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8 Internet Printing Protocol (IPP):  
9 Notifications over SNMP via Job Monitoring MIB  
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30  
31  
32 Abstract

33  
34 This document is a submission to the Internet Printing Protocol  
35 Working Group of the Internet Engineering Task Force (IETF).  
36 Comments should be submitted to the [ipp@pwg.org](mailto:ipp@pwg.org) mailing list.

37  
38 This document proposes a mapping of IPP notifications over SNMP via  
39 new device and job traps extensions defined for the Job Monitoring  
40 MIB [RFC-2707]. This mapping may be used to deliver printer  
41 notifications for any printer (not just IPP-capable ones) and also  
42 job notifications for any job (not just ones submitted via IPP).

43  
44 This document proposes: (4) SNMP traps; and (24) SNMP leaf objects  
45 (for use in various trap bindings).



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113 Internet Draft      IPP Notify over SNMP via Job Mon MIB      19 March 2000  
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172  
173 1. Introduction  
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175 The IPP protocol [IPP-PRO] supports passive monitoring of IPP Printer  
176 and Job objects, via client polling of IPP object attributes using  
177 the 'Get-Printer-Attributes' and 'Get-Job-Attributes' operations.  
178

179 This IPP Notifications over SNMP mapping supports dynamic monitoring  
180 of IPP Printer and Job objects, via server generation of SNMP traps.  
181

182  
183 1.1. Terminology for Conformance  
184

185 The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",  
186 "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this  
187 document are to be interpreted per [RFC-2119].  
188

189  
190 2. SNMP Network Management Framework  
191

192 See: Section 1.1 'SNMPv1', section 1.2 'SNMPv2', and section 1.3  
193 'SNMPv3' of [RFC-2576].  
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229 3. Managed Object Mapping  
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233 3.1. SNMP Mapping for IPP Printer Events  
234

235 IPP Printer event attribute	Job Monitoring MIB object mapping
236 -----	-----
237 version-number	[no mapping - not useful]
238 status-code	[implicit in each generated trap]
239 request-id	[request-id in SNMP trap header]
240 attributes-charset	[no mapping - strings are UTF-8]
241 attributes-natural-language	[no mapping - no text bindings]
242 printer-uri	jmEventDeviceURI
243 printer-name	jmEventDeviceName
244 job-id	jmEventJobIndex
245	[and jmEventJobSetIndex]
246 job-name	jmEventJobName
247 trigger-event	jmEventTriggerEvent
248 trigger-time	[sysUpTime in SNMP trap bindings]
249 trigger-date-time	[hrSystemDate in Host Res MIB]
250 subscription-id	jmEventSubscriptionID
251 subscriber-user-name	jmEventSubscriberUserName
252 subscriber-user-data	jmEventSubscriberUserData
253 printer-state	jmEventDeviceState
254 printer-state-reasons	jmEventDeviceStateReasons
255 printer-is-accepting-jobs	jmEventDeviceIsAcceptingJobs

284  
285 3.2. SNMP Mapping for IPP Job Events  
286

287 IPP Job event attribute	Job Monitoring MIB object mapping
288 -----	-----
289 version-number	[no mapping - not useful]
290 status-code	[implicit in each generated trap]
291 request-id	[request-id in SNMP trap header]
292 attributes-charset	[no mapping - strings are UTF-8]
293 attributes-natural-language	[no mapping - no text bindings]
294 printer-uri	jmEventDeviceURI
295 printer-name	jmEventDeviceName
296 job-id	jmEventJobIndex
297	[and jmEventJobSetIndex]
298 job-name	jmEventJobName
299 trigger-event	jmEventTriggerEvent
300 trigger-time	[sysUpTime in SNMP trap bindings]
301 trigger-date-time	[hrSystemDate in Host Res MIB]
302 subscription-id	jmEventSubscriptionID
303 subscriber-user-name	jmEventSubscriberUserName
304 subscriber-user-data	jmEventSubscriberUserData
305 job-state	jmEventJobState
306 job-state-reasons	jmEventJobStateReasons
307	
308 [job-completed - extra bindings]	
309 job-k-octets	jmEventJobKOctets
310 job-k-octets-processed	jmEventJobKOctetsProcessed
311 job-impressions	jmEventJobImpressions
312 job-impressions-completed	jmEventJobImpressionsCompleted
313 job-media-sheets	jmEventJobMediaSheets
314 job-media-sheets-completed	jmEventJobMediaSheetsCompleted
315	
316 [job-progress - extra bindings]	
317 impressions-completed-current-copy	jmEventJobImpressionsCompletedCC
318 job-collation-type	jmEventJobCollationType
319 sheet-completed-copy-number	jmEventJobSheetCompletedCopyNum
320 sheet-completed-document-number	jmEventJobSheetCompletedDocNum
321	
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340  
341 3.3. Rules for Encoding Notifications  
342

343 Over some transports and/or media, the variable-bindings of these  
344 SNMP traps MAY not fit the MTU (maximum transmission unit) size.  
345 Conforming IPP Notification generators SHALL perform this procedure  
346 to ensure that all variable-bindings of these SNMP traps are always  
347 included in the generated SNMP trap packet:  
348

- 349 1) Truncate all strings specified for variable-bindings  
350 to the reduced maximum sizes that are specified in their  
351 corresponding OBJECT clauses in their MODULE-COMPLIANCE.  
352 1a) If all variable-bindings now fit within the MTU,  
353 then exit this procedure and generate the SNMP trap.  
354 2) Truncate the next one of the following string objects to  
355 the empty string (zero length in the ASN.1 BER encoding),  
356 in the order listed:  
357 - 'jmEventSubscriberUserName'  
358 - 'jmEventSubscriberUserData'  
359 - 'jmEventDeviceURI'  
360 - 'jmEventDeviceName'  
361 - 'jmEventDeviceStateReasons'  
362 - 'jmEventJobName'  
363 - 'jmEventJobStateReasons'  
364 2a) If all variable-bindings now fit within the MTU,  
365 then exit this procedure and generate the SNMP trap.  
366 2b) If all variable-bindings do NOT fit within the MTU,  
367 then repeat step (2) for next string object.  
368 3) If all variable-bindings do NOT fit within the MTU,  
369 then -> logic error (variable-bindings MUST now fit).  
370

371  
372 3.4. Registration for IPP Notifications  
373

374 IPP Clients may register for IPP Notifications delivered via SNMP by  
375 either of the following methods:  
376

377  
378 3.4.1. Registration via IPP  
379

380 IPP Create-Subscription and Job creation (Create-Job, Print-Job,  
381 Print-URI) operations MAY be used to create per-Printer or per-Job  
382 IPP Subscription objects and MAY specify  
383

384 'notify-recipient' = 'snmpnotify://hostname[.port]'  
385  
386  
387  
388  
389  
390

### 3.4.2. Registration via SNMP

SNMP Set-Request operations MAY be used to create appropriate rows in the SNMP Notification MIB defined in [RFC-2573] and MAY specify:

- 1) 'snmpNotifyTag'
  - tag of this notification - see 'snmpTargetAddrTagList' below
  - example "jmDeviceBasicV2Event" or "jmJobBasicV2Event"
- 2) 'snmpNotifyType'
  - notification sent using either SNMP Trap (unacknowledged) or SNMP Inform-Request (acknowledged)
- 3) 'snmpNotifyStorageType'
  - row persistence of this registration

SNMP Set-Request operations MAY be used to create appropriate rows in the SNMP Target MIB defined in [RFC-2573] and MAY specify:

- 1) 'snmpTargetAddrTDomain' and 'snmpTargetAddrTAddress'
  - target transport protocol and address (equivalent to URI)
- 2) 'snmpTargetAddressTimeout' and 'snmpTargetAddrRetryCount'
  - retry timeout and limit (for acknowledged notifications delivered using SNMP Inform-Request rather than SNMP Trap)
- 3) 'snmpTargetAddrTagList'
  - tags of notifications to be sent to this target (client)
  - example "jmDeviceBasicV2Event" or "jmJobBasicV2Event"
- 4) 'snmpTargetAddrParamsEntry'
  - notification security and SNMP protocol version
- 5) 'snmpTargetAddrStorageType'
  - row persistence of this registration

### 3.5. Relationship to other MIBs

#### 3.5.1. MIB-II (RFC 1213)

All SNMPv1 trap messages include 'time-stamp' which is the value of the 'sysUpTime' object from MIB-II [RFC-1213].

All SNMPv2 trap bindings include the 'sysUpTime' object from MIB-II [RFC-1213].

#### 3.5.2. Host Resources MIB (RFC 1514)

The 'jmDeviceBasicV2Event' trap defined in this document permits optional binding of the 'hrDeviceStatus', 'hrDevicePrinterStatus',



451 and 'hrPrinterDetectedErrorState' objects from Host Resources MIB  
452 [RFC-1514].  
453

454  
455 3.5.3. Printer MIB (RFC 1759)  
456

457 The 'jmDeviceBasicV2Event' trap defined in this document permits  
458 optional binding of the 'hrDeviceStatus', 'hrDevicePrinterStatus',  
459 and 'hrPrinterDetectedErrorState' objects from Host Resources MIB  
460 [RFC-1514].  
461

462 The appropriate value of 'hrDeviceIndex' to use in the Printer MIB  
463 [RFC-1759] may be indicated by the instance suffix of the  
464 'hrDeviceStatus' variable's OID.  
465  
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508  
509 4. Managed Object Definitions  
510

511  
512  
513 4.1. Device Basic Event Trap  
514

515 -- Device Basic Event Group (Cond Mandatory)  
516 --  
517 -- Implementation of this group is conditionally mandatory;  
518 -- mandatory for systems which send this Device event via SNMP.  
519

520 jmDeviceBasicV1Enterprise OBJECT-IDENTITY  
521 STATUS current  
522 DESCRIPTION  
523 "The value of the enterprise-specific OID in an SNMPv1 trap  
524 for a Device basic event' sent by this managed system."  
525 ::= { jobmonMIBNotifications 1 }  
526

527 jmDeviceBasicV2EventPrefix  
528 OBJECT IDENTIFIER ::= { jmDeviceBasicV1Enterprise 0 }  
529

530 jmDeviceBasicV2Event NOTIFICATION-TYPE  
531 OBJECTS {  
532 jmEventTriggerEvent,  
533 jmEventSubscriptionID,  
534 jmEventSubscriberUserName,  
535 jmEventSubscriberUserData,  
536 jmEventDeviceURI,  
537 jmEventDeviceName,  
538 jmEventJobSetIndex,  
539 jmEventJobIndex,  
540 jmEventJobName,  
541 jmEventDeviceState,  
542 jmEventDeviceStateReasons,  
543 jmEventDeviceIsAcceptingJobs  
544 }  
545 STATUS current  
546 DESCRIPTION  
547 "This SMIV2 trap corresponds to an IPP Printer basic event.  
548  
549 This trap is sent when requested by a prior subscription.  
550 The event type is specified in 'jmEventTriggerEvent'.  
551  
552 Event types reported via 'jmDeviceBasicV2Event' include:  
553 - 'printer-restarted'  
554 - 'printer-shutdown'  
555 - 'printer-state-changed'  
556 - 'printer-media-changed'  
557 - 'printer-config-changed'  
558

- 563 - 'printer-queue-changed'
- 564 - 'printer-no-longer-full'
- 565 - 'printer-almost-idle'
- 566 - 'device-restarted'
- 567 - 'device-shutdown'
- 568 - 'device-state-changed'
- 569 - 'device-media-changed'
- 570 - 'device-config-changed'
- 571 - 'device-queue-changed'
- 572 - 'device-no-longer-full'
- 573 - 'device-almost-idle'
- 574 - and (optionally) vendor extension event types

575  
576 Additional variable-bindings SHOULD be appended to this trap  
577 for all device-level events:

- 578 - Systems with the Host Resources MIB [RFC-1514] SHOULD add
- 579 'hrSystemDate'
- 580 (compare to IPP 'printer-current-time') and
- 581 'hrDeviceStatus'
- 582 (compare to IPP 'printer-state')

583  
584 Additional variable-bindings MAY be appended to this trap  
585 for all printer-specific events:

- 586 - Systems with the Host Resources MIB [RFC-1514] MAY add
- 587 'hrPrinterStatus'
- 588 (compare to IPP 'printer-state') and
- 589 'hrPrinterDetectedErrorState'
- 590 (compare to IPP 'printer-state-reasons')

591  
592 Systems MAY add other variable-bindings from any MIB.

593  
594 See: Section 5.2 'notify-events' of [IPP-NOT];  
595 Section 7 'Notification Content' in [IPP-NOT]."  
596 ::= { jmDeviceBasicV2EventPrefix 1 }

#### 599 4.2. Job Basic Event Trap

- 600 -- Job Basic Event Group (Cond Mandatory)
- 601 --
- 602 -- Implementation of this group is conditionally mandatory;
- 603 -- mandatory for systems which send this Job event via SNMP.

604  
605 jmJobBasicV1Enterprise OBJECT-IDENTITY  
606 STATUS current  
607 DESCRIPTION  
608 "The value of the enterprise-specific OID in an SNMPv1 trap  
609 for a Job basic event sent by this managed system."  
610 ::= { jobmonMIBNotifications 2 }

611  
612 jmJobBasicV2EventPrefix

```
619     OBJECT IDENTIFIER ::= { jmJobBasicV1Enterprise 0 }
620
621 jmJobBasicV2Event NOTIFICATION-TYPE
622     OBJECTS {
623         jmEventTriggerEvent,
624         jmEventSubscriptionID,
625         jmEventSubscriberUserName,
626         jmEventSubscriberUserData,
627         jmEventDeviceURI,
628         jmEventDeviceName,
629         jmEventJobSetIndex,
630         jmEventJobIndex,
631         jmEventJobName,
632         jmEventJobState,
633         jmEventJobStateReasons
634     }
635     STATUS current
636     DESCRIPTION
637         "This SMIV2 trap corresponds to an IPP Job basic event.
638
639         This trap is sent when requested by a prior subscription.
640         The event type is specified in 'jmEventTriggerEvent'.
641
642         Event types reported via 'jmJobBasicV2Event' include:
643         - 'job-created'
644         - 'job-state-changed'
645         - 'job-config-changed'
646         - 'job-purged'
647         - and (optionally) vendor extension event types
648
649         Systems MAY add other variable-bindings from any MIB.
650
651         See: Section 5.2 'notify-events' of [IPP-NOT];
652             Section 7 'Notification Content' in [IPP-NOT]."
```

```
653 ::= { jmJobBasicV2EventPrefix 1 }
654
655
```

#### 656 4.3. Job Completed Event Trap

```
657
658 -- Job Completed Event Group (Cond Mandatory)
659 --
660 -- Implementation of this group is conditionally mandatory;
661 -- mandatory for systems which send this Job event via SNMP.
```

```
662
663 jmJobCompletedV1Enterprise OBJECT-IDENTITY
664     STATUS current
665     DESCRIPTION
666         "The value of the enterprise-specific OID in an SNMPv1 trap
667         for a Job completed event sent by this managed system."
668     ::= { jobmonMIBNotifications 3 }
669
```

```
676 jmJobCompletedV2EventPrefix
677     OBJECT IDENTIFIER ::= { jmJobCompletedV1Enterprise 0 }
678
679 jmJobCompletedV2Event NOTIFICATION-TYPE
680     OBJECTS {
681         jmEventTriggerEvent,
682         jmEventSubscriptionID,
683         jmEventSubscriberUserName,
684         jmEventSubscriberUserData,
685         jmEventDeviceURI,
686         jmEventDeviceName,
687         jmEventJobSetIndex,
688         jmEventJobIndex,
689         jmEventJobName,
690         jmEventJobState,
691         jmEventJobStateReasons,
692         jmEventJobKOctetsProcessed,
693         jmEventJobImpressionsCompleted,
694         jmEventJobMediaSheetsCompleted
695     }
696     STATUS           current
697     DESCRIPTION
698         "This SMIV2 trap corresponds to an IPP 'job-completed' event.
699
700         This trap is sent when requested by a prior subscription.
701         The event type is specified in 'jmEventTriggerEvent'.
702
703         Event types reported via 'jmJobCompletedV2Event' include:
704         - 'job-completed'
705         - and (optionally) vendor extension event types
706
707         Additional variable-bindings SHOULD be appended to this trap
708         for all 'job-completed' events:
709         - Systems which support this job information SHOULD add
710             'jmEventJobKOctets'
711             (compare to IPP 'job-k-octets' job size attribute
712             and to Job Mon MIB 'jobKOctetsTransferred' attribute)
713             'jmEventJobImpressions'
714             (compare to IPP 'job-impressions' job size attribute)
715             'jmEventJobMediaSheets'
716             (compare to IPP 'job-media-sheets' job size attribute
717             and to Job Mon MIB 'sheetsRequested' attribute)
718
719         Systems MAY add other variable-bindings from any MIB.
720
721         See:     Section 5.2 'notify-events' of [IPP-NOT];
722                 Section 7 'Notification Content' in [IPP-NOT].
723         ::= { jmJobCompletedV2EventPrefix 1 }
724
725
726
```

731  
732  
733 4.4. Job Progress Event Trap  
734

735 -- Job Progress Event Group (Cond Mandatory)  
736 --  
737 -- Implementation of this group is conditionally mandatory;  
738 -- mandatory for systems which send this Job event via SNMP.  
739

740 jmJobProgressV1Enterprise OBJECT-IDENTITY  
741     STATUS         current  
742     DESCRIPTION  
743         "The value of the enterprise-specific OID in an SNMPv1 trap  
744         for a Job progress event sent by this managed system."  
745     ::= { jobmonMIBNotifications 4 }  
746

747 jmJobProgressV2EventPrefix  
748     OBJECT IDENTIFIER ::= { jmJobProgressV1Enterprise 0 }  
749

750 jmJobProgressV2Event NOTIFICATION-TYPE

751     OBJECTS {  
752         jmEventTriggerEvent,  
753         jmEventSubscriptionID,  
754         jmEventSubscriberUserName,  
755         jmEventSubscriberUserData,  
756         jmEventDeviceURI,  
757         jmEventDeviceName,  
758         jmEventJobSetIndex,  
759         jmEventJobIndex,  
760         jmEventJobName,  
761         jmEventJobState,  
762         jmEventJobStateReasons,  
763         jmEventJobKOctetsProcessed,  
764         jmEventJobImpressionsCompleted,  
765         jmEventJobMediaSheetsCompleted,  
766         jmEventJobImpressionsCompletedCC,  
767         jmEventJobCollationType,  
768         jmEventJobSheetCompletedCopyNum,  
769         jmEventJobSheetCompletedDocNum  
770     }  
771     STATUS         current  
772     DESCRIPTION  
773         "This SMIV2 trap corresponds to an IPP 'job-progress' event.  
774  
775         This trap is sent when requested by a prior subscription.  
776         The event type is specified in 'jmEventTriggerEvent'.  
777  
778         Event types reported via 'jmJobProgressV2Event' include:  
779         - 'job-progress'  
780         - and (optionally) vendor extension event types  
781  
782

788           Additional variable-bindings SHOULD be appended to this trap  
789           for all 'job-progress' events:

- 790           - Systems which support this job information SHOULD add
- 791            'jmEventJobKOctets'
- 792            (compare to IPP 'job-k-octets' job size attribute
- 793            and to Job Mon MIB 'jobKOctetsTransferred' attribute)
- 794            'jmEventJobImpressions'
- 795            (compare to IPP 'job-impressions' job size attribute)
- 796            'jmEventJobMediaSheets'
- 797            (compare to IPP 'job-media-sheets' job size attribute
- 798            and to Job Mon MIB 'sheetsRequested' attribute)

799  
800           Systems MAY add other variable-bindings from any MIB.

801  
802           See:       Section 5.2 'notify-events' of [IPP-NOT];  
803                        Section 7 'Notification Content' in [IPP-NOT]."

804           ::= { jmJobProgressV2EventPrefix 1 }

#### 805 806 807 4.5. Event Binding Group

- 808
- 809 -- Event Binding Group (Cond Mandatory)
- 810 --
- 811 -- Implementation of this group is conditionally mandatory;
- 812 -- mandatory for systems which send Device or Job events via SNMP.
- 813 --
- 814 -- Note: All of the objects in this group are defined ONLY for the
- 815 -- purpose of providing instantaneous bindings for SNMP traps - it's
- 816 -- NEVER suitable for an SNMP Manager to Get these objects directly.

817  
818 jmEventBinding OBJECT IDENTIFIER ::= { jobmonMIBObjects 5 }

819  
820 jmEventTriggerEvent OBJECT-TYPE

821       SYNTAX        JmUTF8StringTC (SIZE (0..63))    -- 255 in [IPP-MOD]

822       MAX-ACCESS   read-only

823       STATUS       current

824       DESCRIPTION

825           "The trigger event type associated with this event.

826  
827           Standard Printer event types defined in [IPP-NOT] are:

- 828           - 'printer-restarted'
- 829           - 'printer-shutdown'
- 830           - 'printer-state-changed'
- 831           - 'printer-media-changed'
- 832           - 'printer-config-changed'
- 833           - 'printer-queue-changed'
- 834           - 'printer-no-longer-full'
- 835           - 'printer-almost-idle'

836  
837           Standard Device event types generalized from [IPP-NOT] are:

- 843        - 'device-restarted'
- 844        - 'device-shutdown'
- 845        - 'device-state-changed'
- 846        - 'device-media-changed'
- 847        - 'device-config-changed'
- 848        - 'device-queue-changed'
- 849        - 'device-no-longer-full'
- 850        - 'device-almost-idle'

851  
852        Standard Job event types defined in [IPP-NOT] are:

- 853        - 'job-created'
- 854        - 'job-completed'
- 855        - 'job-state-changed'
- 856        - 'job-config-changed'
- 857        - 'job-purged'
- 858        - 'job-progress'

859  
860        Conformance:      The natural language for keywords  
861        in trigger event type SHALL always be US English.

862  
863        Conformance:      This trigger event type SHALL be valid  
864        and reported in ALL Job Monitoring MIB notifications.

865  
866        See:            Section 5.2 'notify-events' and  
867                        Section 7 'Notification Content' in [IPP-NOT]."

868        -- DEFVAL intentionally omitted - reported value SHALL be valid  
869        ::= { jmEventBinding 1 }

870  
871        jmEventSubscriptionID OBJECT-TYPE

872        SYNTAX            Integer32 (0..2147483647)

873        MAX-ACCESS        read-only

874        STATUS            current

875        DESCRIPTION

876               "The subscription identifier associated with this event  
877               or zero (if none).

878  
879        Conformance:      This subscription identifier SHALL be valid  
880        and reported, if available on this managed system.

881  
882        See:            Section 5.8 'subscription-id' and  
883                        Section 7 'Notification Content' in [IPP-NOT]."

884        DEFVAL            { 0 }                        -- no subscription ID

885        ::= { jmEventBinding 2 }

886  
887        jmEventSubscriberUserName OBJECT-TYPE

888        SYNTAX            JmUTF8StringTC (SIZE (0..63))    -- 1023 in [IPP-MOD]

889        MAX-ACCESS        read-only

890        STATUS            current

891        DESCRIPTION

892               "The subscriber user name associated with this event  
893               or the empty string (if none).



900 Note: The natural language appropriate for text-to-speech  
901 of subscriber user name is orthogonal to the localized text  
902 context in IPP 'attributes-natural-language'. The subscriber  
903 user name MAY include an in-line 'language tag' using Plane  
904 14 'language tag' characters approved for ISO 10646/Unicode.  
905

906 Conformance: This subscriber user name SHALL be valid  
907 and reported, if available on this managed system.  
908

909 See: 'Language Tagging in Unicode Plain Text', RFC 2482  
910 (January 1999);  
911 'Plane 14 Characters for Language Tags', Unicode  
912 Technical Report #7 (January 1999);  
913 Section 4.3.6 'job-originating-user-name' and  
914 Section 4.4.2 'uri-authentication-supported'  
915 (usage of 'requesting-user-name') in [IPP-MOD];  
916 Section 5.11 'subscriber-user-name' and  
917 Section 7 'Notification Content' in [IPP-NOT]."

918 DEFVAL { 'H } -- no subscriber user name  
919 ::= { jmEventBinding 3 }  
920

921 jmEventSubscriberUserData OBJECT-TYPE

922 SYNTAX OCTET STRING (SIZE (0..63)) -- 63 in [IPP-NOT]

923 MAX-ACCESS read-only

924 STATUS current

925 DESCRIPTION

926 "The subscriber user data associated with this event  
927 or the empty string (if none).  
928

929 Conformance: This subscriber user data SHALL be valid  
930 and reported, if available on this managed system.  
931

932 See: Section 5.4 'subscriber-user-data' and  
933 Section 7 'Notification Content' in [IPP-NOT]."

934 DEFVAL { 'H } -- no subscriber user data  
935 ::= { jmEventBinding 4 }  
936

937 jmEventDeviceURI OBJECT-TYPE

938 SYNTAX OCTET STRING (SIZE (0..255)) -- 1023 in [IPP-MOD]

939 MAX-ACCESS read-only

940 STATUS current

941 DESCRIPTION

942 "The device URI associated with this event  
943 or the empty string (if none).  
944

945 Conformance: This device URI SHALL be valid  
946 and reported, if available on this managed system.  
947

948 See: Section 4.3.3 'job-printer-uri' in [IPP-MOD];  
949 Section 4.4.1 'printer-uri-supported' in [IPP-MOD];  
950

955 Section 7 'Notification Content' in [IPP-NOT]."  
956 DEFVAL { 'H } -- no device URI  
957 ::= { jmEventBinding 5 }  
958

959 jmEventDeviceName OBJECT-TYPE  
960 SYNTAX OCTET STRING (SIZE (0..127)) -- 127 in [IPP-MOD]  
961 MAX-ACCESS read-only  
962 STATUS current  
963 DESCRIPTION

964 "The device name associated with this event  
965 or the empty string (if none).  
966

967 Conformance: This device name SHALL be valid  
968 and reported, if available on this managed system.  
969

970 See: Section 4.4.4 'printer-name' in [IPP-MOD];  
971 Section 7 'Notification Content' in [IPP-NOT]."

972 DEFVAL { 'H } -- no device name  
973 ::= { jmEventBinding 6 }  
974

975 jmEventDeviceState OBJECT-TYPE  
976 SYNTAX INTEGER { -- enum in [IPP-MOD]  
977 unknown(2), -- unknown device state  
978 idle(3),  
979 processing(4),  
980 stopped(5)  
981 }

982 MAX-ACCESS read-only  
983 STATUS current  
984 DESCRIPTION

985 "The device state associated with this event  
986 or 'unknown'.  
987

988 Note: This object uses the keywords from the [IPP-MOD]  
989 enumerated type 'printer-state' for coherence.  
990

991 Conformance: This device state SHALL be valid  
992 and reported, if available on this managed system.  
993

994 See: Section 4.4.11 'printer-state' in [IPP-MOD];  
995 Section 7 'Notification Content' in [IPP-NOT]."

996 DEFVAL { unknown } -- unknown device state  
997 ::= { jmEventBinding 7 }  
998

999 jmEventDeviceStateReasons OBJECT-TYPE  
1000 SYNTAX OCTET STRING (SIZE (0..255)) -- 255\*n in [IPP-MOD]  
1001 MAX-ACCESS read-only  
1002 STATUS current  
1003 DESCRIPTION

1004 "The device state reasons associated with this event  
1005 (as a comma-separated list) or the empty string (if none).  
1006

1011  
1012 Conformance: The natural language for keywords  
1013 in device state reasons SHALL always be US English.  
1014

1015 Conformance: These device state reasons SHALL be valid  
1016 and reported, if available on this managed system.  
1017

1018 See: Section 4.4.12 'printer-state-reasons' in [IPP-MOD];  
1019 Section 7 'Notification Content' in [IPP-NOT]."

1020 DEFVAL { 'H } -- no device state reasons

1021 ::= { jmEventBinding 8 }  
1022

1023 jmEventDeviceIsAcceptingJobs OBJECT-TYPE

1024 SYNTAX TruthValue

1025 MAX-ACCESS read-only

1026 STATUS current

1027 DESCRIPTION

1028 "The device substate associated with this event  
1029 or 'true' (if unknown).  
1030

1031 Conformance: This device substate SHALL be valid  
1032 and reported, if available on this managed system.  
1033

1034 See: Section 4.4.23 'printer-is-accepting-jobs'  
1035 in [IPP-MOD];  
1036 Section 7 'Notification Content' in [IPP-NOT]."

1037 DEFVAL { true } -- device is accepting jobs

1038 ::= { jmEventBinding 9 }  
1039

1040 jmEventJobSetIndex OBJECT-TYPE

1041 SYNTAX Integer32 (0..32767)

1042 MAX-ACCESS read-only

1043 STATUS current

1044 DESCRIPTION

1045 "The job set index associated with this event  
1046 or zero (if none).  
1047

1048 Conformance: This job set index SHALL be valid  
1049 and reported, if available on this managed system.  
1050

1051 See: 'jmGeneralJobSetIndex' object in [RFC-2707];  
1052 Section 4.3.2 'job-id' in [IPP-MOD];  
1053 Section 7 'Notification Content' in [IPP-NOT]."

1054 DEFVAL { 0 } -- no job set index

1055 ::= { jmEventBinding 10 }  
1056  
1057  
1058  
1059  
1060  
1061  
1062

1067 jmEventJobIndex OBJECT-TYPE  
1068 SYNTAX Integer32 (0..2147483647)  
1069 MAX-ACCESS read-only  
1070 STATUS current  
1071 DESCRIPTION  
1072 "The job index associated with this event  
1073 or zero (if none).  
1074  
1075 Conformance: This job index SHALL be valid  
1076 and reported, if available on this managed system.  
1077  
1078 See: 'jmJobIndex' object in [RFC-2707];  
1079 Section 4.3.2 'job-id' in [IPP-MOD];  
1080 Section 7 'Notification Content' in [IPP-NOT]."  
1081 DEFVAL { 0 } -- no job index  
1082 ::= { jmEventBinding 11 }

1083  
1084 jmEventJobName OBJECT-TYPE  
1085 SYNTAX OCTET STRING (SIZE (0..255)) -- 255 in [IPP-MOD]  
1086 MAX-ACCESS read-only  
1087 STATUS current  
1088 DESCRIPTION  
1089 "The job name associated with this event  
1090 or the empty string (if none).  
1091  
1092 Conformance: This job name SHALL be valid  
1093 and reported, if available on this managed system.  
1094  
1095 See: 'jobName' attribute in [RFC-2707];  
1096 Section 4.3.5 'job-name' in [IPP-MOD];  
1097 Section 7 'Notification Content' in [IPP-NOT]."  
1098 DEFVAL { 'H' } -- no job name  
1099 ::= { jmEventBinding 12 }

1100  
1101 jmEventJobState OBJECT-TYPE  
1102 SYNTAX INTEGER { -- enum in [IPP-MOD]  
1103 unknown(2), -- unknown job state  
1104 pending(3),  
1105 pendingHeld(4),  
1106 processing(5),  
1107 processingStopped(6),  
1108 canceled(7),  
1109 aborted(8),  
1110 completed(9)  
1111 }  
1112 MAX-ACCESS read-only  
1113 STATUS current  
1114 DESCRIPTION  
1115 "The job state associated with this event  
1116 or 'unknown'.  
1117  
1118

1123  
1124 Note: This object uses the keywords from the [IPP-MOD]  
1125 enumerated type 'job-state' for coherence.  
1126

1127 Conformance: This job state SHALL be valid  
1128 and reported, if available on this managed system.  
1129

1130 See: 'jmJobState' object in [RFC-2707];  
1131 Section 4.3.7 'job-state' in [IPP-MOD];  
1132 Section 7 'Notification Content' in [IPP-NOT]."

1133 DEFVAL { unknown } -- unknown job state  
1134 ::= { jmEventBinding 13 }  
1135

1136 jmEventJobStateReasons OBJECT-TYPE  
1137 SYNTAX OCTET STRING (SIZE (0..255)) -- 255\*n in [IPP-MOD]  
1138 MAX-ACCESS read-only  
1139 STATUS current  
1140 DESCRIPTION

1141 "The job state reasons associated with this event  
1142 (as a comma-separated list) or the empty string (if none).  
1143

1144 Conformance: The natural language for keywords  
1145 in job state reasons SHALL always be US English.  
1146

1147 Conformance: These job state reasons SHALL be valid  
1148 and reported, if available on this managed system.  
1149

1150 See: 'jmJobStateReasons1' object in [RFC-2707];  
1151 'jobStateReasons2', 'jobStateReasons3', and  
1152 'jobStateReasons4' attributes in [RFC-2707];  
1153 Section 4.3.8 'job-state-reasons' in [IPP-MOD];  
1154 Section 7 'Notification Content' in [IPP-NOT]."

1155 DEFVAL { 'H' } -- no job state reasons  
1156 ::= { jmEventBinding 14 }  
1157

1158 jmEventJobKOctets OBJECT-TYPE  
1159 SYNTAX Integer32 (-2..2147483647)  
1160 MAX-ACCESS read-only  
1161 STATUS current  
1162 DESCRIPTION

1163 "The job size in K octets associated with this event  
1164 or zero (if none) or '-2' (if unknown).  
1165

1166 Conformance: This job size SHALL be valid  
1167 and reported, if available on this managed system.  
1168

1169 See: 'jobKOctetsTransferred' attribute in [RFC-2707];  
1170 Section 4.3.17.1 'job-k-octets' in [IPP-MOD];  
1171 Section 7 'Notification Content' in [IPP-NOT]."

1172 DEFVAL { -2 } -- unknown job size  
1173 ::= { jmEventBinding 15 }  
1174

1180 jmEventJobKOctetsProcessed OBJECT-TYPE  
1181 SYNTAX Integer32 (-2..2147483647)  
1182 MAX-ACCESS read-only  
1183 STATUS current  
1184 DESCRIPTION  
1185 "The job progress in K octets associated with this event  
1186 or zero (if none) or '-2' (if unknown).  
1187  
1188 Conformance: This job progress SHALL be valid  
1189 and reported, if available on this managed system.  
1190  
1191 See: 'jmJobKOctetsProcessed' object in [RFC-2707];  
1192 Section 4.3.18.1 'job-k-octets-processed'  
1193 in [IPP-MOD];  
1194 Section 7 'Notification Content' in [IPP-NOT]."  
1195 DEFVAL { -2 } -- unknown job progress  
1196 ::= { jmEventBinding 16 }

1197  
1198 jmEventJobImpressions OBJECT-TYPE  
1199 SYNTAX Integer32 (-2..2147483647)  
1200 MAX-ACCESS read-only  
1201 STATUS current  
1202 DESCRIPTION  
1203 "The job size in impressions associated with this event  
1204 or zero (if none) or '-2' (if unknown).  
1205  
1206 Conformance: This job size SHALL be valid  
1207 and reported, if available on this managed system.  
1208  
1209 See: Section 4.3.17.2 'job-impressions' in [IPP-MOD];  
1210 Section 7 'Notification Content' in [IPP-NOT]."  
1211 DEFVAL { -2 } -- unknown job size  
1212 ::= { jmEventBinding 17 }

1213  
1214 jmEventJobImpressionsCompleted OBJECT-TYPE  
1215 SYNTAX Integer32 (-2..2147483647)  
1216 MAX-ACCESS read-only  
1217 STATUS current  
1218 DESCRIPTION  
1219 "The job progress in impressions associated with this event  
1220 or zero (if none) or '-2' (if unknown).  
1221  
1222 Conformance: This job progress SHALL be valid  
1223 and reported, if available on this managed system.  
1224  
1225 See: 'jmJobImpressionsCompleted' object in [RFC-2707];  
1226 Section 4.3.18.2 'job-impressions-completed'  
1227 in [IPP-MOD];  
1228 Section 7 'Notification Content' in [IPP-NOT]."  
1229 DEFVAL { -2 } -- unknown job progress  
1230

1235 ::= { jmEventBinding 18 }

1236  
1237 jmEventJobMediaSheets OBJECT-TYPE

1238 SYNTAX Integer32 (-2..2147483647)

1239 MAX-ACCESS read-only

1240 STATUS current

1241 DESCRIPTION

1242 "The job size in media sheets associated with this event  
1243 or zero (if none) or '-2' (if unknown).  
1244

1245 Conformance: This job size SHALL be valid  
1246 and reported, if available on this managed system.  
1247

1248 See: 'sheetsRequested' attribute in [RFC-2707];  
1249 Section 4.3.17.3 'job-media-sheets' in [IPP-MOD];  
1250 Section 7 'Notification Content' in [IPP-NOT]."

1251 DEFVAL { -2 } -- unknown job size

1252 ::= { jmEventBinding 19 }

1253  
1254 jmEventJobMediaSheetsCompleted OBJECT-TYPE

1255 SYNTAX Integer32 (-2..2147483647)

1256 MAX-ACCESS read-only

1257 STATUS current

1258 DESCRIPTION

1259 "The job progress in media sheets associated with this event  
1260 or zero (if none) or '-2' (if unknown).  
1261

1262 Conformance: This job progress SHALL be valid  
1263 and reported, if available on this managed system.  
1264

1265 See: 'sheetsCompleted' attribute in [RFC-2707];  
1266 Section 4.3.18.3 'job-media-sheets-completed'  
1267 in [IPP-MOD];  
1268 Section 7 'Notification Content' in [IPP-NOT]."

1269 DEFVAL { -2 } -- unknown job progress

1270 ::= { jmEventBinding 20 }

1271  
1272 jmEventJobImpressionsCompletedCC OBJECT-TYPE

1273 SYNTAX Integer32 (-2..2147483647)

1274 MAX-ACCESS read-only

1275 STATUS current

1276 DESCRIPTION

1277 "The job progress in impressions completed  
1278 on the current copy associated with this event  
1279 or zero (if none) or '-2' (if unknown).  
1280

1281 Conformance: This job progress SHALL be valid  
1282 and reported, if available on this managed system.  
1283

1284 See: 'jmJobImpressionsCompleted' object in [RFC-2707];  
1285 'impressions-completed-current-copy' in [IPP-PROG];  
1286

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1288
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1290
1291             Section 7 'Notification Content' in [IPP-NOT].
1292     DEFVAL      { unknown }          -- unknown job progress
1293     ::= { jmEventBinding 21 }
1294
1295 jmEventJobCollationType OBJECT-TYPE
1296     SYNTAX      JmJobCollationTypeTC
1297     MAX-ACCESS  read-only
1298     STATUS      current
1299     DESCRIPTION
1300         "The job collation type associated with this event
1301         or 'unknown' (if unknown).
1302
1303         Conformance: This job collation type be valid
1304         and reported, if available on this managed system.
1305
1306         See: 'jobCollationType' attribute in [RFC-2707];
1307             'job-collation-type' in [IPP-PROG];
1308             Section 7 'Notification Content' in [IPP-NOT].
1309     DEFVAL      { unknown }          -- unknown job collation type
1310     ::= { jmEventBinding 22 }
1311
1312 jmEventJobSheetCompletedCopyNum OBJECT-TYPE
1313     SYNTAX      Integer32 (-2..2147483647)
1314     MAX-ACCESS  read-only
1315     STATUS      current
1316     DESCRIPTION
1317         "The job progress number of the copy currently being
1318         stacked for the document associated with this event
1319         or zero (if none) or '-2' (if unknown).
1320
1321         Conformance: This job progress SHALL be valid
1322         and reported, if available on this managed system.
1323
1324         See: 'sheetCompletedCopyNumber' attribute
1325             in [RFC-2707];
1326             'sheet-completed-copy-number' in [IPP-PROG];
1327             Section 7 'Notification Content' in [IPP-NOT].
1328     DEFVAL      { -2 }              -- unknown copy number
1329     ::= { jmEventBinding 23 }
1330
1331 jmEventJobSheetCompletedDocNum OBJECT-TYPE
1332     SYNTAX      Integer32 (-2..2147483647)
1333     MAX-ACCESS  read-only
1334     STATUS      current
1335     DESCRIPTION
1336         "The job progress number of the document currently being
1337         stacked associated with this event
1338         or zero (if none) or '-2' (if unknown).
1339
1340         Conformance: This job progress SHALL be valid
1341         and reported, if available on this managed system.
1342
1343 Hastings, McDonald           Expires 19 September 2000           [Page 24]

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1347  
1348 See: 'sheetCompletedDocumentNumber' attribute  
1349 in [RFC-2707];  
1350 'sheet-completed-document-number' in [IPP-PROG];  
1351 Section 7 'Notification Content' in [IPP-NOT]."  
1352 DEFVAL { -2 } -- unknown document number  
1353 ::= { jmEventBinding 24 }  
1354  
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1404  
1405 5. IANA Considerations  
1406

1407 None.  
1408  
1409

1410 6. Internationalization Considerations  
1411

1412 The 'jmEventTriggerEvent', 'jmEventDeviceState', and  
1413 'jmEventDeviceStateReasons' text objects defined in this document are  
1414 of type 'JmUTF8StringTC' (UTF-8 stream-encoded ISO 10646/Unicode  
1415 text) defined in the Job Monitoring MIB [RFC-2707]. The natural  
1416 language of these objects is US English.  
1417

1418 The 'jmEventSubscriberUserName' text object defined in this document  
1419 is of type 'JmUTF8StringTC' (UTF-8 stream-encoded ISO 10646/Unicode  
1420 text) defined in the Job Monitoring MIB [RFC-2707]. The natural  
1421 language of this object is inherently ambiguous (as it usually  
1422 contains some transform of a personal name).  
1423  
1424

1425 7. Security Considerations  
1426

1427 This IPP Notifications over SNMP mapping defines only 'read-only'  
1428 objects. It is suitable for use with any version of SNMP, as no  
1429 update security is required (because no configuration updates are  
1430 supported).  
1431

1432 No sensitive information is available via IPP Notifications over  
1433 SNMP.  
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1516  
1517 9. Change Log  
1518

1519 Changes in reverse chronological order (most recent first).  
1520

1521 <draft-ietf-ipp-not-over-snmpp-02.txt> - 19 March 2000

- 1522 1) Renamed Printer Event notification group to Device Basic Event  
1523 and 'jmPrinterEventV2Event' notification to  
1524 'jmDeviceBasicV2Event', to better align with IPP and to support  
1525 non-printing jobs.
- 1526 2) Revised 'jmDeviceBasicV2Event' notification to remove  
1527 'hrDeviceStatus', 'hrPrinterStatus',  
1528 'hrPrinterDetectedErrorState' from mandatory trap bindings  
1529 because they were redundant, per request of Ron Bergman.
- 1530 3) Renamed Job Event notification group to Job Basic Event and  
1531 'jmJobEventV2Event' notification to 'jmJobBasicV2Event', to  
1532 better align with IPP and to support variant job events.
- 1533 4) Defined new Job Completed Event notification group and defined  
1534 new Job Progress Event notification group, to better align with  
1535 IPP and to support variant job events.
- 1536 5) Renamed Event object group to Event Binding,  
1537 'jmEventPrinterState' to 'jmEventDeviceState',  
1538 'jmEventPrinterStateReasons' to 'jmEventDeviceStateReasons',  
1539 'jmEventPrinterIsAcceptingJobs' to  
1540 'jmEventDeviceIsAcceptingJobs', to support non-printing jobs.
- 1541 6) Revised Event Binding object group, adding explicit objects  
1542 'jmEventDeviceURI', 'jmEventDeviceName', 'jmEventJobSetIndex',  
1543 'jmEventJobIndex', 'jmEventJobName', 'jmEventJobState',  
1544 'jmEventJobStateReasons', 'jmEventJobKOctets',  
1545 'jmEventJobKOctetsProcessed', 'jmEventJobImpressions',  
1546 'jmEventJobImpressionsCompleted', 'jmEventJobMediaSheets',  
1547 'jmEventJobMediaSheetsCompleted',  
1548 'jmEventJobImpressionsCompletedCC', 'jmEventJobCollationType',  
1549 'jmEventJobSheetCompletedCopyNum',  
1550 'jmEventJobSheetCompletedDocNum', per request of Ron Bergman.
- 1551 7) Revised SYNTAX of 'jmEventTriggerEvent' object from from  
1552 'JmUTF8StringTC' (string) to IPP-aligned enumeration, per request  
1553 of Ron Bergman.
- 1554 8) Removed all references to Printer MIB v2, as they were of limited  
1555 value, per request of Ron Bergman.
- 1556 9) Revised 'SNMP Mapping for IPP Printer Events' section for renamed  
1557 event binding objects, per request of Ron Bergman.
- 1558 10) Revised 'Rules for Encoding Notifications' section to truncate  
1559 additional string bindings, per request of Ron Bergman.
- 1560 11) Revised 'Registration via IPP' section, to change scheme name  
1561 from 'ipp-snmpp:' to 'snmppnotify:', per request of Ron Bergman.  
1562

1563 <draft-ietf-ipp-not-over-snmpp-01.txt> - 1 December 1999

- 1564 1) Deleted 'JmTriggerEventTC' textual convention (see below).  
1565  
1566

- 1571     2) Revised SYNTAX of 'jmEventTriggerEvent' object from
- 1572         'JmTriggerEventTC' (enumeration) to 'JmUTF8StringTC' (string), to
- 1573         support use of IPP standard keywords.
- 1574     3) Added 'jmEventPrinterState', 'jmEventPrinterStateReasons', and
- 1575         'jmEventPrinterIsAcceptingJobs' objects for consistency w/
- 1576         [IPP-NOT] and to reduce ambiguity about printer states inherent
- 1577         in RFC 1759.
- 1578     4) Revised DESCRIPTION of 'jmPrinterEventV2Event' notification to
- 1579         add SHOULD (recommendation) for 'jmEventPrinterState',
- 1580         'jmEventPrinterStateReasons', and 'jmEventPrinterIsAcceptingJobs'
- 1581         objects.
- 1582     5) Revised 'SNMP Mapping for IPP Printer Events' section to add
- 1583         direct mapping of IPP notification attributes to
- 1584         'jmEventPrinterState', 'jmEventPrinterStateReasons', and
- 1585         'jmEventPrinterIsAcceptingJobs' objects.
- 1586     6) Revised 'Rules for Encoding Notifications' section to add
- 1587         'jmEventPrinterState' and 'jmEventPrinterStateReasons'.
- 1588     7) Revised 'IANA Considerations' section to specify there are none -
- 1589         no enumerated or keyword textual conventions are now defined in
- 1590         this document.
- 1591     8) Revised 'Internationalization Considerations' section to specify
- 1592         that US English keywords are used in 'jmEventTriggerEvent',
- 1593         'jmEventPrinterState', and 'jmEventPrinterStateReasons' objects
- 1594         and thus no explicit natural language tagging is required.
- 1595

1596 <draft-ietf-ipp-not-over-snm-00.txt> - 10 October 1999

- 1597 1) Initial version.

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