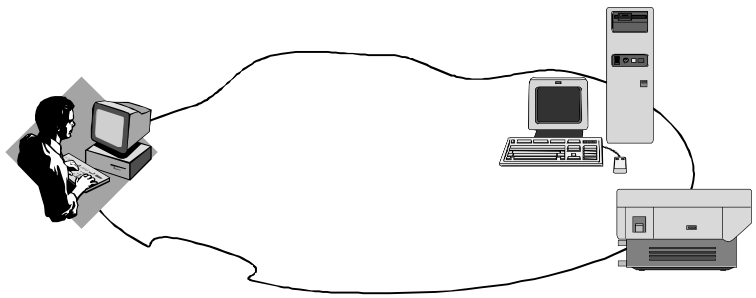
Internet Print Protocol Proposal

HTPP - Hypertext Print Protocol

Requirements

- Platform Independent
- Sits directly on top of TCP/IP
- Based on existing standards
  - HTTP
  - ISO DPA
  - PWG Print and Job MIBs
- Extensible
- Easily Transforms to device protocols
  - NPAP
  - PJL
  - IPDS

Pushing Print to the Server



"Here is a print job"

- Job Information (owner, ID, ...)
- Production Instructions (input tray, plex, finishing ...)
- Print data

"I got it"

- What I did with it or error information
- Job/queue ID on server

o
o
o

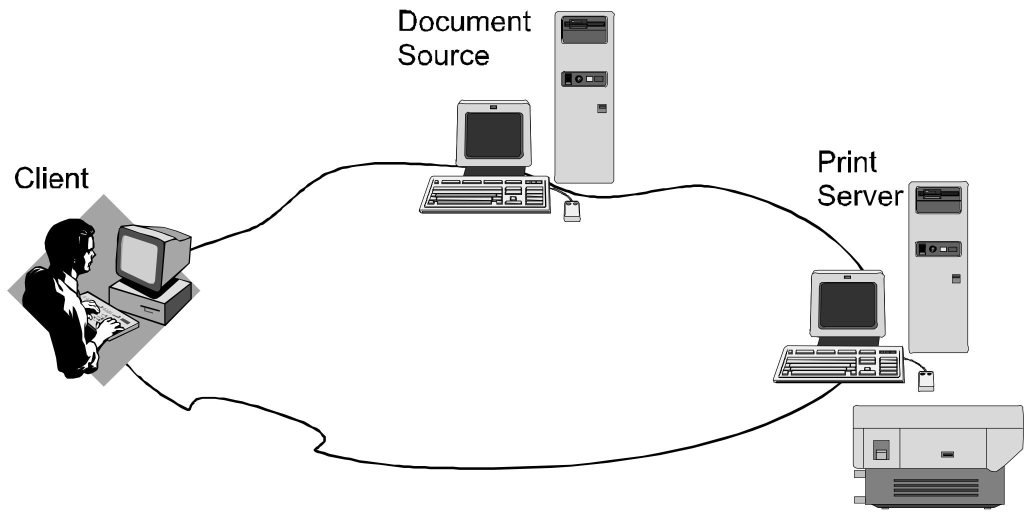
"What is the status of my print job or the printer?"

Response = status

o
o
o

"Print completed" (or error)

Pulling Print From the Client



"Here is a print job"

- Job Information (owner, ID, ...)
- Production Instructions (input tray, plex, finishing ...)
- URL of print file

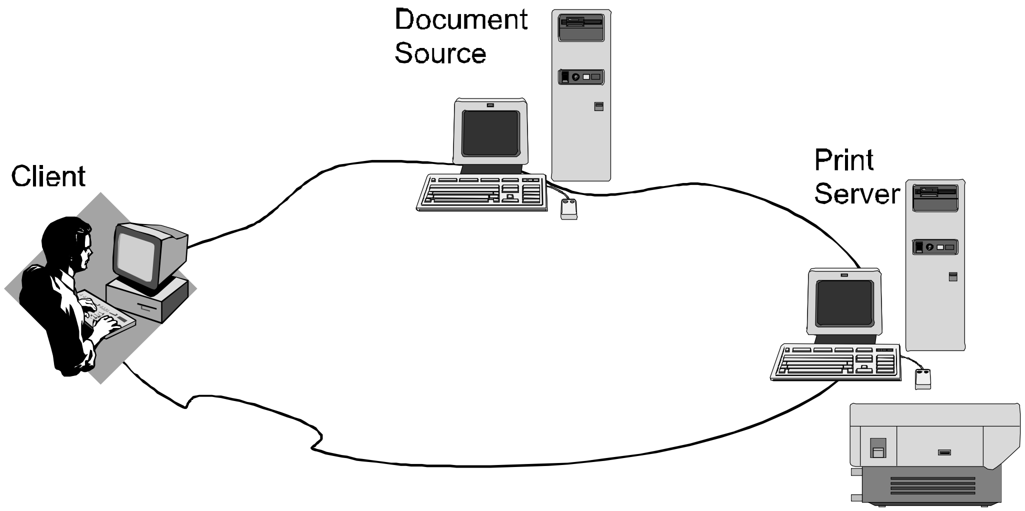
"I got it"

- What I did with it or error information
- Job/queue ID on server

"Give me the print file"

Print File

Pulling a "Purchased" Document



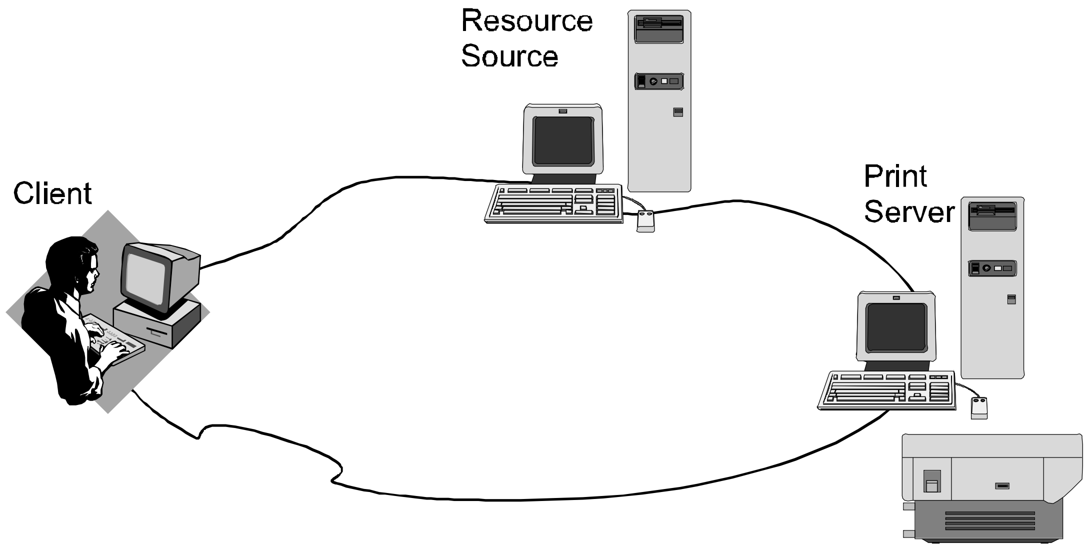
"Here is a print job"
- Job Information (owner, ID, ...)
- Production Instructions (input tray, plex, finishing ...)
- URL of print file
- "Proof of Purchase"

"I got it"
- What I did with it or error information
- Job/queue ID on server

"Give me the print file"
- "Proof of Purchase"

Print File

Printing HTML with Links



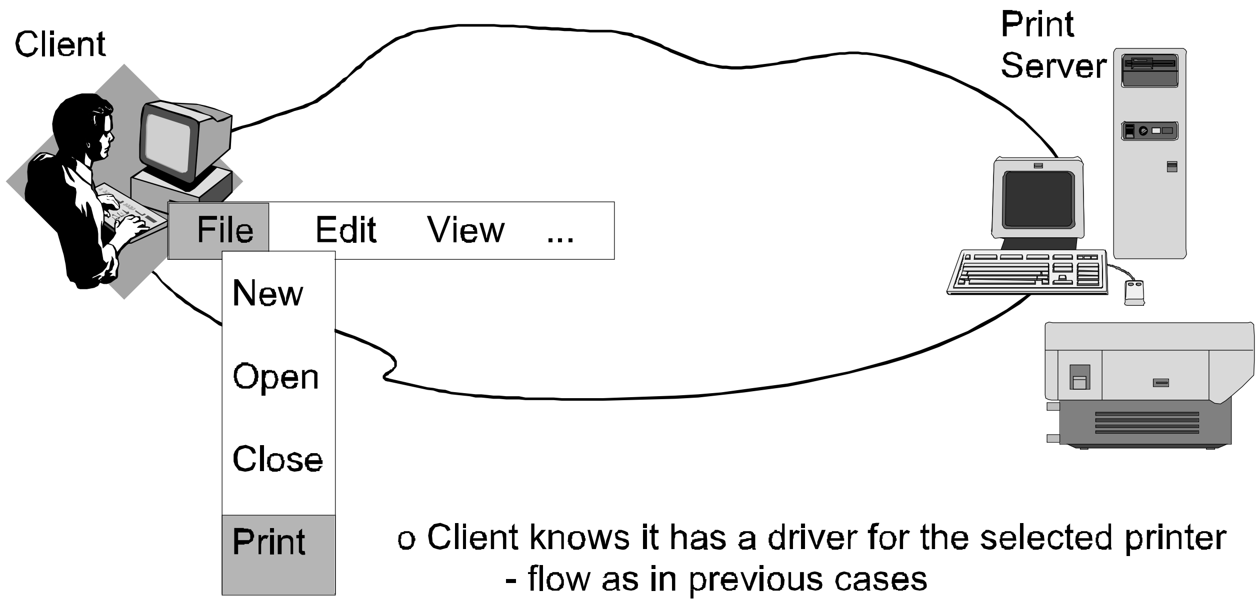
"Here is an HTML print job"
- Job Information (owner, ID, ...)
- Production Instructions (input tray, plex, finishing ...)

"I got it"
- What I did with it or error information
- Job/queue ID on server

"Give me a resource"
- URL of resource

Resource

Printing From an Application



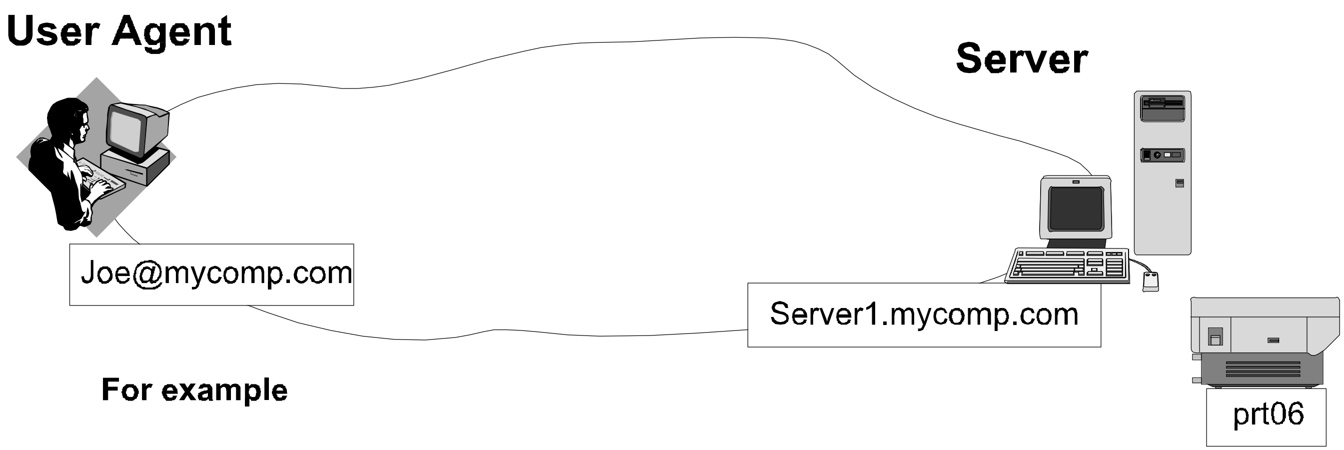
o Client knows it has a driver for the selected printer
  - flow as in previous cases

o Client does not have a driver
  - get a driver from the server, or
  - generate a canonical form that the server can bind to the specific printer at print time

Protocol Based on HTTP 1.0

- Simple and lightweight
- Same Syntax and semantics
- Uses HTTP Post Method and Well Known URLs
- Inherits all HTTP capability
  - Security
  - Payment Mechanisms
  - Authentication
- Can bridge quickly to an existing HTTP Server

HTTP Well known URLs



For example

Printer attributes	http://Server1.mycomp.com/HTPP/PR06/attributes
Job attributes	http://Server1.mycomp.com/HTPP/job-attributes
Printer status	http://Server1.mycomp.com/HTPP/status

HTTP Messages

Request = Request-Line
*(General-Header
| Request-Header
| Entity-Header)
crlf
[Entity-Body]

Response = Status-Line
*(General-Header
| Request-Header
| Entity-Header)
crlf
[Entity-Body]

where all HTTP Headers are of the form:

HTTP Header = field name ":" [field-value] crlf

Request-Line = Method URL Protocol-version crlf

Status-Line = protocol version Code Status-message crlf

Print Methods

- PrintJob
  - POST http://Server1.mycomp.com/HTPP/pr06
  - Message content = PrintJob
- ModifyJob
  - POST http://Server1.mycomp.com/HTPP/job#123
  - Message content = JobSpecification
- CancelJob
  - POST http://Server1.mycomp.com/HTPP/job#123
  - Message content = "cancel"
- ListObjectAttributes
  - POST http://Server1.mycomp.com/HTPP/job-attributes
  - Response is a list of attribute/value pairs

The Print Job

```
Print-Job        =      Job-Specification-Header
                        [Job-Specification]
                        *(Document)

Document         =      [Job-Ticket-Header
                          Job-Ticket]
                           Document-Content

Document-Content = Content-Header
                     URL | Content
```

Job-Specification

```
Job-Specification  =  *(Job-Specification-Header field)
                       crlf
                      *(Job-Specification-Attribute)


Job-Specification-Header field = Content-Encoding
                                 | Content-Length
                                 | Content-Type
                                 | extension-header


Job-Specification-Attribute = Attribute-type: [value] crlf
```

Job Attributes

- Job Client ID
- Job Upstream ID
- Job Type
- Job Owner
- Job Name
- Date/Time
- Job Comment
- Job Priority
- Print ID on Server

Job Ticket

```
Job-Ticket  =  *(Job-Ticket-Header field)
                crlf
               *(Job-Ticket-Attribute)


Job-Ticket-Header field = Content-Encoding
                        | Content-Length
                        | Content-Type
                        | extension-header


Job-Ticket-Attribute = Attribute-type: [value] crlf
```

Job Ticket Attributes

- Media
- Input-Tray
- Print-Resolution
- Plex
- Print-Quality
- Copy-Count
- Content-Orientation
- Finishing