1 Internet Printing Protocol WG   Robert Herriot
2 INTERNET-DRAFT   Tom Hastings
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8

9   Internet Printing Protocol (IPP):
10   **The 'mailto' Delivery Method for Event Notifications**

11

13 Status of this Memo

23 **Abstract**

24   This document describes an extension to the Internet Printing Protocol/1.0 (IPP) [RFC2566, RFC2565]
25   and IPP/1.1 [RFC2911, RFC2910]. This document specifies the 'mailto' Delivery Method for use with
26   the "IPP Event Notifications and Subscriptions" specification [ipp-ntfy]. When IPP Notification [ipp-
27   ntfy] is supported, the Delivery Method defined in this document is one of the RECOMMENDED
28   Delivery Methods for Printers to support.

29   For this Delivery Method, when an Event occurs, the Printer immediately sends an Event Notification
30   via an email message to the Notification Recipient specified in the Subscription Object. The message
31   body of the email consists of Human Consumable text that is not intended to be parsed by a machine.
32   The Notification Recipient receives the Event Notification in the same way as it receives any other email
33   message.

34

34 **Table of Contents**

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84

84 **1 Introduction**

85 The "IPP Event Notifications and Subscriptions" document [ipp-ntfy] defines an OPTIONAL extension
86 to Internet Printing Protocol/1.0 (IPP) [RFC2566, RFC2565] and IPP/1.1 [RFC2911, RFC2910] (for a
87 description of the base IPP documents, see section 13). That extension defines operations that a client
88 can perform in order to create *Subscription Objects* in a Printer and carry out other operations on them.
89 A Subscription Object represents a Subscription abstraction. A client associates Subscription Objects
90 with a particular Job by performing the Create-Job-Subscriptions operation or by submitting a Job with
91 subscription information. A client associates Subscription Objects with the Printer by performing a
92 Create-Printer-Subscriptions operation. Four other operations are defined for Subscription Objects:
93 Get-Subscriptions-Attributes, Get-Subscriptions, Renew-Subscription, and Cancel-Subscription. The
94 Subscription Object specifies that when one of the specified *Events* occurs, the Printer sends an
95 asynchronous *Event Notification* to the specified *Notification Recipient* via the specified *Delivery*
96 *Method* (i.e., protocol).

97 The "IPP Event Notifications and Subscriptions" document [ipp-ntfy] specifies that each Delivery
98 Method is defined in another document. This document is one such document, and it specifies the
99 'mailto' delivery method. When IPP Notification [ipp-ntfy] is supported, the Delivery Method defined
100 in this document is one of the RECOMMENDED Delivery Methods and Printers to support.

101 For this Delivery Method, when an Event occurs, the Printer immediately sends an Event Notification
102 via an email message to the Notification Recipient specified in the Subscription Object. The message
103 body of the email consists of Human Consumable text that is not intended to be parsed by a machine.
104 The 'mailto' Delivery Method is a 'push' Delivery Method as defined in [ipp-ntfy].

105 The Notification Recipient receives the Event Notification in the same way as it receives any other email
106 message.

107 **2 Terminology**

108 This section defines the following terms that are used throughout this document:

109 This document uses the same terminology as [RFC2911], such as "client", "Printer", "attribute",
110 "attribute value", "keyword", "operation", "request", "response", and "support".

111 Capitalized terms, such as **MUST, MUST NOT, REQUIRED, SHOULD, SHOULD NOT, MAY,**
112 **NEED NOT,** and **OPTIONAL**, have special meaning relating to conformance as defined in RFC 2119
113 [RFC2119] and [RFC2911] section 12.1. If an implementation supports the extension defined in this
114 document, then these terms apply; otherwise, they do not. These terms define conformance to *this*
115 *document only*; they do not affect conformance to other documents, unless explicitly stated otherwise.

116 Capitalized terms, such as Notification Recipient, Event Notification, Compound Event Notification,
117 Printer, etc., are defined in [ipp-ntfy], have the same meanings, and are not reproduced here.

3 Model and Operation

In a Subscription Creation Operation, when the value of the "notify-recipient-uri" attribute contains the URI scheme "mailto", the client is requesting that the Printer use the 'mailto' Delivery Method for Event Notifications generated from the new Subscription Object.

For this Delivery Method, the "notify-recipient-uri" attribute value MUST consist of a "mailto" scheme followed by a colon, and then followed by an address part (e.g., 'mailto:smith@abc.com'). See section 5.2.1 for the syntax of the "notify-recipient-uri" attribute value for this Delivery Method.

A Printer MUST support SMTP [RFC821], and it MAY support other email protocols. A Printer MAY use additional services, such as SMTP delivery status notification [RFC1891] or S/MIME encryption [RFC2633].

If the client wants the Printer to send Event Notifications via the 'mailto' Delivery Method, the client MUST choose a value for "notify-recipient-uri" attribute which conforms to the rules of section 5.2.1. To avoid denial-of-service attacks, a client SHOULD NOT use distribution lists as the Notification Recipient.

When an Event occurs, the Printer MUST immediately:

1. Find all pertinent Subscription Objects P according to the rules of section 9 of [ipp-ntfy], AND

2. Find the subset M of these Subscription Objects P whose "notify-recipient-uri" attribute has a scheme value of 'mailto', AND

3. For each Subscription Object in M, the Printer MUST

    a) generate an email message as specified in section 5.2.2 AND

    b) send the email message to the Notification Recipient specified by the address part of the "notify-recipient-uri" attribute value (see section 5.2.1).

If the Printer supports only SMTP, it MUST send the email message via SMTP. If the Printer supports additional email protocols, it MUST determine the protocol from the address part of the "notify-recipient-uri" attribute value and then send the email message via the appropriate email protocol.

When a Subscribing Client is subscribing to the 'job-progress' event (which is a frequently occurring event), it SHOULD supply the "notify-time-interval" attribute (see [ipp-ntfy]) in the Subscription Creation request with a suitable value to limit the time between 'job-progress' Event Notifications sent by the Printer.

4 General Information

If a Printer supports this Delivery Method, the following are its characteristics.

149   **Table 1 – Information about the Delivery Method**

Document Method Conformance Requirement	Delivery Method Realization
1. What is the URL scheme name for the Delivery Method?	mailto
2. Is the Delivery Method REQUIRED, RECOMMENDED, or OPTIONAL for an IPP Printer to support?	RECOMMENDED
3. What transport and delivery protocols does the Printer use to deliver the Event Notification Content, i.e., what is the entire network stack?	A Printer MUST support SMTP. It MAY support other email protocols.
4. Can several Event Notifications be combined into a Compound Event Notification?	A Printer implementation MAY combine several Event Notifications into a single email message (see section 6).
5. Is the Delivery Method initiated by the Notification Recipient (pull), or by the Printer (push)?	This Delivery Method is a push.
6. Is the Event Notification content Machine Consumable or Human Consumable?	Human Consumable
7. What section in this document answers the following question? For a Machine Consumable Event Notification, what is the representation and encoding of values defined in section 9.1 of [ipp-ntfy] and the conformance requirements thereof? For a Human Consumable Event Notification, what is the representation and encoding of pieces of information defined in section 9.2 of [ipp-ntfy] and the conformance requirements thereof?	Section 6
8. What are the latency and reliability of the transport and delivery protocol?	Same as the underlying SMTP (or other optional) email transport
9. What are the security aspects of the transport and delivery protocol, e.g., how it is handled in firewalls?	Same as the underlying SMTP (or other optional) email transport
10. What are the content length restrictions?	None
11. What are the additional values or pieces of information that a Printer sends in an Event Notification content and the conformance requirements thereof?	None
12. What are the additional Subscription Template and/or Subscription Description attributes and the conformance requirements thereof?	See section 5.1.1 on "notify-mailto-text-only"
13. What are the additional Printer Description attributes and the conformance requirements thereof?	None

150 # 5 Subscription Template Attributes

151 ## 5.1 Additional Subscription Template Attributes

152 This Delivery Method introduces one additional Subscription Template Attribute (See Table 2).

153 **Table 2 – Additional Subscription Template Attributes**

Attribute in Subscription Object	Default and Supported Printer Attributes
notify-mailto-text-only (boolean)	N/A

154 ### 5.1.1 notify-mailto-text-only (boolean)

155 When the Printer generates an Event Notification from a Subscription Object, this attribute specifies
156 whether the Printer generates the Event Notification with only plain text (i.e. 'text/plain') or with
157 Content-Types that the Printer chooses.

158 The Printer MUST support this attribute if it supports the 'mailto' Delivery Method.

159 A client MAY supply this attribute. If a client does not supply this attribute, the Printer MUST populate
160 this attribute with the value of 'false' on the Subscription Object. There is no "notify-mailto-text-only-
161 default" attribute.

162 If the value of this attribute is 'true' in a Subscription Object, the message body of each Event
163 Notification that the Printer generates from the Subscription Object MUST contain plain text only (i.e.
164 'text/plain' with the charset specified by the "notify-charset" Subscription Object attribute).

165 If the value of this attribute is 'false' in a Subscription Object, the Content-Type of the message body of
166 each Event Notification that the Printer generates from the Subscription Object MUST be either
167 'text/plain' or 'multipart', depending on implementation. If the Content-Type is 'multipart', one
168 message body of the 'multipart' MUST be the same as the 'text/plain' message body when this attribute
169 has the value of 'true'. Each of the other message bodies of the 'multipart' MAY be any Content-Type
170 (e.g. 'text/html', 'image/gif', 'audio/basic', etc.).

171 A Printer MUST support both values ('true' and 'false') of this attribute. There is no "notify-mailto-
172 text-only-supported" attribute.

173 ## 5.2 Additional Information about Subscription Template Attributes

174 This section describes additional values for attributes defined in [ipp-ntfy].

175   **5.2.1 notify-recipient-uri (uri)**

176   This section describes the syntax of the value of this attribute for the 'mailto' Delivery Method. The
177   syntax for values of this attribute for other Delivery Method is defined in other Delivery Method
178   Documents.

179   In order to support the 'mailto' Delivery Method, the Printer MUST support the following syntax for
180   the 'mailto' Delivery Method when the Printer uses SMTP. The line below use RFC 822 syntax rules
181   and terms.

182   "mailto:" mailbox

183   Note: the above syntax allows 1 occurrence of 'mailbox'. The occurrence of 'mailbox' represents an
184   email address of a Notification Recipient.

185   For SMTP, the phrase 'address part' of the "notify-recipient-uri" attribute value refers to the 'mailbox'
186   part of the value. Example:

187   `mailto:jones@acme.com`
188
189   Unlike other URLs, the mailto scheme MUST NOT use // after the colon (see [RFC2368]).

190   The Printer MAY support other syntax for the 'address part' if it supports email protocols in addition to
191   SMTP.

192   As noted in [ipp-ntfy], the uriScheme value of the corresponding "notify-schemes-supported" Printer
193   attribute does not include the ":" character.

194   **5.2.2 notify-user-data (octetString(63))**

195   This attributes has a special use for the 'mailto' Delivery Method. It specifies the email address of the
196   Subscribing Client. It is primarily useful when the Notification Recipient is some person other than the
197   Subscribing Client. Then the Notification Recipient has a way to reply to the Subscribing Client.

198   If a client specifies this Delivery Method in a Subscription Creation Operation, and the specified
199   Notification Recipient is not associated with the same person as the client, the client SHOULD supply
200   its email address as the value of the "notify-user-data" attribute. If the client does not supply this
201   attribute, the Printer MUST NOT populate the Subscription Object with this attribute.

202   # 6 Event Notification Content

203   This section describes the content of an Event Notification sent via the 'mailto' Delivery Method using
204   the SMTP protocol. This document does not describe the content for other email protocols, but an
205   implementation should use this section as a model.

206   When a Printer sends an email message via SMTP, the content MUST conform to RFC 822. The
207   following sections define the content that a Printer MUST send. A Printer MAY send additional content
208   as long as the resulting content conforms to RFC 822.

209   While the "Event Notification Ordering" in [ipp-ntfy] section 9 specifies ordering requirements for
210   Printers when sending separate Event Notifications, email messages are not guaranteed to arrive in the
211   order sent so that the Notification Recipient may not receive them in the same order.

212   Each subsection below specifies the syntax that pertains to the subsection. The syntax rules and
213   syntactic terms (e.g. 'date-time') in each subsection come from RFC 822, except for the section on
214   "Content-Type" which comes from RFC 1521.

215   The Event Notification content has two parts, the headers and the message body. The headers precede
216   the message body and are separated by a blank line (see [RFC 822]).

217   A Printer implementation MAY combine several Event Notifications into a single email message body.
218   Such an email message is considered a single Compound Event Notification and MUST follow the
219   "Event Notification Ordering" requirements for Event Notifications within a Compound Event
220   Notification specified in [ipp-ntfy] section 9.

221 **6.1 Headers**

222   When a Printer sends an Event Notification via SMTP, it MUST include the following headers. RFC
223   822 RECOMMENDS that the headers be in the order that they appear below.

224 **6.1.1 'Date' header**

225   **Syntax:**   "Date" ":" date-time

226   This header contains the date and time that the Event occurred.

227   The Printer MUST include a "Date" header if and only if it supports the "printer-current-time" Printer
228   attribute.

229 **6.1.2 'From' header**

230   **Syntax:**   "From" ":" mailbox

231   where

232   mailbox = addr-spec / phrase route-addr

233   This header causes a typical email reader to show the email as coming from the Printer that is sending
234   the Event Notification.

235   The Printer MUST include a "From" header whose syntax is specified above.

236   The Printer MUST use the second alternative of the syntax for 'mailbox' defined above (i.e. 'phrase
237   route-addr').   The 'phrase' is the Printer's display name and it MUST be the value of the "printer-
238   name" Printer attribute. The 'route-addr' MUST contain an email address (inside angle brackets)
239   belonging to either an administrator or the output-device. This email address NEED NOT be capable of
240   receiving mail. There is no Printer attribute to hold this email address, so that it cannot be configured
241   using the IPP protocol without an implementation-defined attribute extension.

242   **6.1.3 'Subject' header**

243   **Syntax:** "Subject" ":" *text

244   This header specifies the subject of the message and contains a short summary of the Event Notification.

245   The Printer MUST include a "Subject" header whose syntax is specified above.

246   The Printer MUST localize the '*text' using the values of the "notify-charset" and "notify-natural-
247   language" Subscription Object attributes.

248   For Printer Events, the '*text' SHOULD start with the localized word "printer:", followed by the
249   Printer name, and then followed by the localized Event name, e.g., in English: "printer: 'tiger' stopped"
250   or in Danish: "Printeren 'tiger' er standset".

251   For Job Events, the '*text' SHOULD start with the localized phrase "print job:", followed by the Job
252   name, and then followed by the localized Event name, e.g., in English: "print job: 'financials'
253   completed".

254   The wording is implementation dependent. A Notification Recipient MUST NOT expect to be able to
255   parse this text. But an email filter might look for "printer" or "print job".

256   **6.1.4 'Sender' header**

257   **Syntax:**   "Sender" ":" mailbox

258   This header causes a typical email reader to show the email as coming on behalf of the person
259   associated with the Subscribing Client.

260   If the Subscription Object contains the "notify-user-data" attribute, and if its value satisfies the RFC 822
261   syntax rules for 'mailbox', the Printer MUST include a "Sender" header whose syntax is specified
262   above. Otherwise, the Printer MUST NOT include a "Sender" header.

263   For the "Sender" header, the 'mailbox' MUST be the value of the "notify-user-data" Subscription
264   Object attribute. See section 5.2.2 for details about the "notify-user-data" attribute.

265   **6.1.5 'Reply-to' header**

266   **Syntax:**   "Reply-to" ":" mailbox

267   If the Notification Recipient replies to Event Notification email, this header causes a typical email reader
268   to send email to the person acting as the Subscribing Client. The rules are identical to the "Sender"
269   header.

270   If the Subscription Object contains the "notify-user-data" attribute, and if its value satisfies the RFC 822
271   syntax rules for "mailbox", the Printer MUST include a "Reply-to" header whose syntax is specified
272   above. Otherwise, the Printer MUST NOT include a "Reply-to" header.

273   For the "Reply-to" header, the "mailbox" MUST be the value of the "notify-user-data" Subscription
274   Object attribute. See section 5.2.2 for details about the "notify-user-data" attribute.

275   **6.1.6 'To' header**

276   **Syntax:** "To" ":" 1#mailbox

277   See [RFC 1521] for the syntax.

278   This header specifies the Notification Recipient(s).

279   The Printer MUST include a "To" header whose syntax is specified above.

280   The '1#mailbox' MUST be the '1#mailbox' part of the value of the "notify-recipient-uri" Subscription
281   attribute, i.e. the part after the "mailto:".

282   **6.1.7 'Content-type' header**

283   **Syntax:** "Content-Type" ":" type "/" subtype *(";"parameter)

284   See [RFC 1521] for the syntactic terms (e.g. 'type').

285   This header specifies the format of the message body.

286   The Printer MUST include the "Content-Type" header.

287   The "notify-mailto-text-only" attribute determines the 'type' and 'subtype' values. The possible values
288   are "text/plain" and "multipart" values.

289   **6.2 Message Body**

290   The message body MUST contain Human Consumable content as plain text. It MAY also contain other
291   types of implementation dependent content.

292   For plain text, the Content-Type of Human Consumable content MUST be 'text/plain'. For
293   implementation dependent content, the Content-Type of Human Consumable content MUST be
294   'multipart'. The Content-Type of one body part MUST be 'text/plain' and the Content-Types of the
295   other body parts are implementation dependent. See section 6.3 for a description of plain text content.

296   The following table shows the Content-Type of the message body for the "notify-mailto-text-only"
297   attribute:

"notify-mailto-text-only" attribute	Content-Type of Message Body	Message Body
false	'text/plain'	Human Consumable
true	'text/plain' or*	Human Consumable plain text
	'multipart'	Human Consumable where one body part is plain text

298
299   * The Content-Type depends on the implementation. A Printer MAY send 'text/plain' only or it MAY
300   send several body parts of various Content-Types within a message body whose Content-Type is
301   'multipart'.

302   **6.3 Plain Text Content**

303   When a Printer sends a plain text message, it MUST localize the text using the values of the "notify-
304   charset" and "notify-natural-language" Subscription Object attributes.

305   Section 9.2 in [ipp-ntfy] specifies the information that a Delivery Method MUST specify and a Printer
306   SHOULD send.

307   A Printer SHOULD send the following localized information in the message body. The specific wording
308   of this information and its layout are implementation dependent.

309   a)   the Printer name (see Table 3)
310   b)   omitted (see below).
311   c)   for Printer Events only:
312   i)   the Event (see Table 4) and/or Printer state information (see Table 7)
313   d)   for Job Events only:
314   i)   the job identity (see Table 5)
315   ii)   the Event (see Table 4) and/or Job state information (see Table 6)
316
317   Item b) in the above list is omitted because the Printer sends the time of the Event as an email header
318   (see section 6.1.1 on the 'Date' header).

319   The subsections of this section specify the attributes that a Printer MUST use to obtain this information.

320   The Printer MAY send additional information, depending on implementation.

321   Notification Recipients MUST NOT expect to be able to parse the message.

322   The next three sections define the attributes in Event Notification Contents that are:

323   a)   for all Events

324   b)   for Job Events only

325   c)   for Printer Events only

6.3.1 Event Notification Content Common to All Events

327   The Printer MUST send the following information.

328   There is a separate table for each piece of information. Each row in the table represents a source value
329   for the information and the values are listed in order of preference, with the first one being the preferred
330   one. An implementation SHOULD use the source value from the earliest row in each table. It MAY use
331   the source value from another row instead, or it MAY combine the source values from several rows. An
332   implementation is free to determine the best way to present this information.

333   The tables in this section and following sections contain the following columns for each piece of
334   information:

335   a)   **Source of Value:** the name of the attribute that supplies the value for the Event Notification

336   b)   **Sends:**

337   **MAY:** this is the only value used in the tables. It means that the Printer OPTIONALLY
338   sends this value. However, the Printer SHOULD use at least one value from each table.

339   c)   **Source Object:** the object from which the source value comes.

340   Table 3 lists the source of the information for the Printer Name. The "printer-name" is more user-
341   friendly unless the Notification Recipient is in a place where the Printer name is not meaningful. For
342   example, an implementation could have the intelligence to send the value of the "printer-name" attribute
343   to a Notification Recipient that can access the Printer via value of the "printer-name" attribute and
344   otherwise send the value of the "notify-printer-uri" attribute.

345   **Table 3 – Printer Name in Event Notification Content**

Source Value	Sends	Source Object
printer-name (name(127))	MAY	Printer
notify-printer-uri (uri)	MAY	Subscription

346

347   Table 4 lists the source of the information for the Event name. A Printer MAY combine this information
348   with state information described for Jobs in Table 6 or for Printers in Table 7.

349   **Table 4 – Event Name in Event Notification Content**

Source Value	Sends	Source Object
notify-subscribed-event (type2 keyword)	MAY	Subscription

350

351   **6.3.2 Additional Event Notification Content for Job Events**

352   This section lists the source of the additional information that a Printer MUST send for Job Events.

353   Table 5 lists the source of the information for the job name. The "job-name" is likely more meaningful
354   to a user than "job-id".

355   **Table 5 – Job Name in Event Notification Content**

Source Value	Sends	Source Object
job-name (name(MAX))	MAY	Job
job-id (integer(1:MAX))	MAY	Job

356

357   Table 6 lists the source of the information for the job-state. If a Printer supports the "job-state-message"
358   and "job-detailed-state-message" attributes, it SHOULD use those attributes for the job state
359   information, otherwise, it should fabricate such information from the "job-state" and "job-state-
360   reasons". For some Events, a Printer MAY combine this information with Event information.

361   **Table 6 – Job State in Event Notification Content**

Source Value	Sends	Source Object
job-state-message (text(MAX))	MAY	Job
job-detailed-status-messages (1setOf text(MAX))	MAY	Job
job-state (type1 enum)	MAY	Job
job-state-reasons (1setOf type2 keyword)	MAY	Job

362   **6.3.3 Additional Event Notification Content for Printer Events**

363   This section lists the source of the additional information that a Printer MUST send for Printer Events.

364   Table 7 lists the source of the information for the printer-state. If a Printer supports the "printer-state-
365   message", it SHOULD use that attribute for the job state information, otherwise it SHOULD fabricate

366   such information from the "printer-state" and "printer-state-reasons". For some Events, a Printer MAY
367   combine this information with Event information.

368   **Table 7 – Printer State in Event Notification Content**

Source Value	Sends	Source Object
printer-state-message (text(MAX))	MAY	Printer
printer-state (type1 enum)	MAY	Printer
printer-state-reasons (1setOf type2 keyword)	MAY	Printer
printer-is-accepting-jobs (boolean)	MAY	Printer

369   **6.4 Examples**

370   This section contains three examples. One is a Job Event and the other two are Printer Events, the latter
371   in Danish.

372   A Printer implementation NEED NOT generate Event Notification content that is identical or even
373   similar to these examples. In fact it would be unfortunate if every implementation copied these example
374   as is. These examples merely show some possibilities and are not necessarily the best way to convey
375   information about an Event.

376   **6.4.1 Job Event Example**

377   This section contains an example of an Event Notification of a Job Event.

378   A Subscribing Client Mike Jones (who works for xyz Corp.) performs a Subscription Creation
379   Operation as part of the Print-Job operation on Printer "ipp://tiger@abc.com". Mike Jones specifies that
380   the "job-name" is "financials". Mike is printing the Job for Bill Smith at abc Corp. The Subscription
381   Object then has the following attributes:

Attribute Name	Attribute Value
notify-recipient-uri	mailto:bsmith@abc.com
notify-events	job-completed
notify-user-data	mjones@xyz.com
notify-mailto-text-only	true
notify-charset	us-ascii
notify-natural-language	en-us
notify-subscription-id	35692
notify-sequence-number	0
notify-printer-up-time	34593
notify-printer-uri	ipp://tiger@abc.com
notify-job-id	345
notify-subscriber-user-name	mjones

382

383   When the Job completes, the Printer generates and sends the following email message:

```
384    Date: 17 Jul 00 1632 PDT
385    From: tiger <printAdmin@abc.com>
386    Subject: print job: 'financials' completed
387    Sender: mjones@xyz.com
388    Reply-to: mjones@xyz.com
389    To: bsmith@abc.com
390    Content-type: text/plain
391
392    printer: tiger
393    job: financials
394    job-state: completed
395
```

396   The reader should note that the phrases are not identical to IPP keywords. They have been localized to
397   English.

6.4.2 Printer Event Example

399   This section contains an example of an Event Notification of a Printer Event.

400   A Subscribing Client Peter Williams, a Printer admin, performs a Create-Printer-Subscriptions operation
401   on Printer "ipp://tiger@abc.com". The Subscription Object then has the following attributes:

Attribute Name	Attribute Value
notify-recipient-uri	mailto:pwilliams@abc.com
notify-events	printer-state-changed
notify-mailto-text-only	true
notify-charset	us-ascii
notify-natural-language	en-us
notify-subscription-id	4623
notify-sequence-number	0
notify-printer-uptime	23002
notify-printer-uri	ipp://tiger@abc.com
notify-lease-expiration-time	0
notify-subscriber-user-name	pwilliams

402

403   When the Printer jams, the Printer generates and sends the following email message:

404   Date: 29 Aug 00 0832 PDT
405   From: tiger <printAdmin@abc.com>
406   Subject: printer: 'tiger' has stopped
407   To: pwilliams@abc.com
408   Content-type: text/plain
409
410   Printer tiger has stopped with a paper jam.
411
412   The reader should note that the phrases are not identical to IPP keywords. They have been localized to
413   English.

414   **6.4.3 Printer Event Example (localized to Danish)**

415   This section contains an example of an Event Notification of a Printer Event localized to Danish.

416   A Subscribing Client Per Jensen, a Printer admin, performs a Create-Printer-Subscriptions operation on
417   Printer "ipp://tiger@def.dk". The Subscription Object then has the following attributes:

Attribute Name	Attribute Value
notify-recipient-uri	mailto:pjensen@def.dk
notify-events	printer-state-changed
notify-mailto-text-only	true
notify-charset	utf-8
notify-natural-language	da
notify-subscription-id	50225
notify-sequence-number	0
notify-printer-uptime	53217
notify-printer-uri	ipp://tiger@def.dk
notify-lease-expiration-time	0
notify-subscriber-user-name	pjensen

418

419   When the Printer jams, the Printer generates and sends the following email message:

```
420     Date: 29 Jan 00 0832 CET
421     From: tiger <admin@def.dk>
422     Subject: Printeren 'tiger' er standset
423     To: pjensen@def.dk
424     Content-type: text/plain;charset=utf-8
425
426     Printerens navn er 'tiger'.
427     Printeren er standset.
428     Aarsagen er papir stop.
429
```

7 Conformance Requirements

431   The 'mailto' Delivery Method is RECOMMENDED for a Printer to support.

432   If the Printer supports the 'mailto' Delivery Method, the Printer MUST:

433   1. meet the conformance requirements defined in [ipp-ntfy].

434   2. support the "notify-mailto-text-only" Subscription Object attribute defined in section 5.1.1.

435   3. support the syntax for the "notify-recipient-uri" Subscription Object attribute defined in section
436   5.2.1

437   4. support the use for the "notify-user-data" Subscription Object attribute defined in section 5.2.2

438   5. support SMTP for sending Event Notifications.

439   6. support the 'text/plain' Content-Type for the message body.

440   7. support sending Event Notification via email with the content specified in section 5.2.

8 IANA Considerations

Because the 'mailto' URL scheme is already defined in a standards track document [RFC 2368] and has been registered with IANA as a URL scheme, this document does not require that the mailto URL scheme be further registered as a protocol scheme.

The rest of this section contains the exact registration information for IANA to add to the various IPP Registries according to the procedures defined in RFC 2911 [RFC2911] section 6 to cover the definitions in this document.

Note to RFC Editors: Replace RFC NNNN below with the RFC number for this document, so that it accurately reflects the content of the information for the IANA Registry.

8.1 Attribute Registration

The following table lists the attribute defined in this document. This is to be registered according to the procedures in RFC 2911 [RFC2911] section 6.2.

```
Subscription Template attributes:              Ref.       Section:
notify-mailto-text-only (boolean)              RFC NNNN    5.1.1
```

The resulting attribute registration will be published in the
ftp://ftp.iana.org/in-notes/iana/assignments/ipp/attributes/
area.

8.2 Additional uriScheme Attribute Value Registration for the "operations-supported" Printer Attribute

The following table lists the uriScheme value defined in this document as an additional uriScheme value for use with the "notify-schemes-supported" Printer attribute defined in [ipp-ntfy]. This is to be registered according to the procedures in RFC 2911 [RFC2911] section 6.1.

```
uriScheme Attribute Values:                    Ref.       Section:
mailto                                         RFC NNNN    5.2.1
```

The resulting uri scheme attribute value registration will be published in the
ftp://ftp.iana.org/in-notes/iana/assignments/ipp/attribute-values/notify-schemes-supported/
area.

9 Internationalization Considerations

This Delivery Method presents no internationalization considerations beyond those covered in the [ipp-ntfy] document, and sections 6.1.3 and 6.2 of this document.

474   The Notification Recipient is expected to present the email as received because the Printer does all
475   necessary localization to the Event Notification contents.

476   **10 Security Considerations**

477   The biggest security concern is that a Subscribing Client will cause unsolicited Event Notifications to be
478   sent to third parties, potentially creating denial-of-service problems (i.e., spam). The problem is even
479   worse if the third parties are distribution lists.

480   There exist scenarios where third party notification is required (see Scenario #2 and #3 in [ipp-not-
481   req]). The fully secure solution would require active agreement of all persons before they can become
482   Notification Recipients. However, requirement #9 in [ipp-req] ("There is no requirement for IPP
483   Printer receiving the print request to validate the identity of an event recipient") argues against this. To
484   minimize the risk, a Printer could disallow third party Notification Recipients (a traditional facsimile
485   model).

486   The Delivery Method recommends that the Subscribing Client supply his or her email address as the
487   value of the "notify-user-data" attribute in the Subscription Creation Operation when the Notification
488   Recipient is a third party. To reduce the chance of spamming or identify the spammer, a Printer could
489   disallow third party Notification Recipients if the Subscribing Client doesn't supply the "notify-user-
490   data" attribute with a valid email address.

491   Some firewall administrators prevent mail attachments from being accepted into their organizations
492   because of the problem of the attachments containing computer viruses. The 'mailto' Delivery Method
493   allows the Subscribing Client to request that the Content-Type of a message body be 'text/plain'.

494   **11 References**

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525   [RFC2633]
526   B. Ramsdell, "S/MIME Version 3 Message Specification", RFC 2633, June 1999.

527   [RFC2910]
528   Herriot, R., Butler, S., Moore, P., Tuner, R., "Internet Printing Protocol/1.1: Encoding and
529   Transport", RFC 2910, September, 2000.

530   [RFC2911]
531   R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and
532   Semantics", RFC 2911, September, 2000.

533   **12 Author's Addresses**

534
535   Robert Herriot
536   Xerox Corporation
537   3400 Hillview Ave., Bldg #1
538   Palo Alto, CA 94304
539
540   Phone: 650-813-7696

541   Fax: 650-813-6860
542   Email: robert.herriot@pahv.xerox.com
543
544   Henrik Holst
545   i-data international a/s
546   Vadstrupvej 35-43
547   2880 Bagsvaerd, Denmark
548
549   Phone: +45 4436-6000
550   Fax: +45 4436-6111
551   e-mail: hh@i-data.com
552
553   Tom Hastings
554   Xerox Corporation
555   737 Hawaii St. ESAE 231
556   El Segundo, CA 90245
557
558   Phone: 310-333-6413
559   Fax: 310-333-5514
560   e-mail: hastings@cp10.es.xerox.com
561
562   Carl-Uno Manros
563   Xerox Corporation
564   737 Hawaii St. ESAE 231
565   El Segundo, CA 90245
566
567   Phone: 310-333-8273
568   Fax: 310-333-5514
569   e-mail: manros@cp10.es.xerox.com
570
571
572   IPP Web Page: http://www.pwg.org/ipp/
573   IPP Mailing List: ipp@pwg.org
574
575   To subscribe to the ipp mailing list, send the following email:
576   1) send it to majordomo@pwg.org
577   2) leave the subject line blank
578   3) put the following two lines in the message body:
579   subscribe ipp
580   end
581
582   Implementers of this specification document are encouraged to join IPP Mailing List in order to
583   participate in any discussions of clarification issues and review of registration proposals for additional
584   attributes and values. In order to reduce spam the mailing list rejects mail from non-subscribers, so you
585   must subscribe to the mailing list in order to send a question or comment to the mailing list.

586 **13 Summary of Base IPP Documents**

587   The base set of IPP documents includes:

588   Design Goals for an Internet Printing Protocol [RFC2567]
589   Rationale for the Structure and Model and Protocol for the Internet Printing Protocol [RFC2568]
590   Internet Printing Protocol/1.1: Model and Semantics [RFC2911]
591   Internet Printing Protocol/1.1: Encoding and Transport [RFC2910]
592   Internet Printing Protocol/1.1: Implementer's Guide [ipp-iig]
593   Mapping between LPD and IPP Protocols [RFC2569]
594   Internet Printing Protocol (IPP): IPP Event Notifications and Subscriptions [ipp-ntfy]
595

596   The "Design Goals for an Internet Printing Protocol" document takes a broad look at distributed
597   printing functionality, and it enumerates real-life scenarios that help to clarify the features that need to
598   be included in a printing protocol for the Internet. It identifies requirements for three types of users:
599   end users, operators, and administrators. It calls out a subset of end user requirements that are satisfied
600   in IPP/1.0. A few OPTIONAL operator operations have been added to IPP/1.1.

601   The "Rationale for the Structure and Model and Protocol for the Internet Printing Protocol" document
602   describes IPP from a high level view, defines a roadmap for the various documents that form the suite of
603   IPP specification documents, and gives background and rationale for the IETF working group's major
604   decisions.

605   The "Internet Printing Protocol/1.1: Model and Semantics" document describes a simplified model with
606   abstract objects, their attributes, and their operations that are independent of encoding and transport. It
607   introduces a Printer and a Job object. The Job object optionally supports multiple documents per Job.
608   It also addresses security, internationalization, and directory issues.

609   The "Internet Printing Protocol/1.1: Encoding and Transport" document is a formal mapping of the
610   abstract operations and attributes defined in the model document onto HTTP/1.1 [RFC2616]. It defines
611   the encoding rules for a new Internet MIME media type called "application/ipp". This document also
612   defines the rules for transporting over HTTP a message body whose Content-Type is "application/ipp".
613   This document defines the 'ippget' scheme for identifying IPP printers and jobs.

614   The "Internet Printing Protocol/1.1: Implementer's Guide" document gives insight and advice to
615   implementers of IPP clients and IPP objects. It is intended to help them understand IPP/1.1 and some
616   of the considerations that may assist them in the design of their client and/or IPP object
617   implementations. For example, a typical order of processing requests is given, including error checking.
618   Motivation for some of the specification decisions is also included.

619   The "Mapping between LPD and IPP Protocols" document gives some advice to implementers of
620   gateways between IPP and LPD (Line Printer Daemon) implementations.

621   The "IPP Event Notifications and Subscriptions" document defines an extension to IPP/1.0 [RFC2566,
622   RFC2565] and IPP/1.1 [RFC2911, RFC2910]. This extension allows a client to subscribe to printing
623   related Events and defines the semantics for delivering asynchronous *Event Notifications* to the

624   specified *Notification Recipient* via a specified *Delivery Method* (i.e., protocols) defined in (separate)
625   Delivery Method documents.

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