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## 7 Internet Printing Protocol/1.0 & 1.1: Additional Administrative Operations

### 9 Status of this Memo

10 This document is a PWG-Draft. It is intended for registration following the registration procedures of  
11 IPP/1.0 [RFC2566] and IPP/1.1 [ipp-mod]. This version includes the comments discussed at the IPP  
12 telecon, on 6/23/1999, ~~and 6/30/1999~~, at the IETF IPP WG meeting, 7/7/99-7/8/99, in Copenhagen, and the  
13 IPP telecon, 7/17/1999. **Unresolved ISSUES are highlighted like this in the .doc and .pdf files.**

### 14 Abstract

15 This document specifies 15 additional OPTIONAL administrative operations for use with the Internet  
16 Printing Protocol/1.0 (IPP) [RFC2565, RFC2566] and IPP/1.1 [ipp-mod, ipp-pro]. These operations are ~~67~~  
17 Printer object operations that operators/administrators may perform on a Printer object:

18 Set-Printer-Attributes  
19 Enable-Printer  
20 Disable-Printer  
21 Reset-Printer  
22 Restart-Printer  
23 ~~Space-Printer~~  
24 Shutdown-Printer

25 and ~~78~~ Job object operations that end-users may perform on their jobs and operators/administrators may  
26 perform on any job:

27 Set-Job-Attributes  
28 Reprocess-Job  
29 Cancel-Current-Job (though the target is the Printer object)  
30 ~~Pause-Job~~  
31 Pause-Current-Job (though the target is the Printer object)  
32 Resume-Job  
33 Promote-Job  
34 Space-Current-Job (though the target is the Printer object)

35 In addition, two operation attributes are defined: "printer-message-from-operator" and "job-message-from-  
36 operator" are included to set the corresponding Printer and Job Description attributes with the same names.  
37 And the "when" operation attribute is added to the IPP/1.1 ~~Pause-Printer~~ operation.

38 Finally, a new status codes: 'client-error-attributes-not-settable' ~~is defined for use with the two Set~~  
39 ~~operations~~ and 'server-error-printer-is-in-standby-mode' are added.

40 The full set of IPP documents includes:

- 41 Design Goals for an Internet Printing Protocol [RFC2567]
- 42 Rationale for the Structure and Model and Protocol for the Internet Printing Protocol [RFC2568]
- 43 Internet Printing Protocol/1.1: Model and Semantics (this document)
- 44 Internet Printing Protocol/1.1: Encoding and Transport [IPP-PRO]
- 45 Internet Printing Protocol/1.1: Implementer's Guide [IPP-IIG]
- 46 Mapping between LPD and IPP Protocols [RFC2569]

47

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

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

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

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

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

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110

## 111 1. Introduction

112 The Internet Printing Protocol (IPP) is an application level protocol that can be used for distributed printing  
113 using Internet tools and technologies. IPP version 1.1 (IPP/1.1) focuses only on end user functionality with  
114 a few administrative operations included. This document defines additional OPTIONAL end user and  
115 administrative operations used to control Jobs and Printers. This document is a registration proposal for an  
116 extension to IPP/1.0 and IPP/1.1 following the registration procedures in those documents.

## 117 2. New Operation attributes

118 This section defines the new "printer-message-from-operation" and "job-message-from-operator" operation  
119 attributes that set the corresponding Printer and Job Description attributes.

## 120 2.1 New operation attribute: "printer-message-from-operator" (text(127))

121 Type of registration: attribute

122 Proposed keyword name of this attribute: "printer-message-from-operator"

123 Types of attribute (Operation, Job Template, Job Description, Printer Description): Operation

124 Operations to be used with if the attribute is an operation attribute: See below

125 Object (Job, Printer, etc. if bound to an object): Printer (already in IPP/1.0 and IPP/1.1)

126 Attribute syntax(es) (include 1setOf and range as in Section 4.2): text(127)

127

128 Specification of this attribute (follow the style of IPP Model Section 4.2):

129

130 "printer-message-from-operator" (text(127))

131 The client OPTIONALLY supplies this attribute. The Printer object SHOULD supports this  
132 operation attribute if it supports the corresponding Printer Description attribute. The value of this  
133 attribute is a message from the operator about the Printer object on which the operator ~~has just is~~  
134 ~~performing~~ ~~the~~ ~~an~~ operation. If supported, the Printer copies the value to the Printer's "printer-  
135 message-from-operator" Printer Description attribute (see [ipp-mod] section 4.4.25), automatically  
136 sets the value of the Printer's "printer-message-time" with the current value of the Printer's "printer-  
137 up-time" attribute, the value of the "printer-message-date-time" with ~~the~~ the current value of the  
138 Printer's printer-current-date-and-time" attribute, and ~~automatically sets~~ the value of the Printer's  
139 "printer-message-operation" ~~with~~ the operation-id value of this operation (see [ipp-mod] section  
140 4.4.15).

141

142 If the client omits this attribute, the Printer does not change the value of its "printer-message-from-  
143 operator", "printer-message-time", "printer-message-date-time", and "printer-message-operation"  
144 Printer Description attributes.

145

146 If the client supplies this attribute with a zero-length text value or with a value consisting solely of  
147 white space, the Printer copies that value as any other value to the Printer's "printer-message-from-  
148 operator" and sets the "printer-message-time", "printer-message-date-time", and "printer-message-

149 operation" attributes. Supplying such a value is the way that the operator indicates that there is no  
150 longer a printer message from the operator (rather than using the "out-of-band" 'no-value' value).  
151

152 This operation attribute is defined for use with the following operator operations on the Printer object:

- 153 Pause-Printer - see [ipp-mod] section 3.2.7
  - 154 Resume-Printer - see [ipp-mod] section 3.2.8
  - 155 Purge-Jobs - see [ipp-mod] section 3.2.9
  - 156 Disable-Printer - see section 6.1.2
  - 157 Enable-Printer - see section 6.1.3
  - 158 Reset-Printer - see section 6.1.4
  - 159 Restart-Printer - see section 6.1.5
  - 160 ~~Space-Printer - see section 6.1.6~~
  - 161 Shutdown-Printer - see section 6.1.6
- 162

163 The "printer-message-from-operator" operation attribute MUST NOT be supported as an operation attribute  
164 for the Set-Printer-Attributes operation. If the operator wants to set the Printer's "printer-message-from-  
165 operator" Printer Description attribute when issuing the Set-Printer-Attributes operation, the client supplies  
166 the "printer-message-from-operator" with its new value as one of the Printer Description attributes in Group  
167 2 in the request. The Printer also updates the Printer's "printer-message-date-time" and "printer-message-  
168 operation" Printer Description attributes. Otherwise ~~If the client does not explicitly supply the "printer-~~  
169 ~~message-from-operator" with its new value,~~ the Printer leaves the value of the Printer's "printer-message-  
170 from-operator" Printer Description attribute unchanged ~~by not explicitly setting the attribute.~~

171 2.2 New operation attribute: "job-message-from-operator" (text(127))

172 Type of registration: attribute

173 Proposed keyword name of this attribute: "job-message-from-operator"

174 Types of attribute (Operation, Job Template, Job Description, Printer Description): Operation

175 Operations to be used with if the attribute is an operation attribute: See below

176 Object (Job, Printer, etc. if bound to an object): Job (already in IPP/1.0 and IPP/1.1)

177 Attribute syntax(es) (include 1setOf and range as in Section 4.2): text(127)

178

179 Specification of this attribute (follow the style of IPP Model Section 4.2):

180

181 "job-message-from-operator" (text(127))

182 The client OPTIONALLY supplies this attribute. The Printer object SHOULD supports this  
183 operation attribute if it supports the corresponding Job Description attribute. The value of this  
184 attribute is a message from the operator about the Job object on which the operator has just  
185 performed an operation. If supported, the Printer copies the value to the Job's "job-message-from-  
186 operator" Job Description attribute (see [ipp-mod] section 4.3.16).

187

188 If the client omits this attribute, the Printer does not change the value of its "printer-message-from-  
189 operator" Job Description attribute.

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If the client supplies this attribute with a zero-length text value or with a value consisting solely of white space, the Printer copies that value as any other value to the job's "job-message-from-operator". Supplying such a value is the way that the operator indicates that there is no longer a job message from the operator (rather than using the "out-of-band" 'no-value' value).

Note: There are no corresponding "job-message-time", "job-message-date-time", and "job-message-operation" Job Description attributes, since the usual lifetime of a job is limited.

199 This operation attribute is defined for use with the following operator operations on the Job object:

- 200 Cancel-Job - see [ipp-mod] section 3.2.4
- 201 Hold-Job - see [ipp-mod] section 3.3.5
- 202 Release-Job - see [ipp-mod] section 3.3.6
- 203 Restart-Job - see [ipp-mod] section 3.3.7
- 204 Reprocess-Job - see section 6.2.2
- 205 Cancel-Current-Job - see section 6.2.3
- 206 ~~Pause-Job - see section 6.2.4~~
- 207 Pause-Current-Job - see section 1.1.1
- 208 Resume-Job - see section 6.2.5
- 209 Promote-Job - see section 6.2.6
- 210 Space-Current-Job - see section 6.2.7

211

212 The "job-message-from-operator" operation attribute MUST NOT be supported as an operation attribute for  
213 the Set-Job-Attributes operation. If the operator wants to set the Job's "job-message-from-operator" Job  
214 Description attribute when issuing the Set-Job-Attributes operation, the client supplies the "job-message-  
215 from-operator" with its new value as one of the Job Description attributes in Group 2 in the request.  
216 Otherwise, the Printer leaves the value of the Job's "job-message-from-operator" Job Description attribute  
217 unchanged by not explicitly setting the attribute.

### 218 2.3 New operation attribute for Get-Printer-Attributes: "factory-settings" (boolean)

219 Type of registration: attribute

220 Proposed keyword name of this attribute: "factory-settings"

221 Types of attribute (Operation, Job Template, Job Description, Printer Description): Operation

222 Operations to be used with if the attribute is an operation attribute: Get-Printer-Attributes

223 Object (Job, Printer, etc. if bound to an object): N/A

224 Attribute syntax(es) (include 1setOf and range as in Section 4.2): boolean

225

226 Specification of this attribute (follow the style of IPP Model Section 4.2):

227 "factory-settings" (boolean)

228 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
229 attribute, if it supports the Set-Printer-Attributes operation. If the client omits this attribute or  
230 supplies the 'false' value, the Printer returns the current values of the requested attributes that are



231 settable, i.e., the values that have been set by previous Set-Printer-Attributes. If the client supplies  
 232 the 'true' value, the Printer returns the factory settings, i.e., the inherent values supported by the  
 233 implementation as shipped from the manufacturer or established at install time. This operation  
 234 attribute allows an operator to determine which values are supported in an implementation after  
 235 having modified a settable attribute. Attributes that are not settable are not affected by this  
 236 operation attribute, so that the Printer returns the same values for non-settable attribute when either  
 237 the 'true' or 'false' value has been supplied. If this operation attribute is supported, both values  
 238 MUST be supported.

#### 239 2.4 New operation attribute for Pause-Printer: "when" (type2 keyword)

240 Type of registration: attribute

241 Proposed keyword name of this attribute: "when"

242 Types of attribute (Operation, Job Template, Job Description, Printer Description): Operation

243 Operations to be used with if the attribute is an operation attribute: Pause-Printer, Reset-Printer, Shutdown-  
 244 Printer, and Pause-Current-Job

245 Object (Job, Printer, etc. if bound to an object): N/A Job (already in IPP/1.0 and IPP/1.1)

246 Attribute syntax(es) (include 1setOf and range as in Section 4.2): type2 keyword

247

248 Specification of this attribute (follow the style of IPP Model Section 4.2):

249 "when" (type2 keyword)

250 The client **OPTIONALLY** supplies this attribute. The Printer object **MUST-OPTIONALLY**  
 251 **supports** this attribute, if it supports this operation. The value of this attribute indicates when to  
 252 pause, reset, or shutdown the printer. If the client omits this attribute, the Printer assumes the 'after-  
 253 current-job' value. The 'after-current-job' value is REQUIRED to be supported if the "when"  
 254 attribute is supported; the remaining values are OPTIONAL.

255 **ISSUE 1: Can a client determine the values of "when" that are supported for operations (Pause-**  
 256 **Printer, Reset-Printer, Shutdown-Printer, Pause-Job, and Pause-Current-Job)?**

257 We did not resolve this issue, since there could be different values of "when" for the four different  
 258 operations. Adding four "when-xxx" Printer Description attributes is a possibility, but does seem  
 259 overkill.

260

261 Standard keyword values are:

262 'now' - cancel the currently printing job(s) and shutdown the Printer. Jobs in the 'held' and  
 263 'pending' state remain in those states.

264 'after-current-copy' - shutdown the Printer after the current job finishes printing its current  
 265 copy. Jobs in the 'held' and 'pending' state remain in those states.

266 'after-current-job' - shutdown the Printer after the current job finishes printing (all its copies).  
 267 Jobs in the 'held' and 'pending' state remain in those states.

268 'after-all' - shutdown the Printer after all 'pending' jobs finish printing. Jobs in the 'held' state  
 269 remain in the 'held' state.

270 ~~ISSUE 1: Which values of the "when" operation attribute are required to be supported?~~

271

272 4.4.5 Summary of the operation attributes for the Printer operations

273 The following table shows the operation attributes for the Printer operations that a client MAY supply in a  
 274 request. Operation parameters and attributes that a client MUST supply are not shown. Also "requesting-  
 275 user-name" is not shown, though it is RECOMMENDED that a client supply it in every request.

276 Legend:

277 R - REQUIRED for a Printer to support

278 O - OPTIONAL for a Printer to support; the Printer ignores the attribute if not supported

Operation Attribute	Pause-Printer	Resume-Printer	Purge-Jobs	Get-Printer-Attributes	Set-Printer-Attributes	Enable-Print	Disable-Printer	Reset-Printer	Restart-Printer	Shut down-Printer
<u>document-format</u>				<u>R</u>	<u>R</u>					
<u>factory-settings</u>				<u>O</u>						
<u>printer-message-from-operator</u>	<u>O</u>	<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>
<u>job-type</u>						<u>O</u>	<u>O</u>			
<u>when</u>	<u>O</u>							<u>O</u>		<u>O</u>
<u>reset-function</u>								<u>R</u>		
<u>non-process-run-out</u>									<u>O</u>	<u>O</u>
<u>synchronize</u>										<u>O</u>
<u>shutdown-function</u>										<u>R</u>

279 4.5.6 Summary of the operation attributes for the Job operations

280 The following table shows the operation attributes for the Job operations that a client MAY supply in a  
 281 request. Operation attributes that specify the Printer or Job object as the target are shown in the first two  
 282 rows, respectively. Other operation attributes and parameters that a client MUST supply are not shown.  
 283 Also "requesting-user-name" is not shown, though it is RECOMMENDED that a client supply it in every  
 284 request.

285 Legend:

286 R - REQUIRED for a Printer to support

287 O - OPTIONAL for a Printer to support; the Printer ignores the attribute if not supported

Operation Attribute	Cancel-Job	Cancel-Current-Job	Hold-Job	Release-Job	Space-Current-Job	Pause-Current-Job	Resume-Job	Get-Job-Attributes	Set-Job-Attributes	Restart-Job	Reprocess-Job	Promote-Job
<u>printer-uri</u>		<u>R</u>			<u>R</u>	<u>R</u>						
<u>printer-uri/job-id or job-uri</u>	<u>R</u>		<u>R</u>	<u>R</u>			<u>R</u>	<u>R</u>	<u>R</u>	<u>R</u>	<u>R</u>	<u>R</u>
<u>job-id</u>		<u>R</u>			<u>R</u>	<u>R</u>						
<u>requested-attributes</u>								<u>R</u>				
<u>back-space</u>					<u>O</u>							
<u>forward-space</u>					<u>O</u>							
<u>non-process-run-out</u>		<u>O</u>			<u>O</u>	<u>O</u>						
<u>synchronize</u>					<u>O</u>	<u>O</u>						

<u>when</u>						<u>O</u>					<u>O</u>	
<u>job-message-from-operator</u>	<u>O</u>	<u>O</u>	<u>O</u>	<u>O</u>		<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>	<u>O</u>
<u>message [to-operator]</u>	<u>O</u>		<u>O</u>	<u>O</u>		<u>O</u>	<u>O</u>			<u>O</u>	<u>O</u>	<u>O</u>
<u>job-hold-until</u>			<u>O*</u>	<u>O*</u>							<u>O**</u>	

288 \* The Printer MUST support the "job-hold-until" operation attribute if it supports the "job-hold-until" Job  
 289 Template attribute.

290 \*\* The Printer MUST support the "job-hold-until" operation attribute if it supports the Set-Job-Attributes  
 291 operation, so that the client can hold the job with the Reprocess-Job operation and the modify the job before  
 292 releasing it to be processed.

293 3. New Printer Description Attributes

294 The following new Printer Description attributes are needed to support the new operations defined in this  
 295 document.

296 3.1 settable-attributes (1setOf type2 keyword)

297 Type of registration: attribute

298 Proposed keyword name of this attribute: settable-attributes

299 Types of attribute (Operation, Job Template, Job Description, Printer Description): Printer Description

300 Operations to be used with if the attribute is an operation attribute: N/A

301 Object (Job, Printer, etc. if bound to an object): Printer

302 Attribute syntax(es) (include 1setOf and range as in Section 4.2): 1setOf type2 keyword

303 If attribute syntax is 'keyword' or 'enum', is it type2 or type3: type2

304 If this is a Printer attribute, MAY the value returned depend on "document-format" (See Section 6.2): Yes

305 If this is a Job Template attribute, how does its specification depend on the value of the "multiple-  
 306 document-handling" attribute: N/A

307 Specification of this attribute (follow the style of IPP Model Section 4.2):

308 4.2.? settable-attributes (1setOf type2 keyword)

309 This READ-ONLY Printer attribute identifies the Printer and Job object attributes that are settable in this  
 310 implementation, i.e., that are settable using the Set-Printer-Attributes and Set-Job-Attributes operations,  
 311 respectively. This attribute MUST be supported if the Set-Printer-Attributes or Set-Job-Attributes  
 312 operations are supported. The Printer MUST reject attempts to set any Printer or Job attributes that are not  
 313 in this list, returning the 'client-error-attributes-not-settable' status code (see section 5.1). The value of this  
 314 attribute MAY depend on the value of the "document-format" operation attribute supplied in the Get-  
 315 Printer-Attributes operation (see [ipp-mod] section 3.2.5.1).

316 ISSUE 2: Can we add just one Printer Description attribute: "settable-attributes" or do we need a "printer-  
 317 settable-attributes" and a "job-settable-attributes" Printer Description attributes? What if the Interpreter  
 318 and/or the Document object become real objects, would we need to add "interpreter-settable-attributes" and  
 319 "document-settable-attributes" Printer Description attributes?

320

321 3.2 printer-controls-other-protocols (boolean)322 Type of registration: attribute323 Proposed keyword name of this attribute: printer-controls-other-protocols324 Types of attribute (Operation, Job Template, Job Description, Printer Description): Printer Description325 Operations to be used with if the attribute is an operation attribute: N/A326 Object (Job, Printer, etc. if bound to an object): Printer327 Attribute syntax(es) (include 1setOf and range as in Section 4.2): boolean328 If attribute syntax is 'keyword' or 'enum', is it type2 or type3: N/A329 If this is a Printer attribute, MAY the value returned depend on "document-format" (See Section 6.2): No330 If this is a Job Template attribute, how does its specification depend on the value of the "multiple-  
331 document-handling" attribute: N/A332 Specification of this attribute (follow the style of IPP Model Section 4.2):333 4.2.? printer-controls-other-protocols (boolean)334 This Printer attribute indicates whether administrative operations, such as Disable-Printer, Pause-Printer,  
335 etc., affect non-IPP protocols that may be supported. It is RECOMMENDED that IPP control other non-  
336 IPP protocols. However, this attribute permits an implementation to indicate explicitly whether it does  
337 affect other protocols or not.338 A 'false' value indicates that IPP operations only affect jobs submitted by the IPP Protocol. For example, a  
339 'true' value indicates that a Disable-Printer operation prevents all protocols from submitting jobs, not just  
340 the IPP protocol. An another example, a 'true' value indicates that the Pause-Printer operation would pause  
341 the current job, no matter what job submission protocol had submitted it.342 **ISSUE 3: Ok that the "printer-controls-other-protocols" Printer Description attribute is just a boolean, or do**  
343 **we need a list of operations that affect non-IPP protocols?**344 As with any Printer Description attribute that this specification does not list as READ-ONLY, an  
345 implementation MAY allow an administrator to change the value of this attribute using Set-Printer-  
346 Attributes, thereby changing the way that the IPP operations affect other non-IPP protocols. An  
347 implementation MAY also support other means to change the value of this attribute, such as via the console  
348 or at installation time.349 **ISSUE 4: Is IPP intended for printer management. The issue is still undetermined?**350 3.3 printer-message-time (integer(MIN:MAX))351 Type of registration: attribute352 Proposed keyword name of this attribute: printer-message-time353 Types of attribute (Operation, Job Template, Job Description, Printer Description): Printer Description354 Operations to be used with if the attribute is an operation attribute: N/A355 Object (Job, Printer, etc. if bound to an object): Printer356 Attribute syntax(es) (include 1setOf and range as in Section 4.2): integer(MIN:MAX)357 If attribute syntax is 'keyword' or 'enum', is it type2 or type3: N/A358 If this is a Printer attribute, MAY the value returned depend on "document-format" (See Section 6.2): No

359 If this is a Job Template attribute, how does its specification depend on the value of the "multiple-  
360 document-handling" attribute: N/A

361 Specification of this attribute (follow the style of IPP Model Section 4.2):

362 4.2.? printer-message-time (integer(MIN:MAX))

363 This READ-ONLY Printer Description attribute contains the time that the Printer's "printer-message-from-  
364 operator" was changed by the operator using any operation where the client supplied the "printer-message-  
365 from-operator" operation attribute (see section 2.1) or was explicitly set using the Set-Printer-Attributes  
366 operation (see section 6.1.1). This attribute allows the users to know when the "printer-message-from-  
367 operator" attribute was last set.

368 The Printer sets the value of this attribute by copying the value of the Printer's "printer-up-time" attribute  
369 (see [ipp-mod] section 4.3.14). If the Printer resets its "printer-up-time" attribute to 1 on power-up, then it  
370 MUST change the value of the "printer-message-time" to 0 or a negative number as specified in [ipp-mod]  
371 section 4.3.14.

372 Note: This attribute helps users better understand the context for the "printer-message-from-operator"  
373 message.

374 3.4 printer-message-date-time (dateTime)

375 Type of registration: attribute

376 Proposed keyword name of this attribute: printer-message-date-time

377 Types of attribute (Operation, Job Template, Job Description, Printer Description): [Printer Description](#)

378 Operations to be used with if the attribute is an operation attribute: N/A

379 Object (Job, Printer, etc. if bound to an object): Printer

380 Attribute syntax(es) (include 1setOf and range as in Section 4.2): dateTime

381 If attribute syntax is 'keyword' or 'enum', is it type2 or type3: N/A

382 If this is a Printer attribute, MAY the value returned depend on "document-format" (See Section 6.2): No

383 If this is a Job Template attribute, how does its specification depend on the value of the "multiple-  
384 document-handling" attribute: N/A

385 Specification of this attribute (follow the style of IPP Model Section 4.2):

386 4.2.? printer-message-date-time (dateTime)

387 [This READ-ONLY Printer Description attribute contains the](#) ~~The~~ date and time that the Printer's "printer-  
388 message-from-operator" was changed by the operator using any operation where the client supplied the  
389 "printer-message-from-operator" operation attribute (see section 2.1) or was explicitly set using the Set-  
390 Printer-Attributes operation (see section 6.1.1). This attribute allows the users to know when the "printer-  
391 message-from-operator" attribute was last set. [This attribute MUST be supported if the Printer supports  
392 both the "printer-message-from-operator" and the "printer-current-date-time" attributes.](#)

393 Note: This attribute helps users better understand the context for the "printer-message-from-operator"  
394 message.

## 395 3.5 printer-message-operation (type2 keyword)

396 Type of registration: attribute

397 Proposed keyword name of this attribute: printer-message-operation

398 Types of attribute (Operation, Job Template, Job Description, Printer Description): [Printer Description](#)

399 Operations to be used with if the attribute is an operation attribute: N/A

400 Object (Job, Printer, etc. if bound to an object): Printer

401 Attribute syntax(es) (include 1setOf and range as in Section 4.2): type2 enum

402 If attribute syntax is 'keyword' or 'enum', is it type2 or type3: type2

403 If this is a Printer attribute, MAY the value returned depend on "document-format" (See Section 6.2): No

404 If this is a Job Template attribute, how does its specification depend on the value of the "multiple-  
405 document-handling" attribute: N/A

406 Specification of this attribute (follow the style of IPP Model Section 4.2):

407 4.2.? printer-message-~~operation~~attribute (type2 enum)

408 [This READ-ONLY Printer Description attribute contains the](#) ~~The~~ operation that was used to changed the  
409 Printer's "printer-message-from-operator" by the operator using any operation where the client supplied the  
410 "printer-message-from-operator" operation attribute (see section 2.1) or explicitly set using the Set-Printer-  
411 Attributes operation (see section 6.1.1). This attribute allows the users to know which operation was used  
412 to change the "printer-message-from-operator" attribute when it was last set.

413 Note: This attribute helps users better understand the context for the "printer-message-from-operator"  
414 message.

## 415 4. Additional values for "printer-state-reasons" and "job-state-reasons" attributes

416 The following values are added to the "printer-state-reasons" and "job-state-reasons" for use with the  
417 operations defined in this document.

418

## 419 4.1 Value for "printer-state-reasons": 'standby'

420 Type of registration: type2 keyword attribute value

421 Name of attribute to which this keyword specification is to be added: printer-state-reasons

422 Proposed keyword name of this keyword value: standby

423 Specification of this keyword value (follow the style of IPP Model Section 4.1.2.3):

424 'standby': The Printer has been shutdown in standby mode. Only Restart-Printer and Get-Printer-  
425 Attributes operations are accepted in this state; all other operations are rejected with the 'server-  
426 error-printer-is-in-standby-mode'.

## 427 4.2 Value for "job-state-reasons": 'job-paused'

428 Type of registration: type2 keyword attribute value

429 Name of attribute to which this keyword specification is to be added: job-state-reasons

430 Proposed keyword name of this keyword value: job-paused

431 Specification of this keyword value (follow the style of IPP Model Section 4.1.2.3):

432     ~~job-paused~~: The job has been paused while processing using the ~~Pause-Job or~~ Pause-Current-Job  
433     operations and other jobs can be processed on the Printer. The Job can be resumed using the  
434     Resume-Job operation which removes this value.

435 ~~4.3 Value for "job-state-reasons": 'process-next'~~

436 ~~Type of registration: type2 keyword attribute value~~

437 ~~Name of attribute to which this keyword specification is to be added: job-state-reasons~~

438 ~~Proposed keyword name of this keyword value: process-next~~

439 ~~Specification of this keyword value (follow the style of IPP Model Section 4.1.2.3):~~

440     ~~'process-next~~: The job has been promoted to be the next job processed using the Promote-Job operation  
441     (see section 6.2.7).

442

## 443 5. New status codes

444 This section defines new status codes used by the operations defined in this document.

### 445 5.1 New status code: 'client-error-attributes-not-settable'

446 Type of registration: status code

447 Keyword symbolic name of this status code value: 'client-error-attributes-not-settable'

448 Numeric value (to be assigned by the IPP Designated Expert in consultation with IANA):

449 Operations that this status code may be used with: Set-Printer-Attributes, Set-Job-Attributes

450 Specification of this status code (follow the style of IPP Model Section 13 APPENDIX B: Status Codes  
451 and Suggested Status Code Messages):

#### 452 13.1.4.20 client-error-attributes-not-settable (0x0413)

453 In a Set-Printer-Attributes or Set-Job-Attributes request, if the Printer object does not support one or more  
454 attributes as settable, ~~and the client supplied the "ipp-attributes-fidelity" operation attribute with the 'true'~~  
455 ~~value,~~ the Printer object MUST return this status code. The Printer object MUST also return in the  
456 Unsupported Attributes Group all the attributes and/or values supplied by the client that are not settable.  
457 See [ipp-mod] section 3.1.7. For example, if the request indicates 'job-state', all implementations MUST  
458 reject the request. As another example, if the request indicates an attribute that is supported, but not  
459 settable by this implementation, such as, say, "printer-name", the implementation rejects the request. ~~If the~~  
460 ~~"ipp-attribute-fidelity" attribute is 'false', the Printer MUST ignore attributes that are not settable, rather~~  
461 ~~than reject the request and return this status code.~~

### 462 5.2 New status code: 'server-error-printer-is-in-standby-mode'

463 Type of registration: status code

464 Keyword symbolic name of this status code value: 'server-error-printer-is-in-standby-mode'

465 Numeric value (to be assigned by the IPP Designated Expert in consultation with IANA):  
 466 Operations that this status code may be used with: Shutdown-Printer  
 467 Specification of this status code (follow the style of IPP Model Section 13 APPENDIX B: Status Codes  
 468 and Suggested Status Code Messages):

469 13.1.5.8 server-error-printer-is-in-standby-mode

470 The Printer has been shutdown and is only accepting the Restart-Printer (see section 6.1.5) and Get-Printer-  
 471 Attributes operations. An operator can perform the Restart-Printer operation to allow the Printer to accept  
 472 other operations.

473 6. Summary of Administrative operations and Operation-Id Assignments

474 The Administrative operations are summarized in the following table:

Operation Name	Operation-Id	Brief description
Set-Printer-Attributes	0x??	Sets attribute values of the target Printer object
Enable-Printer	0x??	Allows the target Printer to accept create job operations
Disable-Printer	0x??	Prevents the target Printer from accepting create job operations
Reset-Printer	0x??	Resets the target Printer to one of several indicated ways
Restart-Printer	0x??	Restarts the target Printer from a standby shutdown mode
<del>Space-Printer</del>	<del>0x??</del>	<del>Skips or repeats the specified number of impressions for the target job</del>
Shutdown-Printer	0x??	Shuts down the target Printer in several ways
Set-Job-Attributes	0x??	Sets attribute values of the target Job object
Reprocess-Job	0x??	Creates a copy of a completed target job with a new Job ID and processes it
Cancel-Current-Job	0x??	Cancels the current job on the target Printer <u>or the specified job if it is the current job</u>
<del>Pause Job</del>	<del>0x??</del>	<del>Pauses the indicated processing job, allowing other jobs to be processed instead</del>
Pause-Current-Job	0x??	Pauses the current processing job on the target Printer <u>or the specified job if it is the current job, allowing other jobs to be processed instead</u>
Resume-Job	0x??	Resume the paused target job
Promote-Job	0x??	Promote the pending target job to be next after the current job(s) complete
Space-Current-Job	0x??	Skips or repeats <del>some</del> <u>the specified</u> number of impressions for the current job on the target Printer <u>or the specified job if it is the current job</u>

475 All of the operations in this registration proposal specification are OPTIONAL for an IPP object to support.  
 476 Unless the specification of an OPTIONAL operation requires support of another OPTIONAL operation,  
 477 conforming implementations may support any combination of these operations.



## 478 6.1 Printer Operations

479 All Printer operations are directed at Printer objects. A client MUST always supply the "printer-uri"  
480 operation attribute in order to identify the correct target of the operation. These descriptions assume all of  
481 the common semantics of IPP/1.1 Model and Semantics document [ipp-mod] section 3.1.

## 482 6.1.1 Set-Printer-Attributes Operation

483 Type of registration: operation

484 Proposed name of this operation: Set-Printer-Attributes

485 Object Target: Printer

486 Specification of this operation:

487 This OPTIONAL operation allows a client to set the values of the attributes of a Printer object. In the  
488 request, the client supplies the set of Printer attribute names and values that are to be set. In the response,  
489 the Printer object returns success or rejects the request with indications of which attribute or attributes  
490 could not be set.

491 How the Printer object validates the client-supplied attributes in the Set-Printer-Attributes request is  
492 implementation-dependent, since there are no corresponding Printer attributes that specify the allowed  
493 values that may be set on the Printer object.

494 The Printer MUST accept this operation in any state, i.e., for any of the values of the Printer object's  
495 "printer-state" attribute.

## 496 6.1.1.1 Settable and READ-ONLY Printer Description attributes

497 If the Printer supports the "printer-message-from-operator" Printer Description attribute (see [ipp-mod]  
498 section 4.4.25) and the client explicitly supplies a new value for the "printer-message-from-operator" in the  
499 request, then the Printer MUST set the "printer-message-from-operator" Printer attribute to this new value  
500 and MUST also set the "printer-message-time", "printer-message-date-time", and "printer-message-  
501 operation" attributes, if supported (see sections 3.3, 3.4, and 3.5).

502 If the Printer supports the Set-Printer-Attributes operation, then it SHOULD support setting of:

503 all Job Template Default ("xxx-default") attributes

504 all Job Template Supported ("xxx-supported") attributes

505 all Job Template Ready ("xxx-ready") attributes

506 that the implementation supports (see [ipp-mod] section 4.2 and extensions).

507 The following Printer Description attributes (see [ipp-mod] section 4.4) MUST NOT be settable, i.e., they  
508 are READ-ONLY:

509 printer-state  
510 printer-state-reasons  
511 printer-state-message  
512 printer-is-accepting-jobs - see Enable-Printer/Disable-Printer  
513 queued-job-count  
514 printer-message-time - see Set-Printer-Attributes when setting "printer-message-from-operator"  
515 printer-message-date-time - see Set-Printer-Attributes when setting "printer-message-from-operator"  
516 printer-message-operation - see Set-Printer-Attributes when setting "printer-message-from-operator"  
517 printer-up-time  
518 settable-attributes

519 The remaining Printer Description attributes MAY be settable using the Set-Printer-Attributes operation,  
520 depending on implementation. If "xxx-supported" Printer Description attribute are settable, then they  
521 MUST affect the behavior of the implementation. If they are READ-ONLY then they reflect the  
522 implementation and cannot be changed using the Set-Printer-Attributes operation. Consider the following  
523 examples:

524 For example, if the "operations-supported" Printer Description attribute (see [ipp-mod] section  
525 4.4.15) is settable, then changing its value MUST affect the operations that the implementation  
526 accepts or rejects. Such an implementation will need to be able to reject values for operations that it  
527 contains no code support for.

528 As another example, if the "ipp-versions-supported" Printer Description attribute (see [ipp-mod]  
529 section 4.4.14) is settable, then changing its value MUST affect the protocol versions that are  
530 accepted or rejected. Such an implementation will need to be able to reject values for operations  
531 that it contains no code support for.

532 See the "factory-settings" operation attribute (see section 2.3) for a way to query the implementation  
533 supported values using the Get-Printer-Attributes operation. See the "reset-function" operation attribute of  
534 the Reset-Printer operation (see section 6.1.4) for a way to restore the values to the factory settings.

535 ~~For Printer attributes that are supported, some MUST be settable, some SHOULD be settable, some MAY~~  
536 ~~be settable, and some MUST NOT be settable as indicated in the following table:~~

IPP Printer Attributes	Settable?
<del>all Job Template Default attributes ("xxx-default" [ipp-mod] section 4.2 and extensions)</del>	<del>SHOULD if attribute supported</del>
<del>all Job Template Supported attributes ("xxx-supported" [ipp-mod] section 4.2 and extensions)</del>	<del>SHOULD if attribute supported</del>
<del>all Job Template Ready attributes ("xxx-ready" [ipp-mod] section 4.2 and extensions)</del>	<del>SHOULD if attribute supported</del>
<del>printer-uri-supported</del>	<del>SHOULD</del>
<del>uri-security-supported</del>	<del>SHOULD</del>
<del>uri-authentication-supported</del>	<del>SHOULD</del>
<del>printer-name</del>	<del>MAY</del>
<del>printer-location</del>	<del>SHOULD if attribute supported</del>
<del>printer-info</del>	<del>SHOULD if attribute supported</del>
<del>printer-driver-installer</del>	<del>SHOULD if attribute supported</del>
<del>printer-make-and-model</del>	<del>MAY</del>
<del>printer-more-info-manufacturer</del>	<del>MAY</del>
<del>printer-state</del>	<del>MUST NOT</del>
<del>printer-state-reasons</del>	<del>MUST NOT</del>
<del>printer-state-message</del>	<del>MUST NOT if attribute supported</del>
<del>ipp-versions-supported</del>	<del>MAY</del>
<del>operations-supported</del>	<del>SHOULD</del>
<del>ipp-multiple-document-jobs-supported</del>	<del>MUST NOT if attribute supported</del>
<del>charset-configured</del>	<del>SHOULD</del>
<del>charset-supported</del>	<del>MAY</del>
<del>natural-language-configured</del>	<del>SHOULD</del>
<del>generated-natural-language-supported</del>	<del>MAY</del>
<del>document-format-default</del>	<del>SHOULD</del>
<del>document-format-supported</del>	<del>SHOULD</del>
<del>printer-is-accepting-jobs</del>	<del>MUST NOT—see Enable Printer/Disable Printer</del>
<del>queued-job-count</del>	<del>MUST NOT</del>
<del>printer-message-from-operator</del>	<del>MUST if attribute supported</del> <del>Note: There is no "printer-message-from-operator" operation attribute for the Set-Printer-Attributes operation.</del>
<del>printer-message-date-time</del>	<del>MUST NOT if attribute supported</del>
<del>printer-message-operation</del>	<del>MUST NOT if attribute supported</del>
<del>color-supported</del>	<del>MAY if attribute supported</del>
<del>reference-uri-schemes-supported</del>	<del>MAY if attribute supported</del>
<del>pdl-override-supported</del>	<del>MUST NOT</del>
<del>printer-up-time</del>	<del>MUST NOT</del>
<del>printer-current-time</del>	<del>MAY if attribute supported</del>
<del>multiple-operation-time-out</del>	<del>SHOULD if attribute supported</del>
<del>compression-supported</del>	<del>MAY</del>
<del>job-k-octets-supported</del>	<del>SHOULD if attribute supported</del>
<del>job-impressions-supported</del>	<del>SHOULD if attribute supported</del>
<del>job-media-sheets-supported</del>	<del>SHOULD if attribute supported</del>
<del>pages-per-minute</del>	<del>MAY if attribute supported</del>
<del>pages-per-minute-color</del>	<del>MAY if attribute supported</del>

537 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
538 operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP

539 Printer MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or  
540 'client-error-not-authorized' as appropriate.

541 Most Printer attributes will require administrator privileges to set, such as "xxx-supported", while some will  
542 require operator privileges only, such as "media-ready" and "printer-message-from-operator". Which  
543 attributes require which privileges depends on implementation and MAY depend on site policy.

#### 544 6.1.1.2 Set-Printer-Attributes Request

545 The following sets of attributes are part of the Set-Printer-Attributes Request:

##### 546 Group 1: Operation Attributes

547 Natural Language and Character Set:

548 The "attributes-charset" and "attributes-natural-language" attributes as described in [ipp-mod]  
549 section 3.1.4.1.

550

551 Target:

552 The "printer-uri" (uri) operation attribute which is the target for this operation as described in [ipp-  
553 mod] section 3.1.5.

554

555 Requesting User Name:

556 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as  
557 described in [ipp-mod] section 8.3.

558

559 ~~"ipp-attribute-fidelity" (boolean):~~

560 ~~The client OPTIONALLY supplies this attribute. The Printer object MUST support this attribute.~~  
561 ~~This operation attribute is used to specify whether or not the sets are to be atomic. If 'false', or not~~  
562 ~~present, Printer sets what it can and returns the unset attribute/value pairs in the Unsupported~~  
563 ~~Attributes group. If 'true', either all supplied attributes MUST be set or the operation MUST be~~  
564 ~~rejected. All Printer objects MUST support both types of setting.~~

565

566 "document-format" (mimeMediaType):

567 The client SHOULD supply this attribute. The Printer object MUST support this attribute. This  
568 attribute is useful for a client to select the Interpreter object to which the attribute modification  
569 should be applied. Each Printer object is modeled to contain one or more Interpreter objects. Those  
570 Printer attributes whose values vary from Interpreter to Interpreter, are modeled as Interpreter  
571 objects, while those that do not are Printer object attributes. Thus the target of a Get-Printer-  
572 Attributes or Set-Printer-Attributes operation is either the Printer object or the Interpreter object  
573 identified by the "document-format" operation attribute supplied by the client. Except for Get-  
574 Printer-Attributes and Set-Printer-Attributes, there are no other operations with the Interpreter object  
575 as a target. See [ipp-mod] section 3.2.5.1 "Get-Printer-Attributes Request".

576

577 If a client wants to set an attribute of all of the Interpreter objects to the same value, it can query the  
578 Printer's "document-format-supported" Printer Description attribute and perform separate Set-  
579 Printer-Attributes for each document format supported.

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ISSUE 5: Do we need a way to get and/or set the "xxx" attribute for all Interpreter objects in one Get-Printer-Attributes or Set-Printer-Attributes operation? Or is it sufficient for a client to provide the equivalent functionality by stepping through all the values of the "document-formats-supported" with repeating the Get or Set operation?

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ISSUE 6: Ok to add the Interpreter object, even though it doesn't solve all of the attribute constraint problems. At least it gives us a more object-based description of the semantics. When we do add some sort of Printer Description attribute that enumerates combinations of Job attribute values that may not be used in combination (like PPD file constraints), it can include the "document-format" attribute among them. So introducing the Interpreter object in no way precludes a complete constraint description mechanism in the future.

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If the Printer object does not distinguish between different sets of supported values for each different document format when validating jobs in the create and Validate-Job operations, it MUST NOT distinguish between different document formats in the Set-Printer-Attributes operation. If the Printer object does distinguish between different sets of supported values for each different document format specified by the client, this specialization applies only to the same Printer attributes as the Get-Printer-Attributes operation (see [ipp-mod] section 3.2.5.1).

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If the client omits this "document-format" operation attribute, the Printer object MUST respond as if the attribute had been supplied with the value of the Printer object's "document-format-default" attribute. It is recommended that the client always supply a value for "document-format", since the Printer object's "document-format-default" may be 'application/octet-stream', in which case the set attributes and values are for the union of the document formats that the Printer can automatically sense. For more details, see the description of the 'mimeType' attribute syntax in [ipp-mod] section 4.1.9.

607

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611

If the client supplies a value for the "document-format" Operation attribute that is not supported by the Printer, i.e., is not among the values of the Printer object's "document-format-supported" attribute, the Printer object MUST reject the operation and return the 'client-error-document-format-not-supported' status code.

612

613

## Group 2: Printer Attributes

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The client MUST supply a set of Printer attributes as defined in [ipp-mod] section 4.2 Job Template Attributes ("xxx-default", "xxx-supported", and "xxx-ready" attributes) and section 4.4 Printer Description Attributes. Each Printer attribute supplied in Group 2 replaces the value(s) of the corresponding Printer attribute on the target Printer object. If a Printer object attribute had not been configured yet and so had the 'no-value' out-of-band value (see [ipp-mod] 4.1), the supplied value(s) replace the 'no-value' value. For attributes that can have multiple values (1setOf), all values supplied by the client replace all values of the corresponding Printer object attribute.

621

## 622 6.1.1.3 Set-Printer-Attributes Response

623 The Printer object returns the following sets of attributes as part of the Get-Printer-Attributes Response:

## 624 Group 1: Operation Attributes

## 625 Status Message:

626 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY  
627 includes a "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) operation  
628 attribute as described in [ipp-mod] sections 13 and 3.1.6.

## 630 Natural Language and Character Set:

631 The "attributes-charset" and "attributes-natural-language" attributes as described in [ipp-mod]  
632 section 3.1.4.2.

633

## 634 Group 2: Unsupported Attributes

635 See [ipp-mod] section 3.1.7 for details on returning Unsupported Attributes.

636

637 In the case of attributes that are supported, but are not settable by the implementation, i.e., are not  
638 among the values of the Printer's "settable-attributes" Printer Description attribute (see section 3.1)  
639 (see table above), the Printer object returns the client-supplied attribute(s) with a substituted value  
640 of 'not-~~settable~~supported' (same out-of-band value as for attributes that are not supported). This  
641 value's syntax type is "out-of-band" and its encoding is defined by special rules for "out-of-band"  
642 values in the "Encoding and Transport" document [IPP-PRO]. Its value indicates that the attribute  
643 is either not settable or is not supported at all. ~~Group 2 is returned independent of the value for the~~  
644 ~~"ipp-attribute-fidelity" attribute supplied by the client.~~

645

646 **ISSUE 7: Why not have a separate out-of-band 'not-settable' value, so that the client can distinguish**  
647 **between the cases of the attribute isn't supported versus the attribute is supported, but is not**  
648 **settable? True, the client can query the "settable-attributes" to see which attributes can be set,**  
649 **before or after issuing the Set-Printer-Attributes operation.**

650

## 651 6.1.2 Disable-Printer Operation

652 Type of registration: operation

653 Proposed name of this operation: Disable-Printer

654 Object Target: Printer

655 Specification of this operation:

656 This OPTIONAL operation allows a client to stop the Printer object from accepting jobs, i.e., cause the  
657 Printer to reject subsequent create job operations (Print-Job, Print-URI, and Create-Job operation) and  
658 return the 'server-error-not-accepting-jobs' status code. The Printer still accepts all other operations. All  
659 previously submitted Jobs and currently processing Jobs continue unaffected. The Printer sets the value of  
660 its "printer-is-accepting-jobs" ~~read-only~~READ-ONLY Printer Description attribute to 'false' (see [ipp-mod])

661 section 4.4.20), no matter what the previous value was. This operation has no immediate effect on the  
662 Printer's "printer-state" and "printer-state-reasons" attributes.

663 Note: Use the Enable-Printer operation (section 6.1.3) to enable a Printer to accept Jobs again.

664 If the Disable-Printer operation is supported, then the Enable-Printer operation MUST be supported, and  
665 vice-versa.

666 Note: Use the Enable-Printer and Disable-Printer operations to allow or prevent input to a Printer. Use the  
667 Pause-Printer and Resume-Printer operations to prevent or allow output from the Printer.

668 Whether or not the Disable-Printer operation stops jobs that are submitted using job submission protocols  
669 other than IPP, depends on implementation, i.e., on whether the IPP protocol is being used as a universal  
670 management protocol or just to manage IPP jobs, respectively. See "printer-controls-other-protocols"  
671 (section 3.2).

672 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
673 operator or administrator of the Printer object (see [ipp-mod] Sections 1 and 8.5). Otherwise, the IPP  
674 Printer MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or  
675 'client-error-not-authorized' as appropriate.

676 The Disable-Printer Request and Disable-Printer Response have the same attribute groups and attributes as  
677 the PauseResume-Printer operation (see [ipp-mod] sections 3.2.7.1 and 3.2.7.2), including the new "printer-  
678 message-from-operator" operation attribute (see section 2.1), and with the addition of the following Group  
679 1 operation attribute in the request:-

680 "job-type" (type2 keyword):

681 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
682 attribute. The value of this attribute indicates the type of job to be disabled. If the client omits this  
683 attribute, the Printer assumes the 'network-jobs' value.

684 Standard keyword values are:

685 'network-jobs' - disable jobs submitted using the create job operations.

686 'walk-up-jobs' - disable jobs submitted locally, such as walkup copy jobs

687 'all-jobs' - disable all type of jobs

### 689 6.1.3 Enable-Printer Operation

690 Type of registration: operation

691 Proposed name of this operation: Enable-Printer

692 Object Target: Printer

693 Specification of this operation:

694 This OPTIONAL operation allows a client to start the Printer object accepting jobs, i.e., cause the Printer to  
695 accept subsequent create job operations (Print-Job, Print-URI, and Create-Job operation). The Printer still  
696 accepts all other operations. All previously submitted Jobs and currently processing Jobs continue  
697 unaffected. The Printer sets the value of its "printer-is-accepting-jobs" ~~read-only~~READ-ONLY Printer

698 Description attribute to 'true' (see [ipp-mod] section 4.4.20), no matter what the previous value was. This  
699 operation has no immediate effect on the Printer's "printer-state" and "printer-state-reasons" attributes.

700 Note: Use the Disable-Printer operation (section 6.1.2) to stop a Printer from accepting Jobs.

701 If the Enable-Printer operation is supported, then the Disable-Printer operation MUST be supported, and  
702 vice-versa.

703 Note: Use the Enable-Printer and Disable-Printer operations to allow or prevent input to a Printer. Use the  
704 Pause-Printer and Resume-Printer operations to prevent or allow output from the Printer.

705 Whether or not the Enable-Printer operation allows acceptance of jobs that are submitted using job  
706 submission protocols other than IPP, depends on implementation, i.e., on whether the IPP protocol is being  
707 used as a universal management protocol or just to manage IPP jobs, respectively. See "printer-controls-  
708 other-protocols" (section 3.2).

709 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
710 operator or administrator of the Printer object (see [ipp-mod] Sections 1 and 8.5). Otherwise, the IPP  
711 Printer MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or  
712 'client-error-not-authorized' as appropriate.

713 The Enable-Printer Request and Enable-Printer Response have the same attribute groups and attributes as  
714 the PauseResume-Printer operation (see [ipp-mod] sections 3.2.87.1 and 3.2.87.2), including the new  
715 "printer-message-from-operator" operation attribute (see section 2.1), and with the addition of the  
716 following Group 1 operation attribute in the request:

717 "job-type" (type2 keyword):

718 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
719 attribute. The value of this attribute indicates the type of job to be enabled. If the client omits this  
720 attribute, the Printer assumes the 'network-jobs' value.

721 Standard keyword values are:

722 'network-jobs' - enable jobs submitted using the create job operations.

723 'walk-up-jobs' - enable jobs submitted locally, such as walkup copy jobs

724 'all-jobs' - enable all types of jobs

#### 726 6.1.4 Reset-Printer operation

727 Type of registration: operation

728 Proposed name of this operation: Reset-Printer

729 Object Target: Printer

730 Specification of this operation:

731 This OPTIONAL operation allows a client to reset the Printer in a number of ways, depending on the  
732 "reset-function" operation attribute. The keyword values of this attribute map one-to-one to the enum  
733 values that the NMS writes into the prtGeneralReset object in the Printer MIB [RFC1759] to affect a reset  
734 operation. As in the Printer MIB, the 'reset-to-nvram' (soft reset) value MUST be supported, if this  
735 operation is supported. The other values are OPTIONAL.



736 As is says in the Printer MIB specification, if a device does not have NVRAM (non-volatile RAM), the  
737 device MUST none-the-less respond to this operation for the 'reset-to-nvram' value with some sort of warm  
738 reset that resets the device to some implementation-defined state that is preferably under control of the  
739 system administrator by some means outside the scope of the Printer MIB and this document.

740 The effect of this operation on the currently processing job(s), if any, is not specified by this document.  
741 Note: If this operation does affect the current job(s), it is expected that the operator would issue this  
742 operation on a Printer in the 'idle' state after disabling the Printer with the Disable operation in order to  
743 prevent a job from inadvertently being affected by this operation.

744 The Printer object MUST accept this operation in any state and transition the Printer object to the 'idle'  
745 state.

746 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
747 operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP object  
748 MUST reject the operation and return: client-error-forbidden, client-error-not-authenticated, and client-  
749 error-not-authorized as appropriate.

750 The Reset-Printer Request and Reset-Printer Response have the same attribute groups and attributes as the  
751 Pause-Printer operation (see [ipp-mod] sections 3.2.7.1 and 3.2.7.2), including the new "printer-message-  
752 from-operator" operation attribute (see section 2.1), the new "when" operation attribute (see section 2.4),  
753 and with the addition of the following Group 1 operation attributes in the request:

754 "reset-function" (type3 keyword):

755 The client OPTIONALLY supplies this attribute. The Printer object MUST support this attribute, if  
756 it supports this operation. The value of this attribute indicates the reset function to be performed. If  
757 the client omits this attribute, the Printer assumes the 'reset-to-nvram' value.

758

759 Standard keyword values are:

760 'power-cycle-reset' - Cold start, i.e., to the state when the device is powered up.

761 'reset-to-nvram' - Warm start.

762 'reset-to-factory-defaults' - reset NVRAM to factory defaults, i.e. to factory settings and/or  
763 values established at install time.

764

765 "non-process-run-out" (boolean):

766 The client OPTIONALLY supplies this operation attribute. The IPP object OPTIONALLY supports  
767 this operation attribute, if it is able to perform a non-process-run-out, i.e., remove the last few  
768 printed sheets of a job that is finished printing on a continuous-forms printer. Normally, on such a  
769 printer, the last sheets of a job remain in the printer and are forced out by the next job, thereby  
770 saving time when printing one job after another. This attribute indicates whether or not the printer  
771 is to perform "non-process run-out", i.e., move the last printed sheet to the stacker, before resetting  
772 the Printer.

773

774 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
775 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
776 assumed to perform non-process run-out ('true' behavior). **ISSUE 8: Is the "non-process-run-out"**

777 operation attribute really needed at all or can the default behavior for Reset-Printer be defined to be  
778 to perform non-process run out (for continuous and cut sheet printers)?

#### 779 6.1.5 Restart-Printer operation

780 Type of registration: operation

781 Proposed name of this operation: Restart-Printer

782 Object Target: Printer

783 Specification of this operation:

784 This OPTIONAL operation allows a client to restart a Printer that has previously been shutdown in standby  
785 mode (see section 6.1.6). Standby mode is indicated by the Printer's "printer-state" being ~~'idle'~~ **'stopped'** and  
786 its "printer-state-reasons" including the 'standby' **and 'paused'** values. If the Printer is not in standby mode,  
787 the Printer MUST reject this operation and return the 'client-error-not-possible' status code.

788 **ISSUE 9: What state does the Printer comes back up on Restart-Printer and how can the client control?**  
789 **Possible alternatives:**

790 a. Restart-Printer always brings the Printer up Disabled ("printer-is-accepting-jobs" = 'false') and  
791 Paused ("printer-state" = 'stopped', and "printer-state-reasons" = 'paused') which is the state that  
792 Shutdown-Printer leaves the Printer in. Then the operator issues Enable-Printer and Resume-Printer  
793 when want to restore normal operation. The client can automatically issues these addition 2  
794 operations depending on GUI options. Advantages: This is the simplest to implement, allows new  
795 states to be added without changing the Restart-Printer operation, and can have the same GUI  
796 interface as b:

797 b. Add a REQUIRED operation attribute to Restart-Printer, something like "printer-condition" with  
798 values: 'disabled-and-paused', 'enabled-and-paused', and 'enabled-and-idle'.

799 ~~e. Have Restart-Printer restore the enable/disable and paused/idle state to what it was when the~~  
800 ~~Shutdown-Printer was issued. The operation has to plan ahead at Shutdown-Printer time.~~

801 If the Restart-Printer operation is supported, then the Shutdown-Printer operation MUST be supported.

802 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
803 operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP object  
804 MUST reject the operation and return: client-error-forbidden, client-error-not-authenticated, and client-  
805 error-not-authorized as appropriate.

806 The Restart-Printer Request and Restart-Printer Response have the same attribute groups and attributes as  
807 the ~~Pause~~**Resume**-Printer operation (see [ipp-mod] sections 3.2.~~87~~.1 and 3.2.~~87~~.2), including the new  
808 "printer-message-from-operator" operation attribute (see section 2.1) and the following Group 1 operation  
809 attribute:

810 "non-process-run-out" (boolean):

811 The client OPTIONALLY supplies this operation attribute. The IPP object OPTIONALLY supports  
812 this operation attribute, if it is able to perform a non-process-run-out, i.e., remove the last few

813 printed sheets of a job that is finished printing on a continuous-forms printer. Normally, on such a  
 814 printer, the last sheets of a job remain in the printer and are forced out by the next job, thereby  
 815 saving time when printing one job after another. This attribute indicates whether or not the printer  
 816 is to perform "non-process run-out", i.e., move the last printed sheet to the stacker, as part of  
 817 restarting the Printer.

818 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
 819 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
 820 assumed to perform non-process run-out ('true' behavior). **ISSUE 10: Is the "non-process-run-out"**  
 821 **operation attribute really needed at all or can the default behavior for Restart-Printer be defined to**  
 822 **be to perform non-process run out (for continuous and cut sheet printers)?**

### 823 ~~6.1.6Space-Printer operation~~

824 ~~Type of registration: operation~~

825 ~~Proposed name of this operation: Space-Printer~~

826 ~~Object Target: Printer~~

827 ~~Specification of this operation:~~

828 ~~This OPTIONAL operation allows a client to repeat or skip a specified number of impressions on the target~~  
 829 ~~Printer. The Printer repeats or skips the indicated number of impressions specified by the "back-space" or~~  
 830 ~~"forward-space" operation attribute, respectively. This operation is typically supported in a continuous~~  
 831 ~~forms implementation for synchronizing the web after forms run out or media change.~~

832 ~~The Printer MUST accept this request in any state and whether or not there is a current job.~~

833 ~~Access Rights: The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an~~  
 834 ~~operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP object~~  
 835 ~~MUST reject the operation and return: client-error-forbidden, client-error-not-authenticated, and client-~~  
 836 ~~error-not-authorized as appropriate.~~

837 ~~The Reset-Printer-Request and Reset-Printer-Response have the same attribute groups and attributes as the~~  
 838 ~~Pause-Printer operation (see [ipp-mod] sections 3.2.7.1 and 3.2.7.2), including the new "printer-message-~~  
 839 ~~from-operator" operation attribute (see section 2.1), and with the addition of the following Group-1~~  
 840 ~~operation attributes in the request:~~

841 ~~"back-space" (integer(1:MAX)):~~

842 ~~The client OPTIONALLY supplies this Operation attribute. The IPP object OPTIONALLY~~  
 843 ~~supports this operation attribute, if it is able to repeat impressions.~~

844 ~~If the client supplies a value that specifies more impressions than the job has performed, the job is~~  
 845 ~~positioned at the beginning without any indication.~~

846 ~~"forward-space" (integer(1:MAX)):~~

847 ~~The client OPTIONALLY supplies this Operation attribute. The IPP object OPTIONALLY~~  
 848 ~~supports this operation attribute, if it is able to skip impressions.~~

849 ~~If the client supplies a value that specifies more impressions than remain in the job, the job is~~  
850 ~~positioned at the end without any indication.~~

851 ~~"non-process-run-out" (boolean):~~

852 ~~The client OPTIONALLY supplies this operation attribute. The IPP object OPTIONALLY supports~~  
853 ~~this operation attribute, if it is able to perform a non-process-run-out, i.e., remove the last few~~  
854 ~~printed sheets of a job that is finished printing on a continuous forms printer. Normally, on such a~~  
855 ~~printer, the last sheets of a job remain in the printer and are forced out by the next job, thereby~~  
856 ~~saving time when printing one job after another. This attribute indicates whether or not the printer~~  
857 ~~is to perform "non-process-run-out", i.e., move the last printed sheet to the stacker, after spacing the~~  
858 ~~Printer.~~

860 ~~If the client does not supply this attribute and the attribute is supported, the Printer does not perform~~  
861 ~~non-process-run-out ('false' behavior). If the Printer does not support this attribute, the Printer is~~  
862 ~~assumed to perform non-process-run-out ('true' behavior). ISSUE 4: Is the "non-process-run-out"~~  
863 ~~operation attribute really needed at all or can the default behavior for Space-Printer be defined to be~~  
864 ~~to perform non-process-run-out (for continuous and cut sheet printers)?~~

## 865 6.1.6 Shutdown-Printer Operation

866 Type of registration: operation

867 Proposed name of this operation: Shutdown-Printer

868 Object Target: Printer

869 Specification of this operation:

870 This OPTIONAL operation allows a client to shut-down a Printer, i.e., stop processing jobs. The purpose  
871 of Shutdown-Printer is to shutdown the Printer for an extended period, not to reset the device(s) or modify a  
872 Printer attribute. See Reset-Printer (section 6.1.4) for the way to reset the device(s).

873 Whether the device is powered down or put into standby mode, depends on the value of the "shutdown-  
874 function" operation attribute. If the value is 'power-off', or the "shutdown-function" attribute is omitted, the  
875 Printer adds the 'shutdown' value (see [ipp-mod] section 4.4.11) to its "printer-state-reasons" Printer  
876 Description attribute immediately. If the value is 'standby', the Printer adds the 'standby' value to its  
877 "printer-state-reasons" Printer Description attribute immediately. The execution of the rest of the operation  
878 is the same for either value: The Printer is disabled immediately (see the Disable-Printer operation in  
879 section 6.1.2). The "when" operation attribute specifies how much processing occurs before the Printer is  
880 paused (see [ipp-mod] section 3.2.7) and the shutdown is complete~~takes place~~. All other requests continue  
881 to be accepted until the printer is powered down or enters standby mode. In standby mode, the Printer acts  
882 as if a Pause-Printer had gone to completion, MUST continue to accept the Restart-Printer and Get-Printer-  
883 Attribute requests, and MUST reject all other requests returning the 'server-error-printer-is-in-standby-  
884 mode' status code.

885 ISSUE 11 - Need to look at life cycle of the Printer versus standby/power-down and the other operations  
886 that can be accepted. There can be appreciable time between acceptance of this operation and when the  
887 final state of the printer, either standby or powered down is reached. Is it ok for non-submission operations  
888 to continue to be accepted during this time? May need 'moving-to-shutdown'. What about 'moving-to-  
889 standby'?

890 Whether or not the Shutdown-Printer operation affects jobs that were submitted to the device using job  
891 submission protocols other than IPP, depends on implementation, i.e., on whether the IPP protocol is being  
892 used as a universal management protocol or just to manage IPP jobs, respectively. See "printer-controls-  
893 other-protocols" (section 3.2).

894 The Printer object MUST accept this operation in any state and transition the Printer object to the 'idle'  
895 state.

896 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
897 operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP object  
898 MUST reject the operation and return: client-error-forbidden, client-error-not-authenticated, and client-  
899 error-not-authorized as appropriate.

900 The Shutdown-Printer Request and Shutdown-Printer Response have the same attribute groups and  
901 attributes as the Pause-Printer operation (see [ipp-mod] sections 3.2.7.1 and 3.2.7.2), including the new  
902 "printer-message-from-operator" operation attribute (see section 2.1), the new "when" operation attribute  
903 (see section 2.4), and with the addition of the following Group 1 operation attributes in the request:

904 "shutdown-function" (type2 keyword)

905 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
906 attribute. This attribute indicates which shutdown function is to be performed.

907  
908 Standard keyword values are:

909 'standby' - shutdown the Printer, but leave it in standby-mode (disabled and paused), which  
910 means that Get-Printer-Attributes and Restart-Printer operations are accepted.

911 'power-off' - shutdown the Printer and power it off. No operations are accepted after power  
912 off.

913  
914 "non-process-run-out" (boolean)

915 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
916 attribute, if it is able to perform a non-process-run-out, i.e., remove the last few printed sheets of a  
917 job that is finished printing on a continuous-forms printer. Normally, on such a printer, the last  
918 sheets of a job remain in the printer and are forced out by the next job, thereby saving time when  
919 printing one job after another. This attribute indicates whether or not the printer is to perform "non-  
920 process run-out", i.e., move the last printed sheet to the stacker, before shutting down.

921  
922 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
923 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
924 assumed to perform non-process run-out ('true' behavior).

925 **ISSUE 12: Is the "non-process-run-out" operation attribute really needed at all or can the default**  
926 **behavior for Shutdown-Printer be defined to be to perform non-process run out (for continuous and**  
927 **cut sheet printers)?**

928 "synchronize" (boolean)

929 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
930 attribute. This attribute indicates whether or not the printer is to synchronize the checkpoint data for  
931 the current job ("when" = 'now') with the pages that have actually printed. If the value of the "when"

932 attribute is not 'now' or the "when" attribute is not supplied, then the "synchronize" attribute has no  
933 meaning and the Printer MUST ignore it. If this attribute is supported, then a value of 'true' implies  
934 that the Printer will be able to resume the job at the point of synchronization when the Printer is  
935 restarted. If the implementation does not support resuming a job (either automatically or with the  
936 Resume-Job operation) after a Shutdown-Printer with "when" = 'now', then it does not implement  
937 this attribute.

938 ISSUE 13: It isn't clear which type of checkpointing is being suggested for synchronize: checkpoint  
939 a stream or checkpoint in a job that is on a disk file in the printer.

940  
941 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
942 synchronization ('false' behavior). If the Printer does not support this attribute, the Printer is  
943 assumed to not synchronize ('false' behavior).

944 ISSUE 14: Do we really need the "synchronize" operation attribute for the Shutdown-Printer  
945 operation or can synchronization be the default behavior of the Shutdown-Printer operation? It is  
946 not clear why this would ever be false? If it never makes sense to be 'false', can we remove it  
947 altogether?

948 ISSUE 15: Is the current job automatically restarted when the Printer is restarted? Or does some  
949 client have to issue a Restart-Job operation?

## 950 6.2 Job Operations

951 All Job operations are directed at Job objects. A client MUST always supply some means of identifying the  
952 Job object in order to identify the correct target of the operation. That job identification MAY either be a  
953 single Job URI or a combination of a Printer URI with a Job ID. The IPP object implementation MUST  
954 support both forms of identification for every job.

### 955 6.2.1 Set-Job-Attributes

956 Type of registration: operation

957 Proposed name of this operation: Set-Job-Attributes

958 Object Target: Job

959 Specification of this operation:

960 This OPTIONAL operation allows a client to set the values of the attributes of a Job object. In the request,  
961 the client supplies the set of Job attribute names and values that are to be set. In the response, the IPP  
962 object returns success or rejects the request with indications of which attribute or attributes could not be set.

963 This operation is almost identical to the Set-Printer-Attributes operation (see section 6.1.1). The only  
964 differences are that the Set-Job-Attributes operation is directed at a Job object rather than a Printer object,  
965 there is no "document-format" operation attribute used when setting a Job object, and the validation is the  
966 same as the create job operations, i.e., depends on the "xxx-supported" Printer Description attributes.

967 The validation of the Set-Job-Attributes request is performed as if the job had been submitted originally  
968 with the new values and with "ipp-attribute-fidelity" set to 'true', i.e., all modified attributes MUST be  
969 supported along with the attributes not modified. If such a create job operation would have been accepted,

970 then the Set-Job-Attributes MUST be accepted. If such a create job operation would have been rejected,  
 971 then the Set-Job-Attributes MUST be rejected and the Job MUST be unchanged.

972 The IPP object MUST accept or reject the request based on the job's current state and transition the job to  
 973 the indicated new state as follows:

Current "job-state"	New "job-state"	IPP object's response status code and action:
'pending'	'pending'	'successful-ok'
'pending'	'pending-held'	'successful-ok' - needed resources are not ready
'pending-held'	'pending-held'	'successful-ok'
'pending-held'	'pending'	'successful-ok' - needed resources are ready
'processing'	'processing'	'successful-ok' or 'client-error-not-possible' depending on the attributes being set, whether the job has started marking media, and/or implementation
'processing-stopped'	'processing-stopped'	'successful-ok' or 'client-error-not-possible' depending on the attributes being set, whether the job has started marking media, and/or implementation
'completed'	'completed'	'client-error-not-possible'
'canceled'	'canceled'	'client-error-not-possible'
'aborted'	'aborted'	'client-error-not-possible'

974 6.2.1.1 Settable and READ-ONLY Job Description attributes

975 If the Printer supports the "job-message-from-operator" Job Description attribute (see [ipp-mod] section  
 976 4.3.16) and the client explicitly supplies a new value for the "job-message-from-operator" in the request,  
 977 then the Printer MUST set the "job-message-from-operator" Job attribute to this new value.

978 If the Printer supports the Set-Job-Attributes operation, then it SHOULD support setting of:  
 979 all Job Template ("xxx") attributes (see [ipp-mod] section 4.2 and extensions)  
 980 that the implementation supports.

981 The following Job Description attributes (see [ipp-mod] section 4.3) MUST NOT be settable, i.e., they are  
 982 READ-ONLY:

983 [job-uri](#)  
984 [job-id](#)  
985 [job-printer-uri](#)  
986 [job-more-info](#)  
987 [job-originating-user-name - set in create operation](#)  
988 [job-state](#)  
989 [job-state-reasons](#)  
990 [job-state-message](#)  
991 [number-of-documents](#)  
992 [output-device-assigned](#)  
993 [time-at-creation](#)  
994 [time-at-processing](#)  
995 [time-at-completed](#)  
996 [job-printer-up-time](#)  
997 [date-time-at-creation](#)  
998 [date-time-at-processing](#)  
999 [date-time-at-completed](#)  
1000 [number-of-intervening-jobs](#)  
1001 [job-k-octets](#)  
1002 [job-k-octets-processed](#)  
1003 [job-impressions-completed](#)  
1004 [job-media-sheets-completed](#)  
1005 [attributes-charset - set in create operation](#)  
1006 [attributes-natural-language - set in create operation](#)

1007 The remaining Job Description attributes MAY be settable using the Set-Job-Attributes operation,  
1008 depending on implementation.

1009 ~~For Job attributes that are supported, some MUST be settable, some SHOULD be settable, some MAY be~~  
1010 ~~settable, and some MUST NOT be settable as indicated in the following table:~~



IPP Job Attributes	Settable?
all Job Template Job attributes (" <del>xxx</del> " [ <del>ipp-mod</del> ] section 4.2 and extensions)	SHOULD if attribute supported
<del>job-uri</del>	MUST NOT
<del>job-id</del>	MUST NOT
<del>job-printer-uri</del>	MUST NOT
<del>job-more-info</del>	MUST NOT if attribute supported
<del>job-name</del>	MUST—also set in create operation
<del>job-originating-user-name</del>	MUST NOT—set in create operation
<del>job-state</del>	MUST NOT
<del>job-state-reasons</del>	MUST NOT
<del>job-state-message</del>	MUST NOT if attribute supported
<del>number-of-documents</del>	MUST NOT
<del>output-device-assigned</del>	MUST NOT
<del>time-at-creation</del>	MUST NOT
<del>time-at-processing</del>	MUST NOT
<del>time-at-completed</del>	MUST NOT
<del>job-printer-up-time</del>	MUST NOT
<del>date-time-at-creation</del>	MUST NOT if attribute supported
<del>date-time-at-processing</del>	MUST NOT if attribute supported
<del>date-time-at-completed</del>	MUST NOT if attribute supported
<del>number-of-intervening-jobs</del>	MUST NOT if attribute supported
<del>job-message-from-operator</del>	MUST if attribute supported Note: There is no "job-message-from-operator" operation attribute for the Set Job-Attributes operation.
<del>job-k-octets</del>	MUST NOT if attribute supported
<del>job-impressions</del>	MAY if attribute supported—see Rule 1
<del>job-media-sheets</del>	MAY if attribute supported—see Rule 1
<del>job-k-octets-processed</del>	MUST NOT if attribute supported
<del>job-impressions-completed</del>	MUST NOT if attribute supported
<del>job-media-sheets-completed</del>	MUST NOT if attribute supported
<del>attributes-charset</del>	MUST NOT—set in create operation
<del>attributes-natural-language</del>	MUST NOT—set in create operation

1011 ~~Rule 1—However, an implementation MAY refuse to allow this Job Description attribute to be set, if it has~~  
 1012 ~~determined a more reliable value from the document content.~~

1013 Whether or not the Set-Job-Attributes operation affects jobs that are submitted using job submission  
 1014 protocols other than IPP, depends on implementation, i.e., on whether the IPP protocol is being used as a  
 1015 universal management protocol or just to manage IPP jobs, respectively. See "printer-controls-other-  
 1016 protocols" (section 3.2).

1017 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
 1018 the job owner or an operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5).  
 1019 Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-  
 1020 authenticated', or 'client-error-not-authorized' as appropriate.

## 1021 6.2.1.2 Set-Job-Attributes Request

1022 The following sets of attributes are part of the Set-Job-Attributes Request:

## 1023 Group 1: Operation Attributes

1024 Natural Language and Character Set:

1025 The "attributes-charset" and "attributes-natural-language" attributes as described in [ipp-mod]  
1026 section 3.1.4.1.

1027

1028 Target:

1029 Either (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) operation  
1030 attribute(s) which define the target for this operation as described in [ipp-mod] section 3.1.5.

1031

1032 Requesting User Name:

1033 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as  
1034 described in [ipp-mod] section 8.3.

1035

1036 ~~"ipp-attribute-fidelity" (boolean):~~1037 ~~The client OPTIONALLY supplies this attribute. The Printer object MUST support this attribute if~~  
1038 ~~it supports this operation. This operation attribute is used to specify whether or not the sets are to be~~  
1039 ~~atomic. If 'false', or not present, the Printer sets what it can and returns the unset attribute/value~~  
1040 ~~pairs in the Unsupported Attributes group. If 'true', either all supplied attributes MUST be set or the~~  
1041 ~~operation MUST be rejected. All Printer objects MUST support both types of setting. See [ipp-~~  
1042 ~~mod] section 15 for a full description of "ipp-attribute-fidelity" and its relationship to other~~  
1043 ~~attributes, especially the Printer object's "pdl-override-supported" attribute.~~

1044

## 1045 Group 2: Job Attributes

1046 The client MUST supply a set of Job attributes as defined in [ipp-mod] section 4.2 Job Template  
1047 Attributes ("xxx" attributes) and section 4.3 Job Description Attributes. Each Job attribute supplied  
1048 in Group 2 replaces the value(s) of the corresponding Job attribute on the target Job object. For  
1049 attributes that can have multiple values (1setOf), all values supplied by the client replace all values  
1050 of the corresponding Job object attribute.

1051

## 1052 6.2.1.3 Set-Job-Attributes Response

1053 The Printer object returns the following sets of attributes as part of the Set-Job-Attributes Response:

## 1054 Group 1: Operation Attributes

1055 Status Message:

1056 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY  
1057 includes a "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) operation  
1058 attribute as described in [ipp-mod] sections 13 and 3.1.6.

1059

## Natural Language and Character Set:

The "attributes-charset" and "attributes-natural-language" attributes as described in [ipp-mod] section 3.1.4.2.

## Group 2: Unsupported Attributes

See [ipp-mod] section 3.1.7 for details on returning Unsupported Attributes.

The attributes returned are the same as for the create operation with the same new attribute values.

~~However, i~~In the case of attributes that are supported, but are not settable by the implementation, i.e., are not among the values of the Printer's "settable-attributes" Printer Description attribute (see section 3.1) (see table above), the Printer object returns the client-supplied attribute(s) with a substituted value of 'not-settable-supported' (same out-of-band value as for attributes that are not supported). This value's syntax type is "out-of-band" and its encoding is defined by special rules for "out-of-band" values in the "Encoding and Transport" document [IPP-PRO]. Its value indicates that the attribute is either not settable or is not supported at all.

~~Group 2 is returned independent of the value for the "ipp-attribute-fidelity" attribute supplied by the client. However, if "ipp-attribute-fidelity" is 'true', the 'client-error-attributes-not-settable' status code is returned. If "ipp-attribute-fidelity" is 'false', the 'successful-ok-ignored-or-substituted-attributes' status code is returned.~~

## 6.2.2 Reprocess-Job Operation

This OPTIONAL operation is a create job operation that allows a client to re-process a copy of a job that had been retained in the queue after processing completed, was canceled, or was aborted (see [ipp-mod] section 4.3.7.2). This operation is the same as the Restart-Job operation (see [ipp-mod] section 3.3.7), except that the Printer creates a new job that is a copy of the target job and the target job is unchanged. The new job is assigned new values to the "job-uri" and "job-id" attributes and the new job's Job Description attributes that accumulate job progress, such as "job-impressions-completed", "job-media-sheets-completed", and "job-k-octets-processed", are initialized to 0 as with any create job operation. The target job moves to the Job History after a suitable period, independent of whether one or more Reprocess-Job operations have been performed on it.

If the Set-Job-Attributes operation is supported, then the "job-hold-until" operation attribute MUST be supported with at least the 'indefinite' value, so that a client can modify the new job before it is scheduled for processing using the Set-Job-Attributes operation. After modifying the job, the client can release the job for processing, by using the Release-Job operation specifying the newly assigned "job-uri" or "job-id" for the new job.

## 6.2.3 Cancel-Current-Job Operation

This OPTIONAL operation allows a client to cancel the current job on the target Printer or the specified job if it is the current job on the Printer. See [ipp-mod] section 3.3.3 for the semantics of canceling a job.

1099 Since a Job might already be marking by the time a Cancel-Current-Job is received, some media sheet  
1100 pages might be printed before the job is actually terminated.

1101 If the client does not supply a "job-id" operation attribute, the Printer MUST accept the request and cancel  
1102 the current job if there is a current job in the 'processing' or 'processing-stopped' state; otherwise, it MUST  
1103 reject the request and return the 'client-error-not-possible' status code. If there are no jobs in the 'processing'  
1104 or 'processing-stopped' states, the Printer rejects the request and returns the 'client-error-not-possible' status  
1105 code. Otherwise, the Printer MUST perform the Cancel-Current-Job request, as if the client had supplied  
1106 the "job-uri" or the "job-id" of the current job in a Cancel Job operation. If more than one job is in the  
1107 'processing' or 'processing-stopped' states, the one that is marking is canceled and the others are unaffected.

1108 Warning: On a shared printer, there is a race condition. Between the time that a user issues this operation  
1109 and its acceptance, the current job might change to a different job. If the user or operator is authenticated to  
1110 cancel the new job, the wrong job is canceled. To prevent this race from canceling the wrong job, the client  
1111 can MAY supply the "job-id" operation attribute which is checked against the current job's job-id. If the  
1112 job identified by the "job-id" attribute is not the current job on the Printer, i.e., is not in the 'processing' or  
1113 'processing-stopped' states, the Printer MUST reject this operation and return the 'client-error-not-possible'  
1114 status code. Otherwise, the Printer cancels the specified job.

1115 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
1116 the job owner of the current job or an operator or administrator of the Printer object (see [ipp-mod] sections  
1117 1 and 8.5). Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden', 'client-  
1118 error-not-authenticated', or 'client-error-not-authorized' as appropriate.

1119 The Cancel-Current-Job Request and Cancel-Current-Job Response have the same attribute groups and  
1120 attributes as the PauseResume-Printer operation (see [ipp-mod] sections 3.2.87.1 and 3.2.7.2), including the  
1121 new "job-message-from-operator" operation attribute (see section 2.2), with the addition of the following  
1122 Group 1 Operation attributes in the request:

1123 "job-id" (integer(1:MAX)):

1124 The client OPTIONALLY supplies this Operation attribute in order to verify that the identified job  
1125 is still the current job on the target Printer object. The IPP object MUST supports this operation  
1126 attribute, if it supports this operation.

1127 "non-process-run-out" (boolean):

1128 The client OPTIONALLY supplies this Operation attribute. The IPP object OPTIONALLY  
1129 supports this operation attribute, if it is able to perform a non-process-run-out, i.e., remove the last  
1130 few printed sheets of a job that is finished printing on a continuous-forms printer. Normally, on  
1131 such a printer, the last sheets of a job remain in the printer and are forced out by the next job,  
1132 thereby saving time when printing one job after another. However, when canceling the current job it  
1133 is desirable to move the end of the canceled job to the stacker. This attribute indicates whether or  
1134 not the printer is to perform "non-process run-out", i.e., move the last printed sheet to the stacker,  
1135 after canceling the current job.

1136

1137 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
1138 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
1139 assumed to perform non-process run-out ('true' behavior).

1140 **ISSUE 16: Why isn't non-process-run-out automatic on a continuous form printer? When would an**  
1141 **operator want to cancel the job and NOT run out the last sheets.? It would be simpler to require**  
1142 **process-run-out when canceling the current job (for continuous and cut sheet printers).**

#### 1143 6.2.4 Pause-~~Current~~-Job operation

1144 This OPTIONAL operation allows a client to stop the current job on the target Printer or the target-specified  
1145 job if it is the current job on the Printer, and allow other jobs to be processed instead. The Printer moves  
1146 the current job or the target job to the 'pending-heldprocessing-stopped' state and sets the 'job-paused' value  
1147 in the job's "job-state-reasons" attribute and processes other jobs. ~~ISSUE 9: Or should the job's state be~~  
1148 ~~'processing-stopped' after a Pause-Job or Pause-Current-Job operation in order to indicate that it has~~  
1149 ~~processed some with the 'job-paused' value added to the job's "job-state-reasons" attribute? Then the~~  
1150 ~~'pending-held' job state is not partitioned into two parts depending on whether the Hold-Job or Pause-Job~~  
1151 ~~operation was performed.~~

1152 If the client does not supply a "job-id" operation attribute, the Printer MUST accept the request and pause  
1153 the current job if there is a current job in the 'processing' or 'processing-stopped' state; otherwise, it MUST  
1154 reject the request and return the 'client-error-not-possible' status code. If more than one job is in the  
1155 'processing' or 'processing-stopped' states, all of them are paused.

1156 Warning: On a shared printer, there is a race condition. Between the time that a user issues this operation  
1157 and its acceptance, the current job might change to a different job. If the user or operator is authenticated to  
1158 pause the new job, the wrong job is paused. To prevent this race from pausing the wrong job, the client ~~can~~  
1159 MAY supply the "job-id" operation attribute which is checked against the current job's job-id. If the job  
1160 identified by the "job-id" attribute is not the current job on the Printer, i.e., is not in the 'processing' or  
1161 'processing-stopped' states, the Printer MUST reject this operation and return the 'client-error-not-possible'  
1162 status code. Otherwise, the Printer pauses the specified job and processed other jobs.

1163 ~~If the target job is not in the 'processing' or 'processing-stopped' states, the Printer rejects the request and~~  
1164 ~~returns the 'client-error-not-possible' status code. Otherwise, the Printer stops the target job and processes~~  
1165 ~~other jobs.~~

1166 A paused job is resumed using the Resume-Job operation (see section 6.2.5). If the Pause-~~Current~~-Job  
1167 operation is supported, then the ~~Pause-Current-Job and~~ Resume-Job operations MUST be supported, and  
1168 vice-versa.

1169 The Printer MUST reject a Release-Job request (and return the 'client-error-not-possible') for a job that has  
1170 been paused, i.e., for a job in the 'pending-heldprocessing-stopped' state, with the 'job-paused' value in its  
1171 "job-state-reasons" attribute. The Hold-Job and Release-Job operations are for holding and releasing held  
1172 jobs, not pausing and resuming paused jobs.

1173 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
1174 the job owner of the target job or an operator or administrator of the Printer object (see [ipp-mod] sections 1  
1175 and 8.5). Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden', 'client-  
1176 error-not-authenticated', or 'client-error-not-authorized' as appropriate.

1177 The Pause-~~Current~~-Job Request and Pause-~~Current~~-Job Response have the same attribute groups and  
1178 attributes as the ~~Cancel-Job~~~~Resume-Printer~~ operation (see [ipp-mod] section ~~3.3.3-1~~3.2.8), including the  
1179 new "job-message-from-operator" operation attribute (see section 2.2), the new "when" operation attribute  
1180 (see section 2.4), with the addition of the following Group 1 Operation attributes in the request:

1181 "job-id" (integer(1:MAX)):

1182 The client OPTIONALLY supplies this Operation attribute in order to verify that the identified job  
1183 is still the current job on the target Printer object. The IPP object MUST support this operation  
1184 attribute, if it supports this operation.

1185 "non-process-run-out" (boolean)

1186 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
1187 attribute, if it is able to perform a non-process-run-out, i.e., remove the last few printed sheets of a  
1188 job that is finished printing on a continuous-forms printer. Normally, on such a printer, the last  
1189 sheets of a job remain in the printer and are forced out by the next job, thereby saving time when  
1190 printing one job after another. This attribute indicates whether or not the printer is to perform "non-  
1191 process run-out", i.e., move the last printed sheet to the stacker, as part of pausing the job.

1192  
1193 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
1194 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
1195 assumed to perform non-process run-out ('true' behavior).

1196 **ISSUE 17: Is the "non-process-run-out" operation attribute really needed at all or can the default**  
1197 **behavior for Pause-~~Current~~-Job be defined to be to perform non-process run out (for continuous and**  
1198 **cut sheet printers)?**

1199  
1200 "synchronize" (boolean)

1201 The client OPTIONALLY supplies this attribute. The Printer object OPTIONALLY supports this  
1202 attribute. This attribute indicates whether or not the printer is to synchronize the checkpoint data for  
1203 the current job being paused with the pages that have actually printed. If this attribute is supported,  
1204 then a value of 'true' implies that the Printer will be able to resume the job at the point of  
1205 synchronization when the job is resumed.

1206  
1207 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
1208 synchronization ('false' behavior). If the Printer does not support this attribute, the Printer is  
1209 assumed to not synchronize ('false' behavior).

1210 **ISSUE 18: Do we really need the "synchronize" operation attribute or can synchronization be the**  
1211 **default behavior of the Pause-~~Current~~-Job operation?**

1212 ~~1.1.5 Pause Current Job operation~~

1213 This OPTIONAL operation allows a client to stop the current job on the target Printer and allow other jobs  
1214 to be processed instead. The Printer moves the current job to the 'pending-held' state and sets the 'job-  
1215 paused' value in the job's "job-state-reasons" attribute. **ISSUE 12:** Or should the job's state be 'processing-  
1216 stopped' after a Pause Job or Pause Current Job operation in order to indicate that it has processed some?  
1217 Then the 'pending-held' job state is not partitioned into two parts depending on whether the Hold Job or  
1218 Pause Current Job operation was performed.

1219 If there are no jobs in the 'processing' or 'processing-stopped' states, the Printer rejects the request and  
1220 returns the 'client-error-not-possible' status code. Otherwise, the Printer stops the current job and processes  
1221 other jobs.

1222 ~~Warning:~~ On a shared printer, there is a race condition. Between the time that a user issues this operation  
1223 and its acceptance, the current job might change to a different job. If the user is authenticated to pause the  
1224 new job, the wrong job is paused. To prevent this race from pausing the wrong job, the client can supply  
1225 the "job-id" operation attribute which is checked against the current job's job-id. If the job identified by the  
1226 "job-id" attribute is not the current job on the Printer, the Printer MUST reject this operation and return the  
1227 'client-error-not-possible' status code.

1228 If the Pause Current Job operation is supported, then the Pause Job and Resume Job operations MUST be  
1229 supported, and vice-versa.

1230 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
1231 the job owner of the current job or an operator or administrator of the target Printer object (see [ipp-mod]  
1232 sections 1 and 8.5). Otherwise, the IPP object MUST reject the operation and return: 'client-error-  
1233 forbidden', 'client-error-not-authenticated', or 'client-error-not-authorized' as appropriate.

1234 The Pause Current Job Request and Pause Current Job Response have the same attribute groups and  
1235 attributes as the Pause Job operation (see 6.2.4), including the new "job-message-from-operator" operation  
1236 attribute (see section 2.2), with the addition of the following Group 1 Operation attribute in the request, but  
1237 not including the new "when" operation attribute (see section 2.3):

1238 "job-id" (integer(1:MAX)):

1239 The client ~~OPTIONALLY~~ supplies this Operation attribute in order to verify that the identified job  
1240 is still the current job on the target Printer object. The IPP object MUST supports this operation  
1241 attribute, if it supports this operation.

1242 6.2.5 Resume-Job operation

1243 This OPTIONAL operation allows a client to stop the target job and allow other jobs to be processed  
1244 instead. The Printer moves the target job to the 'pending' state and removes the 'job-paused' value from the  
1245 job's "job-state-reasons" attribute. **ISSUE 13:** Or should the job's state be 'processing-stopped' after a  
1246 Pause Job or Pause Current Job operation in order to indicate that it has processed some? Then the  
1247 'pending-held' job state is not partitioned into two parts depending on whether the Hold Job or Pause Job  
1248 operation was performed.

1249 If the target job is not in the ~~'pending-held'~~'processing-stopped' state with the 'job-paused' value in the job's  
1250 "job-state-reasons" attribute, the Printer rejects the request and returns the 'client-error-not-possible' status  
1251 code, since the job was not paused.

1252 If the Resume-Job operation is supported, then the ~~Pause-Job and~~ Pause-Current-Job operations MUST be  
1253 supported, and vice-versa.

1254 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
1255 the job owner of the target job or an operator or administrator of the Printer object (see [ipp-mod] sections 1  
1256 and 8.5). Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden', 'client-  
1257 error-not-authenticated', or 'client-error-not-authorized' as appropriate.

1258 The Resume-Job Request and Resume-Job Response have the same attribute groups and attributes as the  
1259 ~~CancelRelease~~-Job operation (see [ipp-mod] section 3.3.63), including the new "job-message-from-  
1260 operator" operation attribute (see section 2.2).

#### 1261 6.2.6 Promote-Job operation

1262 This OPTIONAL operation allows a client to make the pending target job be processed next after the  
1263 current job completes. This operation is specially useful in a production printing environment where the  
1264 operator is involved in job scheduling.

1265 If the target job is in the 'pending' state, this operation does not change the job's state, but causes the job to  
1266 be processed after the current job(s) complete, but the Printer adds the 'process-next' value to the job's "job-  
1267 state-reasons" attribute. If the target job is not in the 'pending' state, the Printer rejects the request and  
1268 returns the 'client-error-not-possible' status code. The Printer returns the target job immediately after the  
1269 current job(s) in a Get-Jobs response (see [ipp-mod] section 3.2.6) for the 'not-completed' jobs.

1270 When the current job completes, is canceled, paused, or aborted, the target of this operation is processed  
1271 next, ~~at which time the Printer removes the 'process-next' value from the job's "job-state-reasons" attribute.~~

1272 If a client issues this request (again) before the target of the operation of the original request started  
1273 processing, the target of this new request ~~replaces~~ is scheduled before the previous job that was to be  
1274 processed next.

1275 Note: IPP is specified not to require queues for job scheduling, since there are other implementations for  
1276 scheduling multiple jobs. However, if an implementation does implement queues for jobs, then the  
1277 Promote-Job puts the specified job at the front of the queue. A subsequent Promote-Job before the first job  
1278 starts processing puts that specified job at the front of the queue, so that it is "in front" of the previously  
1279 promoted job. The Printer removes the 'process-next' from the previous job and adds the value to the target  
1280 of the subsequent request. In other words, only one job at a time has the property to be the next job and no  
1281 more than one job has the 'process-next' value in its "job-state-reasons" attribute at the same time.

1282 ~~If a client issues a Hold-Job operation with the target being the job that is to be processed next, the Printer~~  
1283 ~~removes the 'process-next' value from the target job's "job-state-reasons" attribute and moves it to the 'held'~~  
1284 ~~state.~~



1285 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must be an  
1286 operator or administrator of the Printer object (see [ipp-mod] sections 1 and 8.5). Otherwise, the IPP object  
1287 MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or 'client-  
1288 error-not-authorized' as appropriate.

1289 The Promote-Job Request and Promote-Job Response have the same attribute groups and attributes as the  
1290 Cancel-Job operation (see [ipp-mod] section 3.3.3), including the new "job-message-from-operator"  
1291 operation attribute (see section 2.2).

### 1292 6.2.7 Space-Current-Job operation

1293 This OPTIONAL operation allows a client to repeat or skip a specified number of impressions for the  
1294 current job on the target Printer or the specified job if it is the current job on the Printer. The Printer repeats  
1295 or skips the indicated number of impressions specified by the "back-space" or "forward-space" operation  
1296 attribute, respectively. This operation is typically supported in a continuous forms implementation for  
1297 synchronizing the web after forms run out or media change.

1298 If the client does not supply a "job-id" operation attribute, the Printer MUST accept this request in any state,  
1299 whether or not there is a current job, and advance or backspace the media the indicated number of  
1300 impressions specified by the "back-space" or "forward-space" operation attribute, respectively. If more than  
1301 one job is in the 'processing' or 'processing-stopped' states, the one that is marking is spaced and the others  
1302 are unaffected.

1303 ~~If there are no jobs in the 'processing' or 'processing-stopped' states, the Printer rejects the request and~~  
1304 ~~returns the 'client-error-not-possible' status code. Otherwise, the Printer repeats or skips the indicated~~  
1305 ~~number of impressions specified by the "back-space" or "forward-space" operation attribute, respectively.~~

1306 Warning: On a shared printer, there is a race condition. Between the time that a user issues this operation  
1307 and its acceptance, the current job might change to a different job. If the user or operator is authenticated to  
1308 space the new job, the wrong job is spaced. To prevent this race from spacing the wrong job, the client ~~can~~  
1309 MAY supply the "job-id" operation attribute which is checked against the current job's job-id. If the job  
1310 identified by the "job-id" attribute is not the current job on the Printer, i.e., is not in the 'processing' or  
1311 'processing-stopped' states, or is not the job that has impressions in the media path even if the job has  
1312 completed, the Printer MUST reject this operation and return the 'client-error-not-possible' status code.  
1313 Otherwise, the Printer advances or backspaces the media the indicated number of impressions specified by  
1314 the "back-space" or "forward-space" operation attribute, respectively.

1315 **ISSUE 19: Is the Space-Current-Job reasonable to perform when the current job is in the 'processing' state**  
1316 **when paper is still moving?**

1317 *Access Rights:* The authenticated user (see [ipp-mod] section 8.3) performing this operation must either be  
1318 the job owner of the current job or an operator or administrator of the Printer object (see [ipp-mod] sections  
1319 1 and 8.5). Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden', 'client-  
1320 error-not-authenticated', or 'client-error-not-authorized' as appropriate.

1321 The Space-Current-Job Request and Space-Current-Job Response have the same attribute groups and  
1322 attributes as the [SpaceResume-Printer](#) operation (see [\[ipp-mod\]](#) section [3.2.86.1.6](#)), including the new "job-  
1323 message-from-operator" operation attribute (see section 2.2), with the addition of the following Group 1  
1324 Operation attributes in the request:

1325 "job-id" (integer(1:MAX)):

1326 The client OPTIONALLY supplies this Operation attribute in order to verify that the identified job  
1327 is still the current job on the target Printer object. The IPP object MUST supports this operation  
1328 attribute, if it supports this operation.

1329 "back-space" (integer(1:MAX)):

1330 The client OPTIONALLY supplies this Operation attribute. The IPP object OPTIONALLY  
1331 supports this operation attribute, if it is able to repeat impressions.

1332 If the client supplies a value that specifies more impressions than the job has performed, the job is  
1333 positioned at the beginning without any indication.

1334 "forward-space" (integer(1:MAX)):

1335 The client OPTIONALLY supplies this Operation attribute. The IPP object OPTIONALLY  
1336 supports this operation attribute, if it is able to skip impressions.

1337 If the client supplies a value that specifies more impressions than remain in the job, the job is  
1338 positioned at the end without any indication.

1339 "non-process-run-out" (boolean):

1340 The client OPTIONALLY supplies this operation attribute. The IPP object OPTIONALLY supports  
1341 this operation attribute, if it is able to perform a non-process-run-out, i.e., remove the last few  
1342 printed sheets of a job that is finished printing on a continuous-forms printer. Normally, on such a  
1343 printer, the last sheets of a job remain in the printer and are forced out by the next job, thereby  
1344 saving time when printing one job after another. This attribute indicates whether or not the printer  
1345 is to perform "non-process run-out", i.e., move the last printed sheet to the stacker, after spacing the  
1346 Printer.

1347  
1348 If the client does not supply this attribute and the attribute is supported, the Printer does not perform  
1349 non-process run-out ('false' behavior). If the Printer does not support this attribute, the Printer is  
1350 assumed to perform non-process run-out ('true' behavior). **ISSUE 20: Is the "non-process-run-out"**  
1351 **operation attribute really needed at all or can the default behavior for Space-Current-JobPrinter be**  
1352 **defined to be to perform non-process run out (for continuous and cut sheet printers)?**

## 1353 [7. References](#)

1354 [\[ipp-mod\]](#)

1355 [R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and](#)  
1356 [Semantics", <draft-ietf-ipp-model-v11-03.txt>, June, 1999.](#)

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[RFC2566]

R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and Semantics", RFC 2566, April 1999.

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## 8. Change History

1361

This section summarizes the changes. Each sub-section is in reverse chronological order.

1362

### 8.1 Changes to the June 30, 1999 version to make the July 19, 1999 version

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The following changes to the June 30, 1999 version to make the July 19, 1999 version as a result of the IPP WG meeting in Copenhagen, 7/7/99-7/8/99, and the IPP telecon, 7/14/1999:

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1366  
1367

1. Sections 2.1 and 2.2: Clarified that the way to remove a message from the operator was for the client to supply a zero-length or all white space text string which is copied as usual to the "xxx-message-from-operator" attribute.

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2. Section 2.3: Added "factory-settings" (boolean) operation attribute to the Get-Printer-Attributes operation.

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3. Section 2.4: Added the "when" operation attribute to the Pause-Current-Job operation.

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4. Section 2.4: Made the "when" operation attribute OPTIONAL for use in operations (Pause-Printer, Reset-Printer, Shutdown-Printer, and Pause-Current-Job operations).

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5. Sections 2.5: Added table of operation attributes for the Printer operations to make it easy to compare.

1374

6. Sections 2.6: Added table of operation attributes for the Job operations to make it easy to compare.

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7. Section 3.1: Added "settable-attributes" (1setOf type2 keyword) READ-ONLY Printer Description attribute.

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8. Section 3.2: Added "printer-controls-other-protocols" (boolean) Printer Description attribute

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8-9. Section 3.3: Added the READ-ONLY "printer-message-time" (integer(MIN:MAX)) Printer Description attribute to keep time message updated in time ticks.

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10. Section 4.2: Deleted the 'process-next' "job-state-reasons" value, so that repeated Promote-Job operations promote each job "to the front of the queue".

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11. Sections 6.1.1.1 and 6.2.1.1: Replaced the table that listed all attributes with one that lists only the attributes that MUST be READ-ONLY.

- 1384 12. Section 6.1.1.1: Indicated that attributes that are not specified as READ-ONLY in this document MAY  
1385 be settable. If they control behavior, that changing their values MUST change the behavior.
- 1386 ~~12.~~13. Section 6.1.1.2 and 6.2.1.2: Deleted the "ipp-attribute-fidelity" operation attribute from the Set-  
1387 Printer-Attributes and Set-Job-Attributes operations. All set operations are atomic.
- 1388 14. Section 6.1.1.2: Add the concept of the Interpreter object to handle attributes whose values vary in the  
1389 Set-Printer-Attributes and Get-Printer-Attributes, depending on the value of the "document-format"  
1390 operation attribute.
- 1391 15. Sections 6.1.1.3 and 6.2.1.2: Changed the "out-of-band" 'not-settable' value back to the existing 'not-  
1392 supported' value.
- 1393 16. Section 6.1.2 and 6.1.3: Added "job-type" operation attribute to Disable-Printer and Enable-Printer  
1394 operations with values: 'network-jobs', 'walk-up-jobs', and 'all-jobs'.
- 1395 17. Section 6.1.5: Clarified that Restart-Printer brings up the Printer disabled and paused, since that is the  
1396 eventual state that Shutdown-Printer leaves the printer in.
- 1397 18. Section 6.1.5: Indicated that if Restart-Printer is supported, then Shutdown-Printer MUST be  
1398 supported.
- 1399 19. Section 6.1.6: Deleted Space-Printer operation. Keep Space-Current-Job operation only which has a  
1400 "job-id" operation attribute that a client MAY supply.
- 1401 20. Section 6.1.6: Clarified that Shutdown-Printer is for a long period of time, not just to reset the device or  
1402 change attribute values. Also that Shutdown performs an immediate Disable-Printer and an eventual  
1403 Pause-Printer.
- 1404 21. Sections 6.2.3, 6.2.4, and 6.2.7 : Added a "job-id" operation attribute to Cancel-Current-Job, Pause-  
1405 Current-Job, and Space-Current-Job that a client MAY supply to check for race condition where current  
1406 job changes
- 1407 22. Section 6.2.4: Combined Pause-Job into Pause-Current-Job operation.
- 1408 23. Sections 6.2.4 and 6.2.5: Pause-Current-Job puts job in 'processing-stopped' state, not 'pending-held'  
1409 state.
- 1410 24. Section 6.2.6: Simplified Promote-Job, so that it behaves as if the job were put at the front of the  
1411 queue.