
UPnP Printer:1 Device Template Version 1.01, Annex A – Optional Service Addition Version 1.0

For UPnP Device Architecture 1.0

Status: Standardized DCP

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A.1 INTRODUCTION

The Imaging Committee did not progress the PrintEnhancedLayout:1 service through the standardization process. PrintEnhancedLayout:1 is reserved for possible future work (no such work is currently planned). The Imaging Committee has proceeded to progress the PrintEnhanced:1 service [PRINTENHANCED]. The PrintEnhanced:1 service is an optional service for Printer:1 device implementations. The PrintEnhanced:1 service is a superset of the PrintBasic:1 service [PRINTBASIC] with additional operations and semantics as illustrated in Figure 2.

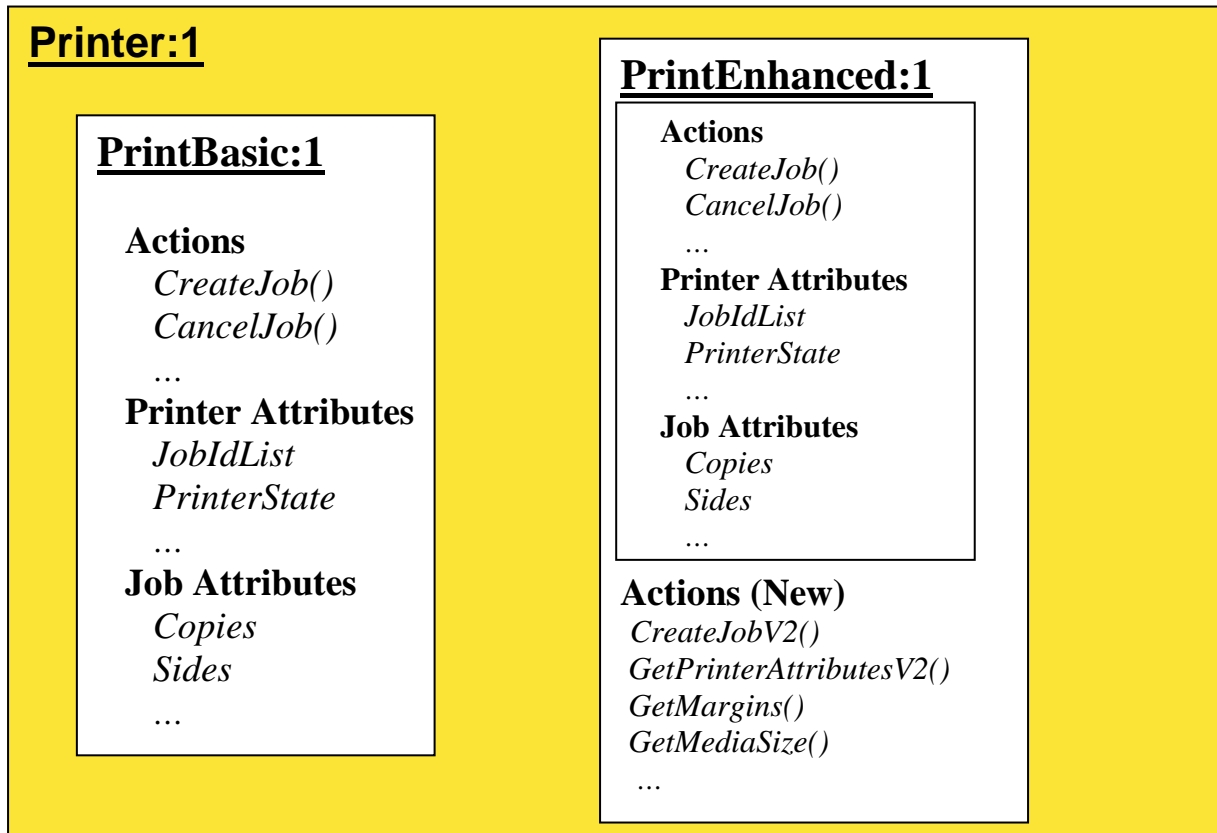


Figure 2 Functional Diagram including PrintEnhanced:1 Service.

When one or more optional services are implemented in addition to the PrintBasic:1 service, a Printer Device implementation may choose to share state variables and data structures between the services, or may choose to implement them as entirely separate services where such sharing does not occur. When a Control Point registers for events with a service, it will always be notified of events occurring within that service; it may or may not hear about events occurring within the other service.

A.2 REFERENCES

This section lists the references that this document refers to and the tag inside square brackets that is used to refer to each such reference:

[DEVICE] - UPnP Device Architecture, version 1.0 and UPnP Vendor's Implementation Guide. Available at: <http://www.upnp.org/standardizeddcp/docs/documents/upnpresource20040907.zip>

[PRINTBASIC] – *PrintBasic:1* Service Template, (Date). Available at: http://www.upnp.org/standardizeddcp/docs/documents/Service_print_v1_020808.pdf

[PRINTENHANCED] – *PrintEnhanced:1* Service Template, February 2005. Available at: http://www.upnp.org/standardizeddcp/docs/documents/Service_PrintEnhanced_v1_050504.pdf

A.3 DEVICE MODEL

Products that expose devices of the type urn:schemas-upnp-org:device:Printer:1 may implement the optional service “PrintEnhanced:1” as specified in the table below.

Table 1: Device Requirements for <urn:schemas-upnp-org:Printer:1>

DeviceType	Root	Req. or Opt. ¹	ServiceType	Req. or Opt. ¹	Service ID ²
<i>Printer:1</i>	<i>Root</i>	<i>R</i>	<i>PrintBasic:1</i>	<i>R</i>	<i>1</i>
			<i>PrintEnhancedLayout:1</i>	<i>O</i>	<i>2</i>
			<i>PrintEnhanced:1</i>	<i>O</i>	<i>3</i>

¹ R = Required, O = Optional, X = Non-standard.

² Prefixed by urn:upnp-org:serviceId: .

A.4 THEORY OF OPERATIONS

A.4.1 Discovery

If a Printer:1 Device supports the optional PrintEnhanced:1 service, both the PrintEnhanced:1 and PrintBasic:1 services must be announced.

A.4.2 Job Submittal

The following illustrates how job submission to a Printer Device works using the PrintEnhanced:1 service. There are two ways of submitting jobs using the PrintEnhanced:1 service, i.e. "push" and "pull" models.

A.4.2.1 "push" model

The Control Point pushes the print document using HTTP POST. The steps are similar to a job submittal (CreateJob) for the PrintBasic:1 service:

- 1) The Control Point sends the Action CreateJobV2 to the PrintEnhanced:1 Service Control URL. If the action is accepted, the CreateJobV2 in-arguments will be used to initialize the job attributes in the Action State Table of the PrintEnhanced:1 Service.
- 2) The CreateJobV2 response will include the following information:
 - PrintEnhanced:1 Service’s Job specific data sink URL for sending the Job data using an HTTP POST from the client. The content of the data sink URL is implementation specific.
- 3) If the Control Point wants job-related events for the submitted job, the Control Point sends the GENA Subscribe request to the eventSubURL for the PrintEnhanced:1 Service.
- 4) The Control Point sends an HTTP POST with the job data to the PrintEnhanced:1 Service’s Job-specific data sink URL.

If the Control Point registered for job-related events, then events would be sent each time the PrinterState and the JobState changes for the PrintEnhanced:1 service.

A.4.2.2 "pull" model

The Control Point provides a URI and requests the PrintEnhanced:1 service to pull the document to be printed from that location using HPPT GET.

- 1) The Control Point sends the Action CreateURIJob to the PrintEnhanced:1 Service Control URL. If the action is accepted, the CreateURIJob in-arguments will be used to initialize the job attributes in the State Variables Table of the PrintEnhanced:1 Service.
- 2) The CreateURIJob action request will include PrintEnhanced:1 Service's Job specific source URI to which the Printer:1 Device will send an HTTP GET.
- 3) If the Control Point wants job-related events for the submitted job, the Control Point sends the GENA Subscribe request to the eventSubURL for the PrintEnhanced:1 Service.
- 4) The Printer:1 Device sends an HTTP GET to the location specified by the source URI.

If the Control Point registered for job-related events, then events would be sent each time the PrinterState and the JobState changes for the PrintEnhanced:1 service.