

1
2 Internet Printing Protocol Working Group
3 INTERNET DRAFT
4 Expires 20 June 2001

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20 December 2000

5
6 [Target Category: Standards Track]

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12 Internet Printing Protocol (IPP):
13 LDAP Schema for Printer Services
14 <draft-ietf-ipp-ldap-printer-schema-04.txt>

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17
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19
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33
34 Abstract

35
36 This document is a product of the Internet Printing Protocol Working
37 Group, chartered by the IETF. Comments should be sent to the
38 ipp@pwg.org mailing list and the principal editor
39 flemingp@us.ibm.com.

40
41 This document defines a common printer schema for use with directory
42 services that support the Lightweight Directory Access Protocol
43 (LDAP) [RFC 2251]. Using this common printer schema enables client
44 applications to use LDAP to search for printers using application or
45 user specified search criteria. Searches are defined based on the
46 entry's type and attributes independent of the LDAP directory being
47 used.

48
49 This document describes the LDAP schema, object classes and
50 attributes, for printers and printer services. This document uses
51 the printer attributes defined in Appendix E of [RFC 2911], the
52 'printer:' service template defined in [SLPPRT], and the mapping
53 between SLP service advertisements and LDAP descriptions of services

54
55 Fleming, Jones, Lewis, McDonald Expires 20 June 2001 [Page 1]

56

58
59 defined in [RFC 2926] to define an LDAP printer schema.

60
61 The goal of this document is to define a consistent schema to be used
62 by printers and print servers. The LDAP printer schema described in
63 this document MAY be used in part or whole.

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228
229 1. Introduction
230

231 The use of directory services based on the Lightweight Directory
232 Access Protocol [RFC 2251] is becoming increasingly popular for
233 distributed services. To ensure interoperability between vendor
234 implementations it is crucial to standardize the schemas which
235 describe these services.
236

237 Under the auspices of the IETF IPP Working Group the IPP protocol is
238 being developed to bring a standards based printing solution to the
239 Internet.
240

241 Section 16 of [RFC 2911] describes a list of attributes which should
242 be included in a general directory schema describing IPP print
243 services. The syntax for each of these attributes is described in
244 detail in [RFC 2911] and [SLPPRT]. This document will take these
245 attributes and map them to LDAP attributes and object classes.
246

247 This document defines several object classes to provide LDAP
248 applications with multiple options in defining printer information
249 using LDAP schema. Classes are provided for defining directory
250 entries with common printer information and for extending existing
251 directory entries with SLP, IPP, and LPR specific information.
252

253
254
255
256 2. Terminology
257

258 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
259 "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
260 document are to be interpreted as described in [RFC 2119].
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284
285 3. Definition of Object Classes
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287 We define the following LDAP object classes for use with both generic
288 printer related information and services specific to SLP, IPP, and
289 LPR.

- 290 slpServicePrinter - auxiliary class for SLP registered printers
- 291 printerAbstract - abstract class for all printer classes
- 292 printerService - structural class for printers
- 293 printerServiceAuxClass - auxiliary class for printers
- 294 printerIPP - auxiliary class for IPP printers
- 295 printerLPR - auxiliary class for LPR printers

296
297
298 The following are some examples of how applications MAY choose to use
299 these classes when creating directory entries:

- 300 1) Use printerService for directory entries containing common printer
301 information.
- 302
303 2) Use both printerService and slpServicePrinter for directory
304 entries containing common printer information for SLP registered
305 printers.
- 306
307 3) Use printerService, printerLPR and printerIPP for directory
308 entries containing common printer information for printers that
309 support both LPR and IPP.
- 310
311 4) Use printerServiceAuxClass and object classes not defined by this
312 document for directory entries containing common printer information.
313 In this example, printerServiceAuxClass is used for extending other
314 structural classes defining printer information with common printer
315 information defined in this document.

316
317
318 Note that specifying the abstract object class printerAbstract is
319 OPTIONAL when using printerService or printerServiceAuxClass to
320 create directory entries per [RFC 2251].

321
322 Refer to section 4 for definition of attribute types referenced by
323 these object classes. We use names instead of OIDs in MUST and MAY
324 for clarity. Some attribute names described in [RFC 2911] have been
325 prefixed with 'printer-' as recommended in [SLPPRT] and [RFC 2926].

326
327 For the object classes defined in this section, schema developers MAY
328 add to the list of MAY OIDs, but MUST NOT modify the list of MUST
329 OIDs and MUST NOT remove OIDs from the list of MAY OIDs. Schema
330 developers MAY derive additional classes from the abstract and
331 structural classes defined in this section. Note, an object class
332 definition SHOULD NOT be changed without having a new name and OID
333 assigned to it.

337
338
339
340
341

342 3.1. slpServicePrinter

343
344 This auxiliary class defines Service Location Protocol (SLP) specific
345 information. It MUST be used with a structural class such as
346 printerService. It MAY be used to create new or extend existing
347 directory entries with SLP 'service:printer' abstract service type
348 information as defined in [SLPPRT]. This object class is derived
349 from 'slpService', the parent class for all SLP services, defined in
350 [RFC 2926].

```
351 ( 1.3.18.0.2.6.254  
352 NAME 'slpServicePrinter'  
353 DESC 'Service Location Protocol (SLP) information.'  
354 AUXILIARY  
355 SUP slpService  
356 )
```

357
358
359
360 3.2. printerAbstract

361
362 This abstract class defines printer information. It is a base class
363 for deriving other printer related classes, such as, but not limited
364 to, classes defined in this document. It defines a common set of
365 printer attributes that are not specific to any one type of service,
366 protocol or operating system.

```
367 ( 1.3.18.0.2.6.258  
368 NAME 'printerAbstract'  
369 DESC 'Printer related information.'  
370 ABSTRACT  
371 SUP top  
372 MAY ( printer-name $  
373 printer-natural-language-configured $  
374 printer-location $ printer-info $ printer-more-info $  
375 printer-make-and-model $  
376 printer-multiple-document-jobs-supported $  
377 printer-charset-configured $ printer-charset-supported $  
378 printer-generated-natural-language-supported $  
379 printer-document-format-supported $ printer-color-supported $  
380 printer-compression-supported $ printer-pages-per-minute $  
381 printer-pages-per-minute-color $  
382 printer-finishings-supported $ printer-number-up-supported $  
383 printer-sides-supported $ printer-media-supported $  
384 printer-media-local-supported $  
385 printer-resolution-supported $  
386 printer-print-quality-supported $  
387 printer-job-priority-supported $ printer-copies-supported $  
388 printer-job-k-octets-supported $ printer-current-operator $  
389 )
```

```
395           printer-service-person $  
396           printer-delivery-orientation-supported $  
397           printer-stacking-order-supported $  
398           printer-output-features-supported )  
399        )
```

400
401
402 3.3. printerService

403
404 This structural class defines printer information. It is derived
405 from class printerAbstract and thus inherits common printer
406 attributes. This class can be used with or without auxiliary classes
407 to define printer information. Auxiliary classes can be used to
408 extend the common printer information with protocol, service or
409 operating system specific information. Note that when extending
410 other structural classes with auxiliary classes, printerService MUST
411 NOT be used.

412
413 LDAP applications SHOULD use printer-uri as the naming attribute.
414 That is, when using printerService, printer-uri SHOULD be used as the
415 attribute type of the directory entry's relative distinguished name
416 (RDN). printer-uri uniquely identifies each of the printer services
417 for a given printer. Note that if the printer service changes
418 domains, printer-uri must be updated with the new domain name.

```
419  
420 ( 1.3.18.0.2.6.255  
421 NAME 'printerService'  
422 DESC 'Printer information.'  
423 STRUCTURAL  
424 SUP printerAbstract  
425 MAY ( printer-uri $ printer-xri-supported )  
426 )
```

427
428
429 3.4. printerServiceAuxClass

430
431 This auxiliary class defines printer information. It is derived from
432 class printerAbstract and thus inherits common printer attributes.
433 This class MUST be used with a structural class.

434
435 LDAP applications SHOULD use printer-uri as the naming attribute.
436 That is, when using printerServiceAuxClass, printer-uri SHOULD be
437 used as the attribute type of the directory entry's relative
438 distinguished name (RDN). printer-uri uniquely identifies each of
439 the printer services for a given printer. Note that if the printer
440 service changes domains, printer-uri must be updated with the new
441 domain name.

```
442  
443 ( 1.3.18.0.2.6.257  
444 NAME 'printerServiceAuxClass'  
445 DESC 'Printer information.'
```


451 AUXILIARY
452 SUP printerAbstract
453 MAY (printer-uri \$ printer-xri-supported)
454)
455

456
457 3.5. printerIPP
458

459 This auxiliary class defines Internet Printing Protocol (IPP)
460 information. It MUST be used with a structural class such as
461 printerService. It is used to extend structural classes with IPP
462 specific printer information.

463 (1.3.18.0.2.6.256
464 NAME 'printerIPP'
465 DESC 'Internet Printing Protocol (IPP) information.'
466 AUXILIARY
467 SUP top
468 MAY (printer-ipp-versions-supported \$
469 printer-multiple-document-jobs-supported)
470)
471

472
473
474 3.6. printerLPR
475

476 This auxiliary class defines LPR information. It MUST be used with a
477 structural class such as printerService. It is used to identify
478 directory entries that support LPR.

479 (1.3.18.0.2.6.253
480 NAME 'printerLPR'
481 DESC 'LPR information.'
482 AUXILIARY
483 SUP top
484 MUST (printer-name)
485 MAY (printer-aliases)
486)
487

508
509 4. Definition of Attribute Types
510

511 The following attribute types are referenced by the object classes
512 defined in section 3.

513
514 The following table is a summary of the attribute names referenced by
515 this document and their corresponding names from [RFC 2911]. Some
516 attribute names described in [RFC 2911] have been prefixed with
517 'printer-' as recommended in [RFC 2926], to address the flat
518 namespace for LDAP identifiers.

519 LDAP & SLP Printer Schema	520 IPP Model [RFC 2911]
521 -----	-----
522 printer-uri	
523 printer-xri-supported	
524	[IPP printer-uri-supported]
525	[IPP uri-authentication-supported]
526	[IPP uri-security-supported]
527 printer-name	printer-name
528 printer-natural-language-configured	
529	natural-language-configured
530 printer-location	printer-location
531 printer-info	printer-info
532 printer-more-info	printer-more-info
533 printer-make-and-model	printer-make-and-model
534 printer-ipp-versions-supported	ipp-versions-supported
535 printer-multiple-document-jobs-supported	
536	multiple-document-jobs-supported
537 printer-charset-configured	charset-configured
538 printer-charset-supported	charset-supported
539 printer-generated-natural-language-supported	
540	generated-natural-language-supported
541 printer-document-format-supported	
542	document-format-supported
543 printer-color-supported	color-supported
544 printer-compression-supported	compression-supported
545 printer-pages-per-minute	pages-per-minute
546 printer-pages-per-minute-color	pages-per-minute-color
547 printer-finishings-supported	finishings-supported
548 printer-number-up-supported	number-up-supported
549 printer-sides-supported	sides-supported
550 printer-media-supported	media-supported
551 printer-media-local-supported	[site names from IPP media-supported]
552 printer-resolution-supported	printer-resolution-supported
553 printer-print-quality-supported	print-quality-supported
554 printer-job-priority-supported	job-priority-supported
555 printer-copies-supported	copies-supported
556 printer-job-k-octets-supported	job-k-octets-supported
557 printer-current-operator	

563 printer-service-person
564 printer-delivery-orientation-supported
565 printer-stacking-order-supported
566 printer-output-features-supported
567 printer-aliases
568

569 In the following definitions, we use matching rule names instead of
570 OIDs for clarity. Note that if the printer information is not known,
571 the attribute value is not set (for optional attributes). In the
572 following definitions, referenced matching rules are defined in
573 section 8 of [RFC 2252].
574

575 The following definitions reference syntax OIDs as defined in [RFC
576 2252], which are summarized below:

577 Syntax OID	Syntax Description
578 -----	-----
579 1.3.6.1.4.1.1466.115.121.1.7	Boolean
580 1.3.6.1.4.1.1466.115.121.1.15	Directory String (UTF-8 [RFC 2279])
581 1.3.6.1.4.1.1466.115.121.1.27	Integer

582
583
584
585 4.1. printer-uri
586

587 Note, that for SLP registered printers, the LDAP printer-uri
588 attribute should set to the value of the registered URL of the
589 printer.

```
590 ( 1.3.18.0.2.4.1140  
591 NAME 'printer-uri'  
592 DESC 'The URI supported by this printer.'  
593 EQUALITY caseIgnoreMatch  
594 ORDERING caseIgnoreOrderingMatch  
595 SUBSTR caseIgnoreSubstringMatch  
596 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15  
597 SINGLE-VALUE  
598 )  
599
```

600
601
602 4.2. printer-xri-supported
603

604 A list of XRI (extended resource identifiers) supported by this
605 printer. Each value of this list consists of a URI (uniform resource
606 identifier) followed by optional authentication and security
607 metaparameters. The keywords for URI and their metaparameters are:

```
608 'uri' == IPP 'printer-uri-supported' value  
609 'auth' == IPP 'uri-authentication-supported' value  
610 'sec' == IPP 'uri-security-supported' value  
611 Legal values of the 'auth' metaparameter include  
612 'none' (no authentication for this URI)  
613 'requesting-user-name' (from operation request)  
614
```

619 'basic' (HTTP/1.1 Basic [RFC 2617])
620 'digest' (HTTP/1.1 Basic, [RFC 2617])
621 'certificate' (from certificate)
622 per IPP Model [3] (extensions MAY also be used). A missing 'auth'
623 metaparameter SHALL mean 'none'. Legal values of the 'sec'
624 metaparameter include
625 'none' (no security for this URI)
626 'ssl3' (Netscape SSL3)
627 'tls' (IETF TLS/1.0, [RFC 2246])
628 per IPP Model [3] (extensions MAY also be used). A missing 'sec'
629 metaparameter SHALL mean 'none'. Each metaparameter of a list member
630 is delimited by '<'. For example:
631 'uri=ipp://foo.com< auth=digest< sec=tls<'
632 'uri=lpr://bar.com< auth=none< sec=none<'
633 Registrations MAY consolidate values for metaparameters, as in the
634 following example:
635 'uri=ipp://foo.com< auth=basic,digest< sec=tls,ssl3<'

636
637 (1.3.18.0.2.4.1107
638 NAME 'printer-xri-supported'
639 DESC 'The unordered list of XRI (extended resource identifiers)
640 supported by this printer. Each member of the list consists of
641 a URI (uniform resource identifier) followed by optional
642 authentication and security metaparameters.'
643 EQUALITY caseIgnoreMatch
644 ORDERING caseIgnoreOrderingMatch
645 SUBSTR caseIgnoreSubstringMatch
646 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15
647)
648
649

650 4.3. printer-name

651
652 The site-specific administrative name of this printer. This value of
653 this attribute SHOULD be in the language specified in
654 'printer-natural-language-configured' (although the printer's name
655 may be in any language). This name MAY be the last part of the
656 printer's URI or it MAY be completely unrelated. This name MAY
657 contain characters that are not allowed in a conventional URI (which
658 conforms to [RFC 2396]).
659

660 (1.3.18.0.2.4.1135
661 NAME 'printer-name'
662 DESC 'The site-specific administrative name of this printer, more
663 end-user friendly than a URI.'
664 EQUALITY caseIgnoreMatch
665 ORDERING caseIgnoreOrderingMatch
666 SUBSTR caseIgnoreSubstringMatch
667 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
668 SINGLE-VALUE
669)
670

675
676
677 4.4. printer-natural-language-configured

```
678 ( 1.3.18.0.2.4.1119  
679 NAME 'printer-natural-language-configured'  
680 DESC 'The configured language in which error and status messages will  
681 be generated (by default) by this printer. Also, a possible  
682 language for printer string attributes set by operator, system  
683 administrator, or manufacturer. Also, the (declared) language  
684 of the "printer-name", "printer-location", "printer-info", and  
685 "printer-make-and-model" attributes of this printer. For  
686 example: "en-us" (US English) or "fr-fr" (French in France)  
687 Legal values of language tags conform to [RFC 1766] "Tags for  
688 the Identification of Languages".'  
689 EQUALITY caseIgnoreMatch  
690 ORDERING caseIgnoreOrderingMatch  
691 SUBSTR caseIgnoreSubstringMatch  
692 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}  
693 SINGLE-VALUE  
694 )
```

695
696
697 4.5. printer-location

```
698 ( 1.3.18.0.2.4.1136  
699 NAME 'printer-location'  
700 DESC 'Identifies the location of the printer. This could include  
701 things like: "in Room 123A", "second floor of building XYZ".'  
702 EQUALITY caseIgnoreMatch  
703 ORDERING caseIgnoreOrderingMatch  
704 SUBSTR caseIgnoreSubstringMatch  
705 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}  
706 SINGLE-VALUE  
707 )
```

708
709
710 4.6. printer-info

```
711 ( 1.3.18.0.2.4.1139  
712 NAME 'printer-info'  
713 DESC 'Identifies the descriptive information about this printer.  
714 This could include things like: "This printer can be used for  
715 printing color transparencies for HR presentations", or "Out  
716 of courtesy for others, please print only small (1-5 page) jobs  
717 at this printer", or even "This printer is going away on July  
718 1, 1997, please find a new printer".'  
719 EQUALITY caseIgnoreMatch  
720 ORDERING caseIgnoreOrderingMatch  
721 SUBSTR caseIgnoreSubstringMatch  
722 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
```

731 SINGLE-VALUE
732)

733
734
735 4.7. printer-more-info
736

737 (1.3.18.0.2.4.1134
738 NAME 'printer-more-info'
739 DESC 'A URI used to obtain more information about this specific
740 printer. For example, this could be an HTTP type URI
741 referencing an HTML page accessible to a Web Browser. The
742 information obtained from this URI is intended for end user
743 consumption.'
744 EQUALITY caseIgnoreMatch
745 ORDERING caseIgnoreOrderingMatch
746 SUBSTR caseIgnoreSubstringMatch
747 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15
748 SINGLE-VALUE
749)

750
751
752 4.8. printer-make-and-model
753

754 (1.3.18.0.2.4.1138
755 NAME 'printer-make-and-model'
756 DESC 'Identifies the make and model of the device. The device
757 manufacturer may initially populate this attribute.'
758 EQUALITY caseIgnoreMatch
759 ORDERING caseIgnoreOrderingMatch
760 SUBSTR caseIgnoreSubstringMatch
761 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
762 SINGLE-VALUE
763)

764
765
766 4.9. printer-ipp-versions-supported
767

768 (1.3.18.0.2.4.1133
769 NAME 'printer-ipp-versions-supported'
770 DESC 'Identifies the IPP protocol version(s) that this printer
771 supports, including major and minor versions, i.e., the version
772 numbers for which this Printer implementation meets the
773 conformance requirements.'
774 EQUALITY caseIgnoreMatch
775 ORDERING caseIgnoreOrderingMatch
776 SUBSTR caseIgnoreSubstringMatch
777 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
778)

789 4.10. printer-multiple-document-jobs-supported
790

```
791 ( 1.3.18.0.2.4.1132  
792 NAME 'printer-multiple-document-jobs-supported'  
793 DESC 'Indicates whether or not the printer supports more than one  
794 document per job, i.e., more than one Send-Document or  
795 Send-Data operation with document data.'  
796 EQUALITY booleanMatch  
797 SYNTAX 1.3.6.1.4.1.1466.115.121.1.7  
798 SINGLE-VALUE  
799 )
```

800
801
802 4.11. printer-charset-configured
803

```
804 ( 1.3.18.0.2.4.1109  
805 NAME 'printer-charset-configured'  
806 DESC 'The configured charset in which error and status messages will  
807 be generated (by default) by this printer. Also, a possible  
808 charset for printer string attributes set by operator, system  
809 administrator, or manufacturer. For example: "utf-8" (ISO  
810 10646/Unicode) or "iso-8859-1" (Latin1). Legal values are  
811 defined by the IANA Registry of Coded Character Sets and the  
812 "(preferred MIME name)" SHALL be used as the tag. For  
813 coherence with IPP Model, charset tags in this attribute SHALL  
814 be lowercase normalized. This attribute SHOULD be static (time  
815 of registration) and SHOULD NOT be dynamically refreshed  
816 (subsequently).'
```

```
817 EQUALITY caseIgnoreMatch  
818 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{63}  
819 SINGLE-VALUE  
820 )
```

821
822
823 4.12. printer-charset-supported
824

```
825 ( 1.3.18.0.2.4.1131  
826 NAME 'printer-charset-supported'  
827 DESC 'Identifies the set of charsets supported for attribute type  
828 values of type Directory String for this directory entry. For  
829 example: "utf-8" (ISO 10646/Unicode) or "iso-8859-1" (Latin1).  
830 Legal values are defined by the IANA Registry of Coded  
831 Character Sets and the preferred MIME name.'  
832 EQUALITY caseIgnoreMatch  
833 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{63}  
834 )
```

845 4.13. printer-generated-natural-language-supported
846

```
847 ( 1.3.18.0.2.4.1137
848   NAME 'printer-generated-natural-language-supported'
849   DESC 'Identifies the natural language(s) supported for this directory
850         entry. For example: "en-us" (US English) or "fr-fr" (French in
851         France). Legal values conform to [RFC 1766], Tags for the
852         Identification of Languages.'
853   EQUALITY caseIgnoreMatch
854   ORDERING caseIgnoreOrderingMatch
855   SUBSTR caseIgnoreSubstringMatch
856   SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{63}
857 )
```

858
859
860 4.14. printer-document-format-supported
861

```
862 ( 1.3.18.0.2.4.1130
863   NAME 'printer-document-format-supported'
864   DESC 'The possible document formats in which data may be interpreted
865         and printed by this printer. Legal values are MIME types come
866         from the IANA Registry of Internet Media Types.'
867   EQUALITY caseIgnoreMatch
868   SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
869 )
```

870
871
872 4.15. printer-color-supported
873

```
874 ( 1.3.18.0.2.4.1129
875   NAME 'printer-color-supported'
876   DESC 'Indicates whether this printer is capable of any type of color
877         printing at all, including highlight color.'
878   EQUALITY booleanMatch
879   SYNTAX 1.3.6.1.4.1.1466.115.121.1.7
880   SINGLE-VALUE
881 )
```

882
883
884 4.16. printer-compression-supported
885

```
886 ( 1.3.18.0.2.4.1128
887   NAME 'printer-compression-supported'
888   DESC 'Compression algorithms supported by this printer. For example:
889         "deflate, gzip". Legal values include; "none", "deflate"
890         (public domain ZIP), "gzip" (GNU ZIP), "compress" (UNIX).'
891   EQUALITY caseIgnoreMatch
892   SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{255}
893 )
```


900
901 4.17. printer-pages-per-minute
902

903 (1.3.18.0.2.4.1127
904 NAME 'printer-pages-per-minute'
905 DESC 'The nominal number of pages per minute which may be output by
906 this printer (e.g., a simplex or black-and-white printer).
907 This attribute is informative, NOT a service guarantee.
908 Typically, it is the value used in marketing literature to
909 describe this printer.'
910 EQUALITY integerMatch
911 ORDERING integerOrderingMatch
912 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
913 SINGLE-VALUE
914)

915
916
917 4.18. printer-pages-per-minute-color
918

919 (1.3.18.0.2.4.1126
920 NAME 'printer-pages-per-minute-color'
921 DESC 'The nominal number of color pages per minute which may be
922 output by this printer (e.g., a simplex or color printer).
923 This attribute is informative, NOT a service guarantee.
924 Typically, it is the value used in marketing literature to
925 describe this printer.'
926 EQUALITY integerMatch
927 ORDERING integerOrderingMatch
928 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
929 SINGLE-VALUE
930)

931
932
933 4.19. printer-finishings-supported
934

935 (1.3.18.0.2.4.1125
936 NAME 'printer-finishings-supported'
937 DESC 'The possible finishing operations supported by this printer.
938 Legal values include; "none", "staple", "punch", "cover",
939 "bind", "saddle-stitch", "edge-stitch", "staple-top-left",
940 "staple-bottom-left", "staple-top-right",
941 "staple-bottom-right", "edge-stitch-left", "edge-stitch-top",
942 "edge-stitch-right", "edge-stitch-bottom", "staple-dual-left",
943 "staple-dual-top", "staple-dual-right", "staple-dual-bottom".'
944 EQUALITY caseIgnoreMatch
945 SUBSTR caseIgnoreSubstringMatch
946 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{255}
947)

956
957 4.20. printer-number-up-supported
958

959 (1.3.18.0.2.4.1124
960 NAME 'printer-number-up-supported'
961 DESC 'The possible numbers of print-stream pages to impose upon a
962 single side of an instance of a selected medium. Legal values
963 include; 1, 2, and 4. Implementations may support other
964 values.'
965 EQUALITY integerMatch
966 ORDERING integerOrderingMatch
967 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
968)
969
970

971 4.21. printer-sides-supported
972

973 (1.3.18.0.2.4.1123
974 NAME 'printer-sides-supported'
975 DESC 'The number of impression sides (one or two) and the two-sided
976 impression rotations supported by this printer. Legal values
977 include; "one-sided", "two-sided-long-edge",
978 "two-sided-short-edge".'
979 EQUALITY caseIgnoreMatch
980 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
981)
982
983

984 4.22. printer-media-supported
985

986 (1.3.18.0.2.4.1122
987 NAME 'printer-media-supported'
988 DESC 'The standard names/types/sizes (and optional color suffixes) of
989 the media supported by this printer. For example: "iso-a4",
990 "envelope", or "na-letter-white". Legal values conform to ISO
991 10175, Document Printing Application (DPA), and any IANA
992 registered extensions.'
993 EQUALITY caseIgnoreMatch
994 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{255}
995)
996
997

998 4.23. printer-media-local-supported
999

1000 (1.3.18.0.2.4.1117
1001 NAME 'printer-media-local-supported'
1002 DESC 'Site-specific names of media supported by this printer, in the
1003 language in "printer-natural-language-configured".
1004 For example: "purchasing-form" (site-specific name) as opposed
1005 to (in "printer-media-supported"): "na-letter" (standard
1006

1011 keyword from ISO 10175).'
1012 EQUALITY caseIgnoreMatch
1013 SUBSTR caseIgnoreSubstringMatch
1014 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{255}
1015)
1016

1017
1018 4.24. printer-resolution-supported
1019

1020 (1.3.18.0.2.4.1121
1021 NAME 'printer-resolution-supported'
1022 DESC 'List of resolutions supported for printing documents by this
1023 printer. Each resolution value is a string with 3 fields:
1024 1) Cross feed direction resolution (positive integer), 2) Feed
1025 direction resolution (positive integer), 3) Resolution unit.
1026 Legal values are "dpi" (dots per inch) and "dpcm" (dots per
1027 centimeter). Each resolution field is delimited by ">". For
1028 example: "300> 300> dpi>".'
1029 EQUALITY caseIgnoreMatch
1030 SUBSTR caseIgnoreSubstringMatch
1031 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{255}
1032)
1033
1034

1035 4.25. printer-print-quality-supported
1036

1037 (1.3.18.0.2.4.1120
1038 NAME 'printer-print-quality-supported'
1039 DESC 'List of print qualities supported for printing documents on
1040 this printer. For example: "draft, normal". Legal values
1041 include; "unknown", "draft", "normal", "high".'
1042 EQUALITY caseIgnoreMatch
1043 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1044)
1045
1046

1047 4.26. printer-job-priority-supported
1048

1049 (1.3.18.0.2.4.1110
1050 NAME 'printer-job-priority-supported'
1051 DESC 'Indicates the number of job priority levels supported. An IPP
1052 conformant printer which supports job priority must always
1053 support a full range of priorities from "1" to "100" (to ensure
1054 consistent behavior), therefore this attribute describes the
1055 "granularity". Legal values of this attribute are from "1" to
1056 "100".'
1057 EQUALITY integerMatch
1058 ORDERING integerOrderingMatch
1059 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
1060 SINGLE-VALUE
1061)
1062

1067
1068
1069 4.27. printer-copies-supported
1070

1071 (1.3.18.0.2.4.1118
1072 NAME 'printer-copies-supported'
1073 DESC 'The maximum number of copies of a document that may be printed
1074 as a single job. A value of "0" indicates no maximum limit. A
1075 value of "-1" indicates unknown.'
1076 EQUALITY integerMatch
1077 ORDERING integerOrderingMatch
1078 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
1079 SINGLE-VALUE
1080)

1081
1082
1083 4.28. printer-job-k-octets-supported
1084

1085 (1.3.18.0.2.4.1111
1086 NAME 'printer-job-k-octets-supported'
1087 DESC 'The maximum size in kilobytes (1,024 octets actually) incoming
1088 print job that this printer will accept. A value of "0"
1089 indicates no maximum limit. A value of "-1" indicates
1090 unknown.'
1091 EQUALITY integerMatch
1092 ORDERING integerOrderingMatch
1093 SYNTAX 1.3.6.1.4.1.1466.115.121.1.27
1094 SINGLE-VALUE
1095)

1096
1097
1098 4.29. printer-current-operator
1099

1100 (1.3.18.0.2.4.1112
1101 NAME 'printer-current-operator'
1102 DESC 'The name of the current human operator responsible for
1103 operating this printer. It is suggested that this string
1104 include information that would enable other humans to reach the
1105 operator, such as a phone number.'
1106 EQUALITY caseIgnoreMatch
1107 ORDERING caseIgnoreOrderingMatch
1108 SUBSTR caseIgnoreSubstringMatch
1109 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1110 SINGLE-VALUE
1111)

1112
1113
1114 4.30. printer-service-person
1115

1116 (1.3.18.0.2.4.1113
1117 NAME 'printer-service-person'
1118

1120
1121 Internet Draft LDAP Schema for Printer Services 20 December 2000
1122
1123 DESC 'The name of the current human service person responsible for
1124 servicing this printer. It is suggested that this string
1125 include information that would enable other humans to reach the
1126 service person, such as a phone number.'
1127 EQUALITY caseIgnoreMatch
1128 ORDERING caseIgnoreOrderingMatch
1129 SUBSTR caseIgnoreSubstringMatch
1130 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1131 SINGLE-VALUE
1132)
1133
1134
1135 4.31. printer-delivery-orientation-supported
1136
1137 (1.3.18.0.2.4.1114
1138 NAME 'printer-delivery-orientation-supported'
1139 DESC 'The possible delivery orientations of pages as they are printed
1140 and ejected from this printer. Legal values include;
1141 "unknown", "face-up", and "face-down".'
1142 EQUALITY caseIgnoreMatch
1143 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1144)
1145
1146
1147 4.32. printer-stacking-order-supported
1148
1149 (1.3.18.0.2.4.1115
1150 NAME 'printer-stacking-order-supported'
1151 DESC 'The possible stacking order of pages as they are printed and
1152 ejected from this printer. Legal values include; "unknown",
1153 "first-to-last", "last-to-first".'
1154 EQUALITY caseIgnoreMatch
1155 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1156)
1157
1158
1159 4.33. printer-output-features-supported
1160
1161 (1.3.18.0.2.4.1116
1162 NAME 'printer-output-features-supported'
1163 DESC 'The possible output features supported by this printer. Legal
1164 values include; "unknown", "bursting", "decollating",
1165 "page-collating", "offset-stacking".'
1166 EQUALITY caseIgnoreMatch
1167 SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}
1168)
1169
1170
1171
1172
1173
1174
1175 Fleming, Jones, Lewis, McDonald Expires 20 June 2001 [Page 21]
1176

1180
1181 4.34. printer-aliases
1182

```
1183 ( 1.3.18.0.2.4.1108  
1184   NAME 'printer-aliases'  
1185   DESC 'Site-specific administrative names of this printer in addition  
1186     the printer name specified for printer-name.'  
1187   EQUALITY caseIgnoreMatch  
1188   ORDERING caseIgnoreOrderingMatch  
1189   SUBSTR caseIgnoreSubstringMatch  
1190   SYNTAX 1.3.6.1.4.1.1466.115.121.1.15{127}  
1191 )
```

1236
1237 5. Definition of Syntaxes
1238

1239 No new syntaxes are defined by this document.
1240

1241
1242 6. IANA Considerations
1243

1244 There are no IANA registration considerations defined by this
1245 document.
1246

1247
1248 7. Internationalization Considerations
1249

1250 All text string attribute values in objects of the printerService
1251 class MUST be encoded in UTF-8 [RFC 2279] characters, as required by
1252 the syntax 'Directory String' [RFC 2252]. Also, a language tag for
1253 all of the text string attributes in objects of the printerService
1254 class SHOULD be supplied in 'printer-natural-language-configured'.
1255 Therefore, all objects of the printerService class conform to "IETF
1256 Policy on Character Sets and Languages" [RFC 2277].
1257

1258
1259
1260 8. Security Considerations
1261

1262 As with any LDAP schema, it is important to protect specific entries
1263 and attributes with the appropriate access control. It is
1264 particularly important that only administrators can modify entries
1265 defined in this schema. For additional considerations of deploying
1266 printers in an IPP environment the reader is referred to section 8 of
1267 [RFC 2911].
1268

1269 By advertising the security methods for each supported printer URL
1270 the printer may expose information useful to attackers. Suitable
1271 security methods SHOULD be used to authenticate any service
1272 advertisements.
1273

1274 Obtaining a reference to an object and storing it in the directory
1275 may make a handle to the object available to a wider audience. This
1276 may have security implications.
1277

1278
1279
1280 9. References
1281

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1330

1331
1332
1333 10. Acknowledgments
1334

1335 This document is a submission to the IPP Working group.
1336

1337 Thanks to Kimberly Reger (IBM), Robert Moore (IBM) and Lee Rafalow
1338 (IBM) for their review comments and help in preparing this document.
1339

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