

1
2 Service Location Working Group
3 INTERNET DRAFT
4 Expires 31 July 2000

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31 January 2000

10 Definition of the Printer Abstract Service Type
11 <draft-ietf-svrloc-printer-scheme-05.txt>

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15
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29
30
31 Abstract

32
33 This document is a product of the Service Location and Internet
34 Printing Protocol Working Groups of the Internet Engineering Task
35 Force (IETF). Comments should be sent to the svrloc@srvloc.org and
36 ipp@pwg.org mailing lists.

37
38 This document defines the 'printer:' abstract service type and the
39 attributes associated with it. This 'printer:' service template is
40 designed to be used in conjunction with the Service Location
41 Protocol, Version 2 (SLPv2) [13], but may be used with any directory
42 service which supports attribute/value pair registration, such as the
43 Lightweight Directory Access Protocol, Version 3 (LDAPv3, RFC 2251).

44
45 The 'printer:' service type is specified as an abstract service type.
46 Printers advertised with the 'printer:' abstract service type may be
47 accessible by one or more print protocols, such as IPP [3] and LPR
48 [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". The service type for this 'service:' URL
124 is 'printer:'.

125
126 The 'printer:' abstract service 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.

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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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173 3. Template url-path Definition
174

175 The 'printer:' type is an abstract service type. Because an abstract
176 service type may contain one of many concrete types, the 'url-path'
177 associated with a 'printer:' service URL may vary. IPP and LPR
178 printers are presently supported by this 'printer:' template. Other
179 printer protocols MAY be supported by extension templates or by
180 future updates of this abstract '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 'printer:' service
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
214
215
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222

228
229 4. Printer Service Template
230

231 The 'printer:' service 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 associated with each supported
243 printer URL via the mandatory attributes 'printer-uri-supported'
244 'uri-authentication-supported', and 'uri-security-supported', the
245 the printer may expose information useful to attackers. SLPv2
246 security or another security method SHOULD be used to authenticate
247 any service advertisements.
248

249 Template Text:

```
250 ----- template begins here -----  
251     template-type = printer  
252  
253     template-version = 1.0  
254  
255     template-description =  
256         The 'printer:' service template describes the attributes  
257         supported by network printing devices. Devices may be  
258         either directly connected to a network or managed by a  
259         print server. The device or server understands one or  
260         more network print protocols such as IPP or LPR.  
261  
262     template-url-syntax =  
263         url-path     = ippurl / lprurl  
264         ippurl       = IPP URL as defined in [9]  
265         lprurl       = "lpr://" hostport [ "/" qname ]  
266         hostport     = host [ ":" port ]  
267         host         = hostname / hostnumber  
268         hostname     = *( domainlabel "." ) toplabel  
269         domainlabel = alphanum /  
270                     alphanum * [alphanum / "-"] alphanum  
271         toplabel     = alpha / alpha * [alphanum / "-"] alphanum  
272         hostnumber   = ipv4-number / ipv6-number  
273         ipv4-number  = 1*3digit 3*3("." 1*3digit)  
274         ipv6-number  = 32*hex  
275         3digit       = digit digit digit  
276         port         = 1*digit  
277         alphanum     = alpha / digit  
278
```

283 alpha = "a" / "b" / "c" / "d" / "e" / "f" / "g" /
284 "h" / "i" / "j" / "k" / "l" / "m" / "n" /
285 "o" / "p" / "q" / "r" / "s" / "t" / "u" /
286 "v" / "w" / "x" / "y" / "z" /
287 "A" / "B" / "C" / "D" / "E" / "F" / "G" /
288 "H" / "I" / "J" / "K" / "L" / "M" / "N" /
289 "O" / "P" / "Q" / "R" / "S" / "T" / "U" /
290 "V" / "W" / "X" / "Y" / "Z"
291 digit = "0" / "1" / "2" / "3" / "4" / "5" / "6" /
292 "7" / "8" / "9"

293
294 printer-uri-supported = STRING L
295 # REQUIRED for all registrations by conforming SLP SAs
296 # IPP 'printer-uri-supported'
297 # The ORDERED list of URI supported by this printer,
298 # correlated with 'uri-authentication-supported' values
299 # and correlated with 'uri-security-supported' values.
300 # Each list member (including the last) is delimited by '>'.
301 # For example:
302 # 'lpr://foo.com> ipp://bar.com>'
303

304 uri-authentication-supported = STRING L
305 # REQUIRED for all registrations by conforming SLP SAs
306 # IPP 'uri-authentication-supported'
307 # The ORDERED list of authentication supported for each URI
308 # specified in 'printer-uri-supported' for this printer.
309 # Each list member (including the last) is delimited by '>'.
310 # For example:
311 # 'none> basic> certificate>'
312 # (see example of 'printer-uri-supported' above).
313 # Legal values include
314 # 'none' (no authentication for this URI)
315 # 'requesting-user-name' (from operation request)
316 # 'basic' (HTTP/1.1 Basic, RFC 2617)
317 # 'digest' (HTTP/1.1 Basic, RFC 2617)
318 # 'certificate' (from certificate)
319 # per IPP Model [3] (extensions MAY also be used).
320 # URI that do not support authentication SHALL specify
321 # 'none'.
322

323 uri-security-supported = STRING L
324 # REQUIRED for all registrations by conforming SLP SAs
325 # IPP 'uri-security-supported'
326 # The ORDERED list of security supported for each URI
327 # specified in 'printer-uri-supported' for this printer.
328 # Each list member (including the last) is delimited by '>'.
329 # For example:
330 # 'none> tls>'
331 # (see example of 'printer-uri-supported' above).
332 # Legal values include
333 # 'none' (no security for this URI)
334

339 # 'ssl3' (Netscape SSL3)
340 # 'tls' (IETF TLS/1.0, RFC 2246)
341 # per IPP Model [3] (extensions MAY also be used).
342 # URI that do not support security SHALL specify
343 # 'none'.
344

345 printer-name = STRING
346 # REQUIRED for all registrations by conforming SLP SAs
347 # IPP 'printer-name'
348 # The site-specific administrative name of this printer,
349 # in the language in 'natural-language-configured'.
350 # This name MAY be the last part of the printer's URI or it
351 # MAY be completely unrelated.
352 # This name MAY contain characters that are not allowed in a
353 # conventional URI (which conforms to RFC 2396).
354 # If this printer information is not known to the SLP SA,
355 # then this attribute SHALL be set to 'unknown'.
356 # This attribute SHOULD be static (time of registration)
357 # and SHOULD NOT be dynamically refreshed (subsequently).
358

359 printer-location = STRING 0
360 unknown
361 # IPP 'printer-location'
362 # The physical location of this printer,
363 # in the language in 'natural-language-configured'.
364 # A free form description of this printer's physical
365 # location, for example:
366 # 'Orlando office, 2nd floor, near the fire escape'
367 # If this printer information is not known to the SLP SA,
368 # then this attribute SHALL be set to 'unknown'.
369 # However, it is STRONGLY RECOMMENDED that this attribute
370 # be supported and that it be set to a meaningful value so
371 # that users can determine this printer's physical location
372 # for printer selection (before print job submission) and
373 # for output collection (after print job completion).
374

375 printer-info = STRING 0
376 unknown
377 # IPP 'printer-info'
378 # Additional descriptive information on this printer,
379 # in the language in 'natural-language-configured'.
380 # A free form string that may contain any site-specific
381 # descriptive information about this printer.
382 # If this printer information is not known to the SLP SA,
383 # then this attribute SHALL be set to 'unknown'.
384

385 printer-more-info = STRING L 0
386 unknown
387 # IPP 'printer-more-info'
388 # A URI used to obtain more information about this specific
389 # printer. For example, this could be an 'http:' URI
390

395 # referencing an HTML page accessible to a Web Browser.
396 # The information obtained from this URI is intended for
397 # end user consumption.
398 # If this printer information is not known to the SLP SA,
399 # then this attribute SHALL be set to 'unknown'.

400
401 printer-make-and-model = STRING 0
402 unknown
403 # IPP 'printer-make-and-model'
404 # The manufacturer, make, and model of this printer,
405 # a simple text string defined by the manufacturer,
406 # in the language in 'natural-language-configured'.
407 # If this printer information is not known to the SLP SA,
408 # then this attribute SHALL be set to 'unknown'.

409
410 ipp-versions-supported = STRING L M 0
411 none
412 # IPP 'ipp-versions-supported'
413 # The unordered list of 'major.minor' IPP versions
414 # supported by this printer or 'none'.
415 # For example:
416 # '1.0, 1.1'
417 # Legal values include 'none', '1.0', and '1.1',
418 # per IPP Model [3] (extensions MAY also be used).
419 # If this printer information is not known to the SLP SA,
420 # then this attribute SHALL be set to 'none'.

421
422 multiple-document-jobs-supported = STRING L 0
423 unknown
424 # IPP 'multiple-document-jobs-supported'
425 # Indicates whether this printer supports more than one
426 # document per job.
427 # This template attribute is an extended boolean.
428 # If this printer information is not known to the SLP SA,
429 # then this attribute SHALL be set to 'unknown'.
430 unknown, true, false

431
432 charset-configured = STRING L 0
433 utf-8
434 # IPP 'charset-configured'
435 # The configured charset in which error and status messages
436 # will be generated (by default) by this printer.
437 # Also, a possible charset for printer string attributes
438 # set by operator, system administrator, or manufacturer.
439 # For example:
440 # 'utf-8' (ISO 10646/Unicode) or 'iso-8859-1' (Latin1)
441 # Legal values of charset tags (names/aliases) come from
442 # the IANA Registry of Coded Character Sets [6] and
443 # the '(preferred MIME name)' SHALL be used as the tag.
444 # For coherence with IPP Model [3], charset tags in this
445 # attribute SHALL be lowercase normalized.

451 # This attribute SHOULD be static (time of registration)
452 # and SHOULD NOT be dynamically refreshed (subsequently).

453
454 charset-supported = STRING L M O
455 utf-8
456 # IPP 'charset-supported'
457 # The possible charsets in which error and status messages
458 # may be generated (if requested) by this printer.
459 # Also, the possible charsets for printer string attributes
460 # set by operator, system administrator, or manufacturer.
461 # For example:
462 # 'utf-8' (ISO 10646/Unicode) or 'iso-8859-1' (Latin1)
463 # Legal values of charset tags (names/aliases) come from
464 # the IANA Registry of Coded Character Sets [6] and
465 # the '(preferred MIME name)' SHALL be used as the tag.
466 # This attribute SHALL include the value 'utf-8', per
467 # RFC 2277, 'IETF Policy on Charsets and Languages' [12].
468 # For coherence with IPP Model [3], charset tags in this
469 # attribute SHALL be lowercase normalized.

470
471 natural-language-configured = STRING L
472 # REQUIRED for all registrations by conforming SLP SAs
473 # IPP 'natural-language-configured'
474 # The configured language in which error and status messages
475 # will be generated (by default) by this printer.
476 # Also, a possible language for printer string attributes
477 # set by operator, system administrator, or manufacturer.
478 # Also, the (declared) language of the 'printer-name',
479 # 'printer-location', 'printer-info', and
480 # 'printer-make-and-model' attributes of this printer.
481 # For example:
482 # 'en-us' (US English) or 'fr-fr' (French in France)
483 # Legal values of language tags conform to RFC 1766
484 # 'Tags for the Identification of Languages' [5].
485 # For coherence with IPP Model [3], language tags in this
486 # attribute SHALL be lowercase normalized.
487 # This attribute SHOULD be static (time of registration)
488 # and SHOULD NOT be dynamically refreshed (subsequently).

489
490 natural-language-supported = STRING L M
491 # REQUIRED for all registrations by conforming SLP SAs
492 # IPP 'generated-natural-language-supported'
493 # The possible languages in which error and status messages
494 # may be generated (if requested) by this printer.
495 # Also, the possible languages for printer string attributes
496 # set by operator, system administrator, or manufacturer.
497 # For example:
498 # 'en-us' (US English) or 'fr-fr' (French in France)
499 # Legal values of language tags conform to RFC 1766
500 # 'Tags for the Identification of Languages' [5].
501 # For coherence with IPP Model [3], language tags in this

507 # attribute SHALL be lowercase normalized.
508

509 document-format-supported = STRING L M
510 # REQUIRED for all registrations by conforming SLP SAs
511 # IPP 'document-format-supported'
512 # The possible document formats in which data may be
513 # interpreted and printed by this printer.
514 # Legal values of document formats (MIME types) come from
515 # the IANA Registry of Internet Media Types [11].
516 # If this printer information is not known to the SLP SA,
517 # then this attribute SHALL be set to 'unknown'.
518

519 color-supported = STRING L O
520 unknown
521 # IPP 'color-supported'
522 # Indicates whether this printer is capable of any type of
523 # color printing at all, including highlight color.
524 # This template attribute is an extended boolean.
525 # If this printer information is not known to the SLP SA,
526 # then this attribute SHALL be set to 'unknown'.
527 unknown, true, false
528

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

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

557 pages-per-minute-color = INTEGER O
558

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

573
574 finishings-supported = STRING L M O
575 none
576 # IPP 'finishings-supported'
577 # The possible finishing operations supported by this
578 # printer.
579 # Legal values of finishings are defined in IPP Model [3].
580 # If this printer information is not known to the SLP SA,
581 # then this attribute SHALL be set to 'none'.
582 none, staple, punch, cover, bind,
583 saddle-stitch, edge-stitch,
584 staple-top-left, staple-bottom-left,
585 staple-top-right, staple-bottom-right,
586 edge-stitch-left, edge-stitch-top,
587 edge-stitch-right, edge-stitch-bottom,
588 staple-dual-left, staple-dual-top,
589 staple-dual-right, staple-dual-bottom

590
591 number-up-supported = INTEGER M O
592 1
593 # IPP 'number-up-supported'
594 # The possible numbers of print-stream pages to impose
595 # upon a single side of an instance of a selected
596 # medium.
597 # Legal values of this attribute include 1, 2, and 4 [3].
598 # Implementations may support other values.
599 # If this printer information is not known to the SLP SA,
600 # then this attribute SHALL be set to '1'.

601
602 sides-supported = STRING L M O
603 one-sided
604 # IPP 'sides-supported'
605 # (Compare with Salutation 'duplex-mode')
606 # The number of impression sides (one or two) and the
607 # two-sided impression rotations supported by this printer.
608 # Salutation 'simplex' == IPP 'one-sided'
609 # Salutation 'duplex' == IPP 'two-sided-long-edge'
610 # Salutation 'tumble' == IPP 'two-sided-short-edge'
611 # If this printer information is not known to the SLP SA,
612 # then this attribute SHALL be set to 'one-sided'.
613 one-sided, two-sided-long-edge, two-sided-short-edge

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

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

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

667 print-quality-supported = STRING L M O
668 unknown
669 # IPP 'print-quality-supported'
670

675 # The unordered list of print qualities supported for
676 # printing documents on this printer.
677 # For example:
678 # 'draft, normal'
679 # Legal values are defined in IPP Model [3].
680 # If this printer information is not known to the SLP SA,
681 # then this attribute SHALL be set to 'unknown'.
682 unknown, draft, normal, high

683
684 job-priority-supported = INTEGER 0
685 1
686 # IPP 'job-priority-supported'
687 # (Compare with Salutation 'priority-levels-supported')
688 # Indicates the number of job priority levels supported.
689 # An IPP conformant printer which supports job priority
690 # must always support a full range of priorities from
691 # '1' to '100' (to ensure consistent behavior), therefore
692 # this template attribute describes the 'granularity'.
693 # Legal values of this attribute are from '1' to '100'.
694 # If this printer information is not known to the SLP SA,
695 # then this attribute SHALL be set to '1'.
696

697 copies-supported = INTEGER 0
698 -1
699 # IPP 'copies-supported'
700 # The maximum number of copies of a document
701 # that may be printed as a single job.
702 # A value of '0' indicates no maximum limit.
703 # A value of '-1' indicates unknown.
704 # If this printer information is not known to the SLP SA,
705 # then this attribute SHALL be set to '-1'.
706

707 job-k-octets-supported = INTEGER 0
708 -1
709 # IPP 'job-k-octets-supported'
710 # The maximum size in kilobytes (1,024 octets actually)
711 # incoming print job that this printer will accept.
712 # A value of '0' indicates no maximum limit.
713 # A value of '-1' indicates unknown.
714 # If this printer information is not known to the SLP SA,
715 # then this attribute SHALL be set to '-1'.
716

717 printer-current-operator = STRING M 0
718 unknown
719 # Printer MIB 'prtGeneralCurrentOperator'
720 # The name of the current human operator responsible for
721 # operating this printer. It is suggested that this string
722 # include information that would enable other humans to
723 # reach the operator, such as a phone number.
724 # If this printer information is not known to the SLP SA,
725 # then this attribute SHALL be set to 'unknown'.
726

731 # This attribute SHOULD be static (time of registration)
732 # and SHOULD NOT be dynamically refreshed (subsequently).
733

734 printer-service-person = STRING M O
735 unknown
736 # Printer MIB 'prtGeneralServicePerson'
737 # The name of the current service person responsible for
738 # servicing this printer. It is suggested that this string
739 # include information that would enable other humans to
740 # reach the service person, such as a phone number.
741 # If this printer information is not known to the SLP SA,
742 # then this attribute SHALL be set to 'unknown'.
743 # This attribute SHOULD be static (time of registration)
744 # and SHOULD NOT be dynamically refreshed (subsequently).
745

746 delivery-orientation-supported = STRING L O
747 unknown
748 # Printer MIB 'prtOutputPageDeliveryOrientation'
749 # The possible delivery orientations of pages as they are
750 # printed and ejected from this printer.
751 # If this printer information is not known to the SLP SA,
752 # then this attribute SHALL be set to 'unknown'.
753 unknown, face-up, face-down
754

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

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

779 ----- template ends here -----
780

788
789 5. Summary of Required Attributes
790

791 Attributes are associated with 'service:' URLs in order to provide a
792 dynamic search capability to service location clients, not to burden
793 servers implementations during registrations.
794

795 A small subset (8) of the attributes defined in 'printer:' are
796 REQUIRED in all compliant service registrations by SLP SAs:
797

798 SLP Required Attribute	799 IPP Generic Directory Schema
800 printer-uri-supported	r
801 uri-authentication-supported	r
802 uri-security-supported	r
803 printer-name	r
804 natural-language-configured	m (SLP enhancement)
805 natural-language-supported	o (SLP enhancement)
806 document-format-supported	r
807 compression-supported	r

- 809 r RECOMMENDED - Appendix E 'Generic Directory Schema' IPP Model [3]
- 810 REQUIRED - SLP 'printer:' template
- 811 o OPTIONAL - Appendix E 'Generic Directory Schema' IPP Model [3]
- 812 REQUIRED - SLP 'printer:' template
- 813 m Missing - Appendix E 'Generic Directory Schema' IPP Model [3]
- 814 REQUIRED - SLP 'printer:' template

815
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817
818 5.1. Rationale for Required Attributes
819

820 'natural-language-configured'
821 - REQUIRED in SLP 'printer:' template to specify language tags for
822 'printer-name', 'printer-location', 'printer-info', and
823 'printer-make-and-model' attributes;
824 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3],
825 because the corresponding IPP attributes are language tagged in-band
826 via the IPP 'textWithLanguage' syntax.
827

828 'natural-language-supported'
829 - REQUIRED in SLP 'printer:' template to assist users in selecting
830 appropriate printers;
831 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3].
832

833 All other REQUIRED SLP 'printer:' template attributes are RECOMMENDED
834 in Appendix E 'Generic Directory Schema' IPP Model [3].
835
836
837

845 6. Summary of Optional Attributes

846 Many of the attributes defined in 'printer:' are OPTIONAL in all
847 compliant service registrations by SLP SAs:

848 SLP Optional Attribute	IPP Generic Directory Schema
849 -----	-----
850 printer-location	r
851 printer-info	o
852 printer-more-info	o
853 printer-make-and-model	r
854 ipp-versions-supported	r
855 multiple-document-jobs-supported	o
856 charset-configured	m (SLP enhancement)
857 charset-supported	o
858 color-supported	r
859 finishings-supported	r
860 number-up-supported	o
861 sides-supported	r
862 media-supported	r
863 media-local-supported	m (part of 'media-supported')
864 pages-per-minute	o
865 pages-per-minute-color	o
866 printer-resolution-supported	o
867 print-quality-supported	o
868 job-priority-supported	m (SLP enhancement)
869 copies-supported	m (SLP enhancement)
870 job-k-octets-supported	m (SLP enhancement)
871 printer-current-operator	m (from Printer MIB)
872 printer-service-person	m (from Printer MIB)
873 delivery-orientation-supported	m (from Printer MIB)
874 stacking-order-supported	m (from Printer MIB)
875 output-features-supported	m (from Printer MIB)

- 876 r RECOMMENDED - Appendix E 'Generic Directory Schema' IPP Model [3]
- 877 OPTIONAL - SLP 'printer:' template (with specified default)
- 878 o OPTIONAL - Appendix E 'Generic Directory Schema' IPP Model [3]
- 879 OPTIONAL - SLP 'printer:' template (with specified default)
- 880 m Missing - Appendix E 'Generic Directory Schema' IPP Model [3]
- 881 OPTIONAL - SLP 'printer:' template (with specified default)

882 6.1. Rationale for Optional Attributes

883 'printer-location', 'printer-make-and-model', 'color-supported',
884 'finishings-supported', 'sides-supported', 'media-supported', and
885 'local-media-supported'

899 - OPTIONAL in SLP 'printer:' template because network print servers
900 may not be able to determine this information;
901 - RECOMMENDED in Appendix E 'Generic Directory Schema' of IPP Model
902 [3].

903
904 'ipp-versions-supported'
905 - OPTIONAL in SLP 'printer:' template because network printers may
906 not support IPP;
907 - RECOMMENDED in Appendix E 'Generic Directory Schema' of IPP Model
908 [3].

909
910 'charset-configured'
911 - OPTIONAL in SLP 'printer:' template to assist users in selecting
912 appropriate printers;
913 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3].

914
915 'job-priority-supported', 'copies-supported', and
916 'job-k-octets-supported'
917 - OPTIONAL in SLP 'printer:' template to assist users in selecting
918 appropriate printers;
919 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3].

920
921 'printer-current-operator', 'printer-service-person',
922 'delivery-orientation-supported', 'stacking-order-supported', and
923 'output-features-supported'
924 - OPTIONAL in SLP 'printer:' template to assist users in selecting
925 appropriate printers;
926 - missing in Appendix E 'Generic Directory Schema' of IPP Model [3],
927 because they are only specified in the Printer MIB [7], not in IPP.

928
929 All other OPTIONAL SLP 'printer:' template attributes are OPTIONAL in
930 Appendix E 'Generic Directory Schema' IPP Model [3].

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956
 957 7. Summary of Attribute Origins
 958

959 The following table summarizes the origins of all of the attributes
 960 in the 'printer:' service template (except 'template-xxx' generic
 961 attributes defined in "Service Templates and service: Schemes" [4]
 962 and required for all 'service:' templates).
 963

964 Attribute Name	IPP[3]	Printer MIB[7]
965 -----	-----	-----
966 printer-uri-supported	X	
967 uri-authentication-supported	X	
968 uri-security-supported	X	
969 printer-name	X	
970 printer-location	X	
971 printer-info	X	
972 printer-more-info	X	
973 printer-make-and-model	X	
974 ipp-versions-supported	X	
975 multiple-document-jobs-supported	X	
976 charset-configured	X	
977 charset-supported	X	
978 natural-language-configured	X	
979 natural-language-supported	X	
980 document-format-supported	X	
981 color-supported	X	
982 compression-supported	X	
983 pages-per-minute	X	
984 pages-per-minute-color	X	
985 finishings-supported	X	
986 number-up-supported	X	
987 sides-supported	X	
988 media-supported	X	
989 media-local-supported	X	
990 printer-resolution-supported	X	
991 print-quality-supported	X	
992 job-priority-supported	X	
993 copies-supported	X	
994 job-k-octets-supported	X	
995 printer-current-operator		X
996 printer-service-person		X
997 delivery-orientation-supported		X
998 stacking-order-supported		X
999 output-features-supported		X

1012
1013 8. IANA Considerations
1014

1015 Registration of this 'printer:' service template will follow the
1016 procedures defined in section 4 'A Procedure for Standardizing New
1017 Service Types' and section 5 'IANA Considerations' of "Service
1018 Templates and service: Schemes" [4].
1019

1020
1021
1022 9. Internationalization Considerations
1023

1024 All attribute values in registrations using this 'printer:' service
1025 template MUST be encoded in UTF-8 characters, as required by "Service
1026 Location Protocol, Version 2" [13]. Thus, all registrations using
1027 this 'printer:' service template conform to "IETF Policy on Character
1028 Sets and Languages" [12].
1029

1030
1031
1032 10. Security Considerations
1033

1034 When used with SLPv2, this 'printer:' service template inherits all
1035 of the security issues described in section 17 'Security
1036 Considerations' of "Service Location Protocol, Version 2" [13].
1037

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1125 12. Acknowledgments
1126

1127 This document is a submission to the Service Location Working group.
1128

1129 Thanks to Jean Beha (Xerox), Jim Erwin (Novell), Tom Hastings
1130 (Xerox), Bob Herriot (Xerox), James Kempf (Sun), Hugo Parra (Novell),
1131 Todd Rupper (Novell), and Randy Turner (formerly Sharp). Appendix E
1132 'Generic Directory Schema' in IPP/1.1 Model [3] (recommended and
1133 optional attributes for registering IPP printers) was the primary
1134 input to this version of the 'printer:' service template.
1135

1136
1137
1138 13. Authors' Addresses
1139

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