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- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

## **IPP Bake Off 3 Testing Outline**

# Table of Contents

12

13 **1 GENERAL..... 2**

14 1.1 COMMON RESTRICTIONS FOR TEST PURPOSES ..... 2

15 1.2 TEST PRINT FILES ..... 3

16 1.3 RESULT PROCESSING AND DOCUMENTATION ..... 3

17 1.3.1 Anonymity ..... 3

18 1.3.2 Test data collection method ..... 3

19 1.3.3 Results determination ..... 3

20 1.3.4 Output..... 3

21 **2 PROCEDURE..... 4**

22 2.1 IPP CONNECTIVITY AND BASIC PRINTING ..... 4

23 2.2 VERSION INTEROPERABILITY..... 5

24 2.3 NOTIFICATION REGISTRATION AND DELIVERY METHODS ..... 5

25 2.4 FIREWALL AND PROXY INTERACTIONS ..... 5

26 2.5 AUTHENTICATION AND SECURITY ..... 5

27 **3 SAMPLE TABLES AND CHECKLISTS ..... 6**

28 3.1 IPP COMPONENTS MATRIX..... 6

29 3.2 SIMPLE PRINT TABLE ..... 6

30 3.3 VERSION INTEROPERABILITY TABLE..... 7

31 3.4 NOTIFICATION TABLE .....10

32 3.5 AUTHENTICATION & SECURITY TABLE .....10

33 3.6 FIREWALL TABLE .....11

34 **4 ISSUES.....11**

35  
36  
37

## 38 **1 General**

### 39 **1.1 Common restrictions for test purposes**

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

- 42
- 43
- 44
- 45 • Security. Authentication, authorization and privacy will not be used except where explicitly
  - 46 stated. There will be a series of test specifically targeting interoperability of security
  - 47 implementations. The core protocol testing will eliminate these variables.
  - 48 • Character set. We will use the UTF-8 character encoding of ISO646. This will simplify the
  - 49 comparison of results. The exception will be tests specifically targeted at characters sets.
  - 50 • Language. We will use en-us. This will simplify the comparison of results. Once again the
  - 51 exception will be tests that are intended to test this aspect of the protocol.
  - IPP Scheme. The URLs for printers will be [ipp://\\*](http://ipp://*) as specified in the IPP 1.1 specification.
  - Http Chunking. No IPP component being tested will chunk its requests or responses. Testing of chunking IPP requests and responses will specifically be performed.

- 52 • Set 1 operations. Any implementations that support the set 1 extensions will use the PWG OP  
53 codes. The PWG OP codes are from 0x0C to 0X12 inclusive.
- 54 • HTTP Version 1.1 will be used. Compatibility tests with 1.1 and 1.0 components will be  
55 performed.
- 56 • Firewalls and proxies. . The exception will be tests specifically targeted at firewalls and  
57 proxies.

58

## 59 **1.2 Test print files**

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

## 62 **1.3 Result processing and documentation**

### 63 1.3.1 Anonymity

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

### 68 1.3.2 Test data collection method

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

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

### 75 1.3.3 Results determination

76 Humans can determine the results for many of the tests. An IPP Client submitting a job that is  
77 printed by an IPP printer would seem to indicate interoperability. .

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

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

81

### 82 1.3.4 Output

#### 83 **1.3.4.1 Detailed results**

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

88 **1.3.4.2 Summary of results**

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

92 **1.3.4.3 Issues**

93 Issues will be recorded and tracked by the TES whip or designate. The issue will be sent to the  
94 IPP Working Group for disposition.

95 **2 Procedure**

96 After setting up and establishing basic IP connectivity, every IPP component will be assigned a  
97 designator. The relevant information for each IPP component will be recorded in the table similar to  
98 the one in section 3.1.

99 Throughout the tests the term “interoperate” means that two independent IPP implementations  
100 correctly understands the feature.

101 **2.1 IPP connectivity and basic printing**

102 Each IPP Client will send a simple print job to every IPP Printer. The results will be recorded in a  
103 table similar to the one in section 3.2. This step should be performed during the initial set up day.  
104 Any holes in the table can be filled in the following days.

105  
106 **Undecided on IPP coverage testing during Bake-Off**  
107 *(NOTE: The remainder of the testing should be performed using a*  
108 *pair of independent implementations of the IPP protocol.)*  
109 **Mandatory operations coverage**  
110 **Check off the operations supported in the table in**  
111 **section**  
112 **Optional operations coverage**  
113 **Check off the attribute supported in the table in section**  
114 **Mandatory printer attributes coverage**  
115 **Check off the attribute supported in the table in section**  
116 **Optional printer attribute coverage**  
117 **Check off the attributes supported in the table in section**

118  
119  
120  
121 *Add this type of testing if common error conditions will be tested*  
122 *Printer State and Status*  
123 *The objective of this step is to compare the state of printers under various conditions. The*  
124 *get-printer-attributes operation will be used to obtain the printer-state and printer-state-*  
125 *reasons attributes.*

126  
127 *Out of paper*  
128 *Submit a job of a known size to a printer with the input tray(s) empty. The printer-state*  
129 *should be stopped and the printer-state-reasons should be 'media-empty'*

130 Put some paper into the input tray. There should not be enough to complete the job. While  
 131 the printer is printing, examine the printer-state and printer-state-reasons. The printer-  
 132 state should be processing and the printer-state-reasons may contain media-low.  
 133 When the printer runs out of paper, examine the two attributes again. The printer-state  
 134 should be stopped. The printer-state-reasons may contain media-needed.  
 135 Cover open  
 136 Open the appropriate covers and doors. The printer-state should move to 'stopped'. The  
 137 printer-state-reasons may contain 'cover-open' and/or 'door-open'.  
 138 Tray missing  
 139 Remove an input tray and record the printer-state and printer-state-reasons. The printer-  
 140 state-reasons may contain 'input-tray-missing'.  
 141 Pausing a printer  
 142 If possible, pause the printer. The printer-state should be stopped. The printer-state-  
 143 reasons may contain paused.  
 144 Paper jam  
 145 If possible, cause the printer to jam. The printer-state should be stopped. The printer-state-  
 146 reasons may contain media-jam.  
 147

## 148 2.2 Version Interoperability

149 Using Clients and Printers of differing versions submit simple print jobs. Record results in table similar to  
 150 the one in section 3.3.

151 Should other operations/scenarios be tested?

## 152 2.3 Notification Registration and Delivery Methods

153 Need to fill out this section. Register for events using supported methods. Test job and printer related  
 154 registrations. Test some common event triggers.

## 155 2.4 Firewall and Proxy Interactions

156 Need to fill out this section. Test inbound and outbound printing. Test inbound and outbound  
 157 notification. Is there any firewall specific test that should be run? Test security and printing through a  
 158 proxy.  
 159

## 160 2.5 Authentication and Security

161 Authentication and security will be tested for interoperability. The IPP printers and client  
 162 participating will record the results in tables similar to the table in section 3.5. Authentication and  
 163 security schemes include Basic, Digest, SSL3, TLS and Kerberos.  
 164  
 165

166 **3 Sample Tables and Checklists**

167 **3.1 IPP Components matrix**

168

ID	URL	Ethernet Address	Chunking (Send,Receive)	Security Schemes	Authentication Schemes	Notification Schemes
Clients						
C1						
C2						
C3						
Printers						
P1						
P2						
P3						
Test Suites						
TS1						
TS2						
TS3						

169 **3.2 Simple Print Table**

170

	<b>Client ID</b>							
<b>Printer ID</b>								

171

172 **3.3 Version interoperability Table**

	<b>1.0 Client</b>	<b>1.1 Client</b>
<b>1.0 Printer</b>		
<b>1.1 Printer</b>		

173

174 **X.X IPP Operation/Attribute Coverage Tables**

175

**X.X.X Mandatory Operations**

Mandatory Operations	
Operation	Interoperate
print-job	
validate-job	
get-printer-attributes	
get-jobs	
cancel-job	
get-job-attributes	

176

**X.X.X Optional Operations**

Optional Operations	
Operation	Interoperate
print-uri	
create-job	
pause-printer	
resume-printer	
purge-printer	
send-document	
send-uri	
hold-job	
release-job	
restart-job	

177

**X.X.X.Operational attributes**

Operational attributes		
Operational Attribute	Group	Interoperate
version-number	preamble	
operation-id	preamble	
request-id	preamble	
attributes-charset	operational-attribute	
attributes-natural-language	operational-attribute	
printer-uri	operational-attribute	
requesting-user-name	operational-attribute	
status code	preamble	
Status-message (Optional)	operational-attribute	

178

**X.X.X Mandatory Printer Attributes**

<b>Mandatory Printer Attributes</b>	
<b>Attribute</b>	<b>Interoperate</b>
printer-uri-supported	
uri-security-supported	
printer-name	
printer-state	
operations-supported	
charset-configured	
charset-supported	
natural-language-configured	
generated-natural-language-supported	
printer-is-accepting-jobs	
pdl-override-supported	
document-format-default	
document-format-supported	
printer-up-time	

179

**X.X.X Optional Printer Attributes**

<b>Optional Printer Attributes</b>	
<b>Attribute</b>	<b>Interoperate</b>
printer-location	
printer-info	
printer-more-info	
printer-driver-installer	
printer-make-and-model	
printer-more-info-manufacturer	
printer-state-reasons	
printer-state-message	
queued-job-count	
printer-message-from-operator	
color-supported	
reference-uri-schemes-supported	
printer-current-time	
multiple-operation-time-out	
compression-supported	
job-k-octets-supported	
job-impressions-supported	
job-media-sheets-supported	
job-priority-default	
job-priority-supported	
job-hold-until-default	
job-hold-until-supported	
job-sheets-default	
job-sheets-supported	
multiple-document-handling-default	



Optional Printer Attributes	
Attribute	Interoperate
multiple-document-handling-supported	
copies-default	
copies-supported	
finishings-default	
finishings-supported	
page-ranges-supported	
sides-default	
sides-supported	
number-up-default	
number-up-supported	
orientation-requested-default	
orientation-requested-supported	
media-default	
media-supported	
media-ready	
printer-resolution-default	
printer-resolution-supported	
print-quality-default	
print-quality-supported	

180

181

### X.X.X Mandatory job Attributes

Mandatory job Attributes	
Attribute	Interoperate
Job-uri	
Job-id	
Job-printer-uri	
Job-name	
Job-originating-user-name	
Job-state	
job-state-reasons	
Time-at-creation	
Time-at-processing	
Time-at-completed	
Attributes-charset	
Attributes-natural-language	

182

183

### X.X.X Optional Job Attributes

Optional Job Attributes	
Attribute	Interoperate
Job-more-info	
Job-state-message	
Job-detailed-status-message	
Job-document-access-error	
Number-of-documents	
Output-device-assigned	
Date-time-at-creation	
Date-time-at-processing	

Optional Job Attributes	
Attribute	Interoperate
Date-time-at-completed	
Number-of-intervening-jobs	
Job-message-from-operator	
Job-k-octets	
job-impressions	
job-media-sheets	
compression-supported	
Job-k-octets-processed	
job-impressions-completed	
job-media-sheets-completed	
job-priority	
job-hold-until	
job-sheets	
multiple-document-handling	
copies	
finishings	
page-ranges	
sides	
number-up	
orientation-requested	
media	
printer-resolution	
print-quality	

184

185

186

187 **3.4 Notification Table**

	<b>Printer ID &amp; method</b>			
<b>Client ID &amp; method</b>	<i>Registration</i>			
	<i>Delivery</i>			

188

189 **3.5 Authentication & Security Table**

<i>Security, Authentication</i>	<b>Client ID</b>			
<b>Printer ID</b>				


190

191 **3.6 Firewall Table**

	<b>Inbound Print</b>	<b>Outbound Notify</b>	<b>Outbound Print</b>	<b>Inbound Notify</b>
<b>Printer ID, Client ID</b>				

192 **4 Issues**

193 Use this area to record any issues, comments or concerns. The items should relate to the IPP specification  
194 or interoperability testing.