	subunitUnrecoverableFailure(30)	
527	subunitRecoverableStorageError(31)	
528	subunitUnrecoverableStorageError(32)	
529	subunitMotorFailure(33)	
530	subunitMemoryExhausted(34)	
531	subunitUnderTemperature(35)	
532	subunitOverTemperature(36)	
533	subunitTimingFailure(37)	
534	subunitThermistorFailure(38)	
535		
536	-- General Printer Group	
537	doorOpen(501)	(door-open)
538	-- DEPRECATED -- use coverOpen(3)	
539	doorClosed(502)	
540	-- DEPRECATED -- use coverClosed(4)	
541	powerUp(503)	
542	powerDown(504)	(shutdown)
543	printerNMSReset(505)	
544	printerManualReset(506)	
545	printerReadyToPrint(507)	

```

546
547 -- Input Group
548 inputMediaTrayMissing(801)          input-tray-missing
549 inputMediaSizeChange(802)
550 inputMediaWeightChange(803)
551 inputMediaTypeChange(804)
552 inputMediaColorChange(805)
553 inputMediaFormPartsChange(806)
554 inputMediaSupplyLow(807)           media-low
555 inputMediaSupplyEmpty(808)        media-empty
556 inputMediaChangeRequest(809)      media-needed
557 inputManualInputRequest(810)
558 inputTrayPositionFailure(811)
559 inputTrayElevationFailure(812)
560 inputCannotFeedSizeSelected(813)
561
562 -- Output Group
563 outputMediaTrayMissing(901)        output-tray-missing
564 outputMediaTrayAlmostFull(902)    output-area-almost-full
565 outputMediaTrayFull(903)          output-area-full
566 outputMailboxSelectFailure(904)
567
568 -- Marker Group
569 markerFuserUnderTemperature(1001)  fuser-under-temp
570 markerFuserOverTemperature(1002)   fuser-over-temp
571 markerFuserTimingFailure(1003)
572 markerFuserThermistorFailure(1004)
573 markerAdjustingPrintQuality(1005)
574
575 -- Marker Supplies Group
576 markerTonerEmpty(1101)             toner-empty
577 markerInkEmpty(1102)               (marker-supply-empty)
578 markerPrintRibbonEmpty(1103)       (marker-supply-empty)
579 markerTonerAlmostEmpty(1104)       toner-low
580 markerInkAlmostEmpty(1105)         (marker-supply-low)
581 markerPrintRibbonAlmostEmpty(1106) (marker-supply-low)
582 markerWasteTonerReceptacleAlmostFull(1107)
583                                   (marker-waste-almost-full)
584 markerWasteInkReceptacleAlmostFull(1108)
585                                   (marker-waste-almost-full)
586 markerWasteTonerReceptacleFull(1109) (marker-waste-full)
587 markerWasteInkReceptacleFull(1110) (marker-waste-full)
588 markerOpcLifeAlmostOver(1111)      opc-near-eol
589 markerOpcLifeOver(1112)            opc-life-over
590 markerDeveloperAlmostEmpty(1113)   (marker-supply-low)
591 markerDeveloperEmpty(1114)         (marker-supply-empty)
592 markerTonerCartridgeMissing(1115)
593
594 -- Media Path Group
595 mediaPathMediaTrayMissing(1301)
596 mediaPathMediaTrayAlmostFull(1302)
597 mediaPathMediaTrayFull(1303)
598 mediaPathCannotDuplexMediaSelected(1304)
599
600 -- Interpreter Group
601 interpreterMemoryIncrease(1501)
602 interpreterMemoryDecrease(1502)

```

```

603 interpreterCartridgeAdded(1503)
604 interpreterCartridgeDeleted(1504)
605 interpreterResourceAdded(1505)
606 interpreterResourceDeleted(1506)
607 interpreterResourceUnavailable(1507)    interpreter-resource-unavailable
608 interpreterComplexPageEncountered(1509)
609
610 -- Alert Group
611 alertRemovalOfBinaryChangeEntry(1801)
612     -- A binary change alert has been removed
    
```

613

614 5.1.2.1 Conformance

- 615 1) For interoperability, IPP implementations that claim conformance to this specification MUST
- 616 implement the Table 5-1 standard mappings between existing values of "printer-state-reasons"
- 617 [RFC2911] and existing values of 'PrtAlertCodeTC' [IANAPRT].
- 618 2) For interoperability, IPP implementations that claim conformance to this specification SHOULD
- 619 NOT implement the Table 5-1 deprecated mappings (enclosed in parentheses) between existing
- 620 values of "printer-state-reasons" [RFC2911] and existing values of 'PrtAlertCodeTC' [IANAPRT].
- 621 Instead, the new specific mappings defined in Table 5-2 SHOULD be implemented.

622 5.1.3 New Printer State Reasons for Alert Codes

623 The table below defines new values of "printer-state-reasons" [RFC2911] and their mapping from existing
 624 values of 'PrtAlertCodeTC' [IANAPRT]. Rows with a '---' value in "printer-state-reasons" indicate existing
 625 values "printer-state-reasons" that were originally defined in [RFC2911] (e.g., 'jam'). IPP implementations
 626 that claim conformance to this specification therefore support a complete and precise mapping of "printer-
 627 state-reasons" from original values of 'PrtAlertCodeTC' [IANAPRT] defined in [RFC 3805].

628 **Table 5-2 - New Printer State Reasons for Alert Codes**

<u>PrtAlertCodeTC</u>	<u>printer-state-reasons</u>
629 -- RFC 1759 Generic codes	
630 other(1)	---
631 unknown(2)	unknown
632 coverOpen(3)	---
633 coverClosed(4)	cover-closed
634 interlockOpen(5)	---
635 interlockClosed(6)	interlock-closed
636 configurationChange(7)	configuration-change
637 jam(8)	---
638	
639 -- RFC 3805 Generic codes	
640 subunitMissing(9)	subunit-missing
641 subunitLifeAlmostOver(10)	subunit-life-almost-over
642 subunitLifeOver(11)	subunit-life-over
643 subunitAlmostEmpty(12)	subunit-almost-empty
644 subunitEmpty(13)	subunit-empty
645 subunitAlmostFull(14)	subunit-almost-full
646 subunitFull(15)	subunit-full
647 subunitNearLimit(16)	subunit-near-limit
648 subunitAtLimit(17)	subunit-at-limit
649 subunitOpened(18)	subunit-opened
650	

651	subunitClosed(19)	subunit-closed
652	subunitTurnedOn(20)	subunit-turned-on
653	subunitTurnedOff(21)	subunit-turned-off
654	subunitOffline(22)	subunit-offline
655	subunitPowerSaver(23)	subunit-power-saver
656	subunitWarmingUp(24)	subunit-warming-up
657	subunitAdded(25)	subunit-added
658	subunitRemoved(26)	subunit-removed
659	subunitResourceAdded(27)	subunit-resource-added
660	subunitResourceRemoved(28)	subunit-resource-removed
661	subunitRecoverableFailure(29)	subunit-recoverable-failure
662	subunitUnrecoverableFailure(30)	subunit-unrecoverable-failure
663	subunitRecoverableStorageError(31)	subunit-recoverable-storage-error
664	subunitUnrecoverableStorageError(32)	subunit-unrecoverable-storage-error
665	subunitMotorFailure(33)	subunit-motor-failure
666	subunitMemoryExhausted(34)	subunit-memory-exhausted
667	subunitUnderTemperature(35)	subunit-under-temperature
668	subunitOverTemperature(36)	subunit-over-temperature
669	subunitTimingFailure(37)	subunit-timing-failure
670	subunitThermistorFailure(38)	subunit-thermistor-failure
671		
672	-- General Printer Group	
673	doorOpen(501)	---
674	-- DEPRECATED -- use coverOpen(3)	
675	doorClosed(502)	cover-closed
676	-- DEPRECATED -- use coverClosed(4)	
677	powerUp(503)	power-up
678	powerDown(504)	power-down
679	printerNMSReset(505)	printer-nms-reset
680	printerManualReset(506)	printer-manual-reset
681	printerReadyToPrint(507)	printer-ready-to-print
682		
683	-- Input Group	
684	inputMediaTrayMissing(801)	---
685	inputMediaSizeChange(802)	input-media-size-change
686	inputMediaWeightChange(803)	input-media-weight-change
687	inputMediaTypeChange(804)	input-media-type-change
688	inputMediaColorChange(805)	input-media-color-change
689	inputMediaFormPartsChange(806)	input-media-form-parts-change
690	inputMediaSupplyLow(807)	---
691	inputMediaSupplyEmpty(808)	---
692	inputMediaChangeRequest(809)	---
693	inputManualInputRequest(810)	input-manual-input-request
694	inputTrayPositionFailure(811)	input-tray-position-failure
695	inputTrayElevationFailure(812)	input-tray-elevation-failure
696	inputCannotFeedSizeSelected(813)	input-cannot-feed-size-selected
697		
698	-- Output Group	
699	outputMediaTrayMissing(901)	---
700	outputMediaTrayAlmostFull(902)	---
701	outputMediaTrayFull(903)	---
702	outputMailboxSelectFailure(904)	output-mailbox-select-failure
703		
704	-- Marker Group	
705	markerFuserUnderTemperature(1001)	---
706	markerFuserOverTemperature(1002)	---
707	markerFuserTimingFailure(1003)	marker-fuser-timing-failure

```

708 markerFuserThermistorFailure(1004) marker-fuser-thermistor-failure
709 markerAdjustingPrintQuality(1005) marker-adjusting-print-quality
710
711 -- Marker Supplies Group
712 markerTonerEmpty(1101) ---
713 markerInkEmpty(1102) marker-ink-empty
714 markerPrintRibbonEmpty(1103) marker-print-ribbon-empty
715 markerTonerAlmostEmpty(1104) ---
716 markerInkAlmostEmpty(1105) marker-ink-almost-empty
717 markerPrintRibbonAlmostEmpty(1106) marker-print-ribbon-almost-empty
718 markerWasteTonerReceptacleAlmostFull(1107) marker-waste-toner-receptacle-
719 almost-
720 full
721 markerWasteInkReceptacleAlmostFull(1108) marker-waste-ink-receptacle-
722 almost-full
723 markerWasteTonerReceptacleFull(1109) marker-waste-toner-receptacle-
724 full
725 markerWasteInkReceptacleFull(1110) marker-waste-ink-receptacle-full
726 markerOpcLifeAlmostOver(1111) ---
727 markerOpcLifeOver(1112) ---
728 markerDeveloperAlmostEmpty(1113) marker-developer-almost-empty
729 markerDeveloperEmpty(1114) marker-developer-empty
730 markerTonerCartridgeMissing(1115) marker-toner-cartridge-missing
731
732 -- Media Path Group
733 mediaPathMediaTrayMissing(1301) media-path-media-tray-missing
734 mediaPathMediaTrayAlmostFull(1302) media-path-media-tray-almost-full
735 mediaPathMediaTrayFull(1303) media-path-media-tray-full
736 mediaPathCannotDuplexMediaSelected(1304) media-path-cannot-duplex-media-
737 selected
738
739 -- Interpreter Group
740 interpreterMemoryIncrease(1501) interpreter-memory-increase
741 interpreterMemoryDecrease(1502) interpreter-memory-decrease
742 interpreterCartridgeAdded(1503) interpreter-cartridge-added
743 interpreterCartridgeDeleted(1504) interpreter-cartridge-deleted
744 interpreterResourceAdded(1505) interpreter-resource-added
745 interpreterResourceDeleted(1506) interpreter-resource-deleted
746 interpreterResourceUnavailable(1507) ---
747 interpreterComplexPageEncountered(1509) interpreter-complex-page-
748 encountered
749
750 -- Alert Group
751 alertRemovalOfBinaryChangeEntry(1801) alert-removal-of-binary-change-entry
752 -- A binary change alert has been removed
753
754 5.1.3.1 Conformance
755 1) For interoperability, IPP implementations that claim conformance to this specification MUST
756 implement the Table 5-2 standard mappings between new values of "printer-state-reasons"
757 [RFC2911] and existing values of 'PrtAlertCodeTC' [IANAPRT].
758

```

759 **5.1.4 New PrinterState Reasons for Finishing Subunits**

760 See the Table 6-1 'New Alert Codes for Finishing Subunits' in section 6.1.1 that shows new values of
 761 "printer-state-reasons" [RFC2911] and their mapping from new values of 'PrtAlertCodeTC' [IANAPRT] for
 762 Finishing Subunits.

763 5.1.4.1 Conformance

764 1) For interoperability, IPP implementations that claim conformance to this specification MUST
 765 implement the Table 6-1 mapping standards between new values of "printer-state-reasons"
 766 [RFC2911] and new values of 'PrtAlertCodeTC' [IANAPRT] for Finishing Subunits.

767

768 **5.2 printer-alert (1setOf octetString(MAX))**

769 This section defines the new multi-valued IPP Printer "printer-alert" attribute. This IPP Printer attribute is
 770 REQUIRED for implementations that conform to this specification

771 **5.2.1 Keywords for Alert Objects**

772 The table below defines keywords for "printer-alert" for all of the machine-readable columnar objects in
 773 'prtAlertTable' [RFC3805]:

774 Note: The conformance levels in this table have been harmonized with:

- 775 1) The bindings of the 'printerV2Alert' notification defined in IETF Printer MIB v2 [RFC3805];
- 776 2) Section 9 'Event Notification Content' in IETF IPP Event Notifications and Subscriptions
 777 [RFC3995]; and
- 778 3) DMTF/PWG CIM modelling of Printer MIB [WIMS-CIM].

779 **Table 5-3 - Keywords for Alert Objects**

Alert Object	Datatype	printer-alert tag	Conformance
780 prtAlertCode	String	code	REQUIRED
781 prtAlertIndex	Integer	index	RECOMMENDED
782 prtAlertSeverityLevel	String	severity	RECOMMENDED
783 prtAlertTrainingLevel	String	training	OPTIONAL
784 prtAlertGroup	String	group	RECOMMENDED
785 prtAlertGroupIndex	Integer	group-index	RECOMMENDED
786 prtAlertLocation	Integer	location	RECOMMENDED
787 prtAlertTime	Integer	time	OPTIONAL

789

790 5.2.1.1 Conformance

791 1) For interoperability, IPP implementations that claim conformance to this specification MUST
 792 implement the new REQUIRED IPP Printer "printer-alert" attribute.

793

794 2) For interoperability, IPP implementations that claim conformance to this specification and
 795 implement the new "printer-alert" attribute MUST implement the Table 5-3 standard mappings
 796 between keywords in "printer-alert" and existing labels of 'prtAlertTable' objects [RFC3805].
 797

- 798 3) For interoperability, IPP implementations that claim conformance to this specification MUST
 799 implement the Table 5-3 keywords defined as REQUIRED.
 800
 801 4) For interoperability, IPP implementations that claim conformance to this specification SHOULD
 802 implement the Table 5-3 keywords defined as RECOMMENDED.

803 5.2.1.2 Rationale for Omission of prtAlertDescription

804 In this specification, a mapping of the human-readable, localized 'prtAlertDescription' object is NOT
 805 defined in "printer-alert" but rather in a separate new "printer-alert-description" attribute, for the following
 806 reasons:

- 807 1) To define such a mapping, where only part of the resulting "printer-alert" attribute is localized,
 808 would be technically impossible to specify in ABNF [RFC5234].
 809 2) To define such a mapping, without a fixed charset (because of localized content) would be
 810 technically impossible to specify in ABNF [RFC5234].
 811 3) To implement such a mapping, if the value of the IPP Printer "charset-configured" attribute was
 812 different from the value of prtLocalizationCharacterSet selected by prtGeneralCurrentLocalization,
 813 would require that the IPP implementation performed (potentially lossy) charset conversion.
 814 4) To implement such a mapping, if the value of the IPP Printer "natural-language-configured"
 815 attribute was different from the combined values of prtLocalizationLanguage and
 816 prtLocalizationCountry selected by prtGeneralCurrentLocalization, would require that the IPP
 817 implementation performed (potentially lossy) message translation.

818 **5.2.2 Printer Alert Encoding of Alert Objects**

819 Values of the new IPP Printer "printer-alert" attribute MUST be encoded using a visible subset of the [US-
 820 ASCII] charset. Control codes (0x00 to 0x1F and 0x7F) MUST NOT be used. The ABNF [RFC5234]
 821 below defines the standard encoding in "printer-alert" for all of the machine-readable (non-localized)
 822 columnar objects in 'prtAlertTable' [RFC3805]:

823 **Figure 4 - ABNF for IPP printer-alert**

```

824 printer-alert      = alert-code *[";" alert-element]
825   ; set of alert elements encoded into one value
826
827 alert-code        = "code" "=" 1*ALPHA
828   ; enumerated value as an alpha string (e.g., 'coverOpen')
829   ; 'prtAlertCode' in IETF Printer MIB v2 [RFC3805] mapped to label
830   ; in 'PrtAlertCodeTC' in IANA Printer MIB [IANAPRT]
831
832 alert-element     = alert-index /
833                   alert-severity /
834                   alert-training /
835                   alert-group /
836                   alert-group-index /
837                   alert-location /
838                   alert-time
839
840 alert-index       = "index" "=" 1*DIGIT
841   ; integer value as a numeric string mapped directly mapped from
842   ; 'prtAlertIndex' in [RFC1759] [RFC3805]
843
844 alert-severity    = "severity" "=" 1*ALPHA
845   ; enumerated value as an alpha string (e.g., 'critical') mapped
    
```



```

846     ; from 'prtAlertSeverityLevel' in [RFC1759] [RFC3805] to label
847     ; in 'PrtAlertSeverityLevelTC' in IANA Printer MIB [IANAPRT]
848
849 alert-training      = "training" "=" 1*ALPHA
850     ; enumerated value as an alpha string (e.g., 'fieldService') mapped
851     ; from 'prtAlertTrainingLevel' in [RFC1759] [RFC3805] to label
852     ; in 'PrtAlertTrainingLevelTC' in IANA Printer MIB [IANAPRT]
853
854 alert-group         = "group" "=" 1*ALPHA
855     ; enumerated value as an alpha string (e.g., 'markerSupplies')
856     ; mapped from 'prtAlertGroup' in [RFC1759] [RFC3805] to label
857     ; in 'PrtAlertGroupTC' in IANA Printer MIB [IANAPRT]
858 alert-group-index   = "groupindex" "=" 1*DIGIT
859     ; integer value as a numeric string mapped directly mapped from
860     ; 'prtAlertGroupIndex' in [RFC1759] [RFC3805]
861
862 alert-location      = "location" "=" 1*DIGIT
863     ; integer value as a numeric string mapped directly mapped from
864     ; 'prtAlertLocation' in [RFC1759] [RFC3805]
865
866 alert-time          = "time" "=" 1*DIGIT
867     ; integer value as a numeric string mapped directly mapped from
868     ; 'prtAlertTime' in [RFC1759] [RFC3805]
869

```

870 5.2.2.1 Conformance

- 871 1) For interoperability, IPP implementations that claim conformance to this specification MUST
- 872 implement the new REQUIRED IPP Printer "printer-alert" attribute.
- 873
- 874 2) For interoperability, IPP implementations that claim conformance to this specification MUST
- 875 implement the above standard encoding in "printer-alert" of machine-readable values of existing
- 876 'prtAlertTable' columnar objects [RFC3805].

877 5.2.2.2 Rationale for Encoding of Enumerated Values

878 In this specification, enumerated values of 'prtAlertTable' objects (e.g., 'prtAlertSeverityLevel') are
879 mapped to corresponding enumeration labels in "printer-alert" for the following reasons:

- 880 1) To define a strictly numeric mapping is (potentially) fragile and loses human-readability.
- 881
- 882 2) To define an alphabetic (keyword) mapping is consistent with the IPP design preference for
- 883 'keyword' (section 4.1.3 of [RFC2911]) rather than 'enum' (section 4.1.4 of [RFC2911]) attribute
- 884 syntaxes.
- 885

886 5.2.2.3 Example of Printer Alert

887 The following example shows all REQUIRED and RECOMMENDED and some OPTIONAL columnar
888 objects from 'prtAlertTable' encoded into two corresponding values of the IPP Printer "printer-alert"
889 attribute for two distinct (but closely related) alerts. Line breaks are shown for readability of this example,
890 but MUST NOT be encoded into actual values of "printer-alert".

891

892

893 **Figure 5 - Example of IPP printer-alert**

```
894 printer-alert[1] =
895     code=jam;index=22;severity=critical
896     ;group=mediaPath;groupindex=4;location=6
897 printer-alert[2] =
898     code=coverOpen;index=23;severity=critical
899     ;group=cover;groupindex=6;location=8
900
```

901 **5.3 printer-alert-description (1setOf text(MAX))**

902 This section defines the new multi-valued IPP Printer "printer-alert-description" attribute.. This IPP Printer
903 attribute is REQUIRED for implementations that conform to this specification.

904 **5.3.1 Printer Alert Description Encoding**

905 Each text value of "printer-alert-description" MUST be mapped directly from the corresponding human-
906 readable, localized value of 'prtAlertDescription' as follows:

- 907
- 908 1) Each value of 'prtAlertDescription' MUST be converted from the charset [RFC2978] [RFC3808]
909 specified by 'prtLocalizationCharacterSet' and 'prtGeneralCurrentLocalization' to the charset
910 specified by "charset-configured" (defaults to UTF-8 [RFC3629]) and then copied to a text value
911 of "printer-alert-description".
912
 - 913 2) Each value of "printer-alert-description" MUST be tagged with the natural language [RFC4646]
914 specified by 'prtLocalizationLanguage', 'prtLocalizationCountry', and
915 'prtGeneralCurrentLocalization'.
916
 - 917 3) Each value of "printer-alert-description" MUST be in the same order as the corresponding value
918 of "printer-alert".

919 **5.3.1.1 Conformance**

- 920 1) For interoperability, IPP implementations that claim conformance to this specification MUST
921 implement the new REQUIRED IPP Printer "printer-alert-description" attribute.
922
- 923 2) For interoperability, IPP implementations that claim conformance to this specification MUST
924 implement the above standard encoding in "printer-alert-description" of human-readable,
925 localized values of the 'prtAlertDescription' columnar object [RFC3805], including charset
926 conversion and language tag copying.

927 **5.3.2 Example of Printer Alert Description**

928 The following example shows two instances of the localized 'prtAlertDescription' columnar object from
929 'prtAlertTable' encoded into two corresponding values of the IPP Printer "printer-alert-description" attribute
930 for two distinct (but closely related) alerts.

931 **Figure 6 - Example of IPP printer-alert-description**

```
932 printer-alert-description[1] =
933     'Critical alert - jam in media path at location 6'
934 printer-alert-description[2] =
935     'Critical alert - cover open at location 8'
```

936 **6 IANA Printer MIB Textual Conventions**

937 **6.1 PrtAlertCodeTC**

938 This section defines new values for the existing 'PrtAlertCodeTC' [IANAPRT] textual convention and also
 939 defines corresponding new values for the existing "printer-state-reasons" [RFC2911] attribute for
 940 registration with IANA. The REQUIRED finishing extensions to the the PrtAlertCodeTC textual convention
 941 defined in IANA Printer MIB are defined in detail below.

942 **6.1.1 New Alert Codes for Finishing Subunits**

943 The table below shows new values of "printer-state-reasons" [RFC2911] and their mapping from new
 944 values of 'PrtAlertCodeTC' [IANAPRT] and their algorithmic mapping from existing values of
 945 'FinDeviceTypeTC' [IANAFIN].

946 Note: See section 6.1.1.3 'Rationale for Stapler and Stitcher Devices' and section 6.1.2 'Conventions for
 947 Alert Code Numbering' for discussion of the missing 'stapler' in IANA Finisher MIB [IANAFIN].

948 **Table 6-1 New Alert Codes for Finishing Subunits**

<u>PrtAlertCodeTC</u>	<u>printer-state-reasons</u>
-- FinDeviceTypeTC = stitcher(3) -> stapler	
-- FinStitchingTypeTC = staple... (4,5,6,7, or 10)	
951 staplerCoverOpen(30203)	stapler-cover-open
952 staplerCoverClosed(30204)	stapler-cover-closed
953 staplerInterlockOpen(30205)	stapler-interlock-open
954 staplerInterlockClosed(30206)	stapler-interlock-closed
955 staplerConfigurationChange(30207)	stapler-configuration-change
956 staplerJam(30208)	stapler-jam
957 staplerMissing(30209)	stapler-missing
958 staplerLifeAlmostOver(30210)	stapler-life-almost-over
959 staplerLifeOver(30211)	stapler-life-over
960 staplerAlmostEmpty(30212)	stapler-almost-empty
961 staplerEmpty(30213)	stapler-empty
962 staplerAlmostFull(30214)	stapler-almost-full
963 staplerFull(30215)	stapler-full
964 staplerNearLimit(30216)	stapler-near-limit
965 staplerAtLimit(30217)	stapler-at-limit
966 staplerOpened(30218)	stapler-opened
967 staplerClosed(30219)	stapler-closed
968 staplerTurnedOn(30220)	stapler-turned-on
969 staplerTurnedOff(30221)	stapler-turned-off
970 staplerOffline(30222)	stapler-offline
971 staplerPowerSaver(30223)	stapler-power-saver
972 staplerWarmingUp(30224)	stapler-warming-up
973 staplerAdded(30225)	stapler-added
974 staplerRemoved(30226)	stapler-removed
975 staplerResourceAdded(30227)	stapler-resource-added
976 staplerResourceRemoved(30228)	stapler-resource-removed
977 staplerRecoverableFailure(30229)	stapler-recoverable-failure
978 staplerUnrecoverableFailure(30230)	stapler-unrecoverable-failure
979 staplerRecoverableStorageError(30231)	stapler-recoverable-storage-error
980 staplerUnrecoverableStorageError(30232)	stapler-unrecoverable-storage-error
981 staplerMotorFailure(30233)	stapler-motor-failure
982 staplerMemoryExhausted(30234)	stapler-memory-exhausted
983 staplerUnderTemperature(30235)	stapler-under-temperature
984 staplerOverTemperature(30236)	stapler-over-temperature

```

986 staplerTimingFailure(30237) stapler-timing-failure
987 staplerThermistorFailure(30238) stapler-thermistor-failure
988
989 -- FinDeviceTypeTC = sticher(3) -> sticher
990 -- FinStitchingTypeTC = saddleStitch(8) or edgeStitch(9)
991 sticherCoverOpen(30303) sticher-cover-open
992 sticherCoverClosed(30304) sticher-cover-closed
993 sticherInterlockOpen(30305) sticher-interlock-open
994 sticherInterlockClosed(30306) sticher-interlock-closed
995 sticherConfigurationChange(30307) sticher-configuration-change
996 sticherJam(30308) sticher-jam
997 sticherMissing(30309) sticher-missing
998 sticherLifeAlmostOver(30310) sticher-life-almost-over
999 sticherLifeOver(30311) sticher-life-over
1000 sticherAlmostEmpty(30312) sticher-almost-empty
1001 sticherEmpty(30313) sticher-empty
1002 sticherAlmostFull(30314) sticher-almost-full
1003 sticherFull(30315) sticher-full
1004 sticherNearLimit(30316) sticher-near-limit
1005 sticherAtLimit(30317) sticher-at-limit
1006 sticherOpened(30318) sticher-opened
1007 sticherClosed(30319) sticher-closed
1008 sticherTurnedOn(30320) sticher-turned-on
1009 sticherTurnedOff(30321) sticher-turned-off
1010 sticherOffline(30322) sticher-offline
1011 sticherPowerSaver(30323) sticher-power-saver
1012 sticherWarmingUp(30324) sticher-warming-up
1013 sticherAdded(30325) sticher-added
1014 sticherRemoved(30326) sticher-removed
1015 sticherResourceAdded(30327) sticher-resource-added
1016 sticherResourceRemoved(30328) sticher-resource-removed
1017 sticherRecoverableFailure(30329) sticher-recoverable-failure
1018 sticherUnrecoverableFailure(30330) sticher-unrecoverable-failure
1019 sticherRecoverableStorageError(30331) sticher-recoverable-storage-error
1020 sticherUnrecoverableStorageError(30332) sticher-unrecoverable-storage-error
1021 sticherMotorFailure(30333) sticher-motor-failure
1022 sticherMemoryExhausted(30334) sticher-memory-exhausted
1023 sticherUnderTemperature(30335) sticher-under-temperature
1024 sticherOverTemperature(30336) sticher-over-temperature
1025 sticherTimingFailure(30337) sticher-timing-failure
1026 sticherThermistorFailure(30338) sticher-thermistor-failure
1027
1028 -- FinDeviceTypeTC = folder(4)
1029 folderCoverOpen(30403) folder-cover-open
1030 folderCoverClosed(30404) folder-cover-closed
1031 folderInterlockOpen(30405) folder-interlock-open
1032 folderInterlockClosed(30406) folder-interlock-closed
1033 folderConfigurationChange(30407) folder-configuration-change
1034 folderJam(30408) folder-jam
1035 folderMissing(30409) folder-missing
1036 folderLifeAlmostOver(30410) folder-life-almost-over
1037 folderLifeOver(30411) folder-life-over
1038 folderAlmostEmpty(30412) folder-almost-empty
1039 folderEmpty(30413) folder-empty
1040 folderAlmostFull(30414) folder-almost-full
1041 folderFull(30415) folder-full
1042 folderNearLimit(30416) folder-near-limit
1043 folderAtLimit(30417) folder-at-limit
1044 folderOpened(30418) folder-opened
1045 folderClosed(30419) folder-closed
1046 folderTurnedOn(30420) folder-turned-on
1047 folderTurnedOff(30421) folder-turned-off
1048 folderOffline(30422) folder-offline

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1049	folderPowerSaver(30423)	folder-power-saver
1050	folderWarmingUp(30424)	folder-warming-up
1051	folderAdded(30425)	folder-added
1052	folderRemoved(30426)	folder-removed
1053	folderResourceAdded(30427)	folder-resource-added
1054	folderResourceRemoved(30428)	folder-resource-removed
1055	folderRecoverableFailure(30429)	folder-recoverable-failure
1056	folderUnrecoverableFailure(30430)	folder-unrecoverable-failure
1057	folderRecoverableStorageError(30431)	folder-recoverable-storage-error
1058	folderUnrecoverableStorageError(30432)	folder-unrecoverable-storage-error
1059	folderMotorFailure(30433)	folder-motor-failure
1060	folderMemoryExhausted(30434)	folder-memory-exhausted
1061	folderUnderTemperature(30435)	folder-under-temperature
1062	folderOverTemperature(30436)	folder-over-temperature
1063	folderTimingFailure(30437)	folder-timing-failure
1064	folderThermistorFailure(30438)	folder-thermistor-failure
1065		
1066	-- FinDeviceTypeTC = binder(5)	
1067	binderCoverOpen(30503)	binder-cover-open
1068	binderCoverClosed(30504)	binder-cover-closed
1069	binderInterlockOpen(30505)	binder-interlock-open
1070	binderInterlockClosed(30506)	binder-interlock-closed
1071	binderConfigurationChange(30507)	binder-configuration-change
1072	binderJam(30508)	binder-jam
1073	binderMissing(30509)	binder-missing
1074	binderLifeAlmostOver(30510)	binder-life-almost-over
1075	binderLifeOver(30511)	binder-life-over
1076	binderAlmostEmpty(30512)	binder-almost-empty
1077	binderEmpty(30513)	binder-empty
1078	binderAlmostFull(30514)	binder-almost-full
1079	binderFull(30515)	binder-full
1080	binderNearLimit(30516)	binder-near-limit
1081	binderAtLimit(30517)	binder-at-limit
1082	binderOpened(30518)	binder-opened
1083	binderClosed(30519)	binder-closed
1084	binderTurnedOn(30520)	binder-turned-on
1085	binderTurnedOff(30521)	binder-turned-off
1086	binderOffline(30522)	binder-offline
1087	binderPowerSaver(30523)	binder-power-saver
1088	binderWarmingUp(30524)	binder-warming-up
1089	binderAdded(30525)	binder-added
1090	binderRemoved(30526)	binder-removed
1091	binderResourceAdded(30527)	binder-resource-added
1092	binderResourceRemoved(30528)	binder-resource-removed
1093	binderRecoverableFailure(30529)	binder-recoverable-failure
1094	binderUnrecoverableFailure(30530)	binder-unrecoverable-failure
1095	binderRecoverableStorageError(30531)	binder-recoverable-storage-error
1096	binderUnrecoverableStorageError(30532)	binder-unrecoverable-storage-error
1097	binderMotorFailure(30533)	binder-motor-failure
1098	binderMemoryExhausted(30534)	binder-memory-exhausted
1099	binderUnderTemperature(30535)	binder-under-temperature
1100	binderOverTemperature(30536)	binder-over-temperature
1101	binderTimingFailure(30537)	binder-timing-failure
1102	binderThermistorFailure(30538)	binder-thermistor-failure
1103		
1104	-- FinDeviceTypeTC = trimmer(6)	
1105	trimmerCoverOpen(30603)	trimmer-cover-open
1106	trimmerCoverClosed(30604)	trimmer-cover-closed
1107	trimmerInterlockOpen(30605)	trimmer-interlock-open
1108	trimmerInterlockClosed(30606)	trimmer-interlock-closed
1109	trimmerConfigurationChange(30607)	trimmer-configuration-change
1110	trimmerJam(30608)	trimmer-jam
1111	trimmerMissing(30609)	trimmer-missing

1112	trimmerLifeAlmostOver(30610)	trimmer-life-almost-over
1113	trimmerLifeOver(30611)	trimmer-life-over
1114	trimmerAlmostEmpty(30612)	trimmer-almost-empty
1115	trimmerEmpty(30613)	trimmer-empty
1116	trimmerAlmostFull(30614)	trimmer-almost-full
1117	trimmerFull(30615)	trimmer-full
1118	trimmerNearLimit(30616)	trimmer-near-limit
1119	trimmerAtLimit(30617)	trimmer-at-limit
1120	trimmerOpened(30618)	trimmer-opened
1121	trimmerClosed(30619)	trimmer-closed
1122	trimmerTurnedOn(30620)	trimmer-turned-on
1123	trimmerTurnedOff(30621)	trimmer-turned-off
1124	trimmerOffline(30622)	trimmer-offline
1125	trimmerPowerSaver(30623)	trimmer-power-saver
1126	trimmerWarmingUp(30624)	trimmer-warming-up
1127	trimmerAdded(30625)	trimmer-added
1128	trimmerRemoved(30626)	trimmer-removed
1129	trimmerResourceAdded(30627)	trimmer-resource-added
1130	trimmerResourceRemoved(30628)	trimmer-resource-removed
1131	trimmerRecoverableFailure(30629)	trimmer-recoverable-failure
1132	trimmerUnrecoverableFailure(30630)	trimmer-unrecoverable-failure
1133	trimmerRecoverableStorageError(30631)	trimmer-recoverable-storage-error
1134	trimmerUnrecoverableStorageError(30632)	trimmer-unrecoverable-storage-error
1135	trimmerMotorFailure(30633)	trimmer-motor-failure
1136	trimmerMemoryExhausted(30634)	trimmer-memory-exhausted
1137	trimmerUnderTemperature(30635)	trimmer-under-temperature
1138	trimmerOverTemperature(30636)	trimmer-over-temperature
1139	trimmerTimingFailure(30637)	trimmer-timing-failure
1140	trimmerThermistorFailure(30638)	trimmer-thermistor-failure
1141		
1142	-- FinDeviceTypeTC = dieCutter(7)	
1143	dieCutterCoverOpen(30703)	die-cutter-cover-open
1144	dieCutterCoverClosed(30704)	die-cutter-cover-closed
1145	dieCutterInterlockOpen(30705)	die-cutter-interlock-open
1146	dieCutterInterlockClosed(30706)	die-cutter-interlock-closed
1147	dieCutterConfigurationChange(30707)	die-cutter-configuration-change
1148	dieCutterJam(30708)	die-cutter-jam
1149	dieCutterMissing(30709)	die-cutter-missing
1150	dieCutterLifeAlmostOver(30710)	die-cutter-life-almost-over
1151	dieCutterLifeOver(30711)	die-cutter-life-over
1152	dieCutterAlmostEmpty(30712)	die-cutter-almost-empty
1153	dieCutterEmpty(30713)	die-cutter-empty
1154	dieCutterAlmostFull(30714)	die-cutter-almost-full
1155	dieCutterFull(30715)	die-cutter-full
1156	dieCutterNearLimit(30716)	die-cutter-near-limit
1157	dieCutterAtLimit(30717)	die-cutter-at-limit
1158	dieCutterOpened(30718)	die-cutter-opened
1159	dieCutterClosed(30719)	die-cutter-closed
1160	dieCutterTurnedOn(30720)	die-cutter-turned-on
1161	dieCutterTurnedOff(30721)	die-cutter-turned-off
1162	dieCutterOffline(30722)	die-cutter-offline
1163	dieCutterPowerSaver(30723)	die-cutter-power-saver
1164	dieCutterWarmingUp(30724)	die-cutter-warming-up
1165	dieCutterAdded(30725)	die-cutter-added
1166	dieCutterRemoved(30726)	die-cutter-removed
1167	dieCutterResourceAdded(30727)	die-cutter-resource-added
1168	dieCutterResourceRemoved(30728)	die-cutter-resource-removed
1169	dieCutterRecoverableFailure(30729)	die-cutter-recoverable-failure
1170	dieCutterUnrecoverableFailure(30730)	die-cutter-unrecoverable-failure
1171	dieCutterRecoverableStorageError(30731)	die-cutter-recoverable-storage-error
1172	dieCutterUnrecoverableStorageError(30732)	die-cutter-unrecoverable-storage-error
1173		error
1174	dieCutterMotorFailure(30733)	die-cutter-motor-failure

1175	dieCutterMemoryExhausted(30734)	die-cutter-memory-exhausted
1176	dieCutterUnderTemperature(30735)	die-cutter-under-temperature
1177	dieCutterOverTemperature(30736)	die-cutter-over-temperature
1178	dieCutterTimingFailure(30737)	die-cutter-timing-failure
1179	dieCutterThermistorFailure(30738)	die-cutter-thermistor-failure
1180		
1181	-- FinDeviceTypeTC = puncher(8)	
1182	puncherCoverOpen(30803)	puncher-cover-open
1183	puncherCoverClosed(30804)	puncher-cover-closed
1184	puncherInterlockOpen(30805)	puncher-interlock-open
1185	puncherInterlockClosed(30806)	puncher-interlock-closed
1186	puncherConfigurationChange(30807)	puncher-configuration-change
1187	puncherJam(30808)	puncher-jam
1188	puncherMissing(30809)	puncher-missing
1189	puncherLifeAlmostOver(30810)	puncher-life-almost-over
1190	puncherLifeOver(30811)	puncher-life-over
1191	puncherAlmostEmpty(30812)	puncher-almost-empty
1192	puncherEmpty(30813)	puncher-empty
1193	puncherAlmostFull(30814)	puncher-almost-full
1194	puncherFull(30815)	puncher-full
1195	puncherNearLimit(30816)	puncher-near-limit
1196	puncherAtLimit(30817)	puncher-at-limit
1197	puncherOpened(30818)	puncher-opened
1198	puncherClosed(30819)	puncher-closed
1199	puncherTurnedOn(30820)	puncher-turned-on
1200	puncherTurnedOff(30821)	puncher-turned-off
1201	puncherOffline(30822)	puncher-offline
1202	puncherPowerSaver(30823)	puncher-power-saver
1203	puncherWarmingUp(30824)	puncher-warming-up
1204	puncherAdded(30825)	puncher-added
1205	puncherRemoved(30826)	puncher-removed
1206	puncherResourceAdded(30827)	puncher-resource-added
1207	puncherResourceRemoved(30828)	puncher-resource-removed
1208	puncherRecoverableFailure(30829)	puncher-recoverable-failure
1209	puncherUnrecoverableFailure(30830)	puncher-unrecoverable-failure
1210	puncherRecoverableStorageError(30831)	puncher-recoverable-storage-error
1211	puncherUnrecoverableStorageError(30832)	puncher-unrecoverable-storage-error
1212	puncherMotorFailure(30833)	puncher-motor-failure
1213	puncherMemoryExhausted(30834)	puncher-memory-exhausted
1214	puncherUnderTemperature(30835)	puncher-under-temperature
1215	puncherOverTemperature(30836)	puncher-over-temperature
1216	puncherTimingFailure(30837)	puncher-timing-failure
1217	puncherThermistorFailure(30838)	puncher-thermistor-failure
1218		
1219	-- FinDeviceTypeTC = perforater(9)	
1220	perforaterCoverOpen(30903)	perforater-cover-open
1221	perforaterCoverClosed(30904)	perforater-cover-closed
1222	perforaterInterlockOpen(30905)	perforater-interlock-open
1223	perforaterInterlockClosed(30906)	perforater-interlock-closed
1224	perforaterConfigurationChange(30907)	perforater-configuration-change
1225	perforaterJam(30908)	perforater-jam
1226	perforaterMissing(30909)	perforater-missing
1227	perforaterLifeAlmostOver(30910)	perforater-life-almost-over
1228	perforaterLifeOver(30911)	perforater-life-over
1229	perforaterAlmostEmpty(30912)	perforater-almost-empty
1230	perforaterEmpty(30913)	perforater-empty
1231	perforaterAlmostFull(30914)	perforater-almost-full
1232	perforaterFull(30915)	perforater-full
1233	perforaterNearLimit(30916)	perforater-near-limit
1234	perforaterAtLimit(30917)	perforater-at-limit
1235	perforaterOpened(30918)	perforater-opened
1236	perforaterClosed(30919)	perforater-closed
1237	perforaterTurnedOn(30920)	perforater-turned-on

1238	perforaterTurnedOff(30921)	perforater-turned-off
1239	perforaterOffline(30922)	perforater-offline
1240	perforaterPowerSaver(30923)	perforater-power-saver
1241	perforaterWarmingUp(30924)	perforater-warming-up
1242	perforaterAdded(30925)	perforater-added
1243	perforaterRemoved(30926)	perforater-removed
1244	perforaterResourceAdded(30927)	perforater-resource-added
1245	perforaterResourceRemoved(30928)	perforater-resource-removed
1246	perforaterRecoverableFailure(30929)	perforater-recoverable-failure
1247	perforaterUnrecoverableFailure(30930)	perforater-unrecoverable-failure
1248	perforaterRecoverableStorageError(30931)	perforater-recoverable-storage-error
1249	perforaterUnrecoverableStorageError(30932)	perforater-unrecoverable-storage-error
1250		
1251	perforaterMotorFailure(30933)	perforater-motor-failure
1252	perforaterMemoryExhausted(30934)	perforater-memory-exhausted
1253	perforaterUnderTemperature(30935)	perforater-under-temperature
1254	perforaterOverTemperature(30936)	perforater-over-temperature
1255	perforaterTimingFailure(30937)	perforater-timing-failure
1256	perforaterThermistorFailure(30938)	perforater-thermistor-failure
1257		
1258	-- FinDeviceTypeTC = slitter(10)	
1259	slitterCoverOpen(31003)	slitter-cover-open
1260	slitterCoverClosed(31004)	slitter-cover-closed
1261	slitterInterlockOpen(31005)	slitter-interlock-open
1262	slitterInterlockClosed(31006)	slitter-interlock-closed
1263	slitterConfigurationChange(31007)	slitter-configuration-change
1264	slitterJam(31008)	slitter-jam
1265	slitterMissing(31009)	slitter-missing
1266	slitterLifeAlmostOver(31010)	slitter-life-almost-over
1267	slitterLifeOver(31011)	slitter-life-over
1268	slitterAlmostEmpty(31012)	slitter-almost-empty
1269	slitterEmpty(31013)	slitter-empty
1270	slitterAlmostFull(31014)	slitter-almost-full
1271	slitterFull(31015)	slitter-full
1272	slitterNearLimit(31016)	slitter-near-limit
1273	slitterAtLimit(31017)	slitter-at-limit
1274	slitterOpened(31018)	slitter-opened
1275	slitterClosed(31019)	slitter-closed
1276	slitterTurnedOn(31020)	slitter-turned-on
1277	slitterTurnedOff(31021)	slitter-turned-off
1278	slitterOffline(31022)	slitter-offline
1279	slitterPowerSaver(31023)	slitter-power-saver
1280	slitterWarmingUp(31024)	slitter-warming-up
1281	slitterAdded(31025)	slitter-added
1282	slitterRemoved(31026)	slitter-removed
1283	slitterResourceAdded(31027)	slitter-resource-added
1284	slitterResourceRemoved(31028)	slitter-resource-removed
1285	slitterRecoverableFailure(31029)	slitter-recoverable-failure
1286	slitterUnrecoverableFailure(31030)	slitter-unrecoverable-failure
1287	slitterRecoverableStorageError(31031)	slitter-recoverable-storage-error
1288	slitterUnrecoverableStorageError(31032)	slitter-unrecoverable-storage-error
1289	slitterMotorFailure(31033)	slitter-motor-failure
1290	slitterMemoryExhausted(31034)	slitter-memory-exhausted
1291	slitterUnderTemperature(31035)	slitter-under-temperature
1292	slitterOverTemperature(31036)	slitter-over-temperature
1293	slitterTimingFailure(31037)	slitter-timing-failure
1294	slitterThermistorFailure(31038)	slitter-thermistor-failure
1295		
1296	-- FinDeviceTypeTC = separationCutter(11)	
1297	separationCutterCoverOpen(31103)	separation-cutter-cover-open
1298	separationCutterCoverClosed(31104)	separation-cutter-cover-closed
1299	separationCutterInterlockOpen(31105)	separation-cutter-interlock-open
1300	separationCutterInterlockClosed(31106)	separation-cutter-interlock-closed

1301	separationCutterConfigurationChange(31107)	separation-cutter-configuration-
1302		change
1303	separationCutterJam(31108)	separation-cutter-jam
1304	separationCutterMissing(31109)	separation-cutter-missing
1305	separationCutterLifeAlmostOver(31110)	separation-cutter-life-almost-over
1306	separationCutterLifeOver(31111)	separation-cutter-life-over
1307	separationCutterAlmostEmpty(31112)	separation-cutter-almost-empty
1308	separationCutterEmpty(31113)	separation-cutter-empty
1309	separationCutterAlmostFull(31114)	separation-cutter-almost-full
1310	separationCutterFull(31115)	separation-cutter-full
1311	separationCutterNearLimit(31116)	separation-cutter-near-limit
1312	separationCutterAtLimit(31117)	separation-cutter-at-limit
1313	separationCutterOpened(31118)	separation-cutter-opened
1314	separationCutterClosed(31119)	separation-cutter-closed
1315	separationCutterTurnedOn(31120)	separation-cutter-turned-on
1316	separationCutterTurnedOff(31121)	separation-cutter-turned-off
1317	separationCutterOffline(31122)	separation-cutter-offline
1318	separationCutterPowerSaver(31123)	separation-cutter-power-saver
1319	separationCutterWarmingUp(31124)	separation-cutter-warming-up
1320	separationCutterAdded(31125)	separation-cutter-added
1321	separationCutterRemoved(31126)	separation-cutter-removed
1322	separationCutterResourceAdded(31127)	separation-cutter-resource-added
1323	separationCutterResourceRemoved(31128)	separation-cutter-resource-removed
1324	separationCutterRecoverableFailure(31129)	separation-cutter-recoverable-
1325		failure
1326	separationCutterUnrecoverableFailure(31130)	separation-cutter-unrecoverable-
1327		failure
1328	separationCutterRecoverableStorageError(31131)	separation-cutter-recoverable-
1329		storage-error
1330	separationCutterUnrecoverableStorageError(31132)	separation-cutter-unrecoverable-
1331		storage-error
1332	separationCutterMotorFailure(31133)	separation-cutter-motor-failure
1333	separationCutterMemoryExhausted(31134)	separation-cutter-memory-exhausted
1334	separationCutterUnderTemperature(31135)	separation-cutter-under-temperature
1335	separationCutterOverTemperature(31136)	separation-cutter-over-temperature
1336	separationCutterTimingFailure(31137)	separation-cutter-timing-failure
1337	separationCutterThermistorFailure(31138)	separation-cutter-thermistor-failure
1338		
1339	-- FinDeviceTypeTC = imprinter(12)	
1340	imprinterCoverOpen(31203)	imprinter-cover-open
1341	imprinterCoverClosed(31204)	imprinter-cover-closed
1342	imprinterInterlockOpen(31205)	imprinter-interlock-open
1343	imprinterInterlockClosed(31206)	imprinter-interlock-closed
1344	imprinterConfigurationChange(31207)	imprinter-configuration-change
1345	imprinterJam(31208)	imprinter-jam
1346	imprinterMissing(31209)	imprinter-missing
1347	imprinterLifeAlmostOver(31210)	imprinter-life-almost-over
1348	imprinterLifeOver(31211)	imprinter-life-over
1349	imprinterAlmostEmpty(31212)	imprinter-almost-empty
1350	imprinterEmpty(31213)	imprinter-empty
1351	imprinterAlmostFull(31214)	imprinter-almost-full
1352	imprinterFull(31215)	imprinter-full
1353	imprinterNearLimit(31216)	imprinter-near-limit
1354	imprinterAtLimit(31217)	imprinter-at-limit
1355	imprinterOpened(31218)	imprinter-opened
1356	imprinterClosed(31219)	imprinter-closed
1357	imprinterTurnedOn(31220)	imprinter-turned-on
1358	imprinterTurnedOff(31221)	imprinter-turned-off
1359	imprinterOffline(31222)	imprinter-offline
1360	imprinterPowerSaver(31223)	imprinter-power-saver
1361	imprinterWarmingUp(31224)	imprinter-warming-up
1362	imprinterAdded(31225)	imprinter-added
1363	imprinterRemoved(31226)	imprinter-removed

1364	imprinterResourceAdded(31227)	imprinter-resource-added
1365	imprinterResourceRemoved(31228)	imprinter-resource-removed
1366	imprinterRecoverableFailure(31229)	imprinter-recoverable-failure
1367	imprinterUnrecoverableFailure(31230)	imprinter-unrecoverable-failure
1368	imprinterRecoverableStorageError(31231)	imprinter-recoverable-storage-error
1369	imprinterUnrecoverableStorageError(31232)	imprinter-unrecoverable-storage-error
1370		
1371	imprinterMotorFailure(31233)	imprinter-motor-failure
1372	imprinterMemoryExhausted(31234)	imprinter-memory-exhausted
1373	imprinterUnderTemperature(31235)	imprinter-under-temperature
1374	imprinterOverTemperature(31236)	imprinter-over-temperature
1375	imprinterTimingFailure(31237)	imprinter-timing-failure
1376	imprinterThermistorFailure(31238)	imprinter-thermistor-failure
1377		
1378	-- FinDeviceTypeTC = wrapper(13)	
1379	wrapperCoverOpen(31303)	wrapper-cover-open
1380	wrapperCoverClosed(31304)	wrapper-cover-closed
1381	wrapperInterlockOpen(31305)	wrapper-interlock-open
1382	wrapperInterlockClosed(31306)	wrapper-interlock-closed
1383	wrapperConfigurationChange(31307)	wrapper-configuration-change
1384	wrapperJam(31308)	wrapper-jam
1385	wrapperMissing(31309)	wrapper-missing
1386	wrapperLifeAlmostOver(31310)	wrapper-life-almost-over
1387	wrapperLifeOver(31311)	wrapper-life-over
1388	wrapperAlmostEmpty(31312)	wrapper-almost-empty
1389	wrapperEmpty(31313)	wrapper-empty
1390	wrapperAlmostFull(31314)	wrapper-almost-full
1391	wrapperFull(31315)	wrapper-full
1392	wrapperNearLimit(31316)	wrapper-near-limit
1393	wrapperAtLimit(31317)	wrapper-at-limit
1394	wrapperOpened(31318)	wrapper-opened
1395	wrapperClosed(31319)	wrapper-closed
1396	wrapperTurnedOn(31320)	wrapper-turned-on
1397	wrapperTurnedOff(31321)	wrapper-turned-off
1398	wrapperOffline(31322)	wrapper-offline
1399	wrapperPowerSaver(31323)	wrapper-power-saver
1400	wrapperWarmingUp(31324)	wrapper-warming-up
1401	wrapperAdded(31325)	wrapper-added
1402	wrapperRemoved(31326)	wrapper-removed
1403	wrapperResourceAdded(31327)	wrapper-resource-added
1404	wrapperResourceRemoved(31328)	wrapper-resource-removed
1405	wrapperRecoverableFailure(31329)	wrapper-recoverable-failure
1406	wrapperUnrecoverableFailure(31330)	wrapper-unrecoverable-failure
1407	wrapperRecoverableStorageError(31331)	wrapper-recoverable-storage-error
1408	wrapperUnrecoverableStorageError(31332)	wrapper-unrecoverable-storage-error
1409	wrapperMotorFailure(31333)	wrapper-motor-failure
1410	wrapperMemoryExhausted(31334)	wrapper-memory-exhausted
1411	wrapperUnderTemperature(31335)	wrapper-under-temperature
1412	wrapperOverTemperature(31336)	wrapper-over-temperature
1413	wrapperTimingFailure(31337)	wrapper-timing-failure
1414	wrapperThermistorFailure(31338)	wrapper-thermistor-failure
1415		
1416	-- FinDeviceTypeTC = bander(14)	
1417	banderCoverOpen(31403)	bander-cover-open
1418	banderCoverClosed(31404)	bander-cover-closed
1419	banderInterlockOpen(31405)	bander-interlock-open
1420	banderInterlockClosed(31406)	bander-interlock-closed
1421	banderConfigurationChange(31407)	bander-configuration-change
1422	banderJam(31408)	bander-jam
1423	banderMissing(31409)	bander-missing
1424	banderLifeAlmostOver(31410)	bander-life-almost-over
1425	banderLifeOver(31411)	bander-life-over
1426	banderAlmostEmpty(31412)	bander-almost-empty

1427	banderEmpty(31413)	bander-empty
1428	banderAlmostFull(31414)	bander-almost-full
1429	banderFull(31415)	bander-full
1430	banderNearLimit(31416)	bander-near-limit
1431	banderAtLimit(31417)	bander-at-limit
1432	banderOpened(31418)	bander-opened
1433	banderClosed(31419)	bander-closed
1434	banderTurnedOn(31420)	bander-turned-on
1435	banderTurnedOff(31421)	bander-turned-off
1436	banderOffline(31422)	bander-offline
1437	banderPowerSaver(31423)	bander-power-saver
1438	banderWarmingUp(31424)	bander-warming-up
1439	banderAdded(31425)	bander-added
1440	banderRemoved(31426)	bander-removed
1441	banderResourceAdded(31427)	bander-resource-added
1442	banderResourceRemoved(31428)	bander-resource-removed
1443	banderRecoverableFailure(31429)	bander-recoverable-failure
1444	banderUnrecoverableFailure(31430)	bander-unrecoverable-failure
1445	banderRecoverableStorageError(31431)	bander-recoverable-storage-error
1446	banderUnrecoverableStorageError(31432)	bander-unrecoverable-storage-error
1447	banderMotorFailure(31433)	bander-motor-failure
1448	banderMemoryExhausted(31434)	bander-memory-exhausted
1449	banderUnderTemperature(31435)	bander-under-temperature
1450	banderOverTemperature(31436)	bander-over-temperature
1451	banderTimingFailure(31437)	bander-timing-failure
1452	banderThermistorFailure(31438)	bander-thermistor-failure
1453		
1454	-- FinDeviceTypeTC = makeEnvelope(15)	
1455	makeEnvelopeCoverOpen(31503)	make-envelope-cover-open
1456	makeEnvelopeCoverClosed(31504)	make-envelope-cover-closed
1457	makeEnvelopeInterlockOpen(31505)	make-envelope-interlock-open
1458	makeEnvelopeInterlockClosed(31506)	make-envelope-interlock-closed
1459	makeEnvelopeConfigurationChange(31507)	make-envelope-configuration-change
1460	makeEnvelopeJam(31508)	make-envelope-jam
1461	makeEnvelopeMissing(31509)	make-envelope-missing
1462	makeEnvelopeLifeAlmostOver(31510)	make-envelope-life-almost-over
1463	makeEnvelopeLifeOver(31511)	make-envelope-life-over
1464	makeEnvelopeAlmostEmpty(31512)	make-envelope-almost-empty
1465	makeEnvelopeEmpty(31513)	make-envelope-empty
1466	makeEnvelopeAlmostFull(31514)	make-envelope-almost-full
1467	makeEnvelopeFull(31515)	make-envelope-full
1468	makeEnvelopeNearLimit(31516)	make-envelope-near-limit
1469	makeEnvelopeAtLimit(31517)	make-envelope-at-limit
1470	makeEnvelopeOpened(31518)	make-envelope-opened
1471	makeEnvelopeClosed(31519)	make-envelope-closed
1472	makeEnvelopeTurnedOn(31520)	make-envelope-turned-on
1473	makeEnvelopeTurnedOff(31521)	make-envelope-turned-off
1474	makeEnvelopeOffline(31522)	make-envelope-offline
1475	makeEnvelopePowerSaver(31523)	make-envelope-power-saver
1476	makeEnvelopeWarmingUp(31524)	make-envelope-warming-up
1477	makeEnvelopeAdded(31525)	make-envelope-added
1478	makeEnvelopeRemoved(31526)	make-envelope-removed
1479	makeEnvelopeResourceAdded(31527)	make-envelope-resource-added
1480	makeEnvelopeResourceRemoved(31528)	make-envelope-resource-removed
1481	makeEnvelopeRecoverableFailure(31529)	make-envelope-recoverable-failure
1482	makeEnvelopeUnrecoverableFailure(31530)	make-envelope-unrecoverable-failure
1483	makeEnvelopeRecoverableStorageError(31531)	make-envelope-recoverable-storage-
1484		error
1485	makeEnvelopeUnrecoverableStorageError(31532)	make-envelope-unrecoverable-storage-
1486		error
1487	makeEnvelopeMotorFailure(31533)	make-envelope-motor-failure
1488	makeEnvelopeMemoryExhausted(31534)	make-envelope-memory-exhausted
1489	makeEnvelopeUnderTemperature(31535)	make-envelope-under-temperature

1490	makeEnvelopeOverTemperature(31536)	make-envelope-over-temperature
1491	makeEnvelopeTimingFailure(31537)	make-envelope-timing-failure
1492	makeEnvelopeThermistorFailure(31538)	make-envelope-thermistor-failure
1493		
1494	-- FinDeviceTypeTC = stacker(16)	
1495	stackerCoverOpen(31603)	stacker-cover-open
1496	stackerCoverClosed(31604)	stacker-cover-closed
1497	stackerInterlockOpen(31605)	stacker-interlock-open
1498	stackerInterlockClosed(31606)	stacker-interlock-closed
1499	stackerConfigurationChange(31607)	stacker-configuration-change
1500	stackerJam(31608)	stacker-jam
1501	stackerMissing(31609)	stacker-missing
1502	stackerLifeAlmostOver(31610)	stacker-life-almost-over
1503	stackerLifeOver(31611)	stacker-life-over
1504	stackerAlmostEmpty(31612)	stacker-almost-empty
1505	stackerEmpty(31613)	stacker-empty
1506	stackerAlmostFull(31614)	stacker-almost-full
1507	stackerFull(31615)	stacker-full
1508	stackerNearLimit(31616)	stacker-near-limit
1509	stackerAtLimit(31617)	stacker-at-limit
1510	stackerOpened(31618)	stacker-opened
1511	stackerClosed(31619)	stacker-closed
1512	stackerTurnedOn(31620)	stacker-turned-on
1513	stackerTurnedOff(31621)	stacker-turned-off
1514	stackerOffline(31622)	stacker-offline
1515	stackerPowerSaver(31623)	stacker-power-saver
1516	stackerWarmingUp(31624)	stacker-warming-up
1517	stackerAdded(31625)	stacker-added
1518	stackerRemoved(31626)	stacker-removed
1519	stackerResourceAdded(31627)	stacker-resource-added
1520	stackerResourceRemoved(31628)	stacker-resource-removed
1521	stackerRecoverableFailure(31629)	stacker-recoverable-failure
1522	stackerUnrecoverableFailure(31630)	stacker-unrecoverable-failure
1523	stackerRecoverableStorageError(31631)	stacker-recoverable-storage-error
1524	stackerUnrecoverableStorageError(31632)	stacker-unrecoverable-storage-error
1525	stackerMotorFailure(31633)	stacker-motor-failure
1526	stackerMemoryExhausted(31634)	stacker-memory-exhausted
1527	stackerUnderTemperature(31635)	stacker-under-temperature
1528	stackerOverTemperature(31636)	stacker-over-temperature
1529	stackerTimingFailure(31637)	stacker-timing-failure
1530	stackerThermistorFailure(31638)	stacker-thermistor-failure
1531		
1532	-- FinDeviceTypeTC = sheetRotator(17)	
1533	sheetRotatorCoverOpen(31703)	sheet-rotator-cover-open
1534	sheetRotatorCoverClosed(31704)	sheet-rotator-cover-closed
1535	sheetRotatorInterlockOpen(31705)	sheet-rotator-interlock-open
1536	sheetRotatorInterlockClosed(31706)	sheet-rotator-interlock-closed
1537	sheetRotatorConfigurationChange(31707)	sheet-rotator-configuration-change
1538	sheetRotatorJam(31708)	sheet-rotator-jam
1539	sheetRotatorMissing(31709)	sheet-rotator-missing
1540	sheetRotatorLifeAlmostOver(31710)	sheet-rotator-life-almost-over
1541	sheetRotatorLifeOver(31711)	sheet-rotator-life-over
1542	sheetRotatorAlmostEmpty(31712)	sheet-rotator-almost-empty
1543	sheetRotatorEmpty(31713)	sheet-rotator-empty
1544	sheetRotatorAlmostFull(31714)	sheet-rotator-almost-full
1545	sheetRotatorFull(31715)	sheet-rotator-full
1546	sheetRotatorNearLimit(31716)	sheet-rotator-near-limit
1547	sheetRotatorAtLimit(31717)	sheet-rotator-at-limit
1548	sheetRotatorOpened(31718)	sheet-rotator-opened
1549	sheetRotatorClosed(31719)	sheet-rotator-closed
1550	sheetRotatorTurnedOn(31720)	sheet-rotator-turned-on
1551	sheetRotatorTurnedOff(31721)	sheet-rotator-turned-off
1552	sheetRotatorOffline(31722)	sheet-rotator-offline

1553	sheetRotatorPowerSaver(31723)	sheet-rotator-power-saver
1554	sheetRotatorWarmingUp(31724)	sheet-rotator-warming-up
1555	sheetRotatorAdded(31725)	sheet-rotator-added
1556	sheetRotatorRemoved(31726)	sheet-rotator-removed
1557	sheetRotatorResourceAdded(31727)	sheet-rotator-resource-added
1558	sheetRotatorResourceRemoved(31728)	sheet-rotator-resource-removed
1559	sheetRotatorRecoverableFailure(31729)	sheet-rotator-recoverable-failure
1560	sheetRotatorUnrecoverableFailure(31730)	sheet-rotator-unrecoverable-failure
1561	sheetRotatorRecoverableStorageError(31731)	sheet-rotator-recoverable-storage-
1562		error
1563	sheetRotatorUnrecoverableStorageError(31732)	sheet-rotator-unrecoverable-storage-
1564		error
1565	sheetRotatorMotorFailure(31733)	sheet-rotator-motor-failure
1566	sheetRotatorMemoryExhausted(31734)	sheet-rotator-memory-exhausted
1567	sheetRotatorUnderTemperature(31735)	sheet-rotator-under-temperature
1568	sheetRotatorOverTemperature(31736)	sheet-rotator-over-temperature
1569	sheetRotatorTimingFailure(31737)	sheet-rotator-timing-failure
1570	sheetRotatorThermistorFailure(31738)	sheet-rotator-thermistor-failure
1571		
1572	-- FinDeviceTypeTC = inserter(18)	
1573	inserterCoverOpen(31803)	inserter-cover-open
1574	inserterCoverClosed(31804)	inserter-cover-closed
1575	inserterInterlockOpen(31805)	inserter-interlock-open
1576	inserterInterlockClosed(31806)	inserter-interlock-closed
1577	inserterConfigurationChange(31807)	inserter-configuration-change
1578	inserterJam(31808)	inserter-jam
1579	inserterMissing(31809)	inserter-missing
1580	inserterLifeAlmostOver(31810)	inserter-life-almost-over
1581	inserterLifeOver(31811)	inserter-life-over
1582	inserterAlmostEmpty(31812)	inserter-almost-empty
1583	inserterEmpty(31813)	inserter-empty
1584	inserterAlmostFull(31814)	inserter-almost-full
1585	inserterFull(31815)	inserter-full
1586	inserterNearLimit(31816)	inserter-near-limit
1587	inserterAtLimit(31817)	inserter-at-limit
1588	inserterOpened(31818)	inserter-opened
1589	inserterClosed(31819)	inserter-closed
1590	inserterTurnedOn(31820)	inserter-turned-on
1591	inserterTurnedOff(31821)	inserter-turned-off
1592	inserterOffline(31822)	inserter-offline
1593	inserterPowerSaver(31823)	inserter-power-saver
1594	inserterWarmingUp(31824)	inserter-warming-up
1595	inserterAdded(31825)	inserter-added
1596	inserterRemoved(31826)	inserter-removed
1597	inserterResourceAdded(31827)	inserter-resource-added
1598	inserterResourceRemoved(31828)	inserter-resource-removed
1599	inserterRecoverableFailure(31829)	inserter-recoverable-failure
1600	inserterUnrecoverableFailure(31830)	inserter-unrecoverable-failure
1601	inserterRecoverableStorageError(31831)	inserter-recoverable-storage-error
1602	inserterUnrecoverableStorageError(31832)	inserter-unrecoverable-storage-error
1603	inserterMotorFailure(31833)	inserter-motor-failure
1604	inserterMemoryExhausted(31834)	inserter-memory-exhausted
1605	inserterUnderTemperature(31835)	inserter-under-temperature
1606	inserterOverTemperature(31836)	inserter-over-temperature
1607	inserterTimingFailure(31837)	inserter-timing-failure
1608	inserterThermistorFailure(31838)	inserter-thermistor-failure
1609		
1610		

1611 6.1.1.1 Conformance

- 1612 1) For interoperability, IPP implementations that claim conformance to this specification MUST
1613 implement the Table 6-1 standard mappings between existing values of 'FinDeviceTypeTC'
1614 [IANAFIN] and new values of 'PrtAlertCodeTC' [IANAPRT] and new values of "printer-state-
1615 reasons" [RFC2911].
- 1616
- 1617 2) For interoperability, IPP implementations that claim conformance to this specification MUST
1618 implement the Table 6-1 standard mappings between existing values of 'FinStitchingTypeTC'
1619 [IANAFIN] and new values of 'PrtAlertCodeTC' [IANAPRT] and new values of "printer-state-
1620 reasons" [RFC2911].

1621 6.1.1.2 Rationale for New Finishing Alert Codes

1622 In this specification, existing enumerated values of 'FinDeviceTypeTC' [IANAFIN] (e.g., 'binder(5)') are
1623 mapped algorithmically to new enumerated values of 'PrtAlertCodeTC' [IANAPRT] (e.g.,
1624 'binderJam(30508)') for the following reasons:

- 1625 1) Unlike the base tables in IETF Printer MIB [RFC3805] (e.g., 'prtInputTable') which are mapped
1626 meaningfully to values of 'PrtAlertCodeTC' (e.g., 'inputMediaSizeChange(802)'), the base table in
1627 IETF Finisher MIB [RFC3805] ('finDeviceTable') is not currently mapped to meaningful specific
1628 alerts.
- 1629
- 1630 2) 'finDeviceTable' [RFC3806] entries are only distinguished by a non-index columnar object
1631 ('finDeviceType') which is NOT included in 'prtAlertTable' (and therefore NOT mapped to "printer-
1632 alert").
- 1633
- 1634 3) Finishing alerts reported using the generic subunit alerts (e.g., 'subunitAlmostFull') are
1635 meaningless without a subsequent query of 'finDeviceTable' (impossible if SNMP is disabled).

1636 6.1.1.3 Rationale for Separate Stapler and Stitcher Devices

1637 In this specification the one value 'stitcher(3)' of 'FinDeviceTypeTC' [IANAFIN] is mapped algorithmically
1638 to two new sets of enumerated values of 'PrtAlertCodeTC' [IANAPRT] (e.g., 'staplerJam(30208)' and
1639 'stitcherJam(30308)'), based on values of 'FinStitchingTypeTC' (e.g., 'stapleTopLeft(4)' and
1640 'saddleStitch(8)') in the 'stitchingType(30)' attribute in 'finDeviceAttributeTable' for the following reasons:

- 1641 1) Both 'staple' and 'stitch' finishing processes and devices are defined in section 2.2 'Process
1642 Specific Terminology' of IETF Finisher MIB [RFC3806].
- 1643
- 1644 2) But, unlike all other finishing processes in IETF Finisher MIB [RFC3806], the 'stapler' and
1645 'stitcher' device types were merged into a single 'stitcher(3)' value of 'FinDeviceTypeTC' in IANA
1646 Finisher MIB [IANAFIN].
- 1647
- 1648 3) For the 'finDeviceType' non-index object in 'finDeviceTable' [RFC3806], the 'stapler' versus
1649 'stitcher' finishing device types are only disambiguated via values of 'FinStitchingTypeTC' in IANA
1650 Finisher MIB [IANAFIN] for the 'stitchingType(30)' attribute in 'finDeviceAttributeTable' in the IETF
1651 Finisher MIB [RFC3806].
- 1652

1653 6.1.2 Conventions for Alert Code Numbering

1654 Printer MIB v1/v2 [RFC1759] [RFC3805] follows a convention that values of 'PrtAlertCodeTC' (e.g.,
1655 'inputMediaTrayMissing(801)') are defined in ranges found by multiplying the corresponding value of
1656 'PrtAlertGroupTC' (e.g., 'input(8)') by 100 and skipping the even hundred (e.g., '800'). For example,
1657 'input(8)' maps to a range of '801' to '899'.

1658 But specific alert codes for Finishing Subunits also need the context of the value of 'FinDeviceTypeTC'
1659 [IANAFIN] in the 'finDeviceType' non-index object in the 'finDeviceTable' [RFC3806], because this object
1660 is NOT encoded in 'prtAlertTable' [RFC3805].

1661 Therefore, this specification defines a new convention that specific alert code values for Finishing
1662 Subunits (e.g., 'slitterJam(31001)') MUST be mapped from existing values of 'FinDeviceTypeTC'
1663 [IANAFIN] (e.g., 'slitter(10)') in ranges of '3nn01' to '3nn99', to avoid colliding with new alert groups that
1664 may be added to 'PrtAlertGroupTC' in the future.

1665 This specification also defines a new convention specific alert code values for 'stapler' and 'stitcher'
1666 finishing. Device types are defined in two parallel ranges. See section 6.1.1.3 'Rationale for Stapler and
1667 'Stitcher Devices' for more details.
1668

1669 7 Conformance Requirements

1670 7.1 IPP Printer Conformance Requirements

1671 To claim conformance to this specification, an IPP Printer implementation MUST support:

- 1672 1) The REQUIRED IPP Printer attribute printer-state-reasons including the mappings of existing
1673 values (section 5.1.2) and new values (sections 5.1.3 and 5.1.4) defined in this specification.
- 1674 2) The REQUIRED IPP Printer attribute printer-alert (section 5.2) defined in this specification.
- 1675 3) The REQUIRED IPP Printer attribute printer-alert-description (section 5.3) defined in this
1676 specification.
- 1677 4) The IDENTICAL set of REQUIRED IPP Printer attribute printer-alert.alert-code values as are
1678 supported in the corresponding prtAlertCode object defined in the IETF Printer MIB v2 [RFC3805]
1679 and/or the corresponding CodeName property defined in the the DMTF CIM_PrintAlertRecord
1680 class [CIMALERT].
- 1681 5) The conformance requirements for an IPP Object specified in section 5.2 of [RFC2911].
- 1682 6) The conformance requirements for IPP Internationalization Considerations (see section 9).
- 1683 7) The conformance requirements for IPP Security Considerations (see section 10) defined in this
1684 specification.

1685 7.2 IPP Client Conformance Requirements

1686 To claim conformance to this specification, an IPP Client implementation MUST support:

- 1687 1) The REQUIRED IPP Printer attribute printer-state-reasons including the mappings of existing
1688 values (section 5.1.2) and new values (sections 5.1.3 and 5.1.4) defined in this specification.
- 1689 2) The REQUIRED IPP Printer attribute printer-alert (section 5.2) defined in this specification.
- 1690 3) The REQUIRED IPP Printer attribute printer-alert-description (section 5.3) defined in this
1691 specification.
- 1692 4) The IDENTICAL set of REQUIRED IPP Printer attribute printer-alert.alert-code values as are
1693 supported in the corresponding prtAlertCode object defined in the IETF Printer MIB v2 [RFC3805]
1694 and/or the corresponding CodeName property defined in the the DMTF CIM_PrintAlertRecord
1695 class [CIMALERT].
- 1696 5) The conformance requirements for an IPP Object specified in section 5.2 of [RFC2911].
- 1697 6) The conformance requirements for IPP Internationalization Considerations (see section 9).
- 1698 7) The conformance requirements for IPP Security Considerations (see section 10) defined in this
1699 specification.

1700

1701 **7.3 Printer MIB Agent Conformance Requirements**

1702 To claim conformance to this specification, a Printer MIB Agent implementation MUST support:

- 1703 1) The IDENTICAL set of prtAlertCode object values defined in section 6.1 of this specification and
1704 in the IETF Printer MIB v2 [RFC3805] as are supported in the corresponding IPP printer-state-
1705 reasons attribute defined in section 5.1 of this specification and in IPP/1.1 [RFC2911] and/or the
1706 corresponding CodeName property defined in the the DMTF CIM_PrintAlertRecord class
1707 [CIMALERT].
- 1708 2) All of the finishing prtAlertCode object values defined in section 6.1 of this specification that apply
1709 to the Printer MIB Agent implementation (i.e., for supported finishing device types).

1710 **7.4 Printer MIB Client Conformance Requirements**

1711 To claim conformance to this specification, a Printer MIB Client implementation MUST support:

- 1712 1) The IDENTICAL set of prtAlertCode object values defined in section 6.1 of this specification and
1713 in the IETF Printer MIB v2 [RFC3805] as are supported in the corresponding IPP printer-state-
1714 reasons attribute defined in section 5.1 of this specification and in IPP/1.1 [RFC2911] and/or the
1715 corresponding CodeName property defined in the the DMTF CIM_PrintAlertRecord class
1716 [CIMALERT].
- 1717 2) All of the finishing prtAlertCode object values defined in section 6.1 of this specification that apply
1718 to the Printer MIB Client implementation (i.e., for supported finishing device types).

1719

1720 **8 IANA Considerations**1721 **8.1 IPP Attributes and Keyword Values Registrations**

1722 This section contains the updates for IANA to add to the IANA IPP Registry [IANAIPP] according to the
 1723 procedures defined in section 6 of [RFC2911] to cover the definitions in this document. The resulting
 1724 registrations will be published in:

1725 <http://www.iana.org/assignments/ipp-registrations>
 1726

1727 **Table 8-1 IPP Attributes and Keyword Values for IANA**

1728	Attribute Name (attribute syntax)	Reference	Section
1729	-----	-----	-----
1730	printer-alert (1setOf octetString(MAX))	[PWG5100.x]	5.2
1731	printer-alert-description (1setOf text(MAX))	[PWG5100.x]	5.3
1732	printer-state-reasons (1setOf type2 keyword)	[RFC2911]	4.4.12
1733	alert-removal-of-binary-change-entry	[PWG5100.x]	5.1.3
1734	configuration-change	[PWG5100.x]	5.1.3
1735	input-cannot-feed-size-selected	[PWG5100.x]	5.1.3
1736	input-manual-input-request	[PWG5100.x]	5.1.3
1737	input-media-color-change	[PWG5100.x]	5.1.3
1738	input-media-form-parts-change	[PWG5100.x]	5.1.3
1739	input-media-size-change	[PWG5100.x]	5.1.3
1740	input-media-type-change	[PWG5100.x]	5.1.3
1741	input-media-weight-change	[PWG5100.x]	5.1.3
1742	input-tray-elevation-failure	[PWG5100.x]	5.1.3
1743	input-tray-position-failure	[PWG5100.x]	5.1.3
1744	interlock-closed	[PWG5100.x]	5.1.3
1745	interpreter-cartridge-added	[PWG5100.x]	5.1.3
1746	interpreter-cartridge-deleted	[PWG5100.x]	5.1.3
1747	interpreter-complex-page-encountered	[PWG5100.x]	5.1.3
1748	interpreter-memory-decrease	[PWG5100.x]	5.1.3
1749	interpreter-memory-increase	[PWG5100.x]	5.1.3
1750	interpreter-resource-added	[PWG5100.x]	5.1.3
1751	interpreter-resource-deleted	[PWG5100.x]	5.1.3
1752	marker-adjusting-print-quality	[PWG5100.x]	5.1.3
1753	marker-developer-almost-empty	[PWG5100.x]	5.1.3
1754	marker-developer-empty	[PWG5100.x]	5.1.3
1755	marker-fuser-thermistor-failure	[PWG5100.x]	5.1.3
1756	marker-fuser-timing-failure	[PWG5100.x]	5.1.3
1757	marker-ink-almost-empty	[PWG5100.x]	5.1.3
1758	marker-ink-empty	[PWG5100.x]	5.1.3
1759	marker-print-ribbon-almost-empty	[PWG5100.x]	5.1.3
1760	marker-print-ribbon-empty	[PWG5100.x]	5.1.3
1761	marker-toner-cartridge-missing	[PWG5100.x]	5.1.3
1762	marker-waste-ink-receptacle-almost-full	[PWG5100.x]	5.1.3
1763	marker-waste-ink-receptacle-full	[PWG5100.x]	5.1.3
1764	marker-waste-toner-receptacle-almost-full	[PWG5100.x]	5.1.3
1765	marker-waste-toner-receptacle-full	[PWG5100.x]	5.1.3
1766	media-path-cannot-duplex-media-selected	[PWG5100.x]	5.1.3
1767	media-path-media-tray-almost-full	[PWG5100.x]	5.1.3
1768	media-path-media-tray-full	[PWG5100.x]	5.1.3

1769	media-path-media-tray-missing	[PWG5100.x]	5.1.3
1770	output-mailbox-select-failure	[PWG5100.x]	5.1.3
1771	power-down	[PWG5100.x]	5.1.3
1772	power-up	[PWG5100.x]	5.1.3
1773	printer-manual-reset	[PWG5100.x]	5.1.3
1774	printer-nms-reset	[PWG5100.x]	5.1.3
1775	printer-ready-to-print	[PWG5100.x]	5.1.3
1776	subunit-added	[PWG5100.x]	5.1.3
1777	subunit-almost-empty	[PWG5100.x]	5.1.3
1778	subunit-almost-full	[PWG5100.x]	5.1.3
1779	subunit-at-limit	[PWG5100.x]	5.1.3
1780	subunit-closed	[PWG5100.x]	5.1.3
1781	subunit-empty	[PWG5100.x]	5.1.3
1782	subunit-full	[PWG5100.x]	5.1.3
1783	subunit-life-almost-over	[PWG5100.x]	5.1.3
1784	subunit-life-over	[PWG5100.x]	5.1.3
1785	subunit-memory-exhausted	[PWG5100.x]	5.1.3
1786	subunit-missing	[PWG5100.x]	5.1.3
1787	subunit-motor-failure	[PWG5100.x]	5.1.3
1788	subunit-near-limit	[PWG5100.x]	5.1.3
1789	subunit-offline	[PWG5100.x]	5.1.3
1790	subunit-opened	[PWG5100.x]	5.1.3
1791	subunit-over-temperature	[PWG5100.x]	5.1.3
1792	subunit-power-saver	[PWG5100.x]	5.1.3
1793	subunit-recoverable-failure	[PWG5100.x]	5.1.3
1794	subunit-recoverable-storage-error	[PWG5100.x]	5.1.3
1795	subunit-removed	[PWG5100.x]	5.1.3
1796	subunit-resource-added	[PWG5100.x]	5.1.3
1797	subunit-resource-removed	[PWG5100.x]	5.1.3
1798	subunit-thermistor-failure	[PWG5100.x]	5.1.3
1799	subunit-timing-Failure	[PWG5100.x]	5.1.3
1800	subunit-turned-off	[PWG5100.x]	5.1.3
1801	subunit-turned-on	[PWG5100.x]	5.1.3
1802	subunit-under-temperature	[PWG5100.x]	5.1.3
1803	subunit-unrecoverable-failure	[PWG5100.x]	5.1.3
1804	subunit-unrecoverable-storage-error	[PWG5100.x]	5.1.3
1805	subunit-warming-up	[PWG5100.x]	5.1.3
1806	unknown	[PWG5100.x]	5.1.3
1807	bander-added	[PWG5100.x]	6.1.1
1808	bander-almost-empty	[PWG5100.x]	6.1.1
1809	bander-almost-full	[PWG5100.x]	6.1.1
1810	bander-at-limit	[PWG5100.x]	6.1.1
1811	bander-closed	[PWG5100.x]	6.1.1
1812	bander-configuration-change	[PWG5100.x]	6.1.1
1813	bander-cover-closed	[PWG5100.x]	6.1.1
1814	bander-cover-open	[PWG5100.x]	6.1.1
1815	bander-empty	[PWG5100.x]	6.1.1
1816	bander-full	[PWG5100.x]	6.1.1
1817	bander-interlock-closed	[PWG5100.x]	6.1.1
1818	bander-interlock-open	[PWG5100.x]	6.1.1
1819	bander-jam	[PWG5100.x]	6.1.1
1820	bander-life-almost-over	[PWG5100.x]	6.1.1
1821	bander-life-over	[PWG5100.x]	6.1.1
1822	bander-memory-exhausted	[PWG5100.x]	6.1.1
1823	bander-missing	[PWG5100.x]	6.1.1
1824	bander-motor-failure	[PWG5100.x]	6.1.1
1825	bander-near-limit	[PWG5100.x]	6.1.1

1826	bander-offline	[PWG5100.x]	6.1.1
1827	bander-opened	[PWG5100.x]	6.1.1
1828	bander-over-temperature	[PWG5100.x]	6.1.1
1829	bander-power-saver	[PWG5100.x]	6.1.1
1830	bander-recoverable-failure	[PWG5100.x]	6.1.1
1831	bander-recoverable-storage-error	[PWG5100.x]	6.1.1
1832	bander-removed	[PWG5100.x]	6.1.1
1833	bander-resource-added	[PWG5100.x]	6.1.1
1834	bander-resource-removed	[PWG5100.x]	6.1.1
1835	bander-thermistor-failure	[PWG5100.x]	6.1.1
1836	bander-timing-failure	[PWG5100.x]	6.1.1
1837	bander-turned-off	[PWG5100.x]	6.1.1
1838	bander-turned-on	[PWG5100.x]	6.1.1
1839	bander-under-temperature	[PWG5100.x]	6.1.1
1840	bander-unrecoverable-failure	[PWG5100.x]	6.1.1
1841	bander-unrecoverable-storage-error	[PWG5100.x]	6.1.1
1842	bander-warming-up	[PWG5100.x]	6.1.1
1843	binder-added	[PWG5100.x]	6.1.1
1844	binder-almost-empty	[PWG5100.x]	6.1.1
1845	binder-almost-full	[PWG5100.x]	6.1.1
1846	binder-at-limit	[PWG5100.x]	6.1.1
1847	binder-closed	[PWG5100.x]	6.1.1
1848	binder-configuration-change	[PWG5100.x]	6.1.1
1849	binder-cover-closed	[PWG5100.x]	6.1.1
1850	binder-cover-open	[PWG5100.x]	6.1.1
1851	binder-empty	[PWG5100.x]	6.1.1
1852	binder-full	[PWG5100.x]	6.1.1
1853	binder-interlock-closed	[PWG5100.x]	6.1.1
1854	binder-interlock-open	[PWG5100.x]	6.1.1
1855	binder-jam	[PWG5100.x]	6.1.1
1856	binder-life-almost-over	[PWG5100.x]	6.1.1
1857	binder-life-over	[PWG5100.x]	6.1.1
1858	binder-memory-exhausted	[PWG5100.x]	6.1.1
1859	binder-missing	[PWG5100.x]	6.1.1
1860	binder-motor-failure	[PWG5100.x]	6.1.1
1861	binder-near-limit	[PWG5100.x]	6.1.1
1862	binder-offline	[PWG5100.x]	6.1.1
1863	binder-opened	[PWG5100.x]	6.1.1
1864	binder-over-temperature	[PWG5100.x]	6.1.1
1865	binder-power-saver	[PWG5100.x]	6.1.1
1866	binder-recoverable-failure	[PWG5100.x]	6.1.1
1867	binder-recoverable-storage-error	[PWG5100.x]	6.1.1
1868	binder-removed	[PWG5100.x]	6.1.1
1869	binder-resource-added	[PWG5100.x]	6.1.1
1870	binder-resource-removed	[PWG5100.x]	6.1.1
1871	binder-thermistor-failure	[PWG5100.x]	6.1.1
1872	binder-timing-failure	[PWG5100.x]	6.1.1
1873	binder-turned-off	[PWG5100.x]	6.1.1
1874	binder-turned-on	[PWG5100.x]	6.1.1
1875	binder-under-temperature	[PWG5100.x]	6.1.1
1876	binder-unrecoverable-failure	[PWG5100.x]	6.1.1
1877	binder-unrecoverable-storage-error	[PWG5100.x]	6.1.1
1878	binder-warming-up	[PWG5100.x]	6.1.1
1879	die-cutter-added	[PWG5100.x]	6.1.1
1880	die-cutter-almost-empty	[PWG5100.x]	6.1.1
1881	die-cutter-almost-full	[PWG5100.x]	6.1.1
1882	die-cutter-at-limit	[PWG5100.x]	6.1.1

1883	die-cutter-closed	[PWG5100.x]	6.1.1
1884	die-cutter-configuration-change	[PWG5100.x]	6.1.1
1885	die-cutter-cover-closed	[PWG5100.x]	6.1.1
1886	die-cutter-cover-open	[PWG5100.x]	6.1.1
1887	die-cutter-empty	[PWG5100.x]	6.1.1
1888	die-cutter-full	[PWG5100.x]	6.1.1
1889	die-cutter-interlock-closed	[PWG5100.x]	6.1.1
1890	die-cutter-interlock-open	[PWG5100.x]	6.1.1
1891	die-cutter-jam	[PWG5100.x]	6.1.1
1892	die-cutter-life-almost-over	[PWG5100.x]	6.1.1
1893	die-cutter-life-over	[PWG5100.x]	6.1.1
1894	die-cutter-memory-exhausted	[PWG5100.x]	6.1.1
1895	die-cutter-missing	[PWG5100.x]	6.1.1
1896	die-cutter-motor-failure	[PWG5100.x]	6.1.1
1897	die-cutter-near-limit	[PWG5100.x]	6.1.1
1898	die-cutter-offline	[PWG5100.x]	6.1.1
1899	die-cutter-opened	[PWG5100.x]	6.1.1
1900	die-cutter-over-temperature	[PWG5100.x]	6.1.1
1901	die-cutter-power-saver	[PWG5100.x]	6.1.1
1902	die-cutter-recoverable-failure	[PWG5100.x]	6.1.1
1903	die-cutter-recoverable-storage-error	[PWG5100.x]	6.1.1
1904	die-cutter-removed	[PWG5100.x]	6.1.1
1905	die-cutter-resource-added	[PWG5100.x]	6.1.1
1906	die-cutter-resource-removed	[PWG5100.x]	6.1.1
1907	die-cutter-thermistor-failure	[PWG5100.x]	6.1.1
1908	die-cutter-timing-failure	[PWG5100.x]	6.1.1
1909	die-cutter-turned-off	[PWG5100.x]	6.1.1
1910	die-cutter-turned-on	[PWG5100.x]	6.1.1
1911	die-cutter-under-temperature	[PWG5100.x]	6.1.1
1912	die-cutter-unrecoverable-failure	[PWG5100.x]	6.1.1
1913	die-cutter-unrecoverable-storage-error	[PWG5100.x]	6.1.1
1914	die-cutter-warming-up	[PWG5100.x]	6.1.1
1915	folder-added	[PWG5100.x]	6.1.1
1916	folder-almost-empty	[PWG5100.x]	6.1.1
1917	folder-almost-full	[PWG5100.x]	6.1.1
1918	folder-at-limit	[PWG5100.x]	6.1.1
1919	folder-closed	[PWG5100.x]	6.1.1
1920	folder-configuration-change	[PWG5100.x]	6.1.1
1921	folder-cover-closed	[PWG5100.x]	6.1.1
1922	folder-cover-open	[PWG5100.x]	6.1.1
1923	folder-empty	[PWG5100.x]	6.1.1
1924	folder-full	[PWG5100.x]	6.1.1
1925	folder-interlock-closed	[PWG5100.x]	6.1.1
1926	folder-interlock-open	[PWG5100.x]	6.1.1
1927	folder-jam	[PWG5100.x]	6.1.1
1928	folder-life-almost-over	[PWG5100.x]	6.1.1
1929	folder-life-over	[PWG5100.x]	6.1.1
1930	folder-memory-exhausted	[PWG5100.x]	6.1.1
1931	folder-missing	[PWG5100.x]	6.1.1
1932	folder-motor-failure	[PWG5100.x]	6.1.1
1933	folder-near-limit	[PWG5100.x]	6.1.1
1934	folder-offline	[PWG5100.x]	6.1.1
1935	folder-opened	[PWG5100.x]	6.1.1
1936	folder-over-temperature	[PWG5100.x]	6.1.1
1937	folder-power-saver	[PWG5100.x]	6.1.1
1938	folder-recoverable-failure	[PWG5100.x]	6.1.1
1939	folder-recoverable-storage-error	[PWG5100.x]	6.1.1

1940	folder-removed	[PWG5100.x]	6.1.1
1941	folder-resource-added	[PWG5100.x]	6.1.1
1942	folder-resource-removed	[PWG5100.x]	6.1.1
1943	folder-thermistor-failure	[PWG5100.x]	6.1.1
1944	folder-timing-failure	[PWG5100.x]	6.1.1
1945	folder-turned-off	[PWG5100.x]	6.1.1
1946	folder-turned-on	[PWG5100.x]	6.1.1
1947	folder-under-temperature	[PWG5100.x]	6.1.1
1948	folder-unrecoverable-failure	[PWG5100.x]	6.1.1
1949	folder-unrecoverable-storage-error	[PWG5100.x]	6.1.1
1950	folder-warming-up	[PWG5100.x]	6.1.1
1951	imprinter-added	[PWG5100.x]	6.1.1
1952	imprinter-almost-empty	[PWG5100.x]	6.1.1
1953	imprinter-almost-full	[PWG5100.x]	6.1.1
1954	imprinter-at-limit	[PWG5100.x]	6.1.1
1955	imprinter-closed	[PWG5100.x]	6.1.1
1956	imprinter-configuration-change	[PWG5100.x]	6.1.1
1957	imprinter-cover-closed	[PWG5100.x]	6.1.1
1958	imprinter-cover-open	[PWG5100.x]	6.1.1
1959	imprinter-empty	[PWG5100.x]	6.1.1
1960	imprinter-full	[PWG5100.x]	6.1.1
1961	imprinter-interlock-closed	[PWG5100.x]	6.1.1
1962	imprinter-interlock-open	[PWG5100.x]	6.1.1
1963	imprinter-jam	[PWG5100.x]	6.1.1
1964	imprinter-life-almost-over	[PWG5100.x]	6.1.1
1965	imprinter-life-over	[PWG5100.x]	6.1.1
1966	imprinter-memory-exhausted	[PWG5100.x]	6.1.1
1967	imprinter-missing	[PWG5100.x]	6.1.1
1968	imprinter-motor-failure	[PWG5100.x]	6.1.1
1969	imprinter-near-limit	[PWG5100.x]	6.1.1
1970	imprinter-offline	[PWG5100.x]	6.1.1
1971	imprinter-opened	[PWG5100.x]	6.1.1
1972	imprinter-over-temperature	[PWG5100.x]	6.1.1
1973	imprinter-power-saver	[PWG5100.x]	6.1.1
1974	imprinter-recoverable-failure	[PWG5100.x]	6.1.1
1975	imprinter-recoverable-storage-error	[PWG5100.x]	6.1.1
1976	imprinter-removed	[PWG5100.x]	6.1.1
1977	imprinter-resource-added	[PWG5100.x]	6.1.1
1978	imprinter-resource-removed	[PWG5100.x]	6.1.1
1979	imprinter-thermistor-failure	[PWG5100.x]	6.1.1
1980	imprinter-timing-failure	[PWG5100.x]	6.1.1
1981	imprinter-turned-off	[PWG5100.x]	6.1.1
1982	imprinter-turned-on	[PWG5100.x]	6.1.1
1983	imprinter-under-temperature	[PWG5100.x]	6.1.1
1984	imprinter-unrecoverable-failure	[PWG5100.x]	6.1.1
1985	imprinter-unrecoverable-storage-error	[PWG5100.x]	6.1.1
1986	imprinter-warming-up	[PWG5100.x]	6.1.1
1987	insertter-added	[PWG5100.x]	6.1.1
1988	insertter-almost-empty	[PWG5100.x]	6.1.1
1989	insertter-almost-full	[PWG5100.x]	6.1.1
1990	insertter-at-limit	[PWG5100.x]	6.1.1
1991	insertter-closed	[PWG5100.x]	6.1.1
1992	insertter-configuration-change	[PWG5100.x]	6.1.1
1993	insertter-cover-closed	[PWG5100.x]	6.1.1
1994	insertter-cover-open	[PWG5100.x]	6.1.1
1995	insertter-empty	[PWG5100.x]	6.1.1
1996	insertter-full	[PWG5100.x]	6.1.1

1997	insert-er-interlock-closed	[PWG5100.x]	6.1.1
1998	insert-er-interlock-open	[PWG5100.x]	6.1.1
1999	insert-er-jam	[PWG5100.x]	6.1.1
2000	insert-er-life-almost-over	[PWG5100.x]	6.1.1
2001	insert-er-life-over	[PWG5100.x]	6.1.1
2002	insert-er-memory-exhausted	[PWG5100.x]	6.1.1
2003	insert-er-missing	[PWG5100.x]	6.1.1
2004	insert-er-motor-failure	[PWG5100.x]	6.1.1
2005	insert-er-near-limit	[PWG5100.x]	6.1.1
2006	insert-er-offline	[PWG5100.x]	6.1.1
2007	insert-er-opened	[PWG5100.x]	6.1.1
2008	insert-er-over-temperature	[PWG5100.x]	6.1.1
2009	insert-er-power-saver	[PWG5100.x]	6.1.1
2010	insert-er-recoverable-failure	[PWG5100.x]	6.1.1
2011	insert-er-recoverable-storage-error	[PWG5100.x]	6.1.1
2012	insert-er-removed	[PWG5100.x]	6.1.1
2013	insert-er-resource-added	[PWG5100.x]	6.1.1
2014	insert-er-resource-removed	[PWG5100.x]	6.1.1
2015	insert-er-thermistor-failure	[PWG5100.x]	6.1.1
2016	insert-er-timing-failure	[PWG5100.x]	6.1.1
2017	insert-er-turned-off	[PWG5100.x]	6.1.1
2018	insert-er-turned-on	[PWG5100.x]	6.1.1
2019	insert-er-under-temperature	[PWG5100.x]	6.1.1
2020	insert-er-unrecoverable-failure	[PWG5100.x]	6.1.1
2021	insert-er-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2022	insert-er-warming-up	[PWG5100.x]	6.1.1
2023	make-envelope-added	[PWG5100.x]	6.1.1
2024	make-envelope-almost-empty	[PWG5100.x]	6.1.1
2025	make-envelope-almost-full	[PWG5100.x]	6.1.1
2026	make-envelope-at-limit	[PWG5100.x]	6.1.1
2027	make-envelope-closed	[PWG5100.x]	6.1.1
2028	make-envelope-configuration-change	[PWG5100.x]	6.1.1
2029	make-envelope-cover-closed	[PWG5100.x]	6.1.1
2030	make-envelope-cover-open	[PWG5100.x]	6.1.1
2031	make-envelope-empty	[PWG5100.x]	6.1.1
2032	make-envelope-full	[PWG5100.x]	6.1.1
2033	make-envelope-interlock-closed	[PWG5100.x]	6.1.1
2034	make-envelope-interlock-open	[PWG5100.x]	6.1.1
2035	make-envelope-jam	[PWG5100.x]	6.1.1
2036	make-envelope-life-almost-over	[PWG5100.x]	6.1.1
2037	make-envelope-life-over	[PWG5100.x]	6.1.1
2038	make-envelope-memory-exhausted	[PWG5100.x]	6.1.1
2039	make-envelope-missing	[PWG5100.x]	6.1.1
2040	make-envelope-motor-failure	[PWG5100.x]	6.1.1
2041	make-envelope-near-limit	[PWG5100.x]	6.1.1
2042	make-envelope-offline	[PWG5100.x]	6.1.1
2043	make-envelope-opened	[PWG5100.x]	6.1.1
2044	make-envelope-over-temperature	[PWG5100.x]	6.1.1
2045	make-envelope-power-saver	[PWG5100.x]	6.1.1
2046	make-envelope-recoverable-failure	[PWG5100.x]	6.1.1
2047	make-envelope-recoverable-storage-error	[PWG5100.x]	6.1.1
2048	make-envelope-removed	[PWG5100.x]	6.1.1
2049	make-envelope-resource-added	[PWG5100.x]	6.1.1
2050	make-envelope-resource-removed	[PWG5100.x]	6.1.1
2051	make-envelope-thermistor-failure	[PWG5100.x]	6.1.1
2052	make-envelope-timing-failure	[PWG5100.x]	6.1.1
2053	make-envelope-turned-off	[PWG5100.x]	6.1.1

2054	make-envelope-turned-on	[PWG5100.x]	6.1.1
2055	make-envelope-under-temperature	[PWG5100.x]	6.1.1
2056	make-envelope-unrecoverable-failure	[PWG5100.x]	6.1.1
2057	make-envelope-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2058	make-envelope-warming-up	[PWG5100.x]	6.1.1
2059	perforater-added	[PWG5100.x]	6.1.1
2060	perforater-almost-empty	[PWG5100.x]	6.1.1
2061	perforater-almost-full	[PWG5100.x]	6.1.1
2062	perforater-at-limit	[PWG5100.x]	6.1.1
2063	perforater-closed	[PWG5100.x]	6.1.1
2064	perforater-configuration-change	[PWG5100.x]	6.1.1
2065	perforater-cover-closed	[PWG5100.x]	6.1.1
2066	perforater-cover-open	[PWG5100.x]	6.1.1
2067	perforater-empty	[PWG5100.x]	6.1.1
2068	perforater-full	[PWG5100.x]	6.1.1
2069	perforater-interlock-closed	[PWG5100.x]	6.1.1
2070	perforater-interlock-open	[PWG5100.x]	6.1.1
2071	perforater-jam	[PWG5100.x]	6.1.1
2072	perforater-life-almost-over	[PWG5100.x]	6.1.1
2073	perforater-life-over	[PWG5100.x]	6.1.1
2074	perforater-memory-exhausted	[PWG5100.x]	6.1.1
2075	perforater-missing	[PWG5100.x]	6.1.1
2076	perforater-motor-failure	[PWG5100.x]	6.1.1
2077	perforater-near-limit	[PWG5100.x]	6.1.1
2078	perforater-offline	[PWG5100.x]	6.1.1
2079	perforater-opened	[PWG5100.x]	6.1.1
2080	perforater-over-temperature	[PWG5100.x]	6.1.1
2081	perforater-power-saver	[PWG5100.x]	6.1.1
2082	perforater-recoverable-failure	[PWG5100.x]	6.1.1
2083	perforater-recoverable-storage-error	[PWG5100.x]	6.1.1
2084	perforater-removed	[PWG5100.x]	6.1.1
2085	perforater-resource-added	[PWG5100.x]	6.1.1
2086	perforater-resource-removed	[PWG5100.x]	6.1.1
2087	perforater-thermistor-failure	[PWG5100.x]	6.1.1
2088	perforater-timing-failure	[PWG5100.x]	6.1.1
2089	perforater-turned-off	[PWG5100.x]	6.1.1
2090	perforater-turned-on	[PWG5100.x]	6.1.1
2091	perforater-under-temperature	[PWG5100.x]	6.1.1
2092	perforater-unrecoverable-failure	[PWG5100.x]	6.1.1
2093	perforater-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2094	perforater-warming-up	[PWG5100.x]	6.1.1
2095	puncher-added	[PWG5100.x]	6.1.1
2096	puncher-almost-empty	[PWG5100.x]	6.1.1
2097	puncher-almost-full	[PWG5100.x]	6.1.1
2098	puncher-at-limit	[PWG5100.x]	6.1.1
2099	puncher-closed	[PWG5100.x]	6.1.1
2100	puncher-configuration-change	[PWG5100.x]	6.1.1
2101	puncher-cover-closed	[PWG5100.x]	6.1.1
2102	puncher-cover-open	[PWG5100.x]	6.1.1
2103	puncher-empty	[PWG5100.x]	6.1.1
2104	puncher-full	[PWG5100.x]	6.1.1
2105	puncher-interlock-closed	[PWG5100.x]	6.1.1
2106	puncher-interlock-open	[PWG5100.x]	6.1.1
2107	puncher-jam	[PWG5100.x]	6.1.1
2108	puncher-life-almost-over	[PWG5100.x]	6.1.1
2109	puncher-life-over	[PWG5100.x]	6.1.1
2110	puncher-memory-exhausted	[PWG5100.x]	6.1.1

2111	puncher-missing	[PWG5100.x]	6.1.1
2112	puncher-motor-failure	[PWG5100.x]	6.1.1
2113	puncher-near-limit	[PWG5100.x]	6.1.1
2114	puncher-offline	[PWG5100.x]	6.1.1
2115	puncher-opened	[PWG5100.x]	6.1.1
2116	puncher-over-temperature	[PWG5100.x]	6.1.1
2117	puncher-power-saver	[PWG5100.x]	6.1.1
2118	puncher-recoverable-failure	[PWG5100.x]	6.1.1
2119	puncher-recoverable-storage-error	[PWG5100.x]	6.1.1
2120	puncher-removed	[PWG5100.x]	6.1.1
2121	puncher-resource-added	[PWG5100.x]	6.1.1
2122	puncher-resource-removed	[PWG5100.x]	6.1.1
2123	puncher-thermistor-failure	[PWG5100.x]	6.1.1
2124	puncher-timing-failure	[PWG5100.x]	6.1.1
2125	puncher-turned-off	[PWG5100.x]	6.1.1
2126	puncher-turned-on	[PWG5100.x]	6.1.1
2127	puncher-under-temperature	[PWG5100.x]	6.1.1
2128	puncher-unrecoverable-failure	[PWG5100.x]	6.1.1
2129	puncher-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2130	puncher-warming-up	[PWG5100.x]	6.1.1
2131	separation-cutter-added	[PWG5100.x]	6.1.1
2132	separation-cutter-almost-empty	[PWG5100.x]	6.1.1
2133	separation-cutter-almost-full	[PWG5100.x]	6.1.1
2134	separation-cutter-at-limit	[PWG5100.x]	6.1.1
2135	separation-cutter-closed	[PWG5100.x]	6.1.1
2136	separation-cutter-configuration-change	[PWG5100.x]	6.1.1
2137	separation-cutter-cover-closed	[PWG5100.x]	6.1.1
2138	separation-cutter-cover-open	[PWG5100.x]	6.1.1
2139	separation-cutter-empty	[PWG5100.x]	6.1.1
2140	separation-cutter-full	[PWG5100.x]	6.1.1
2141	separation-cutter-interlock-closed	[PWG5100.x]	6.1.1
2142	separation-cutter-interlock-open	[PWG5100.x]	6.1.1
2143	separation-cutter-jam	[PWG5100.x]	6.1.1
2144	separation-cutter-life-almost-over	[PWG5100.x]	6.1.1
2145	separation-cutter-life-over	[PWG5100.x]	6.1.1
2146	separation-cutter-memory-exhausted	[PWG5100.x]	6.1.1
2147	separation-cutter-missing	[PWG5100.x]	6.1.1
2148	separation-cutter-motor-failure	[PWG5100.x]	6.1.1
2149	separation-cutter-near-limit	[PWG5100.x]	6.1.1
2150	separation-cutter-offline	[PWG5100.x]	6.1.1
2151	separation-cutter-opened	[PWG5100.x]	6.1.1
2152	separation-cutter-over-temperature	[PWG5100.x]	6.1.1
2153	separation-cutter-power-saver	[PWG5100.x]	6.1.1
2154	separation-cutter-recoverable-failure	[PWG5100.x]	6.1.1
2155	separation-cutter-recoverable-storage-error	[PWG5100.x]	6.1.1
2156	separation-cutter-removed	[PWG5100.x]	6.1.1
2157	separation-cutter-resource-added	[PWG5100.x]	6.1.1
2158	separation-cutter-resource-removed	[PWG5100.x]	6.1.1
2159	separation-cutter-thermistor-failure	[PWG5100.x]	6.1.1
2160	separation-cutter-timing-failure	[PWG5100.x]	6.1.1
2161	separation-cutter-turned-off	[PWG5100.x]	6.1.1
2162	separation-cutter-turned-on	[PWG5100.x]	6.1.1
2163	separation-cutter-under-temperature	[PWG5100.x]	6.1.1
2164	separation-cutter-unrecoverable-failure	[PWG5100.x]	6.1.1
2165	separation-cutter-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2166	separation-cutter-warming-up	[PWG5100.x]	6.1.1
2167	sheet-rotator-added	[PWG5100.x]	6.1.1

2168	sheet-rotator-almost-empty	[PWG5100.x]	6.1.1
2169	sheet-rotator-almost-full	[PWG5100.x]	6.1.1
2170	sheet-rotator-at-limit	[PWG5100.x]	6.1.1
2171	sheet-rotator-closed	[PWG5100.x]	6.1.1
2172	sheet-rotator-configuration-change	[PWG5100.x]	6.1.1
2173	sheet-rotator-cover-closed	[PWG5100.x]	6.1.1
2174	sheet-rotator-cover-open	[PWG5100.x]	6.1.1
2175	sheet-rotator-empty	[PWG5100.x]	6.1.1
2176	sheet-rotator-full	[PWG5100.x]	6.1.1
2177	sheet-rotator-interlock-closed	[PWG5100.x]	6.1.1
2178	sheet-rotator-interlock-open	[PWG5100.x]	6.1.1
2179	sheet-rotator-jam	[PWG5100.x]	6.1.1
2180	sheet-rotator-life-almost-over	[PWG5100.x]	6.1.1
2181	sheet-rotator-life-over	[PWG5100.x]	6.1.1
2182	sheet-rotator-memory-exhausted	[PWG5100.x]	6.1.1
2183	sheet-rotator-missing	[PWG5100.x]	6.1.1
2184	sheet-rotator-motor-failure	[PWG5100.x]	6.1.1
2185	sheet-rotator-near-limit	[PWG5100.x]	6.1.1
2186	sheet-rotator-offline	[PWG5100.x]	6.1.1
2187	sheet-rotator-opened	[PWG5100.x]	6.1.1
2188	sheet-rotator-over-temperature	[PWG5100.x]	6.1.1
2189	sheet-rotator-power-saver	[PWG5100.x]	6.1.1
2190	sheet-rotator-recoverable-failure	[PWG5100.x]	6.1.1
2191	sheet-rotator-recoverable-storage-error	[PWG5100.x]	6.1.1
2192	sheet-rotator-removed	[PWG5100.x]	6.1.1
2193	sheet-rotator-resource-added	[PWG5100.x]	6.1.1
2194	sheet-rotator-resource-removed	[PWG5100.x]	6.1.1
2195	sheet-rotator-thermistor-failure	[PWG5100.x]	6.1.1
2196	sheet-rotator-timing-failure	[PWG5100.x]	6.1.1
2197	sheet-rotator-turned-off	[PWG5100.x]	6.1.1
2198	sheet-rotator-turned-on	[PWG5100.x]	6.1.1
2199	sheet-rotator-under-temperature	[PWG5100.x]	6.1.1
2200	sheet-rotator-unrecoverable-failure	[PWG5100.x]	6.1.1
2201	sheet-rotator-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2202	sheet-rotator-warming-up	[PWG5100.x]	6.1.1
2203	slitter-added	[PWG5100.x]	6.1.1
2204	slitter-almost-empty	[PWG5100.x]	6.1.1
2205	slitter-almost-full	[PWG5100.x]	6.1.1
2206	slitter-at-limit	[PWG5100.x]	6.1.1
2207	slitter-closed	[PWG5100.x]	6.1.1
2208	slitter-configuration-change	[PWG5100.x]	6.1.1
2209	slitter-cover-closed	[PWG5100.x]	6.1.1
2210	slitter-cover-open	[PWG5100.x]	6.1.1
2211	slitter-empty	[PWG5100.x]	6.1.1
2212	slitter-full	[PWG5100.x]	6.1.1
2213	slitter-interlock-closed	[PWG5100.x]	6.1.1
2214	slitter-interlock-open	[PWG5100.x]	6.1.1
2215	slitter-jam	[PWG5100.x]	6.1.1
2216	slitter-life-almost-over	[PWG5100.x]	6.1.1
2217	slitter-life-over	[PWG5100.x]	6.1.1
2218	slitter-memory-exhausted	[PWG5100.x]	6.1.1
2219	slitter-missing	[PWG5100.x]	6.1.1
2220	slitter-motor-failure	[PWG5100.x]	6.1.1
2221	slitter-near-limit	[PWG5100.x]	6.1.1
2222	slitter-offline	[PWG5100.x]	6.1.1
2223	slitter-opened	[PWG5100.x]	6.1.1
2224	slitter-over-temperature	[PWG5100.x]	6.1.1

2225	slitter-power-saver	[PWG5100.x]	6.1.1
2226	slitter-recoverable-failure	[PWG5100.x]	6.1.1
2227	slitter-recoverable-storage-error	[PWG5100.x]	6.1.1
2228	slitter-removed	[PWG5100.x]	6.1.1
2229	slitter-resource-added	[PWG5100.x]	6.1.1
2230	slitter-resource-removed	[PWG5100.x]	6.1.1
2231	slitter-thermistor-failure	[PWG5100.x]	6.1.1
2232	slitter-timing-failure	[PWG5100.x]	6.1.1
2233	slitter-turned-off	[PWG5100.x]	6.1.1
2234	slitter-turned-on	[PWG5100.x]	6.1.1
2235	slitter-under-temperature	[PWG5100.x]	6.1.1
2236	slitter-unrecoverable-failure	[PWG5100.x]	6.1.1
2237	slitter-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2238	slitter-warming-up	[PWG5100.x]	6.1.1
2239	stacker-added	[PWG5100.x]	6.1.1
2240	stacker-almost-empty	[PWG5100.x]	6.1.1
2241	stacker-almost-full	[PWG5100.x]	6.1.1
2242	stacker-at-limit	[PWG5100.x]	6.1.1
2243	stacker-closed	[PWG5100.x]	6.1.1
2244	stacker-configuration-change	[PWG5100.x]	6.1.1
2245	stacker-cover-closed	[PWG5100.x]	6.1.1
2246	stacker-cover-open	[PWG5100.x]	6.1.1
2247	stacker-empty	[PWG5100.x]	6.1.1
2248	stacker-full	[PWG5100.x]	6.1.1
2249	stacker-interlock-closed	[PWG5100.x]	6.1.1
2250	stacker-interlock-open	[PWG5100.x]	6.1.1
2251	stacker-jam	[PWG5100.x]	6.1.1
2252	stacker-life-almost-over	[PWG5100.x]	6.1.1
2253	stacker-life-over	[PWG5100.x]	6.1.1
2254	stacker-memory-exhausted	[PWG5100.x]	6.1.1
2255	stacker-missing	[PWG5100.x]	6.1.1
2256	stacker-motor-failure	[PWG5100.x]	6.1.1
2257	stacker-near-limit	[PWG5100.x]	6.1.1
2258	stacker-offline	[PWG5100.x]	6.1.1
2259	stacker-opened	[PWG5100.x]	6.1.1
2260	stacker-over-temperature	[PWG5100.x]	6.1.1
2261	stacker-power-saver	[PWG5100.x]	6.1.1
2262	stacker-recoverable-failure	[PWG5100.x]	6.1.1
2263	stacker-recoverable-storage-error	[PWG5100.x]	6.1.1
2264	stacker-removed	[PWG5100.x]	6.1.1
2265	stacker-resource-added	[PWG5100.x]	6.1.1
2266	stacker-resource-removed	[PWG5100.x]	6.1.1
2267	stacker-thermistor-failure	[PWG5100.x]	6.1.1
2268	stacker-timing-failure	[PWG5100.x]	6.1.1
2269	stacker-turned-off	[PWG5100.x]	6.1.1
2270	stacker-turned-on	[PWG5100.x]	6.1.1
2271	stacker-under-temperature	[PWG5100.x]	6.1.1
2272	stacker-unrecoverable-failure	[PWG5100.x]	6.1.1
2273	stacker-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2274	stacker-warming-up	[PWG5100.x]	6.1.1
2275	stapler-added	[PWG5100.x]	6.1.1
2276	stapler-almost-empty	[PWG5100.x]	6.1.1
2277	stapler-almost-full	[PWG5100.x]	6.1.1
2278	stapler-at-limit	[PWG5100.x]	6.1.1
2279	stapler-closed	[PWG5100.x]	6.1.1
2280	stapler-configuration-change	[PWG5100.x]	6.1.1
2281	stapler-cover-closed	[PWG5100.x]	6.1.1

2282	stapler-cover-open	[PWG5100.x]	6.1.1
2283	stapler-empty	[PWG5100.x]	6.1.1
2284	stapler-full	[PWG5100.x]	6.1.1
2285	stapler-interlock-closed	[PWG5100.x]	6.1.1
2286	stapler-interlock-open	[PWG5100.x]	6.1.1
2287	stapler-jam	[PWG5100.x]	6.1.1
2288	stapler-life-almost-over	[PWG5100.x]	6.1.1
2289	stapler-life-over	[PWG5100.x]	6.1.1
2290	stapler-memory-exhausted	[PWG5100.x]	6.1.1
2291	stapler-missing	[PWG5100.x]	6.1.1
2292	stapler-motor-failure	[PWG5100.x]	6.1.1
2293	stapler-near-limit	[PWG5100.x]	6.1.1
2294	stapler-offline	[PWG5100.x]	6.1.1
2295	stapler-opened	[PWG5100.x]	6.1.1
2296	stapler-over-temperature	[PWG5100.x]	6.1.1
2297	stapler-power-saver	[PWG5100.x]	6.1.1
2298	stapler-recoverable-failure	[PWG5100.x]	6.1.1
2299	stapler-recoverable-storage-error	[PWG5100.x]	6.1.1
2300	stapler-removed	[PWG5100.x]	6.1.1
2301	stapler-resource-added	[PWG5100.x]	6.1.1
2302	stapler-resource-removed	[PWG5100.x]	6.1.1
2303	stapler-thermistor-failure	[PWG5100.x]	6.1.1
2304	stapler-timing-failure	[PWG5100.x]	6.1.1
2305	stapler-turned-off	[PWG5100.x]	6.1.1
2306	stapler-turned-on	[PWG5100.x]	6.1.1
2307	stapler-under-temperature	[PWG5100.x]	6.1.1
2308	stapler-unrecoverable-failure	[PWG5100.x]	6.1.1
2309	stapler-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2310	stapler-warming-up	[PWG5100.x]	6.1.1
2311	stitcher-added	[PWG5100.x]	6.1.1
2312	stitcher-almost-empty	[PWG5100.x]	6.1.1
2313	stitcher-almost-full	[PWG5100.x]	6.1.1
2314	stitcher-at-limit	[PWG5100.x]	6.1.1
2315	stitcher-closed	[PWG5100.x]	6.1.1
2316	stitcher-configuration-change	[PWG5100.x]	6.1.1
2317	stitcher-cover-closed	[PWG5100.x]	6.1.1
2318	stitcher-cover-open	[PWG5100.x]	6.1.1
2319	stitcher-empty	[PWG5100.x]	6.1.1
2320	stitcher-full	[PWG5100.x]	6.1.1
2321	stitcher-interlock-closed	[PWG5100.x]	6.1.1
2322	stitcher-interlock-open	[PWG5100.x]	6.1.1
2323	stitcher-jam	[PWG5100.x]	6.1.1
2324	stitcher-life-almost-over	[PWG5100.x]	6.1.1
2325	stitcher-life-over	[PWG5100.x]	6.1.1
2326	stitcher-memory-exhausted	[PWG5100.x]	6.1.1
2327	stitcher-missing	[PWG5100.x]	6.1.1
2328	stitcher-motor-failure	[PWG5100.x]	6.1.1
2329	stitcher-near-limit	[PWG5100.x]	6.1.1
2330	stitcher-offline	[PWG5100.x]	6.1.1
2331	stitcher-opened	[PWG5100.x]	6.1.1
2332	stitcher-over-temperature	[PWG5100.x]	6.1.1
2333	stitcher-power-saver	[PWG5100.x]	6.1.1
2334	stitcher-recoverable-failure	[PWG5100.x]	6.1.1
2335	stitcher-recoverable-storage-error	[PWG5100.x]	6.1.1
2336	stitcher-removed	[PWG5100.x]	6.1.1
2337	stitcher-resource-added	[PWG5100.x]	6.1.1
2338	stitcher-resource-removed	[PWG5100.x]	6.1.1

2339	stitcher-thermistor-failure	[PWG5100.x]	6.1.1
2340	stitcher-timing-failure	[PWG5100.x]	6.1.1
2341	stitcher-turned-off	[PWG5100.x]	6.1.1
2342	stitcher-turned-on	[PWG5100.x]	6.1.1
2343	stitcher-under-temperature	[PWG5100.x]	6.1.1
2344	stitcher-unrecoverable-failure	[PWG5100.x]	6.1.1
2345	stitcher-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2346	stitcher-warming-up	[PWG5100.x]	6.1.1
2347	trimmer-added	[PWG5100.x]	6.1.1
2348	trimmer-almost-empty	[PWG5100.x]	6.1.1
2349	trimmer-almost-full	[PWG5100.x]	6.1.1
2350	trimmer-at-limit	[PWG5100.x]	6.1.1
2351	trimmer-closed	[PWG5100.x]	6.1.1
2352	trimmer-configuration-change	[PWG5100.x]	6.1.1
2353	trimmer-cover-closed	[PWG5100.x]	6.1.1
2354	trimmer-cover-open	[PWG5100.x]	6.1.1
2355	trimmer-empty	[PWG5100.x]	6.1.1
2356	trimmer-full	[PWG5100.x]	6.1.1
2357	trimmer-interlock-closed	[PWG5100.x]	6.1.1
2358	trimmer-interlock-open	[PWG5100.x]	6.1.1
2359	trimmer-jam	[PWG5100.x]	6.1.1
2360	trimmer-life-almost-over	[PWG5100.x]	6.1.1
2361	trimmer-life-over	[PWG5100.x]	6.1.1
2362	trimmer-memory-exhausted	[PWG5100.x]	6.1.1
2363	trimmer-missing	[PWG5100.x]	6.1.1
2364	trimmer-motor-failure	[PWG5100.x]	6.1.1
2365	trimmer-near-limit	[PWG5100.x]	6.1.1
2366	trimmer-offline	[PWG5100.x]	6.1.1
2367	trimmer-opened	[PWG5100.x]	6.1.1
2368	trimmer-over-temperature	[PWG5100.x]	6.1.1
2369	trimmer-power-saver	[PWG5100.x]	6.1.1
2370	trimmer-recoverable-failure	[PWG5100.x]	6.1.1
2371	trimmer-recoverable-storage-error	[PWG5100.x]	6.1.1
2372	trimmer-removed	[PWG5100.x]	6.1.1
2373	trimmer-resource-added	[PWG5100.x]	6.1.1
2374	trimmer-resource-removed	[PWG5100.x]	6.1.1
2375	trimmer-thermistor-failure	[PWG5100.x]	6.1.1
2376	trimmer-timing-failure	[PWG5100.x]	6.1.1
2377	trimmer-turned-off	[PWG5100.x]	6.1.1
2378	trimmer-turned-on	[PWG5100.x]	6.1.1
2379	trimmer-under-temperature	[PWG5100.x]	6.1.1
2380	trimmer-unrecoverable-failure	[PWG5100.x]	6.1.1
2381	trimmer-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2382	trimmer-warming-up	[PWG5100.x]	6.1.1
2383	wrapper-added	[PWG5100.x]	6.1.1
2384	wrapper-almost-empty	[PWG5100.x]	6.1.1
2385	wrapper-almost-full	[PWG5100.x]	6.1.1
2386	wrapper-at-limit	[PWG5100.x]	6.1.1
2387	wrapper-closed	[PWG5100.x]	6.1.1
2388	wrapper-configuration-change	[PWG5100.x]	6.1.1
2389	wrapper-cover-closed	[PWG5100.x]	6.1.1
2390	wrapper-cover-open	[PWG5100.x]	6.1.1
2391	wrapper-empty	[PWG5100.x]	6.1.1
2392	wrapper-full	[PWG5100.x]	6.1.1
2393	wrapper-interlock-closed	[PWG5100.x]	6.1.1
2394	wrapper-interlock-open	[PWG5100.x]	6.1.1
2395	wrapper-jam	[PWG5100.x]	6.1.1

2396	wrapper-life-almost-over	[PWG5100.x]	6.1.1
2397	wrapper-life-over	[PWG5100.x]	6.1.1
2398	wrapper-memory-exhausted	[PWG5100.x]	6.1.1
2399	wrapper-missing	[PWG5100.x]	6.1.1
2400	wrapper-motor-failure	[PWG5100.x]	6.1.1
2401	wrapper-near-limit	[PWG5100.x]	6.1.1
2402	wrapper-offline	[PWG5100.x]	6.1.1
2403	wrapper-opened	[PWG5100.x]	6.1.1
2404	wrapper-over-temperature	[PWG5100.x]	6.1.1
2405	wrapper-power-saver	[PWG5100.x]	6.1.1
2406	wrapper-recoverable-failure	[PWG5100.x]	6.1.1
2407	wrapper-recoverable-storage-error	[PWG5100.x]	6.1.1
2408	wrapper-removed	[PWG5100.x]	6.1.1
2409	wrapper-resource-added	[PWG5100.x]	6.1.1
2410	wrapper-resource-removed	[PWG5100.x]	6.1.1
2411	wrapper-thermistor-failure	[PWG5100.x]	6.1.1
2412	wrapper-timing-failure	[PWG5100.x]	6.1.1
2413	wrapper-turned-off	[PWG5100.x]	6.1.1
2414	wrapper-turned-on	[PWG5100.x]	6.1.1
2415	wrapper-under-temperature	[PWG5100.x]	6.1.1
2416	wrapper-unrecoverable-failure	[PWG5100.x]	6.1.1
2417	wrapper-unrecoverable-storage-error	[PWG5100.x]	6.1.1
2418	wrapper-warming-up	[PWG5100.x]	6.1.1
2419			
2420			

2421 **[[[PWG Secretary: replace PWG5100.x w/ number of this document before publication as CS]]]**

2422 **8.2 IANA Printer MIB Alert Values Registrations**

2423 This section contains the updates for IANA to add to the IANA Printer MIB according to the procedures
 2424 defined in section 7 of [RFC3805] to cover the definitions in this document. The resulting registrations will
 2425 be published in:

2426 <http://www.iana.org/assignments/ianaprinter-mib>

2427 IANA should first remove the comma on the last enumerated value in the 'PrtAlertCodeTC' textual
 2428 convention and then insert the following new enumerated values and ASN.1 comments on usage:

2429 **Table 8-2 – IANA Printer MIB Alert Values for IANA**

```

2430      -- FinDeviceTypeTC = stitcher(3) -> stapler
2431      -- FinStitchingTypeTC = staple... (4,5,6,7, or 10)
2432      staplerCoverOpen(30203),
2433      staplerCoverClosed(30204),
2434      staplerInterlockOpen(30205),
2435      staplerInterlockClosed(30206),
2436      staplerConfigurationChange(30207),
2437      staplerJam(30208),
2438      staplerMissing(30209),
2439      staplerLifeAlmostOver(30210),
2440      staplerLifeOver(30211),
2441      staplerAlmostEmpty(30212),
2442      staplerEmpty(30213),
2443      staplerAlmostFull(30214),
2444      staplerFull(30215),
2445      staplerNearLimit(30216),
2446      staplerAtLimit(30217),
2447      staplerOpened(30218),
2448      staplerClosed(30219),
2449      staplerTurnedOn(30220),
2450      staplerTurnedOff(30221),
2451      staplerOffline(30222),
2452      staplerPowerSaver(30223),
2453      staplerWarmingUp(30224),
2454      staplerAdded(30225),
2455      staplerRemoved(30226),
2456      staplerResourceAdded(30227),
2457      staplerResourceRemoved(30228),
2458      staplerRecoverableFailure(30229),
2459      staplerUnrecoverableFailure(30230),
2460      staplerRecoverableStorageError(30231),
2461      staplerUnrecoverableStorageError(30232),
2462      staplerMotorFailure(30233),
2463      staplerMemoryExhausted(30234),
2464      staplerUnderTemperature(30235),
2465      staplerOverTemperature(30236),
2466      staplerTimingFailure(30237),
2467      staplerThermistorFailure(30238),
2468
2469      -- FinDeviceTypeTC = stitcher(3) -> stitcher
2470      -- FinStitchingTypeTC = saddleStitch(8) or edgeStitch(9)
2471      stitcherCoverOpen(30303),

```

```
2472     stitche rCoverClosed(30304),
2473     stitche rInterlockOpen(30305),
2474     stitche rInterlockClosed(30306),
2475     stitche rConfigurationChange(30307),
2476     stitche rJam(30308),
2477     stitche rMissing(30309),
2478     stitche rLifeAlmostOver(30310),
2479     stitche rLifeOver(30311),
2480     stitche rAlmostEmpty(30312),
2481     stitche rEmpty(30313),
2482     stitche rAlmostFull(30314),
2483     stitche rFull(30315),
2484     stitche rNearLimit(30316),
2485     stitche rAtLimit(30317),
2486     stitche rOpened(30318),
2487     stitche rClosed(30319),
2488     stitche rTurnedOn(30320),
2489     stitche rTurnedOff(30321),
2490     stitche rOffline(30322),
2491     stitche rPowerSaver(30323),
2492     stitche rWarmingUp(30324),
2493     stitche rAdded(30325),
2494     stitche rRemoved(30326),
2495     stitche rResourceAdded(30327),
2496     stitche rResourceRemoved(30328),
2497     stitche rRecoverableFailure(30329),
2498     stitche rUnrecoverableFailure(30330),
2499     stitche rRecoverableStorageError(30331),
2500     stitche rUnrecoverableStorageError(30332),
2501     stitche rMotorFailure(30333),
2502     stitche rMemoryExhausted(30334),
2503     stitche rUnderTemperature(30335),
2504     stitche rOverTemperature(30336),
2505     stitche rTimingFailure(30337),
2506     stitche rThermistorFailure(30338),
2507
2508     -- FinDeviceTypeTC = folder(4)
2509     folderCoverOpen(30403),
2510     folderCoverClosed(30404),
2511     folderInterlockOpen(30405),
2512     folderInterlockClosed(30406),
2513     folderConfigurationChange(30407),
2514     folderJam(30408),
2515     folderMissing(30409),
2516     folderLifeAlmostOver(30410),
2517     folderLifeOver(30411),
2518     folderAlmostEmpty(30412),
2519     folderEmpty(30413),
2520     folderAlmostFull(30414),
2521     folderFull(30415),
2522     folderNearLimit(30416),
2523     folderAtLimit(30417),
2524     folderOpened(30418),
2525     folderClosed(30419),
2526     folderTurnedOn(30420),
2527     folderTurnedOff(30421),
2528     folderOffline(30422),
```



```
2529     folderPowerSaver(30423),
2530     folderWarmingUp(30424),
2531     folderAdded(30425),
2532     folderRemoved(30426),
2533     folderResourceAdded(30427),
2534     folderResourceRemoved(30428),
2535     folderRecoverableFailure(30429),
2536     folderUnrecoverableFailure(30430),
2537     folderRecoverableStorageError(30431),
2538     folderUnrecoverableStorageError(30432),
2539     folderMotorFailure(30433),
2540     folderMemoryExhausted(30434),
2541     folderUnderTemperature(30435),
2542     folderOverTemperature(30436),
2543     folderTimingFailure(30437),
2544     folderThermistorFailure(30438),
2545
2546     -- FinDeviceTypeTC = binder(5)
2547     binderCoverOpen(30503),
2548     binderCoverClosed(30504),
2549     binderInterlockOpen(30505),
2550     binderInterlockClosed(30506),
2551     binderConfigurationChange(30507),
2552     binderJam(30508),
2553     binderMissing(30509),
2554     binderLifeAlmostOver(30510),
2555     binderLifeOver(30511),
2556     binderAlmostEmpty(30512),
2557     binderEmpty(30513),
2558     binderAlmostFull(30514),
2559     binderFull(30515),
2560     binderNearLimit(30516),
2561     binderAtLimit(30517),
2562     binderOpened(30518),
2563     binderClosed(30519),
2564     binderTurnedOn(30520),
2565     binderTurnedOff(30521),
2566     binderOffline(30522),
2567     binderPowerSaver(30523),
2568     binderWarmingUp(30524),
2569     binderAdded(30525),
2570     binderRemoved(30526),
2571     binderResourceAdded(30527),
2572     binderResourceRemoved(30528),
2573     binderRecoverableFailure(30529),
2574     binderUnrecoverableFailure(30530),
2575     binderRecoverableStorageError(30531),
2576     binderUnrecoverableStorageError(30532),
2577     binderMotorFailure(30533),
2578     binderMemoryExhausted(30534),
2579     binderUnderTemperature(30535),
2580     binderOverTemperature(30536),
2581     binderTimingFailure(30537),
2582     binderThermistorFailure(30538),
2583
2584     -- FinDeviceTypeTC = trimmer(6)
2585     trimmerCoverOpen(30603),
```

```
2586         trimmerCoverClosed(30604),
2587         trimmerInterlockOpen(30605),
2588         trimmerInterlockClosed(30606),
2589         trimmerConfigurationChange(30607),
2590         trimmerJam(30608),
2591         trimmerMissing(30609),
2592         trimmerLifeAlmostOver(30610),
2593         trimmerLifeOver(30611),
2594         trimmerAlmostEmpty(30612),
2595         trimmerEmpty(30613),
2596         trimmerAlmostFull(30614),
2597         trimmerFull(30615),
2598         trimmerNearLimit(30616),
2599         trimmerAtLimit(30617),
2600         trimmerOpened(30618),
2601         trimmerClosed(30619),
2602         trimmerTurnedOn(30620),
2603         trimmerTurnedOff(30621),
2604         trimmerOffline(30622),
2605         trimmerPowerSaver(30623),
2606         trimmerWarmingUp(30624),
2607         trimmerAdded(30625),
2608         trimmerRemoved(30626),
2609         trimmerResourceAdded(30627),
2610         trimmerResourceRemoved(30628),
2611         trimmerRecoverableFailure(30629),
2612         trimmerUnrecoverableFailure(30630),
2613         trimmerRecoverableStorageError(30631),
2614         trimmerUnrecoverableStorageError(30632),
2615         trimmerMotorFailure(30633),
2616         trimmerMemoryExhausted(30634),
2617         trimmerUnderTemperature(30635),
2618         trimmerOverTemperature(30636),
2619         trimmerTimingFailure(30637),
2620         trimmerThermistorFailure(30638),
2621
2622         -- FinDeviceTypeTC = dieCutter(7)
2623         dieCutterCoverOpen(30703),
2624         dieCutterCoverClosed(30704),
2625         dieCutterInterlockOpen(30705),
2626         dieCutterInterlockClosed(30706),
2627         dieCutterConfigurationChange(30707),
2628         dieCutterJam(30708),
2629         dieCutterMissing(30709),
2630         dieCutterLifeAlmostOver(30710),
2631         dieCutterLifeOver(30711),
2632         dieCutterAlmostEmpty(30712),
2633         dieCutterEmpty(30713),
2634         dieCutterAlmostFull(30714),
2635         dieCutterFull(30715),
2636         dieCutterNearLimit(30716),
2637         dieCutterAtLimit(30717),
2638         dieCutterOpened(30718),
2639         dieCutterClosed(30719),
2640         dieCutterTurnedOn(30720),
2641         dieCutterTurnedOff(30721),
2642         dieCutterOffline(30722),
```

```
2643     dieCutterPowerSaver(30723),
2644     dieCutterWarmingUp(30724),
2645     dieCutterAdded(30725),
2646     dieCutterRemoved(30726),
2647     dieCutterResourceAdded(30727),
2648     dieCutterResourceRemoved(30728),
2649     dieCutterRecoverableFailure(30729),
2650     dieCutterUnrecoverableFailure(30730),
2651     dieCutterRecoverableStorageError(30731),
2652     dieCutterUnrecoverableStorageError(30732),
2653     dieCutterMotorFailure(30733),
2654     dieCutterMemoryExhausted(30734),
2655     dieCutterUnderTemperature(30735),
2656     dieCutterOverTemperature(30736),
2657     dieCutterTimingFailure(30737),
2658     dieCutterThermistorFailure(30738),
2659
2660     -- FinDeviceTypeTC = puncher(8)
2661     puncherCoverOpen(30803),
2662     puncherCoverClosed(30804),
2663     puncherInterlockOpen(30805),
2664     puncherInterlockClosed(30806),
2665     puncherConfigurationChange(30807),
2666     puncherJam(30808),
2667     puncherMissing(30809),
2668     puncherLifeAlmostOver(30810),
2669     puncherLifeOver(30811),
2670     puncherAlmostEmpty(30812),
2671     puncherEmpty(30813),
2672     puncherAlmostFull(30814),
2673     puncherFull(30815),
2674     puncherNearLimit(30816),
2675     puncherAtLimit(30817),
2676     puncherOpened(30818),
2677     puncherClosed(30819),
2678     puncherTurnedOn(30820),
2679     puncherTurnedOff(30821),
2680     puncherOffline(30822),
2681     puncherPowerSaver(30823),
2682     puncherWarmingUp(30824),
2683     puncherAdded(30825),
2684     puncherRemoved(30826),
2685     puncherResourceAdded(30827),
2686     puncherResourceRemoved(30828),
2687     puncherRecoverableFailure(30829),
2688     puncherUnrecoverableFailure(30830),
2689     puncherRecoverableStorageError(30831),
2690     puncherUnrecoverableStorageError(30832),
2691     puncherMotorFailure(30833),
2692     puncherMemoryExhausted(30834),
2693     puncherUnderTemperature(30835),
2694     puncherOverTemperature(30836),
2695     puncherTimingFailure(30837),
2696     puncherThermistorFailure(30838),
2697
2698     -- FinDeviceTypeTC = perforater(9)
2699     perforaterCoverOpen(30903),
```

```
2700     perforaterCoverClosed(30904),
2701     perforaterInterlockOpen(30905),
2702     perforaterInterlockClosed(30906),
2703     perforaterConfigurationChange(30907),
2704     perforaterJam(30908),
2705     perforaterMissing(30909),
2706     perforaterLifeAlmostOver(30910),
2707     perforaterLifeOver(30911),
2708     perforaterAlmostEmpty(30912),
2709     perforaterEmpty(30913),
2710     perforaterAlmostFull(30914),
2711     perforaterFull(30915),
2712     perforaterNearLimit(30916),
2713     perforaterAtLimit(30917),
2714     perforaterOpened(30918),
2715     perforaterClosed(30919),
2716     perforaterTurnedOn(30920),
2717     perforaterTurnedOff(30921),
2718     perforaterOffline(30922),
2719     perforaterPowerSaver(30923),
2720     perforaterWarmingUp(30924),
2721     perforaterAdded(30925),
2722     perforaterRemoved(30926),
2723     perforaterResourceAdded(30927),
2724     perforaterResourceRemoved(30928),
2725     perforaterRecoverableFailure(30929),
2726     perforaterUnrecoverableFailure(30930),
2727     perforaterRecoverableStorageError(30931),
2728     perforaterUnrecoverableStorageError(30932),
2729     perforaterMotorFailure(30933),
2730     perforaterMemoryExhausted(30934),
2731     perforaterUnderTemperature(30935),
2732     perforaterOverTemperature(30936),
2733     perforaterTimingFailure(30937),
2734     perforaterThermistorFailure(30938),
2735
2736     -- FinDeviceTypeTC = slitter(10)
2737     slitterCoverOpen(31003),
2738     slitterCoverClosed(31004),
2739     slitterInterlockOpen(31005),
2740     slitterInterlockClosed(31006),
2741     slitterConfigurationChange(31007),
2742     slitterJam(31008),
2743     slitterMissing(31009),
2744     slitterLifeAlmostOver(31010),
2745     slitterLifeOver(31011),
2746     slitterAlmostEmpty(31012),
2747     slitterEmpty(31013),
2748     slitterAlmostFull(31014),
2749     slitterFull(31015),
2750     slitterNearLimit(31016),
2751     slitterAtLimit(31017),
2752     slitterOpened(31018),
2753     slitterClosed(31019),
2754     slitterTurnedOn(31020),
2755     slitterTurnedOff(31021),
2756     slitterOffline(31022),
```

```
2757         slitterPowerSaver(31023),
2758         slitterWarmingUp(31024),
2759         slitterAdded(31025),
2760         slitterRemoved(31026),
2761         slitterResourceAdded(31027),
2762         slitterResourceRemoved(31028),
2763         slitterRecoverableFailure(31029),
2764         slitterUnrecoverableFailure(31030),
2765         slitterRecoverableStorageError(31031),
2766         slitterUnrecoverableStorageError(31032),
2767         slitterMotorFailure(31033),
2768         slitterMemoryExhausted(31034),
2769         slitterUnderTemperature(31035),
2770         slitterOverTemperature(31036),
2771         slitterTimingFailure(31037),
2772         slitterThermistorFailure(31038),
2773
2774         -- FinDeviceTypeTC = separationCutter(11)
2775         separationCutterCoverOpen(31103),
2776         separationCutterCoverClosed(31104),
2777         separationCutterInterlockOpen(31105),
2778         separationCutterInterlockClosed(31106),
2779         separationCutterConfigurationChange(31107),
2780         separationCutterJam(31108),
2781         separationCutterMissing(31109),
2782         separationCutterLifeAlmostOver(31110),
2783         separationCutterLifeOver(31111),
2784         separationCutterAlmostEmpty(31112),
2785         separationCutterEmpty(31113),
2786         separationCutterAlmostFull(31114),
2787         separationCutterFull(31115),
2788         separationCutterNearLimit(31116),
2789         separationCutterAtLimit(31117),
2790         separationCutterOpened(31118),
2791         separationCutterClosed(31119),
2792         separationCutterTurnedOn(31120),
2793         separationCutterTurnedOff(31121),
2794         separationCutterOffline(31122),
2795         separationCutterPowerSaver(31123),
2796         separationCutterWarmingUp(31124),
2797         separationCutterAdded(31125),
2798         separationCutterRemoved(31126),
2799         separationCutterResourceAdded(31127),
2800         separationCutterResourceRemoved(31128),
2801         separationCutterRecoverableFailure(31129),
2802         separationCutterUnrecoverableFailure(31130),
2803         separationCutterRecoverableStorageError(31131),
2804         separationCutterUnrecoverableStorageError(31132),
2805         separationCutterMotorFailure(31133),
2806         separationCutterMemoryExhausted(31134),
2807         separationCutterUnderTemperature(31135),
2808         separationCutterOverTemperature(31136),
2809         separationCutterTimingFailure(31137),
2810         separationCutterThermistorFailure(31138),
2811
2812         -- FinDeviceTypeTC = imprinter(12)
2813         imprinterCoverOpen(31203),
```

```
2814     imprinterCoverClosed(31204),
2815     imprinterInterlockOpen(31205),
2816     imprinterInterlockClosed(31206),
2817     imprinterConfigurationChange(31207),
2818     imprinterJam(31208),
2819     imprinterMissing(31209),
2820     imprinterLifeAlmostOver(31210),
2821     imprinterLifeOver(31211),
2822     imprinterAlmostEmpty(31212),
2823     imprinterEmpty(31213),
2824     imprinterAlmostFull(31214),
2825     imprinterFull(31215),
2826     imprinterNearLimit(31216),
2827     imprinterAtLimit(31217),
2828     imprinterOpened(31218),
2829     imprinterClosed(31219),
2830     imprinterTurnedOn(31220),
2831     imprinterTurnedOff(31221),
2832     imprinterOffline(31222),
2833     imprinterPowerSaver(31223),
2834     imprinterWarmingUp(31224),
2835     imprinterAdded(31225),
2836     imprinterRemoved(31226),
2837     imprinterResourceAdded(31227),
2838     imprinterResourceRemoved(31228),
2839     imprinterRecoverableFailure(31229),
2840     imprinterUnrecoverableFailure(31230),
2841     imprinterRecoverableStorageError(31231),
2842     imprinterUnrecoverableStorageError(31232),
2843     imprinterMotorFailure(31233),
2844     imprinterMemoryExhausted(31234),
2845     imprinterUnderTemperature(31235),
2846     imprinterOverTemperature(31236),
2847     imprinterTimingFailure(31237),
2848     imprinterThermistorFailure(31238),
2849
2850     -- FinDeviceTypeTC = wrapper(13)
2851     wrapperCoverOpen(31303),
2852     wrapperCoverClosed(31304),
2853     wrapperInterlockOpen(31305),
2854     wrapperInterlockClosed(31306),
2855     wrapperConfigurationChange(31307),
2856     wrapperJam(31308),
2857     wrapperMissing(31309),
2858     wrapperLifeAlmostOver(31310),
2859     wrapperLifeOver(31311),
2860     wrapperAlmostEmpty(31312),
2861     wrapperEmpty(31313),
2862     wrapperAlmostFull(31314),
2863     wrapperFull(31315),
2864     wrapperNearLimit(31316),
2865     wrapperAtLimit(31317),
2866     wrapperOpened(31318),
2867     wrapperClosed(31319),
2868     wrapperTurnedOn(31320),
2869     wrapperTurnedOff(31321),
2870     wrapperOffline(31322),
```

```
2871     wrapperPowerSaver(31323),
2872     wrapperWarmingUp(31324),
2873     wrapperAdded(31325),
2874     wrapperRemoved(31326),
2875     wrapperResourceAdded(31327),
2876     wrapperResourceRemoved(31328),
2877     wrapperRecoverableFailure(31329),
2878     wrapperUnrecoverableFailure(31330),
2879     wrapperRecoverableStorageError(31331),
2880     wrapperUnrecoverableStorageError(31332),
2881     wrapperMotorFailure(31333),
2882     wrapperMemoryExhausted(31334),
2883     wrapperUnderTemperature(31335),
2884     wrapperOverTemperature(31336),
2885     wrapperTimingFailure(31337),
2886     wrapperThermistorFailure(31338),
2887
2888     -- FinDeviceTypeTC = bander(14)
2889     banderCoverOpen(31403),
2890     banderCoverClosed(31404),
2891     banderInterlockOpen(31405),
2892     banderInterlockClosed(31406),
2893     banderConfigurationChange(31407),
2894     banderJam(31408),
2895     banderMissing(31409),
2896     banderLifeAlmostOver(31410),
2897     banderLifeOver(31411),
2898     banderAlmostEmpty(31412),
2899     banderEmpty(31413),
2900     banderAlmostFull(31414),
2901     banderFull(31415),
2902     banderNearLimit(31416),
2903     banderAtLimit(31417),
2904     banderOpened(31418),
2905     banderClosed(31419),
2906     banderTurnedOn(31420),
2907     banderTurnedOff(31421),
2908     banderOffline(31422),
2909     banderPowerSaver(31423),
2910     banderWarmingUp(31424),
2911     banderAdded(31425),
2912     banderRemoved(31426),
2913     banderResourceAdded(31427),
2914     banderResourceRemoved(31428),
2915     banderRecoverableFailure(31429),
2916     banderUnrecoverableFailure(31430),
2917     banderRecoverableStorageError(31431),
2918     banderUnrecoverableStorageError(31432),
2919     banderMotorFailure(31433),
2920     banderMemoryExhausted(31434),
2921     banderUnderTemperature(31435),
2922     banderOverTemperature(31436),
2923     banderTimingFailure(31437),
2924     banderThermistorFailure(31438),
2925
2926     -- FinDeviceTypeTC = makeEnvelope(15)
2927     makeEnvelopeCoverOpen(31503),
```

```
2928     makeEnvelopeCoverClosed(31504),
2929     makeEnvelopeInterlockOpen(31505),
2930     makeEnvelopeInterlockClosed(31506),
2931     makeEnvelopeConfigurationChange(31507),
2932     makeEnvelopeJam(31508),
2933     makeEnvelopeMissing(31509),
2934     makeEnvelopeLifeAlmostOver(31510),
2935     makeEnvelopeLifeOver(31511),
2936     makeEnvelopeAlmostEmpty(31512),
2937     makeEnvelopeEmpty(31513),
2938     makeEnvelopeAlmostFull(31514),
2939     makeEnvelopeFull(31515),
2940     makeEnvelopeNearLimit(31516),
2941     makeEnvelopeAtLimit(31517),
2942     makeEnvelopeOpened(31518),
2943     makeEnvelopeClosed(31519),
2944     makeEnvelopeTurnedOn(31520),
2945     makeEnvelopeTurnedOff(31521),
2946     makeEnvelopeOffline(31522),
2947     makeEnvelopePowerSaver(31523),
2948     makeEnvelopeWarmingUp(31524),
2949     makeEnvelopeAdded(31525),
2950     makeEnvelopeRemoved(31526),
2951     makeEnvelopeResourceAdded(31527),
2952     makeEnvelopeResourceRemoved(31528),
2953     makeEnvelopeRecoverableFailure(31529),
2954     makeEnvelopeUnrecoverableFailure(31530),
2955     makeEnvelopeRecoverableStorageError(31531),
2956     makeEnvelopeUnrecoverableStorageError(31532),
2957     makeEnvelopeMotorFailure(31533),
2958     makeEnvelopeMemoryExhausted(31534),
2959     makeEnvelopeUnderTemperature(31535),
2960     makeEnvelopeOverTemperature(31536),
2961     makeEnvelopeTimingFailure(31537),
2962     makeEnvelopeThermistorFailure(31538),
2963
2964     -- FinDeviceTypeTC = stacker(16)
2965     stackerCoverOpen(31603),
2966     stackerCoverClosed(31604),
2967     stackerInterlockOpen(31605),
2968     stackerInterlockClosed(31606),
2969     stackerConfigurationChange(31607),
2970     stackerJam(31608),
2971     stackerMissing(31609),
2972     stackerLifeAlmostOver(31610),
2973     stackerLifeOver(31611),
2974     stackerAlmostEmpty(31612),
2975     stackerEmpty(31613),
2976     stackerAlmostFull(31614),
2977     stackerFull(31615),
2978     stackerNearLimit(31616),
2979     stackerAtLimit(31617),
2980     stackerOpened(31618),
2981     stackerClosed(31619),
2982     stackerTurnedOn(31620),
2983     stackerTurnedOff(31621),
2984     stackerOffline(31622),
```



```
2985     stackerPowerSaver(31623),
2986     stackerWarmingUp(31624),
2987     stackerAdded(31625),
2988     stackerRemoved(31626),
2989     stackerResourceAdded(31627),
2990     stackerResourceRemoved(31628),
2991     stackerRecoverableFailure(31629),
2992     stackerUnrecoverableFailure(31630),
2993     stackerRecoverableStorageError(31631),
2994     stackerUnrecoverableStorageError(31632),
2995     stackerMotorFailure(31633),
2996     stackerMemoryExhausted(31634),
2997     stackerUnderTemperature(31635),
2998     stackerOverTemperature(31636),
2999     stackerTimingFailure(31637),
3000     stackerThermistorFailure(31638),
3001
3002     -- FinDeviceTypeTC = sheetRotator(17)
3003     sheetRotatorCoverOpen(31703),
3004     sheetRotatorCoverClosed(31704),
3005     sheetRotatorInterlockOpen(31705),
3006     sheetRotatorInterlockClosed(31706),
3007     sheetRotatorConfigurationChange(31707),
3008     sheetRotatorJam(31708),
3009     sheetRotatorMissing(31709),
3010     sheetRotatorLifeAlmostOver(31710),
3011     sheetRotatorLifeOver(31711),
3012     sheetRotatorAlmostEmpty(31712),
3013     sheetRotatorEmpty(31713),
3014     sheetRotatorAlmostFull(31714),
3015     sheetRotatorFull(31715),
3016     sheetRotatorNearLimit(31716),
3017     sheetRotatorAtLimit(31717),
3018     sheetRotatorOpened(31718),
3019     sheetRotatorClosed(31719),
3020     sheetRotatorTurnedOn(31720),
3021     sheetRotatorTurnedOff(31721),
3022     sheetRotatorOffline(31722),
3023     sheetRotatorPowerSaver(31723),
3024     sheetRotatorWarmingUp(31724),
3025     sheetRotatorAdded(31725),
3026     sheetRotatorRemoved(31726),
3027     sheetRotatorResourceAdded(31727),
3028     sheetRotatorResourceRemoved(31728),
3029     sheetRotatorRecoverableFailure(31729),
3030     sheetRotatorUnrecoverableFailure(31730),
3031     sheetRotatorRecoverableStorageError(31731),
3032     sheetRotatorUnrecoverableStorageError(31732),
3033     sheetRotatorMotorFailure(31733),
3034     sheetRotatorMemoryExhausted(31734),
3035     sheetRotatorUnderTemperature(31735),
3036     sheetRotatorOverTemperature(31736),
3037     sheetRotatorTimingFailure(31737),
3038     sheetRotatorThermistorFailure(31738),
3039
3040     -- FinDeviceTypeTC = inserter(18)
3041     inserterCoverOpen(31803),
```

3042 inserterCoverClosed(31804),
3043 inserterInterlockOpen(31805),
3044 inserterInterlockClosed(31806),
3045 inserterConfigurationChange(31807),
3046 inserterJam(31808),
3047 inserterMissing(31809),
3048 inserterLifeAlmostOver(31810),
3049 inserterLifeOver(31811),
3050 inserterAlmostEmpty(31812),
3051 inserterEmpty(31813),
3052 inserterAlmostFull(31814),
3053 inserterFull(31815),
3054 inserterNearLimit(31816),
3055 inserterAtLimit(31817),
3056 inserterOpened(31818),
3057 inserterClosed(31819),
3058 inserterTurnedOn(31820),
3059 inserterTurnedOff(31821),
3060 inserterOffline(31822),
3061 inserterPowerSaver(31823),
3062 inserterWarmingUp(31824),
3063 inserterAdded(31825),
3064 inserterRemoved(31826),
3065 inserterResourceAdded(31827),
3066 inserterResourceRemoved(31828),
3067 inserterRecoverableFailure(31829),
3068 inserterUnrecoverableFailure(31830),
3069 inserterRecoverableStorageError(31831),
3070 inserterUnrecoverableStorageError(31832),
3071 inserterMotorFailure(31833),
3072 inserterMemoryExhausted(31834),
3073 inserterUnderTemperature(31835),
3074 inserterOverTemperature(31836),
3075 inserterTimingFailure(31837),
3076 inserterThermistorFailure(31838)

3077

3078 9 Internationalization Considerations

3079 In section 5, this document defines the new human-readable, localized "printer-alert-description" IPP
3080 Printer attribute using the existing 'text' syntax defined in section 4.1.1 of [RFC2911]. Values of this new
3081 attribute MUST copy their natural language tag [RFC4646] from the values of 'prtLocalizationLanguage',
3082 'prtLocalizationCountry', and 'prtGeneralCurrentLocalization' [RFC3805]. Values of this new attribute
3083 MUST also be converted from the charset specified by the values of 'prtLocalizationCharacterSet' and
3084 'prtGeneralCurrentLocalization' [RFC3805] to the charset specified by "charset-configured" (defaults to
3085 UTF-8 [RFC3629]).

3086 In section 5, this document defines new keyword attribute values for "printer-state-reasons" [RFC2911] for
3087 Printer Subunits [RFC3805] and a new machine-readable attribute "printer-alert". Localization by the IPP
3088 Printer does NOT apply to these machine-readable attributes.

3089 In section 6, this document defines new keyword attribute values for "printer-state-reasons" [RFC2911] for
3090 Finishing Subunits [RFC3806] and new corresponding enumerated attribute values for the
3091 'PrtAlertCodeTC' textual convention [RFC3805] [IANAPRT]. Localization by the IPP Printer or SNMP
3092 Printer MIB Agent does NOT apply to these machine-readable attributes and values.

3093 Therefore, this document conforms to 'IETF Policy on Character Sets and Languages' [RFC2277].

3094 See section 7 'Internationalization Considerations' in [RFC2911] and section 8 'Internationalization
3095 Considerations' in [RFC3805].

3096 10 Security Considerations

3097 This document adds no new security considerations to the IETF Printer MIB v2 [RFC3805] or IETF
3098 IPP/1.1 [RFC2911]. In section 5, this document defines extensions to one existing REQUIRED IPP
3099 Printer Description attribute "printer-state-reasons" defined in [RFC2911]. This document also defines two
3100 new RECOMMENDED IPP Printer Description attributes "printer-alert" and "printer-alert-description". All
3101 three are IPP Printer Description attributes as defined in [RFC2911].

3102 In section 6, this document defines extensions to one existing REQUIRED Printer MIB columnar object
3103 'prtAlertCode' defined in [RFC3805] via extensions to one existing textual convention 'PrtAlertCodeTC'
3104 defined in [IANAPRT].

3105 See section 8 'Security Considerations' in [RFC2911] and section 9 'Security Considerations' in
3106 [RFC3805].

3107 11 Acknowledgements

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3114 (TIC), Paul Tykodi (TCS), Pete Zehler (Xerox), and other IPP WG members.

3115 12 References

3116

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3220 <ftp://www.pwg.org/wims/cim> - archive of WIMS-CIM planning papers
3221 <ftp://www.pwg.org/wims/wd> - archive of WIMS-CIM working drafts
3222 http://www.dmtf.org/standards/cim/cim_schema_v220/ - CIM_Printer,
3223 CIM_PrintAlertRecord, etc. (complete Printer MIB mapping)

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3236 To subscribe, see the PWG web page:

3237 <http://www.pwg.org/mailhelp.html>

3238 **14 Appendix A - Design Alternatives (Informative)**

3239 This section provides durable documentation of the 'road not taken' on various design alternatives during
3240 the development of this document.

3241 **14.1 Printer Alert Encoding in Collection Attribute**

3242 A note to the IPP WG mailing list on 19 July 2006 proposed an alternative to encode the columnar objects
3243 from 'prtAlertTable' in a new IPP Printer attribute using the 'collection' syntax defined in section 3 of
3244 [RFC3382].

3245 **14.1.1 Rationale for Rejection**

3246 The IPP WG rejected this proposal because it would make support of this document dependent on
3247 support for the IPP 'collection' syntax (not widely supported in IPP/1.1 [RFC2911] [RFC2910]
3248 implementations and not known to be supported in any IPP/1.0 [RFC2566] [RFC2565] implementation).

3249 **14.2 Printer Alert Encoding in New Object**

3250 A note to the IPP WG mailing list on 19 July 2006 proposed an alternative to encode the columnar objects
3251 from 'prtAlertTable' in a new first-class IPP object.

3252 **14.2.1 Rationale for Rejection**

3253 The IPP WG rejected this proposal because it would NOT be compatible with any deployed IPP
3254 implementation (because it would require a new IPP request attribute group over-the-wire).

3255 **14.3 Printer Alert Encoding in Parallel Attributes**

3256 A note to the IPP WG mailing list on 19 July 2006 proposed an alternative to encode the columnar objects
3257 from 'prtAlertTable' in an a set of ordered parallel IPP Printer attributes.

3258 **14.3.1 Rationale for Rejection**

3259 The IPP WG rejected this proposal because it would NOT be robust (because ordering is NOT required
3260 by the '1setOf X' syntax defined in section 4.1.6 of [RFC2911]) and would NOT be compatible with vendor
3261 extensions.

3262 **14.4 Printer Alert Encoding in State Message**

3263 The initial draft of this specification proposed an optimization (to avoid the definition of any new IPP
3264 Printer attributes) by overloading the existing IPP Printer attribute "printer-state-message" to encode
3265 columnar objects from 'prtAlertTable' in a structured string.

3266 **14.4.1 Rationale for Rejection**

3267 The IPP WG rejected this proposal because it would have forced IPP Printer "printer-state-message"
3268 values to be locale-independent (illegal for the 'text' syntax defined in section 4.1.1 of [RFC2911]).

3269 14.5 Printer Alert Group Finishing Extensions

3270 The initial draft of this specification proposed an optimization (to avoid the definition of many new
3271 Finishing Subunit-specific values of 'PrtAlertCodeTC' and IPP Printer attribute "printer-state-reasons") by
3272 defining one new value of 'PrtAlertGroupTC' for each value of of the IANA Finisher MIB
3273 'FinDeviceTypeTC' (originally published in [RFC3806]) used in the non-index object 'finDeviceType' in
3274 'finDeviceTable' and NOT included in 'prtAlertTable'.

3275 14.5.1 Rationale for Rejection

3276 The IPP WG rejected this optimization because it would have made IPP Printer "printer-state-reasons"
3277 values ambiguous for all Finishing Subunits (because the generic 'subunit-xxx' alert values were used).

3278 14.6 Printer Alert Subset for Finishing Subunits

3279 Previous versions of this document defined a subset of specific subunit alerts for each Finishing Subunit.

3280 14.6.1 Rationale for Rejection

3281 Lively discussion during the review at the PWG Lexington face-to-face (27 October 2006) resulted in a
3282 consensus to expand to a complete set of specific subunit alerts for each Finishing Subunit.

3283

3284 **15 Appendix X - Change Log**3285 **[[[PWG Secretary: Delete this section before publication as a Candidate Standard]]]**

3286 3 June 2009 – Changes made after PWG Last Call (edits by Bill Wagner – thanks)

3287 - LCRC – Made formatting to approximate that used in other PWG IPP documents

3288 - LCRC – Added headings that were lost

3289 - LCRC – Corrected Figure Caption placement

3290 - LCRC – Added list of tables

3291 - LCRC – Other minor formatting corrections

3292 - LCRC – Highlighted notes to PWG Secretary

3293

3294 4 April 2009 (v0.70)

3295

3296 - Changed document Status to Stable per IPP WG consensus

3297 - Corrected minor typos and spelling errors

3298 - Added text to section 4 Requirements to reference PWG Process

3299 - Added text to section 4.1 Rationale to clarify

3300 - Completed section 8 IANA Considerations for IPP and Printer MIB registrations

3301 8 February 2009 (v0.60)

3302

3303 - Integrated changes from 7 November 2006 edition to tables and text

3304

3305 25 January 2009 (v0.50)

3306

3307 - William Wagner (TIC) converted source from HTML to MS Word – thanks!

3308 - Changed document Status to Prototype per IPP WG consensus

3309 - Added detailed conformance requirements in section 7 for IPP Printer, IPP Client, Printer MIB Agent,
3310 and Printer MIB Client

3311 - Added Table of Contents and Table of Figures

- 3312 - Added Figure titles and Table titles throughout document
- 3313 - Updated obsolete references
- 3314 - Added Normative reference to CIM_PrintAlertRecord class
- 3315 - Added page breaks before all major sections
- 3316
- 3317 7 November 2006 (v0.40)
- 3318
- 3319 - Changed document status from 'Interim' to 'Prototype', per PWG
- 3320 Process/2.0;
- 3321 - Revised section 5.1.1 'Severity Suffixes Interoperability' for
- 3322 clarity;
- 3323 - Revised Table 1 in section 5.1.2 'Existing Printer State Reasons for
- 3324 Alert Codes' to DEPRECATE all non-specific legacy one-way mappings,
- 3325 per review at PWG face-to-face in Lexington (27 October 2006);
- 3326 - Revised Table 2 in section 5.1.3 'New Printer State Reasons for
- 3327 Alert Codes' to DELETE all non-specific legacy one-way mappings,
- 3328 per review at PWG face-to-face in Lexington (27 October 2006);
- 3329 - Revised Table 3 in section 5.2.1 'Keywords for Alert Objects'
- 3330 conformance levels, to align with bindings of 'printerV2Alert' in
- 3331 Printer MIB, section 9 of IPP Event Notifications and Subscriptions
- 3332 [RFC3995], and WIMS-CIM work-in-progress mapping of Printer MIB,
- 3333 per review at PWG face-to-face in Lexington (27 October 2006);
- 3334 - Revised section 5.2.2. 'Printer Alert Encoding of Alert Objects'
- 3335 to specify explicit charset [US-ASCII], reference specific objects in
- 3336 'prtAlertTable', and clarify mapping details in ABNF expressions;
- 3337 - Revised section 5.3.1 'Printer Alert Description Encoding' to specify
- 3338 REQUIRED copy of natural language tag and REQUIRED charset conversion
- 3339 to the value of "charset-configured" (i.e., current site policy)

- 3340 - Revised section 6.1.1 'New Alert Codes for Finishing Subunits' to
3341 define complete set based on subunit generic alerts for every device,
3342 per review at PWG face-to-face in Lexington (27 October 2006);
- 3343 - Added new section 6.1.2 'Conventions for Alert Code Numbering' to
3344 explain conventions from Printer MIB and extensions in this document,
3345 per review at PWG face-to-face in Lexington (27 October 2006);
- 3346 - Revised section 7 'Conformance Requirements' to add explicit lists of
3347 of detailed conformance sections in this specification,
3348 per review at PWG face-to-face in Lexington (27 October 2006);
- 3349 - Added new section 8.2 'IPP Printer Attributes - IANA Registrations'
3350 to register "printer-alert" and "printer-alert-description" with IANA;
- 3351 - Revised section 9 'Internationalization Considerations' to reflect new
3352 "printer-alert" and "printer-alert-description" attributes.
- 3353 - Revised section 10 'Security Considerations' to add details.
- 3354 - Added new section 15.6 'Printer Alert Subset for Finishing Subunits'
3355 to explain changed strategy to complete set of specific alerts.
3356
- 3357 11 October 2006 (v0.30)
3358
- 3359 - Added 'staplerXxx' values to 'PrintAlertCodeTC' and 'stapler-xxx'
3360 values to "printer-state-reasons" IPP attribute in section 6.1.1
3361 (in addition to existing 'stitcherXxx' and 'stitcher-xxx' values),
3362 to fix error in Finisher MIB, per request of Naoki Asada (Sharp);
- 3363 - Added new special case conformance clause to section 6.1.1.2
3364 for mapping of 'stapler' and 'stitcher' finishing devices,
3365 to fix error in Finisher MIB, per request of Naoki Asada (Sharp);
- 3366 - Added section 6.1.1.3 'Rationale for Stapler and Stitcher Devices',
3367 to fix error in Finisher MIB, per request of Naoki Asada (Sharp);

- 3368
- 3369
- 3370 23 September 2006 (v0.20)
- 3371
- 3372 - Changed document status from 'Initial' to 'Interim', per PWG
- 3373 Process/2.0;
- 3374 - Renamed document from 'IPP Printer State Reasons Extensions' to
- 3375 'IPP Printer State Extensions' (new state attributes are defined);
- 3376 - Renamed section 1.1 from 'Background' to 'Problem Statement' for
- 3377 better alignment with project charter.
- 3378 - Added formal definitions of 'IPP Client', 'IPP Printer', 'Printer MIB
- 3379 Agent', and 'Printer MIB Client' protocol roles to section 2.2
- 3380 'Printing Terminology', for unambiguous conformance requirements;
- 3381 - Revised section 4 'Requirements' to align with new design requirements
- 3382 and preferred design alternatives, per consensus of IPP WG;
- 3383 - Renamed section 5 from 'IPP Printer Attribute Extensions' to
- 3384 'IPP Printer Attributes' (new attributes are defined);
- 3385 - Renamed section 6 from 'IANA Printer MIB Extensions' to
- 3386 'IANA Printer MIB Textual Conventions' (no new objects are defined);
- 3387 - Deleted section 5.1.1 'Severity Suffixes DEPRECATED' and replaced with
- 3388 new section 5.1.1 'Severity Suffixes Interoperability', per comments
- 3389 from Ted Tronson (Novell) and Michael Sweet (Easy Software);
- 3390 - Added section 5.1.4 'New Printer State Reasons for Finishing Subunits'
- 3391 that points to section 6.1.1 'New Alert Codes for Finishing Subunits'
- 3392 - Deleted section 5.2 'printer-state-message(text(MAX))' and replaced
- 3393 with new section 5.2 'printer-alert(1setOf octetString(MAX))',
- 3394 per consensus of IPP WG;
- 3395 - Deleted redundant prefix 'alert-' from all keywords defined for use in

- 3396 "printer-alert" in section 5.2, e.g., changing 'alert-code' to 'code'
- 3397 (no longer overloading general attribute "printer-state-message");
- 3398 - Added new section 5.3 'printer-alert-description (1setOf text(MAX))',
- 3399 per consensus of IPP WG;
- 3400 - Deleted section 6.1 'PrtAlertGroupTC' and replaced with new section
- 3401 6.1 'PrtAlertCodeTC', per consensus of IPP WG;
- 3402 - Deleted section 6.1.1 'New Alert Groups for Finishing Subunits' and
- 3403 replaced with new section 6.1.1 'New Alert Codes for Finishing
- 3404 Subunits', per consensus of IPP WG;
- 3405 - Revised section 9 'Internationalization Considerations' to reflect
- 3406 new "printer-alert-description" attribute;
- 3407 - Added new section 'Appendix A - Design Alternatives (Informative)', to
- 3408 document the evolution of IPP WG consensus (i.e., the road not taken);
- 3409
- 3410
- 3411 17 July 2006 (v0.10)
- 3412
- 3413 - Initial draft version