Decision Points for an Open Alias Directory

Fasterpaymentscouncil.org

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Introduction

The mission of the U.S. Faster Payments Council (FPC) is to drive adoption of faster payments in the United States. It is the consensus of the Directory Models Work Group (DMWG) that a valuable tool to drive such adoption is a directory capability that would allow payers to make faster payments to payees using payment aliases rather than relatively cumbersome account information. This consensus is supported by research presented in the earlier work of the DMWG entitled "Beneficial Characteristics Desirable in A Directory Service."[1]

The United States payments landscape is supported by a robust set of providers with directory capabilities. It is the purpose of this report to explore the considerations necessary to be addressed to enable these existing capabilities to cooperate in a manner that enables faster payments without the need for senders and receivers to be bound to any particular "closed" directory services. As such, the DMWG has identified the directory model presented here as an "open" directory service – one in which any authorized party can query and that any authorized existing service or provider can choose to participate.

This report will discuss the following considerations:

- What is "open"?
    - What is the role of the "open" directory?
- What is an alias?
    - What values can an alias comprise?
    - What scope of uniqueness should an alias have?
- How could ownership of an alias be established and managed?
- How might an open directory capability be structured?

For each of the considerations, this report presents defining elements of the consideration. The considerations generally represent alternatives. This report will discuss crucial decision elements when evaluating these alternatives and will discuss a few different operational approaches.

Importantly, this report is not intended to be a design document. It is expected that any such open alias directory service will need to have an agreed upon governance structure. There would need to be an operator, or operators, of such a service. Issues such as information security, authorization, and authentication are acknowledged as critical considerations to be addressed. While these items are recognized as important, they are not directly addressed in report. The reader is encouraged to review coverage of these topics in the Beneficial Characteristics paper referenced above.

Additionally, this paper does not address the business model of operating an open alias directory. This topic was explored in an earlier work of the DMWG entitled "The Economic Benefits of an Independent, Interoperable Directory for Faster Payments."[2]

It is the hope of the DMWG that this report facilitates robust dialogue within the industry that might lead to collaboration on an open alias directory capability.

Aligning on Terminology

The DMWG found during its work that having a productive conversation on this topic requires all parties to agree on the words to be used and the meaning of those words. Terms used in this report are generally used to have the meanings as defined in the FPC's Faster Payments Glossary.[3]

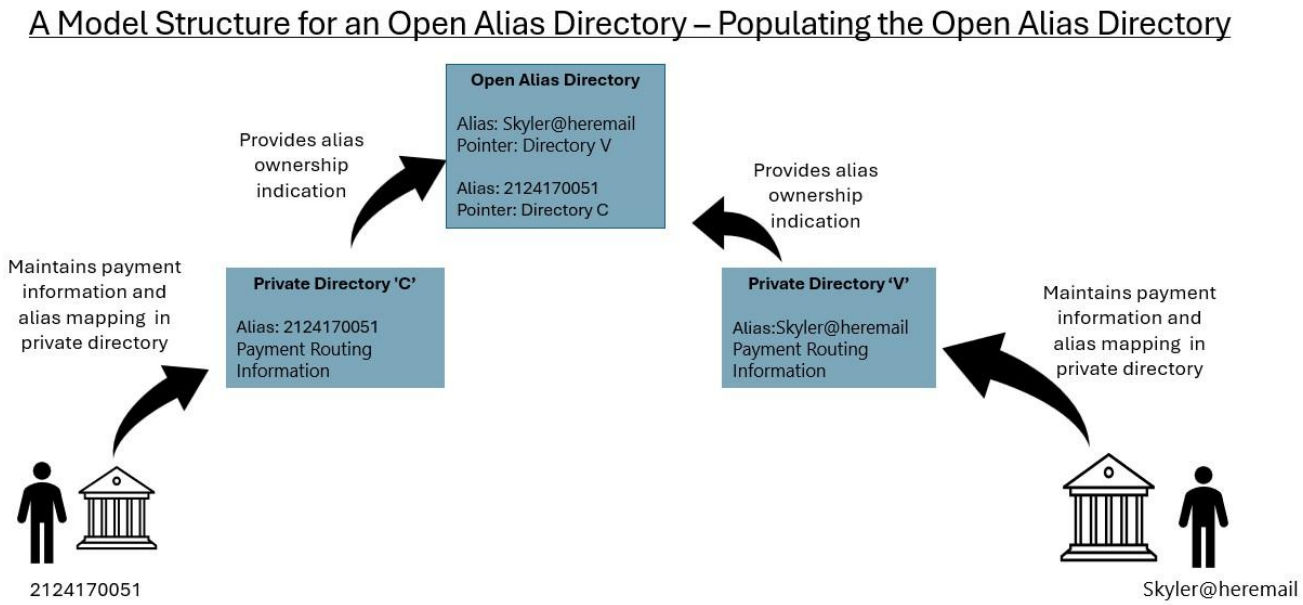

Diagram 1

For the purpose of providing explanations of key concepts, the following terminology is used through this report:

- Open
  A directory capability which is available to all approved parties under industry accepted governance and access is controlled via standards developed and adopted by the industry.

- Private
  A directory capability which is controlled by a single entity with unilateral control over its operation and access is limited to parties who enter into an agreement to secure proprietary access to the directory.

- Receiver
  This refers to the party intended to receive a message. Note that this is not always the party receiving value (e.g., the receiver of a Request for Payment message.)

- Sender
  This refers to the party who wishes to send a message and desires to use a directory service to determine the destination of the message. Note that this is not always the party sending value (e.g., the sender of a Request for Payment message.)

Note that for brevity in this report, the use of the terms senders and receivers includes the service providers that the end customers may be using to process their payments and payment messaging.

The Happy Path

The intent of an open alias directory service, as envisioned in this report, is to enable parties to exchange value using faster payments easily and safely. What would that look like?

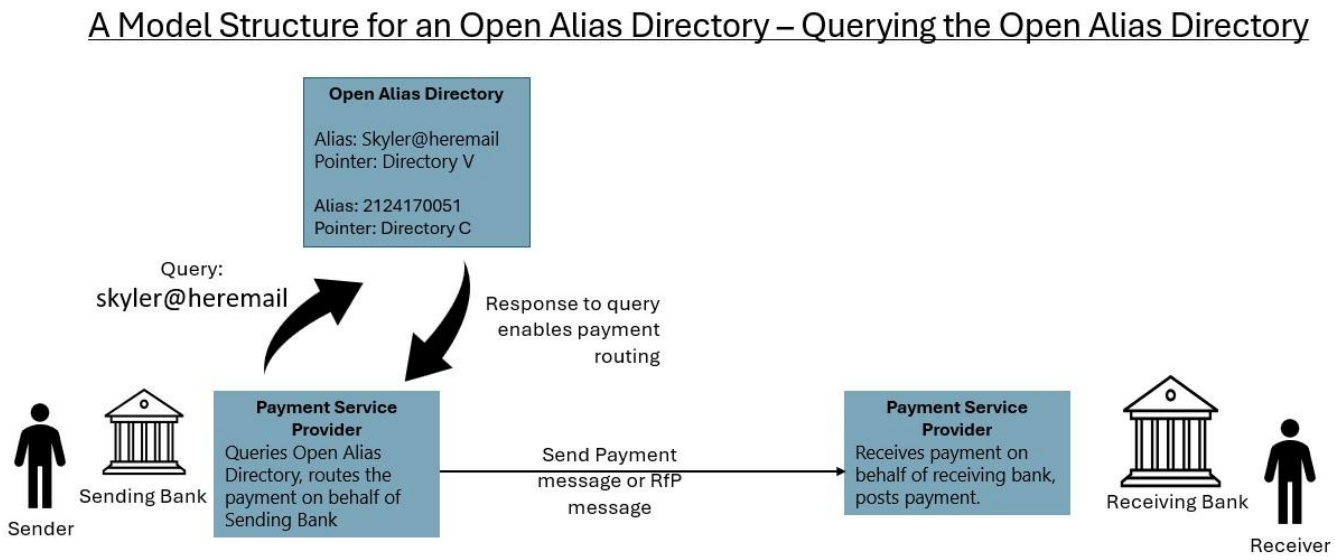

Diagram 2

In the happy path (an experience where everything worked as intended with no error or exception) it might look like this:

- Tali wants to pay Skyler $35
- Tali asks Skyler how to pay, and Skyler provides her email address (skyler@heremail) and instructs Tali to send a faster payment
- Tali enters Skyler's email address in her payment app of choice and sends $35
- Skyler gets her money

In this scenario, skyler@heremail is the payment alias Skyler has chosen. The prerequisites for this "happy path" to occur are that:

- Skyler has a relationship with a financial institution that participates in faster payments
- Skyler has a relationship with a party (FI or alias service provider) with whom she has registered her payment alias (skyler@heremail) which is in turn linked to a payment credential(s)
- Tali has a relationship with a party (FI or service provider) that has enabled payments where the payment details are discovered through the open alias directory service

Each of these prerequisites raises additional questions. For many of the questions, there are no right or wrong answers, but there are alternatives. Some of these alternatives will in turn raise their own questions.

To put some structure around evaluating these alternatives, this report frames them as considerations. What follows is a discussion of what DMWG has identified as primary considerations.

Considerations

What is "open"?

The United States has a robust payment ecosystem with many providers filling a variety of roles for payers and payees. Many proprietary ecosystems provide their own form of private directory available for use to parties who have bought into that ecosystem. The DMWG sees it as unlikely that the United States will see a single overarching directory service that will be used by all parties in the payment ecosystem. Rather, DMWG expects that private directories will continue to exist and provide value to their stakeholders.

The role of an open directory service would be to bridge these private directories where payments need to be sent to or received from parties who may have payments data that are not registered in the private directories. There may also be cases where a party is not a participant in a private directory scheme and an open directory can enable the discovery of payment information for such parties.

What is an alias?

In the context of this report, an alias (or payment alias) is a value which can be openly and easily shared by a receiver such that a sender can resolve the value to enable initiation of a payment related message.

Payment information such as a bank account routing transit number and demand deposit account number (RT/DDA) or a credit or debit card primary account number (PAN) are generally considered to be confidential information the distribution of which should be controlled. Further, RT/DDA and PAN are long numbers which are generally not memorized by the holders of such accounts.

An alias value is intended to be public, something freely sharable amongst transacting parties. An alias would be used by a directory service to resolve the alias to a RT/DDA or PAN to be used in payment messages to properly route payment-related transactions.

What values can an alias comprise?

Payment alias values can be essentially any character string that can be used by a directory to resolve the alias to payment information. Common alias values for payment directories (see earlier work by DMWG[4]) include:

Data type	Example
Email address	skyler@heremail
Phone number	+1-847-555-1212
Handle	@skyler
Unique Identifier (e.g., GUID/UUID)	c7413402-9c24-4c32-9d82-696531aed7a6

The key characteristic of a payment alias is that the value of the alias shares minimal confidential information and is thus more comfortably shared between the parties in a transaction.

What scope of uniqueness should an alias have?

The intent of a payment alias is to be able to resolve the alias to a particular payment account value to enable exchange of payment related messages. In order for payment aliases to deliver the ability to resolve to a particular payment account it is desirable that the alias values must have some level of uniqueness. An alias of @skyler that can resolve to payment information for an individual named Skyler Smith or to a business named Skyler Enterprises is of limited utility in practice. An alias is assumed to be unique to a single party.

Note that in the examples shown in the section above, the namespaces largely force uniqueness – email addresses are unique; phone numbers are unique, UUIDs are unique. Handles are generally unique within the domain that issued the handle – e.g., @skyler would be unique within a certain social media platform but could be reused in other platforms.

This concept of "scope" is important for the resolution of payments. The scope of uniqueness can be considered in the following ways:

- **Unique**
  Payment alias values must be determinatively unique within the open alias directory. There may be one and only one directory entry for any given payment alias value. Refer to **Diagram 3** for an example of unique payment alias values.

- Unique by Domain

  The value chosen as an alias is unique within a certain domain. In this context, a "domain" will be a definition of any type of boundary to define the scope. The following are examples of possible domains:

  - *payment type*, such as instant payment vs ACH or push to card.
  - *payment rail*, such as the FedNow® Service or the RTP® Network.
  - *private directory*, such as where the alias is used across multiple private directories.
  - *account, such as the alias can be used for multiple accounts.*
  - *geography*, such as United States or Canada.

An example of domain uniqueness is shown in **Diagram 4.**

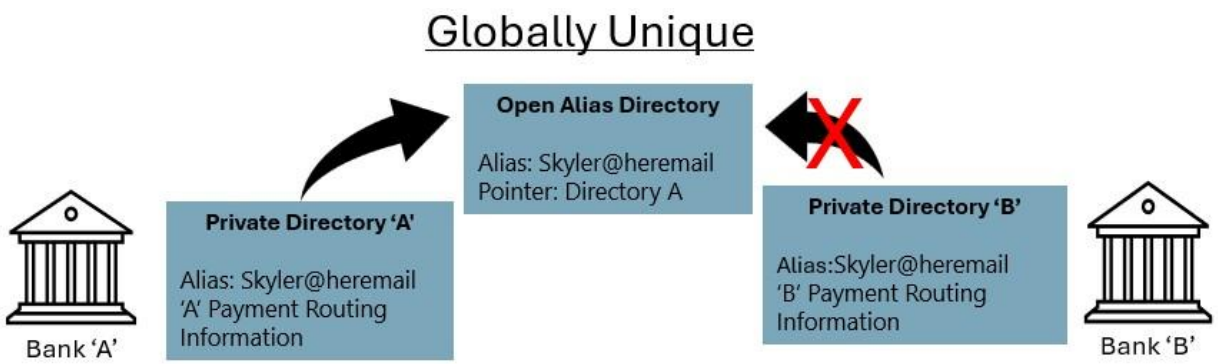

Diagram 3

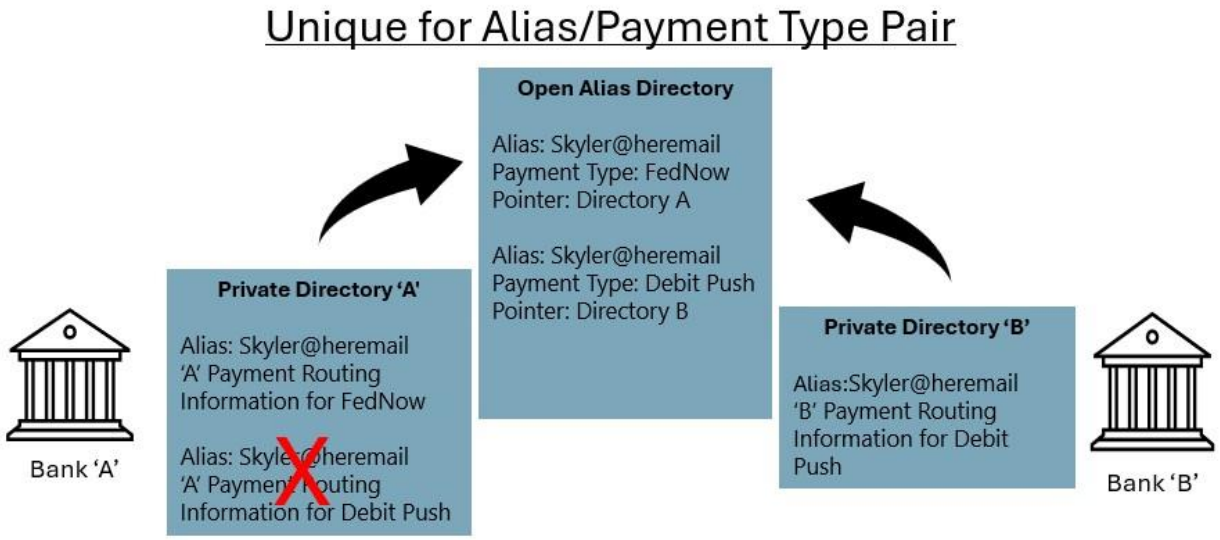

Diagram 4

Each of these scopes have a tradeoff when considering how the alias will be used to resolve payment instructions.

Scope	Pros	Cons
Unique	- Simpler and more efficient experience - Improved payment accuracy	- Parties may need to have multiple aliases - Needs to resolve choice of which payment information source and data to use with unique use of alias
Unique by Domain	- Less need to resolve multiple payment sources and data for same alias	- Creates interoperability issues across domains

How should ownership of an alias be established and managed?

A payment alias is something that a party who owns an account would like to use to enable trading partners to send payment messages directed to the proper accounts. These accounts are owned by one or more parties. An open directory service must define the manner in which parties establish an alias for accounts that they control. This ability can be provided through relationships a party already has, for example their financial institution. Or it can be provided via a new type of entity – a "payment alias service provider" – which exists solely to manage a person's payment alias. Importantly, whomever enables a party to establish a payment alias is also responsible for resolving payment alias requests and/or maintaining an up-to-date list of accounts tied to the alias.

Alternative ways to establish and manage payment aliases are presented in the table below.

Approach	Description
Financial institution	A party uses a service provided by their financial institution to register their payment alias. The alias can be for accounts at the financial institution or at other financial institutions or ecosystems.
Wallet provider	A wallet provider develops capabilities to enable a party to establish an alias and identify the accounts to be associated with that alias.
Payment network	Payment networks could offer an alias management capability to users of the payment network. Consideration should be given to whether the alias extends beyond the network offering the alias service.
Payment alias service provider	An entity (or entities) could be created whose sole purpose is to collaborate with parties to establish and maintain payment aliases.

Whomever manages the alias on behalf of a party, a means to resolve alias ownership must be established by the open directory ecosystem through its governance mechanism. All parties must agree on how an alias is claimed, updated, switched between providers, and deleted.

How might an open directory service be structured?

The ultimate goal of an open directory service is to use an alias to resolve payment details related to that alias. In practice, a query will be made to the open directory using the alias. The nature of the query, and what gets returned from that query, are design considerations.

For example, the sender could query the directory for payment information related to the alias and retrieve payment information for many potential payment mechanisms. Alternatively, the sender could query the directory information for payment information related only to a specific instant payment rail (e.g., FedNow). In the prior example, more information is exposed to the sender as a tradeoff for ensuring whatever payment information they might need is resolved in one query. In the latter example, the sender needs to know which rail they intend to use. Neither of the approaches are "wrong," but they illustrate an implementation option for the directory.

Implementation models:

1) Redirector

   Open directory stores and returns location of one or more private directories to resolve available payment types. See **Diagram 5**.

2) Forwarder

   Open directory stores location and forwards queries to one or more private directories which then can be used to resolve alias to certain payment information which is returned to the sender. See **Diagram 6**.

3) Concentrator

   Open directory stores and returns payment information. See **Diagram 7**.

Re-Director: Open Alias Directory Responds with an address to a Private Directory

Diagram 5

Forwarder: Open Alias Directory forwards the query

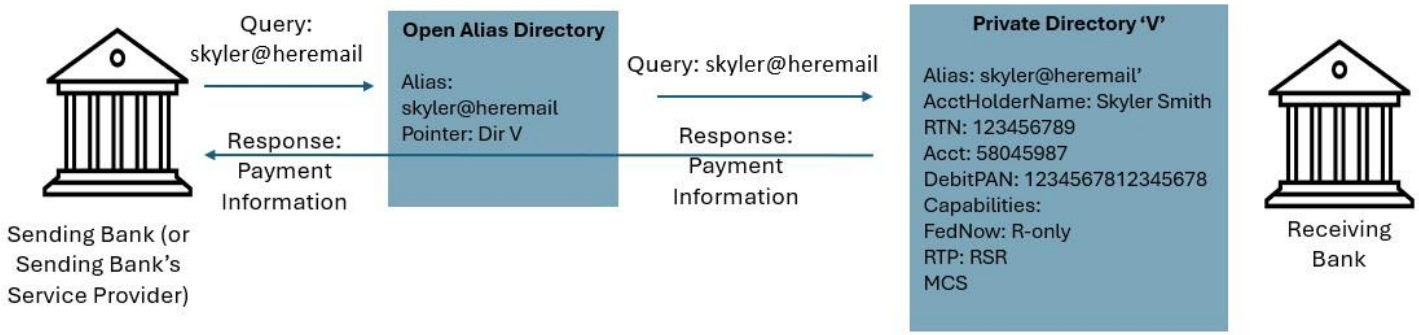

Diagram 6

Consolidator: Alias Directory maintains information to respond to query

Diagram 7

In addition, design of a directory capability needs to determine where payment information for an alias will be maintained.

Model	Pros	Cons
Redirector	- Limited payment information exposure via open directory (Open directory would only store locations of private directories; Payment information would be stored in private directories.)	- Query to an open directory would only return private directories where the senders would need a second interface with each of the private directories. - Requires retrieving payment information from private directories on every query (relative to concentrator model) - Many to many access and relationship agreements required (senders to private directories)
Forwarder	- One query to directory can resolve for all payment types and accounts - Limited information exposure via open directory, but higher than Redirector (Open directory would only store locations of private directories, but still receives payment information and to return to the sender of the original query) - Query senders only require relationship with the open directory	- Require secure handling of payment data returned to sender - Requires retrieving payment information from private directories on every query (relative to concentrator model)
Concentrator	- Requests are resolved in one call (i.e., more efficiently) - Query senders only require relationship with the open directory	- Single point of failure - Require secure storage and handling of all payment data - Attack target for bad actors - Requires continual updates from private directories to keep current

Call to Action for the Industry

The purpose of this report is to outline a variety of considerations important to the development of an open alias directory. The Directory Models Work Group of the U. S. Faster Payments Council anticipates that industry players can use this report to structure meaningful dialogue around these, and other, decision criteria. And through this dialogue, the industry will achieve consensus on the key decisions that lead to the design, delivery, and operation of an open alias directory to achieve faster payments ubiquity.

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About the Faster Payments Council and the Directory Models Work Group

The Faster Payments Council (FPC) is an industry-led membership organization whose vision is a world-class payment system where Americans can safely and securely pay anyone, anywhere, at any time and with near-immediate funds availability. To further this vision, the Faster Payments Council established the Directory Models Work Group with the mission to identify and assess an approach for best practices across directory models and/or dependent platforms for the faster payments ecosystem.

References

[1][4] Faster Payments Council. (2021, May 24). *Beneficial Characteristics Desirable in a Directory Service*. https://fasterpaymentscouncil.org/blog/6331/Beneficial-Characteristics-Desirable-in-a-Directory-Service.

[2] Faster Payments Council. (2021, May 25). *The Economic Benefits of an Independent, Interoperable Directory for Faster Payments*. https://fasterpaymentscouncil.org/blog/5523/-The-Economic-Benefits-of-an-Independent-Interoperable-Directory-for-Faster-Payments.

[3] Faster Payments Council. (n.d.). *Education & Awareness Glossary*. Retrieved May 8, 2025, from https://fasterpaymentscouncil.org/Glossary-of-Terms.