

1 Requirements for IPP Notifications

2

3

4

5 STATUS OF THIS MEMO

6

7 This document is an Internet-Draft. Internet-Drafts are working
8 documents of the Internet Engineering Task Force (IETF), its areas,
9 and its working groups. Note that other groups may also distribute
10 working documents as Internet-Drafts.

11

12 Internet-Drafts are draft documents alid for a maximum of six months
13 and may be updated, replaced, or obsoleted by other documents at any
14 time. It is inappropriate to use Internet-Drafts as reference
15 material or to cite them other than as "work in progress."

16

17 To learn the current status of any Internet-Draft, please check the
18 'l1id-abstracts.txt' listing contained in the Internet- Drafts
19 Shadow Directories on ftp.is.co.za (Africa), nic.nordu.net (Europe),
20 munnari.oz.au (Pacific Rim), ds.internic.net (US East Coast), or
21 ftp.isi.edu (US West Coast).

22

23 ABSTRACT

24

25 This document is one of a set of documents which together describe
26 all aspects of a new Internet Printing Protocol (IPP). IPP is an
27 application leel protocol that can be used for distributed printing
28 on the Internet. There are multiple parts to IPP, but the primary
29 architectural components are the Model, the Protocol and an interface
30 to Directory Serices. This document proides a statement of the
31 requirements for notifications as part of an IPP Serice. The full
32 set of IPP documents include:

33

34 Requirements for an Internet Printing Protocol
35 Internet Printing Protocol/1.0: Model and Semantics
36 Internet Printing Protocol/1.0: Protocol Specification
37 Rationale for the Structure of the Model and Protocol
38 for the Internet Printing Protocol

39

Expires August 19, 1998

[Page 1]

40 1.0 Scope

41

42 The scope of this requirements statement is for end users. This
43 document does not address requirements specific to print
44 administrators or operators. However, we fully expect the
45 notification mechanisms defined in support of the requirements set
46 forth in this document to be extendible to print administrators and
47 operators as well. This document describes the requirements for
48 notifications for client-server, server-printer, and client-printer
49 connections

50

51 2.0 Terminology

52

53 It is necessary to define a set of terms in order to be able to
54 clearly express the requirements for notification services in an IPP
55 System.

56

57 2.1 Job Submitting End User

58

59 A human end user who submits a print job to an IPP Printer. This
60 person may or may not be within the same security domain as the
61 Printer. This person may or may not be geographically near the
62 printer.

63

64 2.2 Job Submitting Application

65

66 An application (for example a batch application), acting on behalf of
67 an end user, which submits a print job to an IPP Printer. The
68 application may or may not be within the same security domain as the
69 Printer. This application may or may not be geographically near the
70 printer.

71

72 2.3 Security Domain

73

74 For the purposes of this discussion, the set of network components
75 which can communicate without going through a proxy or firewall. A
76 security domain may be geographically very large, for example -
77 anywhere within IBM.COM.

78

79 2.4 IPP Client

80

81 The software component on the client system which implements the IPP
82 protocol.

83

84 2.5 Job Recipient

85

86 A human who is the ultimate consumer of the print job. In many cases
87 this will be the same person as the Job Submitting End User, but this

88 need not always be the case. For example, if I use IPP to print a
89 document on a printer in a business partner's office, I am the Job
90 Submitting End User, while the person I intend the document for in my

Expires August 19, 1998

Page [2]

INTERNET DRAFT
<[draft-ietf-ipp-not-00.txt](#)>

Roger K deBry
IBM Corporation
February 19, 1998

91 business partner's office is the Job Recipient. Since one of the
92 goals of IPP is to be able to print near the ultimate recipient of
93 the printed output, we would normally expect the Job Recipient to be
94 in the same security domain as, and geographically near the Printer.
95 However, this may not always be the case. For example, I submit a
96 print job across the Internet to a Kinko s print shop. I am both the
97 Submitting end User and the Job Recipient, but I am neither near nor
98 in the same security domain as the Printer.

99

100 2.6 Job Recipient Proxy

101

102 A person acting on behalf of the Job Recipient. In particular, the
103 Job Recipient Proxy physically picks up the printed document from the
104 Printer, if the Job Recipient cannot perform that function. The Proxy
105 is by definition geographically near and in the same security domain
106 as the printer. For example, I submit a print job from home to be
107 printed on a printer at work. I d like my secretary to pick up the
108 print job and put it on my desk. In this case, I am acting as both
109 Job Submitting End User and Job Recipient. My secretary is acting as
110 a Job Recipient Proxy. An issue that needs to be considered in the
111 notification architecture is the impact of a third party receeing
112 many unwanted notifications.

113

114 2.7 Notification Recipient

115

116 Any of: Job Submitting End User, Job Submitting Application, Job
117 Recipient, or Job Recipient Proxy.

118

119 2.8 Notification Recipient Agent

120

121 A program which receies eents on behalf of the notification
122 recipient. The agent may take some action on behalf of the recipient,
123 forward the notification to the recipient ia some alternatie means
124 (for example, page the recipient), or queue the notification for
125 later retrieal by the recipient.

126

127 2.9 Notification Eents

128

129 Any of the following constitute eents that a Job Submitting End User
130 can specify notifications be sent for. Notifications are sent to an
131 end user only for that end user s job, or for eents that affect the

[132](#) processing of that end user's job.

133

[134](#) - Any standard Printer MIB alert (i.e. device events that impact the
[135](#) end user's job)

[136](#) - Job Received (transition from Unknown to Pending or Pending-held)

[137](#) - Job Started (Transition from Pending to Processing)

[138](#) - Page Complete (Page is stacked)

[139](#) - Collated Copy Complete (last sheet of collated copy is stacked)

[140](#) - Job Complete (transition from Processing or Processing-stopped to

[141](#) Completed)

Expires August 19, 1998

[Page 3]

- [142](#) - Job aborted (transition from Pending, Pending-held, Processing,
[143](#) or Processing-stopped to Aborted)
[144](#) - Job canceled (transition from Pending, Pending-held, Processing,
[145](#) or Processing-held to Canceled)

146

[147](#) 2.10 Notification Registration

148

[149](#) It should be possible for end users to Register for notifications
[150](#) of certain types of events. These include any of those described in
[151](#) the preceding section.

152

[153](#) 2.11 Notification Attributes

154

[155](#) IPP Objects (for example, a print job) from which notification are
[156](#) being sent may have attributes associated with them. A user may want
[157](#) to have one or more of these associated attributes returned along
[158](#) with a particular notification. In general, these may include any
[159](#) attribute associated with the object emitting the notification.
[160](#) Examples include:

161

[162](#) number-of-interpreting jobs
[163](#) job-k-octets
[164](#) job-k-octets processed
[165](#) job impressions
[166](#) job-impressions-interpreted
[167](#) job-impressions-completed
[168](#) impressionsCompletedCurrentCopy (job MIB)
[169](#) sheetCompletedCopyNumber (job MIB)
[170](#) sheetsCompletedDocumentNumber (job MIB)
[171](#) Copies-requested
[172](#) Copy-type
[173](#) Output-destination
[174](#) Job-state-reasons

175

176

[177](#) 2.12 Immediate Notification

178

[179](#) Notifications sent to the notification recipient or the notification
[180](#) recipient's agent in such a way that the notification arrives
[181](#) immediately, within the limits of common addressing, routing,
[182](#) network congestion and quality of service.

183

[184](#) 2.13 Queued Notification

185

[186](#) Notifications which are not necessarily sent immediately, but are
[187](#) queued for delivery by some intermediate network application, or for
[188](#) later retrieval. Email with store and forward is an example of queued

[189](#) notification.

190

[191](#) **2.14 Notification with Reliable Delivery**

192

Expires August 19, 1998

[Page 4]

[193](#) Notifications which are delivered by a reliable, sequenced delivery
[194](#) of packets or character stream, with acknowledgment and retry, such
[195](#) that delivery of the notification is guaranteed within some
[196](#) reasonable time limits. For example, if the notification recipient
[197](#) has logged off and gone home for the day, an immediate notification
[198](#) cannot be guaranteed to be delivered, even when sent over a reliable
[199](#) transport, because there is nothing there to catch it. Guaranteed
[200](#) delivery requires both queued notification and a reliable transport.
[201](#) If delivery of the notification requires process to process
[202](#) communications, each session is managed in a reliable manner,
[203](#) assuring fully ordered, end-to-end delivery.

204

[205](#) 2.15 Notification with Unreliable Delivery

206

[207](#) Notifications are delivered via the fundamental transport address and
[208](#) routing framework, but no acknowledgment or retry is required.
[209](#) Process to process communications, if needed, are unconstrained.

210

[211](#) 2.16 Human Consumable Notification

212

[213](#) Notifications which are intended to be consumed by human end users
[214](#) only. They contain no machine readable encodings of the event. Email
[215](#) would be an example of a Human consumable notification.

216

[217](#) 2.17 Machine Consumable Notification

218

[219](#) Notifications which are intended for consumption by a program only,
[220](#) such as an IPP Client. Machine Consumable notifications may not
[221](#) contain human readable information.

222

[223](#) 2.18 Mixed Notification

224

[225](#) A mixed notification may contain both human readable and human
[226](#) readable information.

227

[228](#) 3.0 Requirements

229

[230](#) 3.1 A Job Submitting End User must be able to specify zero or more
[231](#) notification recipients when submitting a print job.

232

[233](#) 3.2 When specifying a notification recipient, a Job Submitting End
[234](#) user must be able to specify one or more notification events for
[235](#) that notification recipient.

236

[237](#) 3.3 When specifying a notification recipient, the Job Submitting End
[238](#) User must be able to specify either immediate or queued
[239](#) notification for that notification recipient. This may be

[240](#) explicit, or implied by the method of delivery chosen by the Job
[241](#) Submitting End User.
242

Expires August 19, 1998

[Page 5]

- [243](#) 3.4 When specifying a notification event, a Job Submitting End User
[244](#) must be able to specify that zero or more notification attributes
[245](#) be sent along with the notification, when that event occurs.
246
- [247](#) 3.5 Common delivery methods should be utilized where they are
[248](#) appropriate and meet the requirements expressed in this document.
249
- [250](#) 3.6 There is no requirement for the IPP Printer receiving the print
[251](#) request to validate the identity of an event recipient, nor the
[252](#) ability of the system to deliver an event to that recipient as
[253](#) requested (for example, if the event recipient is not at work
[254](#) today).
255
- [256](#) 3.7 However, an IPP Printer must validate its ability to deliver an
[257](#) event using the specified delivery scheme. If it does not support
[258](#) the specified scheme, or the specified scheme is invalid for some
[259](#) reason, then it should respond to the print request with an error
[260](#) condition.
261
- [262](#) 3.8 There must be a class of IPP event notifications which can flow
[263](#) through corporate firewalls. However, an IPP printer need not test
[264](#) to guarantee delivery of the notification through a firewall
[265](#) before accepting a print job.
266
- [267](#) 3.9 A mechanism must be provided for delivering a notification to the
[268](#) submitting client when the delivery of an event notification to a
[269](#) specified Notification Recipient fails.
270
- [271](#) 3.10 There must be a mechanism for localizing human consumable
[272](#) notifications.
273
- [274](#) 4.0 Scenarios
275
- [276](#) 4.1 I am sitting in my office and submit a print job to the printer
[277](#) down the hall. I am in the same security domain as the printer and
[278](#) of course, geographically near. I want to know immediately when
[279](#) my print job will be completed (or if there is a problem) because
[280](#) the document I am working on is urgent. I submit the print job
[281](#) with the following attributes:
282
- [283](#) - Notification Recipient - me
 - [284](#) - Notification Events - all
 - [285](#) - Notification Attributes - job-state-reason
 - [286](#) - Notification Type - immediate
- 287
- [288](#) 4.2 I am working from home and submit a print job to the same printer
[289](#) as in the previous example. However, since I am not at work, I

[290](#) cannot physically get the print file or do anything with it. It
[291](#) can wait until I get to work this afternoon. However, I'd like my
[292](#) secretary to pick up the output and put it on my desk so it
[293](#) doesn't get lost or mis-filed. I'd also like a queued notification

Expires August 19, 1998

[Page 6]

[294](#) sent to my email so that when I get to work I can tell if there
[295](#) was a problem with the print job. I submit a print job with the
[296](#) following attributes:

297

[298](#) - Notification Recipient - my secretary

[299](#) - Notification Events - print complete

[300](#) - Notification Type - immediate

301

[302](#) - Notification Recipient - me

[303](#) - Notification Events - print complete

[304](#) - Notification Attributes - impressions completed

[305](#) - Notification Type - queued

306

[307](#) 4.3 I am sitting in my office and submit a print job to a client at
[308](#) an engineering firm we work with on a daily basis. The engineering
[309](#) form is in Belgium. I would like my client to know when the print
[310](#) job is complete, so that she can pick it up from the printer in
[311](#) her building. It is important that she review it right away and
[312](#) get her comments back to me. I submit the print job with the
[313](#) following attributes:

314

[315](#) - Notification Recipient - client at engineering firm

[316](#) - Notification Events - print complete

[317](#) - Notification Type - immediate

[318](#) - Notification Language - French

319

[320](#) 4.4 I am in a hotel room and send a print job to a Kinko's store in
[321](#) the town I am working in, in order to get a printed report for the
[322](#) meeting I am attending in the morning. Since I'm going out to
[323](#) dinner after I get this job submitted, an immediate notification
[324](#) won't do me much good. However, I'd like to check in the morning
[325](#) before I drive to the Kinko's store to see if the file has been
[326](#) printed. An email notification is sufficient for this purpose. I
[327](#) submit the print job with the following attributes:

328

[329](#) - Notification Recipient - me

[330](#) - Notification Events - print complete

[331](#) - Notification Type - email

332

[333](#) 4.5 I am printing a large, complex print file. I want to have some
[334](#) immediate feedback on the progress of the print job as it prints.
[335](#) I submit the print job with the following attributes:

336

[337](#) - Notification Recipient - me

[338](#) - Notification Type - immediate

[339](#) - Notification Events - all state transitions

[340](#) - Notification Attributes - impression completed

Expires August 19, 1998

[Page 7]

INTERNET DRAFT
<[draft-ietf-ipp-not-00.txt](#)>

Roger K deBry
IBM Corporation
February 19, 1998

5.0 Author's Address

Roger K deBry
IBM Corporation
003G
P.O. Box 1900
Boulder, CO 80301-9191
email rdebry@us.ibm.com

Expires August 19, 1998

[Page 8]