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2 Service Location Working Group  
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10 Definition of the Printer Abstract Service Type v2.0  
11 <draft-ietf-svrloc-printer-scheme-06.txt>

12  
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31  
32  
33 Abstract

34  
35 This document is a product of the Service Location and Internet  
36 Printing Protocol Working Groups of the Internet Engineering Task  
37 Force (IETF). Comments should be sent to the [svrloc@srvloc.org](mailto:svrloc@srvloc.org) and  
38 [ipp@pwg.org](mailto:ipp@pwg.org) mailing lists.

39  
40 This document defines the 'service:printer:' abstract type and the  
41 attributes associated with it. This 'service:printer:' template is  
42 designed to be used in conjunction with the Service Location  
43 Protocol, Version 2 (SLPv2) [13], but may be used with any directory  
44 service which supports attribute/value pair registration, such as the  
45 Lightweight Directory Access Protocol, Version 3 (LDAPv3 [16]).

46  
47 The 'service:printer:' type is specified as an abstract service type.  
48 Printers advertised with the 'service:printer:' abstract type may be  
49 accessible by one or more print protocols, such as IPP [3] and LPR  
50 [2].

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116  
117 1. Introduction  
118

119 Service Type templates are used to describe in a standard way those  
120 services which use the 'service:' URL. The template described in  
121 this document is an abstract service type that includes concrete  
122 types such as the printing protocol defined in RFC 1179 [2], "Line  
123 Printer Daemon Protocol". This template defines the  
124 'service:printer:' abstract type.  
125

126 The 'service:printer:' abstract type supports consistent registration  
127 of printer services. The attributes described within this document  
128 are derived from previous specifications developed by the IETF IPP WG  
129 and IETF Printer MIB WG.  
130

131 The attributes specified are intended to facilitate both automatic  
132 and manual selection of services, not to provide service state,  
133 statistics, or notification. The target audience of service  
134 attributes consists of users, either software agents or end users.  
135  
136

137  
138 2. Terminology  
139

140 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",  
141 "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this  
142 document are to be interpreted as described in RFC 2119 [14].  
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172  
173 3. Template url-path Definition  
174

175 The 'service:printer:' type is an abstract type. Because an abstract  
176 service type may contain one of many concrete types, the 'url-path'  
177 associated with a 'service:printer:' URL may vary. IPP and LPR  
178 printers are presently supported by this 'service:printer:' template.  
179 Other printer protocols MAY be supported by extension templates or by  
180 future updates of this abstract 'service:printer:' template.  
181

182  
183  
184 3.1. IPP  
185

186 An IPP Printer object is defined in "IPP/1.1 Model and Semantics"  
187 [3]. An IPP printer concrete URL is defined in "IPP/1.1 Encoding and  
188 Transport" [9].  
189

190 Examples of valid 'service:' URLs for IPP printers include:

191  
192 service:printer:ipp://server.sun.com/cgi-bin/public-printer  
193 service:printer:ipp://foo.sun.com/printers?public-printer  
194

195  
196  
197 3.2. LPR  
198

199 An LPR accessible printer MAY include a queue name as the last part  
200 of the URL. If the queue name is absent, the print server is assumed  
201 to use a default print queue. The definition of an LPR printer  
202 concrete URL is specified in this document, in the 'service:printer:'  
203 template.  
204

205 Examples of valid 'service:' URLs for LPR printers include:

206  
207 service:printer:lpr://server.sun.com  
208 service:printer:lpr://server.sun.com/public-printer  
209  
210  
211  
212  
213  
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221  
222

229 4. Printer Service Template  
230

231 The 'service:printer:' template defined below conforms to the grammar  
232 described in "Service Templates and service: Schemes". Please refer  
233 to [4] for detailed explanation of the syntax.  
234

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238

239 Language of service template: en (English)  
240

241 Security Considerations:

242 By advertising the security methods for each supported printer URL  
243 the printer may expose information useful to attackers. SLPv2  
244 security or another security method SHOULD be used to authenticate  
245 any service advertisements.  
246

247 Template Text:

```
248 ----- template begins here -----  
249     template-type = printer  
250  
251     template-version = 2.0  
252  
253     template-description =  
254         The 'service:printer:' template describes the attributes  
255         supported by network printing devices. Devices may be  
256         either directly connected to a network or managed by a  
257         print server. The device or server understands one or  
258         more network print protocols such as IPP or LPR.  
259  
260     template-url-syntax =  
261         url-path      = ippurl / lprurl  
262         ippurl        = IPP URL as defined in [9]  
263         lprurl        = "lpr://" hostport [ "/" qname ]  
264         hostport      = host [ ":" port ]  
265         host          = hostname / hostnumber  
266         hostname      = *( domainlabel "." ) toplabel  
267         domainlabel   = alphanum /  
268                       alphanum * [alphanum / "-"] alphanum  
269         toplabel      = alpha / alpha * [alphanum / "-"] alphanum  
270         hostnumber    = ipv4-number / ipv6-number  
271         ipv4-number   = 1*3digit 3*3("." 1*3digit)  
272         ipv6-number   = 32*hex  
273         3digit        = digit digit digit  
274         port          = 1*digit  
275         alphanum      = alpha / digit  
276         alpha         = "a" / "b" / "c" / "d" / "e" / "f" / "g" /  
277                       "h" / "i" / "j" / "k" / "l" / "m" / "n" /  
278
```

283 "o" / "p" / "q" / "r" / "s" / "t" / "u" /  
284 "v" / "w" / "x" / "y" / "z" /  
285 "A" / "B" / "C" / "D" / "E" / "F" / "G" /  
286 "H" / "I" / "J" / "K" / "L" / "M" / "N" /  
287 "O" / "P" / "Q" / "R" / "S" / "T" / "U" /  
288 "V" / "W" / "X" / "Y" / "Z"  
289 digit = "0" / "1" / "2" / "3" / "4" / "5" / "6" /  
290 "7" / "8" / "9"

291  
292 printer-xri-supported = STRING L  
293 # REQUIRED for all registrations by conforming SLP SAs  
294 # IPP 'printer-uri-supported'  
295 # IPP 'uri-authentication-supported'  
296 # IPP 'uri-authentication-supported'  
297 # The unordered list of XRI (extended resource identifiers)  
298 # supported by this printer. Each member of the list  
299 # consists of a URI (uniform resource identifier) followed  
300 # by optional authentication and security metaparameters.  
301 # The keywords for URI and their metaparameters are:  
302 # 'uri' == IPP 'printer-uri-supported' value  
303 # 'auth' == IPP 'uri-authentication-supported' value  
304 # 'sec' == IPP 'uri-security-supported' value  
305 # Legal values of the 'auth' metaparameter include  
306 # 'none' (no authentication for this URI)  
307 # 'requesting-user-name' (from operation request)  
308 # 'basic' (HTTP/1.1 Basic, RFC 2617 [18])  
309 # 'digest' (HTTP/1.1 Basic, RFC 2617 [18])  
310 # 'certificate' (from certificate)  
311 # per IPP Model [3] (extensions MAY also be used).  
312 # A missing 'auth' metaparameter SHALL mean 'none'.  
313 # Legal values of the 'sec' metaparameter include  
314 # 'none' (no security for this URI)  
315 # 'ssl3' (Netscape SSL3)  
316 # 'tls' (IETF TLS/1.0, RFC 2246 [15])  
317 # per IPP Model [3] (extensions MAY also be used).  
318 # A missing 'sec' metaparameter SHALL mean 'none'.  
319 # Each metaparameter of a list member is delimited by '<'.  
320 # Each list member (including the last) is delimited by '>'.  
321 # For example:  
322 # 'uri=ipp://foo.com< auth=digest< sec=tls< >  
323 # 'uri=lpr://bar.com< auth=none< sec=none< >  
324 # Registrations MAY consolidate values for metaparameters,  
325 # as in the following example:  
326 # 'uri=ipp://foo.com< auth=basic,digest< sec=tls,ssl3< >

327  
328 printer-name = STRING  
329 # REQUIRED for all registrations by conforming SLP SAs  
330 # IPP 'printer-name'  
331 # The site-specific administrative name of this printer.  
332 # This value of this attribute SHOULD be in the language  
333 # specified in 'printer-natural-language-configured'  
334

339 # (although the printer's name may be in any language).  
340 # This name MAY be the last part of the printer's URI or it  
341 # MAY be completely unrelated.  
342 # This name MAY contain characters that are not allowed in a  
343 # conventional URI (which conforms to RFC 2396 [17]).  
344 # If this printer information is not known to the SLP SA,  
345 # then this attribute SHALL be set to 'unknown'.  
346

347 printer-natural-language-configured = STRING L O  
348 unknown  
349 # RECOMMENDED for all registrations by conforming SLP SAs  
350 # IPP 'natural-language-configured'  
351 # The configured language in which error and status messages  
352 # will be generated (by default) by this printer.  
353 # Also, the (declared) language of the attributes  
354 # 'printer-name', 'printer-location', 'printer-info',  
355 # 'printer-make-and-model', 'printer-media-local-supported',  
356 # 'printer-current-operator', 'printer-service-person'.  
357 # For example:  
358 # 'en-us' (US English) or 'fr-fr' (French in France)  
359 # Legal values of language tags conform to RFC 1766  
360 # 'Tags for the Identification of Languages' [5].  
361 # For coherence with IPP Model [3], language tags in this  
362 # attribute SHALL be lowercase normalized.  
363 # If this printer information is not known to the SLP SA,  
364 # then this attribute SHALL be set to 'unknown'.  
365 # However, it is STRONGLY RECOMMENDED that this attribute  
366 # be supported and that it be set to a meaningful value.  
367

368 printer-location = STRING O  
369 unknown  
370 # RECOMMENDED for all registrations by conforming SLP SAs  
371 # IPP 'printer-location'  
372 # The physical location of this printer.  
373 # This value of this attribute SHOULD be in the language  
374 # specified in 'printer-natural-language-configured'.  
375 # A free form description of this printer's physical  
376 # location, for example:  
377 # 'Orlando office, 2nd floor, near the fire escape'  
378 # If this printer information is not known to the SLP SA,  
379 # then this attribute SHALL be set to 'unknown'.  
380 # However, it is STRONGLY RECOMMENDED that this attribute  
381 # be supported and that it be set to a meaningful value so  
382 # that users can determine this printer's physical location  
383 # for printer selection (before print job submission) and  
384 # for output collection (after print job completion).  
385

386 printer-info = STRING O  
387 unknown  
388 # IPP 'printer-info'  
389 # Additional descriptive information on this printer.  
390

395           # This value of this attribute SHOULD be in the language  
396           # specified in 'printer-natural-language-configured'.  
397           # A free form string that may contain any site-specific  
398           # descriptive information about this printer.  
399           # If this printer information is not known to the SLP SA,  
400           # then this attribute SHALL be set to 'unknown'.  
401

402 printer-more-info = STRING L O  
403           unknown  
404           # IPP 'printer-more-info'  
405           # A URI used to obtain more information about this specific  
406           # printer. For example, this could be an 'http:' URI  
407           # referencing an HTML page accessible to a Web Browser.  
408           # The information obtained from this URI is intended for  
409           # end user consumption.  
410           # If this printer information is not known to the SLP SA,  
411           # then this attribute SHALL be set to 'unknown'.  
412

413 printer-make-and-model = STRING O  
414           unknown  
415           # IPP 'printer-make-and-model'  
416           # The manufacturer, make, and model of this printer,  
417           # a simple text string defined by the manufacturer.  
418           # This value of this attribute SHOULD be in the language  
419           # specified in 'printer-natural-language-configured'.  
420           # If this printer information is not known to the SLP SA,  
421           # then this attribute SHALL be set to 'unknown'.  
422

423 printer-ipp-versions-supported = STRING L M O  
424           none  
425           # IPP 'ipp-versions-supported'  
426           # The unordered list of 'major.minor' IPP versions  
427           # supported by this printer or 'none'.  
428           # For example:  
429           #    '1.0, 1.1'  
430           # Legal values include 'none', '1.0', and '1.1',  
431           # per IPP Model [3] (extensions MAY also be used).  
432           # If this printer information is not known to the SLP SA,  
433           # then this attribute SHALL be set to 'none'.  
434

435 printer-multiple-document-jobs-supported = STRING L O  
436           unknown  
437           # IPP 'multiple-document-jobs-supported'  
438           # Indicates whether this printer supports more than one  
439           # document per job.  
440           # This template attribute is an extended boolean.  
441           # If this printer information is not known to the SLP SA,  
442           # then this attribute SHALL be set to 'unknown'.  
443           unknown, true, false  
444

445 printer-charset-configured = STRING L O  
446



451 utf-8  
452 # IPP 'charset-configured'  
453 # The configured charset in which error and status messages  
454 # will be generated (by default) by this printer.  
455 # For example:  
456 # 'utf-8' (ISO 10646/Unicode) or 'iso-8859-1' (Latin1)  
457 # Legal values of charset tags (names/aliases) come from  
458 # the IANA Registry of Coded Character Sets [6] and  
459 # the '(preferred MIME name)' SHALL be used as the tag.  
460 # For coherence with IPP Model [3], charset tags in this  
461 # attribute SHALL be lowercase normalized.

462  
463 printer-charset-supported = STRING L M O

464 utf-8  
465 # IPP 'charset-supported'  
466 # The possible charsets in which error and status messages  
467 # may be generated (if requested) by this printer.  
468 # Also, the possible charsets for printer string attributes  
469 # set by operator, system administrator, or manufacturer.  
470 # For example:  
471 # 'utf-8' (ISO 10646/Unicode) or 'iso-8859-1' (Latin1)  
472 # Legal values of charset tags (names/aliases) come from  
473 # the IANA Registry of Coded Character Sets [6] and  
474 # the '(preferred MIME name)' SHALL be used as the tag.  
475 # This attribute SHALL include the value 'utf-8', per  
476 # RFC 2277, 'IETF Policy on Charsets and Languages' [12].  
477 # For coherence with IPP Model [3], charset tags in this  
478 # attribute SHALL be lowercase normalized.

479  
480 printer-generated-natural-language-supported = STRING L M O

481 unknown  
482 # RECOMMENDED for all registrations by conforming SLP SAs  
483 # IPP 'generated-natural-language-supported'  
484 # The possible languages in which error and status messages  
485 # may be generated (if requested) by this printer.  
486 # Also, the possible languages for printer string attributes  
487 # set by operator, system administrator, or manufacturer.  
488 # For example:  
489 # 'en-us' (US English) or 'fr-fr' (French in France)  
490 # Legal values of language tags conform to RFC 1766  
491 # 'Tags for the Identification of Languages' [5].  
492 # For coherence with IPP Model [3], language tags in this  
493 # attribute SHALL be lowercase normalized.  
494 # If this printer information is not known to the SLP SA,  
495 # then this attribute SHALL be set to 'unknown'.  
496 # However, it is STRONGLY RECOMMENDED that this attribute  
497 # be supported and that it be set to a meaningful value.

498  
499 printer-document-format-supported = STRING L M O

500 unknown  
501 # RECOMMENDED for all registrations by conforming SLP SAs

507 # IPP 'document-format-supported'  
508 # The possible document formats in which data may be  
509 # interpreted and printed by this printer.  
510 # Legal values of document formats (MIME types) come from  
511 # the IANA Registry of Internet Media Types [11].  
512 # If this printer information is not known to the SLP SA,  
513 # then this attribute SHALL be set to 'unknown'.  
514 # However, it is STRONGLY RECOMMENDED that this attribute  
515 # be supported and that it be set to a meaningful value.

516  
517 printer-color-supported = STRING L O  
518 unknown  
519 # IPP 'color-supported'  
520 # Indicates whether this printer is capable of any type of  
521 # color printing at all, including highlight color.  
522 # This template attribute is an extended boolean.  
523 # If this printer information is not known to the SLP SA,  
524 # then this attribute SHALL be set to 'unknown'.  
525 unknown, true, false  
526

527 printer-compression-supported = STRING L M O  
528 none  
529 # RECOMMENDED for all registrations by conforming SLP SAs  
530 # IPP 'compression-supported'  
531 # The unordered list of compression algorithms supported  
532 # by this printer.  
533 # For example:  
534 # 'deflate, gzip'  
535 # Legal values include  
536 # 'none'  
537 # 'deflate' (public domain ZIP)  
538 # 'gzip' (GNU ZIP)  
539 # 'compress' (UNIX)  
540 # per IPP Model [3] (extensions MAY also be used).  
541 # If this printer information is not known to the SLP SA,  
542 # then this attribute SHALL be set to 'none'.  
543 # However, it is STRONGLY RECOMMENDED that this attribute  
544 # be supported and that it be set to a meaningful value.  
545

546 printer-pages-per-minute = INTEGER O  
547 -1  
548 # IPP 'pages-per-minute'  
549 # The nominal number of pages per minute which may be  
550 # output by this printer (e.g., simplex, black-and-white).  
551 # This attribute is informative, NOT a service guarantee.  
552 # Typically, it is the value used in marketing literature  
553 # to describe this printer.  
554 # A value of '-1' indicates unknown.  
555 # If this printer information is not known to the SLP SA,  
556 # then this attribute SHALL be set to '-1'.  
557

563  
564 printer-pages-per-minute-color = INTEGER 0  
565     -1  
566     # IPP 'pages-per-minute-color'  
567     # The nominal number of color pages per minute which may be  
568     # output by this printer (e.g., simplex, color).  
569     # This attribute is informative, NOT a service guarantee.  
570     # Typically, it is the value used in marketing literature  
571     # to describe this printer.  
572     # A value of '-1' indicates unknown.  
573     # If this printer information is not known to the SLP SA,  
574     # then this attribute SHALL be set to '-1'.  
575

576 printer-finishings-supported = STRING L M O  
577     none  
578     # IPP 'finishings-supported'  
579     # The possible finishing operations supported by this  
580     # printer.  
581     # Legal values of finishings are defined in IPP Model [3].  
582     # If this printer information is not known to the SLP SA,  
583     # then this attribute SHALL be set to 'none'.  
584     none, staple, punch, cover, bind,  
585     saddle-stitch, edge-stitch,  
586     staple-top-left, staple-bottom-left,  
587     staple-top-right, staple-bottom-right,  
588     edge-stitch-left, edge-stitch-top,  
589     edge-stitch-right, edge-stitch-bottom,  
590     staple-dual-left, staple-dual-top,  
591     staple-dual-right, staple-dual-bottom  
592

593 printer-number-up-supported = INTEGER M O  
594     1  
595     # IPP 'number-up-supported'  
596     # The possible numbers of print-stream pages to impose  
597     # upon a single side of an instance of a selected  
598     # medium.  
599     # Legal values of this attribute include 1, 2, and 4 [3].  
600     # Implementations may support other values.  
601     # If this printer information is not known to the SLP SA,  
602     # then this attribute SHALL be set to '1'.  
603

604 printer-sides-supported = STRING L M O  
605     one-sided  
606     # IPP 'sides-supported'  
607     # (Compare with Salutation 'duplex-mode')  
608     # The number of impression sides (one or two) and the  
609     # two-sided impression rotations supported by this printer.  
610     # Salutation 'simplex' == IPP 'one-sided'  
611     # Salutation 'duplex' == IPP 'two-sided-long-edge'  
612     # Salutation 'tumble' == IPP 'two-sided-short-edge'  
613     # If this printer information is not known to the SLP SA,  
614

619 # then this attribute SHALL be set to 'one-sided'.  
620 one-sided, two-sided-long-edge, two-sided-short-edge

621  
622 printer-media-supported = STRING L M O  
623 unknown  
624 # IPP 'media-supported' - only the standard keyword values  
625 # The standard names/types/sizes (and optional color  
626 # suffixes) of the media supported by this printer.  
627 # The values specified are NOT localized according to  
628 # 'printer-natural-language-configured', but are in a  
629 # fixed language of 'en-us' (US English). For example:  
630 # 'iso-a4' or 'envelope' or 'na-letter-white'  
631 # Legal values of this attribute conform to ISO 10175  
632 # 'Document Printing Application (DPA)' [10] and  
633 # any IANA registered extensions, per IPP Model [3].  
634 # If this printer information is not known to the SLP SA,  
635 # then this attribute SHALL be set to 'unknown'.  
636

637 printer-media-local-supported = STRING M O  
638 unknown  
639 # IPP 'media-supported' - only site-specific name values  
640 # Site-specific names of media supported by this printer.  
641 # This value of this attribute SHOULD be in the language  
642 # specified in 'printer-natural-language-configured'  
643 # (although the media names may be in any language).  
644 # For example:  
645 # 'purchasing-form' (site-specific name)  
646 # as opposed to (in 'media-supported' above):  
647 # 'na-letter' (standard keyword from ISO 10175 [10]).  
648 # If this printer information is not known to the SLP SA,  
649 # then this attribute SHALL be set to 'unknown'.  
650

651 printer-resolution-supported = STRING L M O  
652 unknown  
653 # IPP 'printer-resolution-supported'  
654 # (Compare with 'printer-xri-supported' in this template)  
655 # The unordered list of resolutions supported for printing  
656 # documents by this printer.  
657 # Each resolution supported is a string with 3 fields:  
658 # 1) Crossfeed direction resolution (positive integer)  
659 # 2) Feed direction resolution (positive integer)  
660 # 3) Resolution unit (enumerated value - see below)  
661 # Each resolution field is delimited by '>', for example:  
662 # '300> 300> dpi>, 600> 600> dpi>'  
663 # Legal values of resolution unit are  
664 # 'dpi' (dots per inch)  
665 # 'dpcm' (dots per centimeter)  
666 # per IPP Model [3] (extensions SHOULD NOT be used).  
667 # This attribute is derived from the Printer MIB [7].  
668 # If this printer information is not known to the SLP SA,  
669 # then this attribute SHALL be set to 'unknown'.  
670

```
676 printer-print-quality-supported = STRING L M O  
677     unknown  
678     # IPP 'print-quality-supported'  
679     # The unordered list of print qualities supported for  
680     # printing documents on this printer.  
681     # For example:  
682     #     'draft, normal'  
683     # Legal values are defined in IPP Model [3].  
684     # If this printer information is not known to the SLP SA,  
685     # then this attribute SHALL be set to 'unknown'.  
686     unknown, draft, normal, high  
687
```

```
688 printer-job-priority-supported = INTEGER 0  
689     1  
690     # IPP 'job-priority-supported'  
691     # (Compare with Salutation 'priority-levels-supported')  
692     # Indicates the number of job priority levels supported.  
693     # An IPP conformant printer which supports job priority  
694     # must always support a full range of priorities from  
695     # '1' to '100' (to ensure consistent behavior), therefore  
696     # this template attribute describes the 'granularity'.  
697     # Legal values of this attribute are from '1' to '100'.  
698     # If this printer information is not known to the SLP SA,  
699     # then this attribute SHALL be set to '1'.  
700
```

```
701 printer-copies-supported = INTEGER 0  
702     -1  
703     # IPP 'copies-supported'  
704     # The maximum number of copies of a document  
705     # that may be printed as a single job.  
706     # A value of '0' indicates no maximum limit.  
707     # A value of '-1' indicates unknown.  
708     # If this printer information is not known to the SLP SA,  
709     # then this attribute SHALL be set to '-1'.  
710
```

```
711 printer-job-k-octets-supported = INTEGER 0  
712     -1  
713     # IPP 'job-k-octets-supported'  
714     # The maximum size in kilobytes (1,024 octets actually)  
715     # incoming print job that this printer will accept.  
716     # A value of '0' indicates no maximum limit.  
717     # A value of '-1' indicates unknown.  
718     # If this printer information is not known to the SLP SA,  
719     # then this attribute SHALL be set to '-1'.  
720
```

```
721 printer-current-operator = STRING M O  
722     unknown  
723     # Printer MIB 'prtGeneralCurrentOperator'  
724     # The name of the current human operator responsible for  
725     # operating this printer. It is suggested that this string  
726
```

731            # include information that would enable other humans to  
732            # reach the operator, such as a telephone number.  
733            # This value of this attribute SHOULD be in the language  
734            # specified in 'printer-natural-language-configured'  
735            # (although the person's name may be in any language).  
736            # If this printer information is not known to the SLP SA,  
737            # then this attribute SHALL be set to 'unknown'.  
738

739 printer-service-person = STRING M O  
740            unknown  
741            # Printer MIB 'prtGeneralServicePerson'  
742            # The name of the current service person responsible for  
743            # servicing this printer. It is suggested that this string  
744            # include information that would enable other humans to  
745            # reach the service person, such as a telephone number.  
746            # This value of this attribute SHOULD be in the language  
747            # specified in 'printer-natural-language-configured'  
748            # (although the person's name may be in any language).  
749            # If this printer information is not known to the SLP SA,  
750            # then this attribute SHALL be set to 'unknown'.  
751

752 printer-delivery-orientation-supported = STRING L M O  
753            unknown  
754            # Printer MIB 'prtOutputPageDeliveryOrientation'  
755            # The possible delivery orientations of pages as they are  
756            # printed and ejected from this printer.  
757            # If this printer information is not known to the SLP SA,  
758            # then this attribute SHALL be set to 'unknown'.  
759            unknown, face-up, face-down  
760

761 printer-stacking-order-supported = STRING L M O  
762            unknown  
763            # Printer MIB 'prtOutputStackingOrder'  
764            # (Compare with Salutation 'paper-output')  
765            # The possible stacking order of pages as they are printed  
766            # and ejected from this printer.  
767            # If this printer information is not known to the SLP SA,  
768            # then this attribute SHALL be set to 'unknown'.  
769            unknown, first-to-last, last-to-first  
770

771 printer-output-features-supported = STRING L M O  
772            unknown  
773            # Printer MIB 'prtOutputFeaturesGroup'  
774            # (Compare with Salutation 'paper-output')  
775            # The possible output features supported by this printer.  
776            # 'bursting' == Printer MIB 'prtOutputBursting'  
777            # 'decollating' == Printer MIB 'prtOutputDecollating'  
778            # 'page-collating' == Printer MIB 'prtOutputPageCollated'  
779            # 'offset-stacking' == Printer MIB 'prtOutputOffestStacking'  
780            # If this printer information is not known to the SLP SA,  
781            # then this attribute SHALL be set to 'unknown'.  
782

784  
785 Internet Draft Printer Abstract Service Type v2.0 3 March 2000  
786

787 unknown, bursting, decollating, page-collating,  
788 offset-stacking  
789

790 ----- template ends here -----  
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839 St. Pierre, Isaacson, McDonald Expires 8 September 2000 [Page 15]

844  
845 5. Summary of Required Attributes

846  
847 Attributes are associated with 'service:' URLs in order to provide a  
848 dynamic search capability to service location clients. SLP SAs  
849 SHOULD include OPTIONAL attributes in their service registrations.  
850

851 Two (2) of the attributes defined in 'service:printer:' are REQUIRED  
852 in all compliant service registrations by SLP SAs:

853

854 SLP Required Attribute	854 IPP Generic Schem
855 -----	855 -----
856 printer-xri-supported	856 r
857 printer-name	857 r

858

- 859 r RECOMMENDED - Appendix E 'Generic Directory Schema' IPP Model [3]
  - 860 REQUIRED - SLP 'service:printer:' template
  - 861 m Missing - Appendix E 'Generic Directory Schema' IPP Model [3]
  - 862 REQUIRED - SLP 'service:printer:' template
- 863  
864  
865

866 5.1. Rationale for Required Attributes

867  
868 'printer-xri-supported'  
869 - REQUIRED in SLP 'service:printer:' to consolidate values from the  
870 following three IPP attributes (without parallel ordered attributes):  
871 'printer-uri-supported', 'uri-authentication-supported', and  
872 'uri-security-supported'.  
873

874 All other REQUIRED SLP 'service:printer:' template attributes are  
875 RECOMMENDED in Appendix E 'Generic Directory Schema' IPP Model [3].  
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900  
901 6. Summary of Recommended Attributes  
902

903 Attributes are associated with 'service:' URLs in order to provide a  
904 dynamic search capability to service location clients. SLP SAs  
905 SHOULD include RECOMMENDED attributes in their service registrations.  
906

907 Some of the attributes defined in 'service:printer:' are RECOMMENDED  
908 in all compliant service registrations by SLP SAs:  
909

910 SLP Recommended Attribute	910 IPP Generic Schem
911 -----	911 -----
912 printer-location	912 o
913 printer-natural-language-configured	913 m
914 printer-generated-natural-language-supported	914 o
915 printer-document-format-supported	915 r
916 printer-compression-supported	916 r

- 917  
918 r RECOMMENDED - Appendix E 'Generic Directory Schema' IPP Model [3]  
919 o OPTIONAL - SLP 'service:printer:' template (with specified defau  
920 o OPTIONAL - Appendix E 'Generic Directory Schema' IPP Model [3]  
921 m Missing - Appendix E 'Generic Directory Schema' IPP Model [3]  
922 m OPTIONAL - SLP 'service:printer:' template (with specified defau  
923  
924  
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926

927 6.1. Rationale for Recommended Attributes  
928

929 'printer-location'  
930 - RECOMMENDED in SLP 'service:printer:' template to aid users in  
931 selecting appropriate printers (by physical proximity);  
932 - OPTIONAL in Appendix E 'Generic Directory Schema' of IPP Model [3].  
933

934 'printer-natural-language-configured'  
935 - RECOMMENDED in SLP 'service:printer:' template to specify language  
936 tags for 'printer-name', 'printer-location', 'printer-info',  
937 'printer-make-and-model', 'printer-media-local-supported',  
938 'printer-current-operator', and 'printer-service-person' attributes;  
939 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3],  
940 because the corresponding IPP attributes are language tagged in-band  
941 via the IPP 'textWithLanguage' syntax.  
942

943 'printer-generated-natural-language-supported'  
944 - RECOMMENDED in SLP 'service:printer:' template to aid users in  
945 selecting appropriate printers;  
946 - OPTIONAL in Appendix E 'Generic Directory Schema' of IPP Model [3].  
947

948 All other RECOMMENDED SLP 'service:printer:' template attributes are  
949 RECOMMENDED in Appendix E 'Generic Directory Schema' IPP Model [3].  
950

957 7. Summary of Optional Attributes  
 958

959 Attributes are associated with 'service:' URLs in order to provide a  
 960 dynamic search capability to service location clients. SLP SAs MAY  
 961 include OPTIONAL attributes in their service registrations.  
 962

963 Most of the attributes defined in 'service:printer:' are OPTIONAL in  
 964 all compliant service registrations by SLP SAs:  
 965

SLP Optional Attribute	IPP Generic Schem
-----	-----
968 printer-info	o
969 printer-more-info	o
970 printer-make-and-model	r
971 printer-ipp-versions-supported	r
972 printer-multiple-document-jobs-supported	o
973 printer-charset-configured	m (SLP enhancemen
974 printer-charset-supported	o
975 printer-color-supported	r
976 printer-finishings-supported	r
977 printer-number-up-supported	o
978 printer-sides-supported	r
979 printer-media-supported	r
980 printer-media-local-supported	r (site-specific)
981 printer-pages-per-minute	o
982 printer-pages-per-minute-color	o
983 printer-resolution-supported	o
984 printer-print-quality-supported	o
985 printer-job-priority-supported	m (SLP enhancemen
986 printer-copies-supported	m (SLP enhancemen
987 printer-job-k-octets-supported	m (SLP enhancemen
988 printer-current-operator	m (from Printer M
989 printer-service-person	m (from Printer M
990 printer-delivery-orientation-supported	m (from Printer M
991 printer-stacking-order-supported	m (from Printer M
992 printer-output-features-supported	m (from Printer M

- 994 r RECOMMENDED - Appendix E 'Generic Directory Schema' IPP Model [3]
- 995 o OPTIONAL - SLP 'service:printer:'' template (with specified defau
- 996 o OPTIONAL - Appendix E 'Generic Directory Schema' IPP Model [3]
- 997 o OPTIONAL - SLP 'service:printer:'' template (with specified defau
- 998 m Missing - Appendix E 'Generic Directory Schema' IPP Model [3]
- 999 o OPTIONAL - SLP 'service:printer:'' template (with specified defau

1012  
1013 7.1. Rationale for Optional Attributes  
1014

1015 'printer-location', 'printer-make-and-model',  
1016 'printer-color-supported', 'printer-finishings-supported',  
1017 'printer-sides-supported', 'printer-media-supported', and  
1018 'printer-media-local-supported'  
1019 - OPTIONAL in SLP 'service:printer:' template because network print  
1020 servers may not be able to determine this information;  
1021 - RECOMMENDED in Appendix E 'Generic Directory Schema' of IPP Model  
1022 [3].

1023  
1024 'printer-ipp-versions-supported'  
1025 - OPTIONAL in SLP 'service:printer:' template because network  
1026 printers may not support IPP;  
1027 - RECOMMENDED in Appendix E 'Generic Directory Schema' of IPP Model  
1028 [3].

1029  
1030 'printer-charset-configured'  
1031 - OPTIONAL in SLP 'service:printer:'' template to aid users in  
1032 selecting appropriate printers;  
1033 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3].  
1034

1035 'printer-job-priority-supported', 'printer-copies-supported', and  
1036 'printer-job-k-octets-supported'  
1037 - OPTIONAL in SLP 'service:printer:'' template to aid users in  
1038 selecting appropriate printers;  
1039 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3].  
1040

1041 'printer-current-operator', 'printer-service-person',  
1042 'printer-delivery-orientation-supported',  
1043 'printer-stacking-order-supported', and  
1044 'printer-output-features-supported'  
1045 - OPTIONAL in SLP 'service:printer:'' template to aid users in  
1046 selecting appropriate printers;  
1047 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3],  
1048 because they are only specified in the Printer MIB [7], not in IPP.  
1049

1050 All other OPTIONAL SLP 'service:printer:' template attributes are  
1051 also OPTIONAL in Appendix E 'Generic Directory Schema' IPP Model [3].  
1052

1069 8. Summary of Attribute Origins  
 1070

1071 The following table summarizes the origins of all of the attributes  
 1072 in the 'service:printer:' template (except 'template-xxx' generic  
 1073 attributes defined in "Service Templates and service: Schemes" [4]  
 1074 and required for all 'service:' templates). The two source documents  
 1075 are IPP Model [3] and Printer MIB [7].  
 1076

1077 Attribute Name	IPP	Printer MIB
1078 -----	---	-----
1079 printer-xri-supported	X	
1080 printer-name	X	
1081 printer-natural-language-configured	X	
1082 printer-location	X	
1083 printer-info	X	
1084 printer-more-info	X	
1085 printer-make-and-model	X	
1086 printer-ipp-versions-supported	X	
1087 printer-multiple-document-jobs-supported	X	
1088 printer-charset-configured	X	
1089 printer-charset-supported	X	
1090 printer-generated-natural-language-supported	X	
1091 printer-document-format-supported	X	
1092 printer-color-supported	X	
1093 printer-compression-supported	X	
1094 printer-pages-per-minute	X	
1095 printer-pages-per-minute-color	X	
1096 printer-finishings-supported	X	
1097 printer-number-up-supported	X	
1098 printer-sides-supported	X	
1099 printer-media-supported	X	
1100 printer-media-local-supported	X	
1101 printer-resolution-supported	X	
1102 printer-print-quality-supported	X	
1103 printer-job-priority-supported	X	
1104 printer-copies-supported	X	
1105 printer-job-k-octets-supported	X	
1106 printer-current-operator		X
1107 printer-service-person		X
1108 delivery-orientation-supported		X
1109 stacking-order-supported		X
1110 output-features-supported		X

1111 'printer-xri-supported'  
 1112 - REQUIRED in SLP 'service:printer:' to consolidate values from the  
 1113 following three IPP attributes (without parallel ordered attributes):  
 1114 'printer-uri-supported', 'uri-authentication-supported', and  
 1115 'uri-security-supported'.  
 1116  
 1117  
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1123  
1124  
1125 9. IANA Considerations  
1126

1127        Registration of this 'service:printer:' template will follow the  
1128        procedures defined in section 4 'A Procedure for Standardizing New  
1129        Service Types' and section 5 'IANA Considerations' of "Service  
1130        Templates and service: Schemes" [4].  
1131

1132  
1133  
1134 10. Internationalization Considerations  
1135

1136        All attribute values in registrations using the 'service:printer:'  
1137        template MUST be encoded in UTF-8 characters, as required by "Service  
1138        Location Protocol, Version 2" [13]. Also, a language tag for all of  
1139        the textual attributes in the 'service:printer:' template SHOULD be  
1140        supplied in the attribute 'printer-natural-language-configured'.  
1141        Therefore, all registrations using the 'service:printer:' template  
1142        conform to "IETF Policy on Character Sets and Languages" [12].  
1143

1144  
1145  
1146 11. Security Considerations  
1147

1148        When used with SLPv2, this 'service:printer:' template inherits all  
1149        of the security issues described in section 17 'Security  
1150        Considerations' of "Service Location Protocol, Version 2" [13].  
1151

1152        By advertising the security methods for each supported printer URL  
1153        the printer may expose information useful to attackers. SLPv2  
1154        security or another security method SHOULD be used to authenticate  
1155        any service advertisements.  
1156

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1294

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1304

1305 Appendix E 'Generic Directory Schema' in IPP/1.1 Model [3]  
1306 (recommended and optional attributes for registering IPP printers)  
1307 was the primary input to this 'service:printer:' template.  
1308  
1309

1310  
1311 14. Authors' Addresses  
1312

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