

INTERNET-DRAFT

[<draft-ietf-ipp-ipp-scheme-01.txt>](#)

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Internet Printing Protocol/NV: IPP URL Scheme

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Abstract

Internet Printing Protocol/NV (IPP/NV) is the next version of IPP, which is an application level protocol for distributed printing on the Internet. This document describes a new 'ipp' scheme, which is intended to identify URLs that reference an IPP printing service.

IPP/1.0 is described by the following documents:

Internet Printing Protocol/1.0: Model and Semantics [[IPP-MOD](#)]

Internet Printing Protocol/1.0: Encoding and Transport [[IPP-PRO](#)]

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1 Introduction

This document states that IPP must support a new scheme 'ipp', which clients and servers use in IPP attributes. Such attributes are in a message body whose Content-Type is application/ipp. A client maps 'ipp' URLs to 'http' URLs, and then follows the HTTP [[RFC2068](#)][RFC2069] rules for constructing a Request-Line and HTTP headers. The 'ipp' scheme implies all of the same protocol semantics as that of the 'http' scheme [[RFC2068](#)], except that it represents a print service and the implicit (default) port number that clients use to connect to a server is port 631.

In the remainder of this document the term 'ipp-URL' means a URL whose scheme is 'ipp' and whose implicit (default) port is 631. The term 'http-URL' means a URL whose scheme is 'http', and the term 'https-URL' means a URL whose scheme is 'https',

2 IPP URL Scheme

A client and an IPP object (i.e. the server) MUST support the ipp-URL value in the following IPP attributes.

- job attributes:

- job-uri

- job-printer-uri

- printer attributes:

- printer-uri-supported

- operation attributes:

- job-uri

- printer-uri

Each of the above attributes identifies a printer or job object. The ipp-URL is intended as the value of the attributes in this list, and for no other attributes. All of these attributes have a syntax type of 'uri', but there are attributes with a syntax type of 'uri' that do not use the 'ipp' scheme, e.g. 'job-more-info'.

If a printer registers its URL with a directory service, the printer MUST register an ipp-URL.

User interfaces are beyond the scope of this document. But if software exposes the ipp-URL values of any of the above five attributes to a human user, it is REQUIRED that the human see the ipp-URL as is.

When a client sends a request, it MUST convert a target ipp-URL to a target http-URL according to the following rules:

1. change the 'ipp' scheme to 'http'
2. add an explicit port 631 if the URL does not contain an explicit port. Note: port 631 is the IANA-reserved TCP port number.

The client MUST use the target http-URL in both the HTTP Request-Line and HTTP headers, as specified by HTTP[RFC2068][[RFC2069](#)]. However, the client must use the target ipp-URL for the value of the "printer-uri" or "job-uri" attribute within the application/ipp body of the request.

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For example, when an IPP client sends a request directly (i.e. no proxy) to an ipp-URL "ipp://myhost.com/myprinter/myqueue", it opens a TCP connection to port 631 (the ipp implicit port) on the host "myhost.com" and sends the following data:

```
POST /myprinter/myqueue HTTP/1.1
Host: myhost.com:631
Content-type: application/ipp
Transfer-Encoding: chunked
...
"printer-uri" "ipp://myhost.com/myprinter/myqueue"
               (encoded in application/ipp message body)
...
```

As another example, when an IPP client sends the same request as above via a proxy "myproxy.com", it opens a TCP connection to the proxy port [8080](#) on the proxy host "myproxy.com" and sends the following data:

```
POST http://myhost.com:631/myprinter/myqueue HTTP/1.1
Host: myhost.com:631
Content-type: application/ipp
Transfer-Encoding: chunked
...
"printer-uri" "ipp://myhost.com/myprinter/myqueue"
               (encoded in application/ipp message body)
...
```

The proxy then connects to the IPP origin server with headers that are the same as the "no-proxy" example above.

3 Compatibility with IPP/1.0

For compatibility with IPP/1.0, clients and IPP objects (i.e. a server) MUST support additional schemes as described in this section:

- @ If a server receives an IPP/1.0 request, it MUST return an IPP/1.0 response. That is, it MUST support an http-URL in the target "printer-uri" and "job-uri" operation attributes in a request. If the server returns any of the 3 attributes, "job-uri", "job-printer-uri" or "printer-uri-supported" in the response, the value of these attributes MUST be http-URLs. For security, a server MAY also support https-URLs.
- @ When a server returns the printer attribute "printer-uri-supported", it MUST return all supported values for an IPP/NV request. For an IPP/1.0 request, a server MUST NOT return values that are ipp-URLs, i.e. it MUST return only the http-URLs and https-URLs.
- @ The table below shows the type of URL that a server returns for the "job-uri" and "job-printer-uri" job attributes for all operations based on how the job was created. The "or" in the table below indicates an implementation option.

Operation attribute	Job created via		
	ipp	http	https
s for a request			
ipp	ipp	ipp	No URL returned
http	http	http	No URL returned
https	https or http	https or http	https

- @ If a server registers an ipp-URL with a name service, then it MUST also register an http-URL. If a printer supports a secure connection using SSL3, then it MUST register an https-URL.
- @ An IPP/NV client MUST use an ipp-URL for non-secure printers unless it receives a "version not supported" error message. Then it MUST try to send a request in version 1.0, using the http-URL in place of the ipp-URL for the target "job-uri" and "printer-uri" operation attributes in the request. For secure printers, an IPP/NV client must operate as an IPP/1.0 client and use an https-URL. An IPP/1.0 client MUST use an http-URL for non-secure printers and an https-URL for secure printers.

4 Security

See the sections on security in the "Internet Printing Protocol/1.0: Model and Semantics" [[IPP-MOD](#)] and "Internet Printing Protocol/1.0: Encoding and Transport" [[IPP-PRO](#)].

5 References

[IPP-MOD]

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"Internet Printing Protocol/1.0: Model and Semantics" [draft-ietf-ipp-mod-11.txt](#), November, 1998.

[IPP-PRO]

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[RFC2068]

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