1

2

3

4

5

6

7

8

9

10

11

<u>IPP Bake Off 2Test Plan Outline</u>

Table of Contents

128

129

130

1   General

1.1   Common restrictions for test purposes

133 To facilitate testing and analysis of results we should conduct our tests under certain restrictions. If
134 time permits specific restrictions may be lifted for specific tests.

135 • Security. Authentication, authorization and privacy will not be used except where explicitly
136 stated. There will be a series of test specifically targeting interoperability of security
137 implementations. The core protocol testing will eliminate these variables.

138 • Character set. We will use the UTF-8 character encoding of ISO646. This will simplify the
139 comparison of results. The exception will be tests specifically targeted at characters sets.

140 • Language. We will use en-us. This will simplify the comparison of results. Once again the
141 exception will be tests that are intended to test this aspect of the protocol.

142 • IPP Scheme. The URLs for printers will be http://* as specified in the June 30 IPP
143 specification.

144 • Http Chunking. No IPP component being tested will chunk its requests or responses. Testing of
145 chunking IPP requests and responses will specifically be performed.

146 • Set 1 operations. Any implementations that support the set 1 extensions will use the PWG OP
147 codes. The PWG OP codes are from 0x0C to 0X12 inclusive.

148 • HTTP Version 1.1 will be used. Compatibility tests with 1.1 and 1.0 components will be
149 performed.

150

1.2   Test print files

152 Where possible a small standard file will be used. A large test file will be used for IPP contention
153 testing and real life printing scenario testing

1.3 Result processing and documentation

1.3.1 Anonymity

The participants of the tests will be aware of the identity of the participants. Any posting or discussion of results will not identify the participants demonstrating the issue at hand. The discussions will focus on issues regarding the IPP specification. The objective is to clarify the specification's language to resolve the issue.

1.3.2 Test data collection method

Developers of IPP test tools should operate at the IPP application layer. This will simplify the comparison of results. The format of the traces will be test tool specific. It is recommended that there be an indication of success or failure. The tool should also report expected and received results.

Network analyzers are suggested to keep a detailed trace of various tests. All participants are encouraged to bring their favorite.

1.3.3 Results determination

Humans can determine the results for many of the tests. An IPP Client submitting a job that is printed by an IPP printer would seem to indicate interoperability. We will submit print requests with various attributes. Subsequently we will list the attributes of the job and insure the expected attributes are present.

Some clients or tools will allow us to examine the attribute groups, tags, attributes and values. The examination of these may be automated to some extent.

If all else fails the network analyzers will allow us to examine the bits on the wire.

1.3.4 Output

1.3.4.1 Detailed results

The detailed results of the bake-off will be emailed directly to the participants of the test. Some of the detailed results will be made available during the bake-off. All participants are encouraged to make their traces available to interested participants. Implementers of IPP components involved in a test are entitled to the results of the test.

1.3.4.2 Summary of results

A summary of the test results will be circulated among the participants prior to posting on the IPP distribution list. The results will be sanitized of any vendor specific information. The object of the summary results is to give a high level overview of the bake-off results.

1.3.4.3 Issues

Issues will be recorded and tracked by the TES whip or designate.

188   2   Procedure

189   After setting up and establishing basic IP connectivity every IPP component will be assigned a
190   designator. The Printer URL and Ethernet address will be recorded in the table in section 4.1. The
191   supported security schemes should also be listed in the table. During each step of the test, each IPP
192   component involved will be recorded.

193   The tests are performed against IPP components. In the tables in section 4 columns marked
194   "supported" indicates the IPP component supports that operation, attribute or attribute value. The
195   columns marked "interoperate" are used to indicate the peer IPP component correctly understands the
196   operation, attribute or attribute value.

197   *2.1   Send request from Client to Printer*

198   For each IPP Printer send a get-printer-attributes request to the Printer to get default response (i.e.
199   no requested attributes or groups). Any IPP Client or Test Tool may be used. The objective of this
200   initial test is basic IPP connectivity. It is preferable to use an independently implemented
201   Client/Test Tool. Use the results of the IPP operation below.

202   2.1.1   Get-printer-attributes

203   Use the test tool and/or a network analyzer and insure the appropriate operational attributes are
204   returned. Record results in section 4.2.1

205   2.1.2   Mandatory operations coverage

206   Check off the operations supported in the table in section 4.2.2.

207   2.1.3   Optional operations coverage

208   Check off the attribute supported in the table in section 4.2.3

209   *2.2   Find out the capabilities of the printer*

210   Use the results from 2.1

211   2.2.1   Mandatory printer attributes coverage

212   Check off the attribute supported in the table in section 4.3.1.

213   2.2.2   Optional printer attribute coverage

214   Check off the attributes supported in the table in section 4.3.2

215

216

217   **NOTE: The remainder of the testing should be performed using a**
218   **pair of independent implementations of the IPP protocol.**

2.3 Print Job interoperability matrix

Each IPP Client/Test Tool will submit a simple print job to all of the IPP Printers. The simple print job will be a 'text/plain'. The charset will depend on the printer implementation (charset-utf-8 recommended). To make confirmation of the results easier the content of the print file should contain the identity of the client.

The attributes in the request will be the entire mandatory attributes and one optional attribute. The mandatory attributes are attributes-charset, attributes-natural-language and printer-uri. The optional attribute will be job-name. The job-name attribute in the request should be set to the identity of the submitting client.

For each IPP Client, the results will be recorded in the table in section 4.4. Put the Client identifiers in the first column. The Printer identifiers go across the first row. The results of a Client/Printer interaction are placed in the corresponding cell.

2.4 Print job validation

This will test the mandatory validate-job operation. Implementations that do not implement validate job can substitute the results from section 2.5 in the table in section 4.5. A note should be made in the table indicating this substitution has bee made.

2.4.1 Simple Job

Send a validate-job to the printer. Record the job attributes that are being sent. Try various supported attributes. Record combinations in the table in section 4.5 for comparison with the results in section 2.5.1.

2.4.2 Unsupported attribute job/best effort

Send a validate-job to the printer. The attribute-fidelity attribute should be set to false and/or not included. Record the job attributes that are being sent. Try various unsupported and supported attribute combinations. Record combinations in the table in section 4.5 for comparison with the results in section 2.5.2.

2.4.3 Unsupported attribute job/fidelity

Send a validate-job to the printer. The attribute-fidelity attribute should be set to true. Record the job attributes that are being sent. Try various unsupported and supported attribute combinations. Record combinations in the table in section 4.5 for comparison with the results in section 2.5.3.

2.5 Print jobs submission

This step tests the print-job operation. The results of this test can be checked by the examining the response and performing a subsequent operation as in sections 2.6 and 2.7. List any results that do not match the results from section 2.4 in the table in section 4.6

2.5.1 Simple Job

Submit some jobs using the print-job operation. Use the attribute combinations used in section 2.4.1. If the results do not agree, make a note in section 4.6.

256 2.5.2 Unsupported attribute job/best effort

257   Submit some jobs using the print-job operation. Use the attribute combinations used in section
258   2.4.2. If the results do not agree, make a note in section 4.6.

259 2.5.3 Unsupported attribute job/fidelity

260   Submit some jobs using the print-job operation. Use the attribute combinations used in section
261   2.4.3. If the results do not agree, make a note in section 4.6.

262 *2.6 List all the jobs*

263   This will test the get-jobs operation. If job information is not retained once a job is completed the
264   printer should be paused. This may be done with the optional set 1 operation "pause-printer" or
265   by preventing the printer by some other means from processing the job. This test can be done in
266   combination with the section 2.5 to examine the results.   For each job the results from this test
267   should match the results from section 2.7.

268   For this section, submit a job(s) with known attributes.

269 2.6.1 Default

270   The list of jobs should only have the 'job-uri' and 'job-id' attributes. Record results in section 4.7.

271 2.6.2 Requested-attributes: groups

272   The groups to be tested are 'all', 'job-description' and 'job-template'.   Record results in section
273   4.7.

274 2.6.3 Requested-attributes: attributes

275   Pick an attribute that is in every job. Pick an attribute that is not in every job. Record results in
276   section 4.7.

277 2.6.4 Which-jobs

278   List 'completed' and 'not-completed' jobs. Record results in section 4.7.

279 2.6.5 Limit

280   Send a request with the 'limit' set to less than the number of jobs on the printer. Try again with
281   'limit' greater than the number of jobs on the printer. Record results in section 4.7.

282 2.6.6 My-jobs

283   Submit a job from two different users. Each user should then submit a 'get-jobs' request. Record
284   results in section 4.7.

285 *2.7 List specific job*

286   This will test the Get-Job-Attributes operation. If job information is not retained once a job is
287   completed the printer should be paused. This may be done with the optional set 1 operation "pause-

288 printer" or by preventing the printer by some other means from processing the job. This test can be
289 done in combination with the section 2.5 to examine the results. This test should also be done in
290 combination with section 2.6

291 For this section, submit a job(s) with known attributes.

2.7.1 Default

293 Send get-jobs-attributes and compare with section **Error! Reference source not found.**. Note
294 that the default behavior of get-jobs-attributes is different from that of get-jobs. Record results in
295 section 4.7.

2.8 get-printer-attributes

297 Test the attribute groups in the get-printer-attributes

2.8.1 Default

299 Make sure output is the same as the results for the printer in section 2.1 as listed in the tables in
300 section 4.2

2.8.2 All

302 Make sure output is the same as 2.8.1

2.8.3 Printer-description

304 Make sure all the printer-description attributes listed in section 4.3 for the target printer are
305 reported. The list of attributes for the target printer may be obtained from performing section 2.2
306 on the Printer. The Printer implementers will have these results. The attribute groupings are listed
307 in section 5.3.

2.8.4 Job-template

309 Make sure all the job-template attributes listed in section 4.3 for the target printer are reported.
310 The list of attributes for the target printer may be obtained from performing section 2.2 on the
311 Printer. The Printer implementers will have these results. The attribute groupings are listed in
312 section 5.3.

2.9 Cancel a job

314 The printers tested must have the ability to prevent jobs from being scheduled. This may be
315 accomplished by the Set 1 IPP operations, opening a cover or by other printer specific means.
316 Record the results and behavior in section 4.8

317   2.9.1 Cancel a pending job (owner)

318   2.9.2 Cancel a pending job (not owner)

319   2.9.3 Cancel a completed job

320   2.9.4 Cancel a processing job

321   ***2.10 Printer State and Status***

322   The objective of this step is to compare the state of printers under various conditions. The get-
323   printer-attributes operation will be used to obtain the printer-state and printer-state-reasons
324   attributes.   The printer-state-reasons attribute is optional. Therefore, it may be unsupported in
325   some implementations.
326   Record the results in section 4.9

327   2.10.1 State of the printer

328

329   Poll the printer before, during and after a job has been processed. The printer-state should be
330   'idle', 'processing' and 'idle' respectively. The printer-state of 'paused' will be tested in section
331   2.10.5.

332   2.10.2 Out of paper

333   Submit a job of a known size to a printer with the input tray(s) empty. The printer-state should be
334   stopped and the printer-state-reasons should be 'media-empty'.
335   Put some paper into the input tray. There should not be enough to complete the job. While the
336   printer is printing, examine the printer-state and printer-state-reasons. The printer-state should be
337   processing and the printer-state-reasons may contain media-low.
338   When the printer runs out of paper, examine the two attributes again. The printer-state should be
339   stopped. The printer-state-reasons may contain media-needed

340   2.10.3 Cover open

341   Open the appropriate covers and doors. The printer-state should move to 'stopped'. The printer-
342   state-reasons may contain 'cover-open' and/or 'door-open'

343   2.10.4 Tray missing

344   Remove an input tray and record the printer-state and printer-state-reasons. The printer-state-
345   reasons may contain 'input-tray-missing'.

346   2.10.5 Pausing a printer

347   If possible, pause the printer. The printer-state should be stopped. The printer-state-reasons may
348   contain paused.

Turner, Zehler

349 2.10.6 Paper jam

350 If possible, cause the printer to jam. The printer-state should be stopped. The printer-state-
351 reasons may contain media-jam.
352

353 *2.11 Operation status code sampling*

354 Below are some statuses codes that will be tested. The list is not all-inclusive. It is intended to
355 touch on some of the important conditions.
356 For each of these scenarios record the status-code in section 4.10. The status-code-message should
357 also be recorded.

358 2.11.1 successful-ok (0x0000)

359 This code should be returned in any of the successful operations performed so far.

360 2.11.2 successful-ok-ignored-or-substituted-attributes (0x0001)

361 This code should have been returned in the test in section 2.4.2 and section 2.5.2.

362 2.11.3 client-error-bad-request (0x0400)

363 Submit a request that is syntactically incorrect.

364 2.11.4 client-error-not-found (0x0406)

365 Submit a get-jobs-attribute request for a job that does not exist.

366 2.11.5 client-error-request-value-too-long (0x0409)

367 Submit a request with an attribute value whose length exceeds the specified maximum.

368 2.11.6 client-error-document-format-not-supported (0x040A)

369 Submit a request specifying a document format not listed in the printer attribute document-format-
370 supported.

371 2.11.7 client-error-attributes-or-values-not-supported (0x040B)

372 Submit a get-printer-attribute request with a requested attribute that is not supported by the printer.
373 The attribute may be an attribute not defined in the IPP model specification. The test should be
374 repeated for an invalid attribute value for a supported attribute.

375 2.11.8 client-error-charset-not-supported (0x040D)

376 Submit a request where the value of the operational attribute attributes-charset is set to an
377 unsupported value. The value may be something other than the valid values from the IPP
378 specification.

379 2.11.9 server-error-operation-not-supported (0x0501)

380 Submit a request with a value in the operation field for a nonexistent operation.

381 2.11.10 server-error-version-not-supported (0x0503)

382 Submit a request with an invalid value for the IPP version.

383   ## *2.12 Printer Contention*

384   Have multiple clients submit print jobs to a single printer. Record the status codes, status code
385   message from the responses. Describe the behavior of the client/printer interactions. Record in
386   section 4.11
387   Compare the results with other printer contention tests.

388   ## *2.13 Large Jobs*

389   Have a clients submit a large print jobs to several printers. Watch the data flow using a network
390   analyzer. Record the status codes, status code message from the responses. Describe the behavior
391   of the client/printer interactions. Record in section 4.12
392   Compare the results with other printer contention tests.
393
394

395   # 3   Optional Testing

396
397   If time permits some additional tests may be performed.

398   ## *3.1 Security*

399   Security that is supported by the HTTP and transport layers will be tested for interoperability. The
400   IPP printers participating will all turn on the security mentioned below. Record the results in tables
401   similar to the table in section 4.13.

402   ### 3.1.1 Basic

403   Turn on basic authentication at the printers. Have the clients submit a request. Record the
404   participants, the operation and the results in a table similar to the one in section 4.13.

405   ### 3.1.2 Digest

406   Turn on digest authentication at the printers. Have the clients submit a request. Record the
407   participants, the operation and the results in a table similar to the one in section 4.13. Note the
408   version number of the Digest implementation.
409

410   ### 3.1.3 SSL3

411   Turn on SSL3 authentication at the printers. Have the clients submit a request. Record the
412   participants, the operation and the results in a table similar to the one in section 4.13.
413

414   ### 3.1.4 TLS

415   Turn on TLS authentication at the printers. Have the clients submit a request. Record the
416   participants, the operation and the results in a table similar to the one in section 4.13.

417   ### 3.1.5 Kerboros

418   Turn on Kerboros authentication at the printers. Have the clients submit a request. Record the
419   participants, the operation and the results in a table similar to the one in section 4.13.

420
421

3.2 Get-printer-attribute/Document-format Test

423 Any printer that supports the behavior of returning different printer attributes based on the document-
424 format attribute will be tested. The test will be similar to section 2.2 except the procedure will be
425 repeated for each document-format-supported. Record the results in section 4.14
426

3.3 Chunking Request/Response Test

428 Select Clients and Printers that support chunking. Try operations that will cause the client to chunk a
429 request and record the results. Try operations that will cause the Printer to chunk a response and
430 record the results. Record the results in section 4.15.
431 Additional tests may include:
432 • Variable chunking methods such as One large chunk, Two chunk (header and document) and
433   consistent size chunk without regard to content.
434 • Chunk size larger than TCP buffer (4K chunks with 1K writes)
435 • Vary timing between chunks.
436 • Chunking and content length tests over persistent connections.
437 • Chunking in combination with compression.
438 • Vary case in Hex string that represents length
439

3.4 HTTP version compatibility Test

441 Select Clients and Printers that use different versions of HTTP. Record the results of their
442 interactions. Record the results in section 4.16
443 NOTE: Do we involve a proxy in this test?
444

3.5 Contention Resolution Test

446 Send a large job to a printer. At about the same time submit a similar job from another client. Record
447 the results of their interactions. Record the results in section

3.6 Character Set Test

449 Send print request in a character set other than UTF-8 to a printer that supports the character set. List
450 the jobs from the submitting client. Take note of results. List the jobs from multiple clients.
451 Submit jobs in character sets that are not supported by a printer. Take note of the results.

3.7 Language Test

453 Send 'get-printer-attributes' requests from client that supports multiple languages. Each request
454 should be for a different language. Compare the values of text and name fields (e.g. printer-name,
455 printer-location) in the response.
456

3.8 Create-Job and Send-Document

Each IPP Client will submit a job to all of the IPP Printers using the create-job/send-document operations. The attributes in the request will be the entire mandatory attributes and one optional attribute. The mandatory attributes are attributes-charset, attributes-natural-language, printer-uri and last-document. The optional attribute will be job-name or document-name. The job-name will be set to identify the submitting client. At least two documents will be submitted. The contents of the documents will identify the submitting client.

Record the in the table in section 4.17. Put the Client identifiers in the first column. The Printer identifiers go across the first row. The results of a Client/Printer interaction are placed in the corresponding cell

3.9 Print-Uri and Create-Job /Send-Uri

Each IPP Client will submit a job to all of the IPP Printers using the Print-uri and create-job/send-uri operations. The attributes in the request will be the entire mandatory attributes and one optional attribute. The mandatory attributes are attributes-charset, attributes-natural-language, printer-uri and last-document. The optional attribute will be job-name or document-name. The job-name will be set to identify the submitting client. . At least two documents will be submitted when using create-job. The contents of the documents will identify the submitting client.

Record the in the table in section 4.18. Put the Client identifiers in the first column. The Printer identifiers go across the first row. The results of a Client/Printer interaction are placed in the corresponding cell

3.10 IPP URL Scheme

Repeat section 2.3 for clients and printers that use the "ipp://" scheme. After submitting a job perform a Get-Jobs operation to verify the scheme is supported in the IPP Job object. Complete a table similar to the one in section 4.19

3.11 Set One Operations

Test the Set One operations more fully. A test should include at least the following steps. There may be differences based on the printer's capabilities and whether or not it is a spooling device.

Pause the printer
   (Printer state should be stopped, state reasons may be set to 'moving-to-paused'/'paused')
Pause the printer again
   (Response should be 'successful-OK')
Submit a print job
Hold the job until later time
   (job state moves to pending-held, job-hold-until set, job-state-reasons' may be set to 'job-hold-until-specified')
restart-job
   (Insure that the error returned is client-error-not-possible')
Hold the job with'no-hold' value
   (job state moves to pending, job-hold-until set, job-state-reasons' may clear 'job-hold-until-specified')
Hold the job until later time
   (job state moves to pending-held, job-hold-until set, job-state-reasons' may be set to 'job-hold-until-specified')
Resume the printer

505   (Insure that printer is no longer stopped and job is still 'pending-held')
506   Release the job
507   (insure that job is no longer 'pending-held')
508   try to hold the job until later time once the job has begun to process (or completed)
509   (Insure that the error returned is client-error-not-possible')
510   restart-job once job is completed
511   (Insure that the job is processed again)
512   Resume the printer
513   (Response should be 'successful-OK')
514   Purge-jobs
515   (Response should be 'successful-OK' and all the jobs should disappear)
516
517
518

519 # 4 Procedure Checklists

520 ## 4.1 IPP Components matrix (Section 2 (Procedure))

521

ID	URL	Ethernet Address	Security Schemes	Chunking (Send,Receive)	Print by Ref (method)
Clients					
CA					
CB					
CC					
CD					
CE					
CF					
CG					
Printers					
PA					
PB					
PC					
PD					
PE					
PF					
PG					
PH					
PI					

PJ				
PK				
PL				
PM				
PN				
PM				

522

523

4.2 Checklists for section 2.1 (Send request from Client to Printer)

525 4.2.1 Checklist for section 2.1.1 (Get-printer-attributes)

526

Operational attributes				
Printer ID				
Client(s) ID				
Test Tool(s) ID				
Attr ID	**Operational Attribute**	**Group**	**Supported**	**Interoperate**
OA05	version-number	preamble		
OA06	operation-id	preamble		
OA07	request-id	preamble		
OA08	attributes-charset	operational-attribute		
OA09	attributes-natural-language	operational-attribute		
OA10	printer-uri	operational-attribute		
OA14	requesting-user-name	operational-attribute		
OA17	status code	preamble		
OA18	Status-message	operational-attribute		

527

528 4.2.2 Checklist for section 2.1.2 (Mandatory operations coverage)

Mandatory Operations	
Printer ID	

Turner, Zehler

Client(s) ID		
Test Tool(s) ID		
Attr ID	**Operation**	**Supported**
OC01	print-job	
OC04	validate-job	
OC05	get-printer-attributes	
OC06	get-jobs	
OC07	get-job-attributes	
OC08	cancel-job	

529   4.2.3 Checklist for section 2.1.3 (Optional operations coverage)

Optional Operations		
Printer ID		
Client(s) ID		
Test Tool(s) ID		
Attr ID	**Operation**	**Supported**
OC09	print-uri	
OC10	create-job	
OC11	send-document	
OC12	send-uri	
OC13	hold-job	
OC14	release-job	
OC15	pause-printer	
OC16	resume-printer	
OC17	purge-printer	
OC18	reprint-job	

530

531

532

533   ***4.3   Checklist for section 2.2 (Find out the capabilities of the printer)***

534   4.3.1 Checklist for section 2.2.1 (Mandatory printer attributes coverage)

Mandatory Printer Attributes		
ID	**Attribute**	**Supported**
PD01	printer-uri-supported	
PD01	uri-security-supported	
PD03	printer-name	
PD04	printer-state	
PD05	operations-supported	
PD06	charset-configured	

Mandatory Printer Attributes		
ID	Attribute	Supported
PD07	charset-supported	
PD08	natural-language-configured	
PD09	generated-natural-language-supported	
PD10	printer-is-accepting-jobs	
PD11	pdl-override-supported	
PD21	document-format-default	
PD22	document-format-supported	
PD12	printer-up-time	

535 4.3.2 Checklist for section 2.2.2 (Optional printer attribute coverage)

Optional Printer Attributes		
Attr ID	Attribute	Supported
PD13	printer-location	
PD14	printer-info	
PD15	printer-more-info	
PD16	printer-driver-installer	
PD17	printer-make-and-model	
PD18	printer-more-info-manufacturer	
PD19	printer-state-reasons	
PD20	printer-state-message	
PD23	queued-job-count	
PD24	printer-message-from-operator	
PD25	color-supported	
PD26	reference-uri-schemes-supported	
PD27	printer-current-time	
PD28	multiple-operation-time-out	
PD29	compression-supported	
PD30	job-k-octets-supported	
PD31	job-impressions-supported	
PD32	job-media-sheets-supported	
JT02	job-priority-default	
JT03	job-priority-supported	
JT05	job-hold-until-default	
JT06	job-hold-until-supported	
JT08	job-sheets-default	
JT09	job-sheets-supported	
JT11	multiple-document-handling-default	
JT12	multiple-document-handling-supported	
JT14	copies-default	
JT15	copies-supported	
JT17	finishings-default	
JT18	finishings-supported	
JT20	page-ranges-supported	

Turner, Zehler

Optional Printer Attributes		
Attr ID	Attribute	Supported
JT22	sides-default	
JT23	sides-supported	
JT25	number-up-default	
JT26	number-up-supported	
JT28	orientation-requested-default	
JT29	orientation-requested-supported	
JT31	media-default	
JT32	media-supported	
JT33	media-ready	
JT35	printer-resolution-default	
JT36	printer-resolution-supported	
JT38	print-quality-default	
JT39	print-quality-supported	

536

537

538

4.4 Checklist for section 2.3 (Print Job interoperability matrix)

540   Print Job interoperability matrix

	Client ID							
Printer ID	Results							

	Client ID							

541

542

4.5   Checklist for section 2.4 (Print job validation)

544

Print job validation

Test #	Client/ Test Tool ID	Printer ID	Status Code	Requested Attributes	Accepted Attributes	Rejected Attributes
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
K						
L						
M						
N						
O						

545

546

4.6   Checklist for section 2.5 (Print jobs submission)

548

Print jobs submission

Test #	Description of difference

549

4.7   Checklist for section 2.6 and 2.7 (List all the jobs & List specific job)

551

List all the jobs and List specific job

Operation and description	results
List-jobs default	
List-jobs requested-attributes = all	
List-jobs requested-attributes = job-description	
List-jobs requested-attributes = job-template	
List-jobs attribute in every job	
List-jobs attribute not in every job	
List-jobs which-jobs = completed'	
List-jobs which-jobs = not-completed'	

Operation and description	results
List-jobs limit is less than the number of printer jobs	
List-jobs limit is greater than the number of printer jobs	
List-jobs my-jobs	

552

553

4.8　Checklist for section 2.9 (Cancel a job)

554

555

Cancel a job

Scenerio	status code	status-message	Describe behavior
Cancel a pending job (owner)			
Cancel a pending job (not owner)			
Cancel a completed job			
Cancel a processing job			

556

4.9　Checklist for section 2.10 (Printer State and Status)

557

558

Printer State and Status

Scenario	Printer-state	Printer-state-reasons	Describe behavior
State of the printer before job			
State of the printer			

during job			
State of the printer after job			
Out of paper			
Cover open			
Tray missing			
Pausing a printer			
Paper jam			

559

560

561 *4.10 Checklist for section 2.11 (Operation status code sampling)*

562   Operation status code sampling

status code	status-message	Operation	Description of conditions/behavior
successful-ok (0x0000)			
successful-ok-ignored-or-substituted-attributes (0x0001)			
client-error-bad-request (0x0400)			
client-error-not-found (0x0406)			
client-error-request-value-too-long (0x0409)			
client-error-document-format-not-supported (0x040A)			

Turner, Zehler

status code	status-message	Operation	Description of conditions/behavior
client-error-attributes-or-values-not-supported (0x040B)			
client-error-charset-not-supported (0x040D)			
server-error-operation-not-supported (0x0501)			
server-error-version-not-supported (0x0503)			

563 ## *4.11 Checklist for section 2.12 (Printer Contention)*

564

Printer Contention

status code	status-message	Description of behavior

565

566 ## *4.12 Checklist for section 2.13 (Large Jobs)*

567

Large Jobs

status code	status-message	Description of behavior

568 ## *4.13 Checklist for section 3.1 (Security)*

569

Security =			
IDs	Client ID		
Printer ID	Operation & Results		

Turner, Zehler

570 *4.14 Checklist for section 3.2 (Get-printer-attribute/Document-format Test)*

571

Get-printer-attribute/Document-format Test

1st document-format	2nd document-format	Description difference

572 *4.15 Checklist for section 3.3 (Chunking Request/Response Test)*

573

Chunking Request/Response Test

	Component IDs						
Chunking Component IDs	results						

	Component IDs						

574 *4.16 Checklist for section 3.4 (HTTP version compatibility Test)*

575   HTTP version compatibility Test

Client ID & HTTP Version	Printer ID & HTTP Version	Describe results

576

577 *4.17 Checklist for section 3.8 (Create-Job and Send-Document)*

578   Create-Job and Send-Document

	Client ID							
Printer ID	Results							

Turner, Zehler

	Client ID							

579
580

4.18 Checklist for section 3.9 (Print-Uri and Create-Job /Send-Uri)

582   Print-Uri and Create-Job /Send-Uri

	Client ID							
Printer ID	Results							

	Client ID							

583
584

4.19 Checklist for section 3.10 (IPP URL Scheme)

586   IPP URL Scheme

	Client ID							
Printer ID	Results							

587
588

589 **5   Summary Checklists**

590   The purpose of the set of tables in this section is to assign a shorthand ID to all operations, attributes and
591   syntaxes . These tables may also be used during and after the test to document the IPP Model coverage.

592 *5.1   Operation Coverage*

593

ID	Operation	Mandatory	Tested
OC01	print-job	Yes	
OC04	validate-job	Yes	
OC05	get-printer-attributes	Yes	
OC06	get-jobs	Yes	
OC07	get-job-attributes	Yes	
OC08	cancel-job	Yes	
OC09	print-uri	No	
OC10	create-job	No	
OC11	send-document	No	
OC12	send-uri	No	
OC13	hold-job	No	
OC14	release-job	No	
OC15	pause-printer	No	
OC16	resume-printer	No	
OC17	purge-printer	No	
OC18	restart-job	No	

594

595 *5.2   Operational Attributes Coverage*

596

Operational Attribute Coverage					
ID	Operational Attribute	Group	Comment	Mandatory	Tested
OA01		job-attribute	Tested by get-jobs	Yes	
OA02		printer-attribute	Tested by get-printer-attributes	Yes	
OA03		unsupported-attributes	Tested by print-job with unsupported attributes	Yes	
OA04		operational-attribute	See OA08 to OAZZ		
OA05	version-number	preamble	Test with any operation	Yes	

Turner, Zehler

ID	Operational Attribute	Group	Comment	Mandatory	Tested
Operational Attribute Coverage					
OA06	operation-id	preamble	See section 5.1	Yes	
OA07	request-id	preamble	Test with any operation	Yes	
OA08	attributes-charset	operational-attribute	Must support utf-8	Yes	
OA09	attributes-natural-language	operational-attribute	Test imposes en-us requirement	Yes	
OA10	printer-uri	operational-attribute	This or OA11 must be 3rd attribute	Conditional	
OA11	job-uri	operational-attribute	This or OA10 must be 3rd attribute	Conditional	
OA12	job-id	operational-attribute	This must be 4th attribute	Conditional	
OA13	job-name	operational-attribute	Only for print & validate operations	Optional	
OA14	requesting-user-name	operational-attribute		Optional	
OA15	document-uri	operational-attribute	Only for print-uri	Conditional	
OA16	last-document	operational-attribute	Only for send-uri and send-document	Conditional	
OA17	status code	preamble	Test with any response	Yes	
OA18	status-message	operational-attribute	Test with any response	Optional	
OA19	compression	operational-attribute	Only for print & validate operations	Optional	
OA20	document-natural-language	operational-attribute	Only for print & validate operations	Optional	
OA21	ipp-attribute-fidelity	operational-attribute	Only for print & validate operations	Optional	

Operational Attribute Coverage					
ID	Operational Attribute	Group	Comment	Mandatory	Tested
OA22	job-impressions	operational-attribute	Only for print & validate operations	Optional	
OA23	job-k-octets	operational-attribute	Only for print & validate operations	Optional	
OA24	job-media-sheets	operational-attribute	Only for print & validate operations	Optional	
OA25	limit	operational-attribute	Only for get-jobs operations	Optional	
OA26	message	operational-attribute	Only for cancel operations	Optional	
OA27	my-jobs	operational-attribute	Only for get-jobs operations	Optional	
OA28	requested-attributes	operational-attribute	Only for get-* operations	Optional	
OA29	Document-format	operational-attribute	Only for print operations	Optional	
OA30	which-jobs	operational-attribute	Only for get-jobs operations	Optional	

597   ## 5.3 Attribute Coverage

598   ### 5.3.1 Printer Description

Printer Description				
ID	Attribute	Syntax	Mandatory	Tested
PD01	printer-uri-supported	uri	Yes	
PD01	uri-security-supported	1setOf type2 keyword	Yes	
PD03	printer-name	name	Yes	
PD04	printer-state	type1 enum	Yes	
PD05	operations-supported	1setOf type2 enum	Yes	
PD06	charset-configured	charset	Yes	
PD07	charset-supported	1setOf charset	Yes	
PD08	natural-language-configured	naturalLanguage	Yes	
PD09	generated-natural-language-supported	1setOf naturalLanguage	Yes	
PD10	printer-is-accepting-jobs	boolean	Yes	

Turner, Zehler

Printer Description				
ID	**Attribute**	**Syntax**	**Mandatory**	**Tested**
PD11	pdl-override-supported	type2 keyword	Yes	
PD12	printer-up-time	integer	Yes	
PD13	printer-location	text	No	
PD14	printer-info	text	No	
PD15	printer-more-info	uri	No	
PD16	printer-driver-installer	uri	No	
PD17	printer-make-and-model	text	No	
PD18	printer-more-info-manufacturer	uri	No	
PD19	printer-state-reasons	1setOf type2 keyword	No	
PD20	printer-state-message	text	No	
PD21	document-format-default	mimeMediaType	No	
PD22	document-format-supported	1setOf mimeMediaType	No	
PD23	queued-job-count	integer	No	
PD24	printer-message-from-operator	text	No	
PD25	color-supported	boolean	No	
PD26	reference-uri-schemes-supported	1setOf uriScheme	No	
PD27	printer-current-time	dateTime	No	
PD28	multiple-operation-time-out	integer	No	
PD29	compression-supported	1setOf type3 keyword	No	
PD30	job-k-octets-supported	rangeOfInteger	No	
PD31	job-impressions-supported	rangeOfInteger	No	
PD32	job-media-sheets-supported	rangeOfInteger	No	

599

600   5.3.2 Job Template

Job Template				
ID	**Attribute**	**Syntax**	**Mandatory**	**Tested**
JT01	job-priority	integer	No	
JT02	job-priority-default	integer	No	
JT03	job-priority-supported	integer	No	
JT04	job-hold-until	type4 keyword | name	No	
JT05	job-hold-until-default	type4 keyword | name	No	
JT06	job-hold-until-supported	1setOf type4 keyword | name	No	
JT07	job-sheets	type4 keyword | name	No	
JT08	job-sheets-default	type4 keyword | name	No	
JT09	job-sheets-supported	1setOf type4 keyword | name	No	

Job Template				
ID	**Attribute**	**Syntax**	**Mandatory**	**Tested**
JT10	multiple-document-handling	type2 keyword	No	
JT11	multiple-document-handling-default	type2 keyword	No	
JT12	multiple-document-handling-supported	1setOf type2 keyword	No	
JT13	copies	integer	No	
JT14	copies-default	integer	No	
JT15	copies-supported	integer	No	
JT16	finishings	1setOf type2 enum	No	
JT17	finishings-default	1setOf type2 enum	No	
JT18	finishings-supported	1setOf type2 enum	No	
JT19	page-ranges	1setOf rangeOfInteger	No	
JT20	page-ranges-supported	boolean	No	
JT21	sides	type2 keyword	No	
JT22	sides-default	type2 keyword	No	
JT23	sides-supported	1setOf type2 keyword	No	
JT24	number-up	integer	No	
JT25	number-up-default	integer	No	
JT26	number-up-supported	1setOf integer | rangeOfInteger	No	
JT27	orientation-requested	type2	No	
JT28	orientation-requested-default	type2	No	
JT29	orientation-requested-supported	1setOf type2	No	
JT30	media	type4 keyword | name	No	
JT31	media-default	type4 keyword | name	No	
JT32	media-supported	1setOf type4 keyword | name	No	
JT33	media-ready	1setOf type4 keyword | name	No	
JT34	printer-resolution	resolution	No	
JT35	printer-resolution-default	resolution	No	
JT36	printer-resolution-supported	1setOf resolution	No	
JT37	print-quality	type2 enum	No	
JT38	print-quality-default	type2 enum	No	
JT39	print-quality-supported	1setOf type2 enum	No	

601

602   ## 5.3.3 Job Description

Job Description				
ID	**Attribute**	**Syntax**	**Mandatory**	**Tested**
JD01	job-uri	uri	Yes	
JD02	job-id	integer	Yes	
JD03	job-printer-uri	uri	Yes	
JD04	job-name	name	Yes	
JD05	job-originating-user-name	name	Yes	

Job Description				
ID	**Attribute**	**Syntax**	**Mandatory**	**Tested**
JD06	job-state	type1 enum	Yes	
JD07	attributes-charset	charset	Yes	
JD08	attributes-natural-language	naturalLanguage	Yes	
JD09	job-more-info	uri	No	
JD10	job-state-reasons	1setOf type2 keyword	No	
JD11	job-state-message	text	No	
JD12	number-of-documents	integer	No	
JD13	output-device-assigned	name	No	
JD14	time-at-creation	integer	No	
JD15	time-at-processing	integer	No	
JD16	time-at-completed	integer	No	
JD17	number-of-intervening-jobs	integer	No	
JD18	job-message-from-operator	text	No	
JD19	job-k-octets	integer	No	
JD20	job-impressions	integer	No	
JD21	job-media-sheets	integer	No	
JD22	job-k-octets-processed	integer	No	
JD23	job-impressions-completed	integer	No	
JD24	job-media-sheets-completed	integer	No	

603 ## 5.4 Syntax Coverage

Syntax Coverage				
ID	**Syntax**	**Attribute**	**Mandatory**	**Tested**
SC01	text	printer-location	No	
SC02	textWithLanguage			
SC03	name	printer-name	Yes	
SC04	nameWithLanguage			
SC05	keyword	pdl-override-supported	Yes	
SC06	enum	printer-state	Yes	
SC07	uri	printer-uri-supported	Yes	
SC08	UriScheme (1 setOf)	reference-uri-schemes-supported	No	
SC09	charset	charset-configured	Yes	
SC10	naturalLanguage	natural-language-configured	Yes	
SC11	mimeMediaType	document-format-default	No	
SC12	octetString			
SC13	boolean	printer-is-accepting-jobs	Yes	
SC14	integer	printer-up-time	Yes	
SC15	rangeOfInteger	job-k-octets-supported	No	
SC16	dateTime	printer-current-time	No	
SC17	resolution	printer-resolution	No	

Turner, Zehler

| SC18 | 1setOf X (1setOf type2 enum) | operations-supported | Yes | |

604   6 Issues

605 Use this area to record any issues, comments or concerns. The items should relate to the IPP specification
606 or interoperability testing.
607
608   • Section 5 has not been updated

609

610