

Internet Engineering Task Force
Internet-Draft
Intended status: Informational
Expires: October 9, 2018

F. Dold
INRIA
C. Grothoff
BFH
April 7, 2018

**The 'payto' URI scheme for payments
draft-dold-payto-01**

Abstract

This document defines the 'payto' Uniform Resource Identifier (URI) scheme for specifying payments.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <https://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on October 9, 2018.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<https://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
2.	Syntax of a 'payto' URL	2
3.	Semantics	2
4.	Examples	3
5.	Generic Options	3
6.	Encoding	4
7.	Security Considerations	4
8.	IANA Considerations	4
8.1.	URI Scheme Registration	4
9.	Payto Payment Method Registry	4
10.	References	5
10.1.	Normative References	5
10.2.	Informational References	6
	Authors' Addresses	6

[1.](#) Introduction

This document defines the 'payto' Uniform Resource Identifier (URI) [[RFC3986](#)] scheme for specifying payments. In its simplest form, a 'payto' URL identifies a payment method and optionally an account identifier. Additional parameters for a payment, such as an amount or a payment reference, can be provided.

[2.](#) Syntax of a 'payto' URL

This document uses the Augmented Backus-Naur Form (ABNF) of [[RFC5234](#)].

```
payto-URI = "payto" "://" authority path-abempty [ "?" opts ]
opts = opt *( "&" opt )
opt = (generic-opt / authority-specific-opt) "=" *( pchar )
generic-opt = "amount" / "creditor-name" / "debitor-name" /
              "message" / "instruction"
authority = <authority, see [RFC3986], Section 3.2>
path-abempty = <path-abempty, see [RFC3986], Section 3.3>
pchar = <pchar, see [RFC3986], Appendix A.>
```

[3.](#) Semantics

The authority component of a payment URI identifies the payment method. The payment methods are defined in the Payto Payment Method Registry, see [Section 9](#). The path component of the URI identifies the target account for a payment as interpreted by the respective payment method. The query component of the URI can provide additional parameters for a payment. Every payment method SHOULD

accept the options defined in generic-opt. The default operation of applications that invoke a URI with the payto scheme SHOULD be to launch an application (if available) associated with the payment method that can initiate a payment. Details of the payment MUST be taken from the path and options given in the URI. The user SHOULD be allowed to modify these details before confirming a payment.

4. Examples

```
payto://sepa/CH9300762011623852957?amount=EUR:200.0&message=hello
```

```
INVALID (authority missing): payto:sepa/12345
```

5. Generic Options

Applications MUST accept URIs with options in any order. The "amount" option MUST only occur at most once. Other options MAY be allowed multiple times, with further restrictions depending on the payment method. The following options SHOULD be understood by every payment method.

amount: The amount to transfer, including currency information if applicable. The format MUST be:

```
amount = [ currency ":" ] unit [ "." fraction ]
currency = 1*ALPHA
unit = 1*(DIGIT / ",")
fraction = 1*(DIGIT / ",")
```

The fraction MUST be smaller than 10^8 . The unit value MUST be smaller than 2^{53} . The use of commas is optional for readability and they MUST be ignored.

creditor-name: Name of the entity that is credited (receives the payment).

debitor-name: Name of the entity that is debited (makes the payment).

message: A short message to identify the purpose of the payment, which MAY be subject to lossy conversions (for example, due to character set encoding limitations).

instruction: A short message giving instructions to the recipient, which MUST NOT be subject to lossy conversions. Character set limitations allowed for such instructions depend on the payment method.

6. Encoding

Various payment systems use restricted character sets. An application that processes 'payto' URIs MUST convert characters that are not allowed by the respective payment systems into allowable character using either an encoding or a replacement table. This conversion process MAY be lossy, except for the instruction field.

7. Security Considerations

Applications handling the payto URI scheme MUST NOT initiate any transactions without prior review and confirmation from the user.

8. IANA Considerations

8.1. URI Scheme Registration

The "payto" URI scheme is to be registered in the "Permanent URI Schemes" registry.

Scheme name: payto

Status: permanent

URI scheme syntax: See [Section 2](#).

URI scheme semantics: See [Section 3](#).

Applications/protocols that use this scheme name: payto URIs are mainly used by financial software

Contact: grothoff@gnu.org

Change controller: grothoff@gnu.org

References: See References section of this document.

9. Payto Payment Method Registry

This document defines a registry for payment methods. The name of the registry is "Payto Payment Method Registry".

The registry shall record for each entry:

- o Name: The name of the payment method (case insensitive ASCII string)

- o Description: A description of the payment method, including the semantics of the path in the URI if applicable.
- o Contact: The contact information of a person to contact for further information
- o References: Optionally, references describing the payment method (such as an RFC) and method-specific options

The registration policy for this registry is "First Come First Served", as described in [[RFC5226](#)].

The registry is initially populated with the following entries:

Name	Description	Contact	References
ach	Automated Clearing House. The path is a bank account number.	N/A	[NACHA]
sepa	Single European Payment Area. The path is an IBAN.	N/A	[ISO20022]
upi	Unified Payment Interface. The path is an account alias.	N/A	[UPILinking]
bitcoin	Bitcoin protocol. The path is a "bitcoinaddress" as per [BIP0021].	N/A	[BIP0021]

[10.](#) References

[10.1.](#) Normative References

- [ISO20022] International Organization for Standardization, "ISO 20022 Financial Services - Universal financial industry message scheme", May 2013.
- [NACHA] NACHA, "NACHA Operating Rules & Guidelines", January 2017.
- [RFC3986] Berners-Lee, T., Fielding, R., and L. Masinter, "Uniform Resource Identifier (URI): Generic Syntax", STD 66, [RFC 3986](#), DOI 10.17487/RFC3986, January 2005, <<https://www.rfc-editor.org/info/rfc3986>>.

- [RFC5226] Narten, T. and H. Alvestrand, "Guidelines for Writing an IANA Considerations Section in RFCs", [RFC 5226](#), DOI 10.17487/RFC5226, May 2008, <<https://www.rfc-editor.org/info/rfc5226>>.
- [RFC5234] Crocker, D., Ed. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, [RFC 5234](#), January 2008.

[10.2.](#) Informational References

- [BIP0021] Schneider, N. and M. Corallo, "Bitcoin Improvement Proposal 21", January 2012, <https://en.bitcoin.it/wiki/BIP_0021>.
- [UPILinking]
National Payment Corporation of India, "Unified Payment Interface - Common URL Specifications For Deep Linking And Proximity Integration", May 2016, <<http://www.npci.org.in/documents/UPILinkingSpecificationsVersion10draft.pdf>>.

Authors' Addresses

Florian Dold
INRIA
Equipe TAMIS
INRIA Rennes Bretagne Atlantique
263 avenue du General Leclerc
Campus Universitaire de Beaulieu
Rennes, Bretagne F-35042
FR

Email: florian.dold@inria.fr

Christian Grothoff
BFH
Hoeheweg 80
Biel/Bienne CH-2501
CH

Email: christian.grothoff@bfh.ch

