

Telephone Related Queries (TeRQ)

IETF 85 (Atlanta)

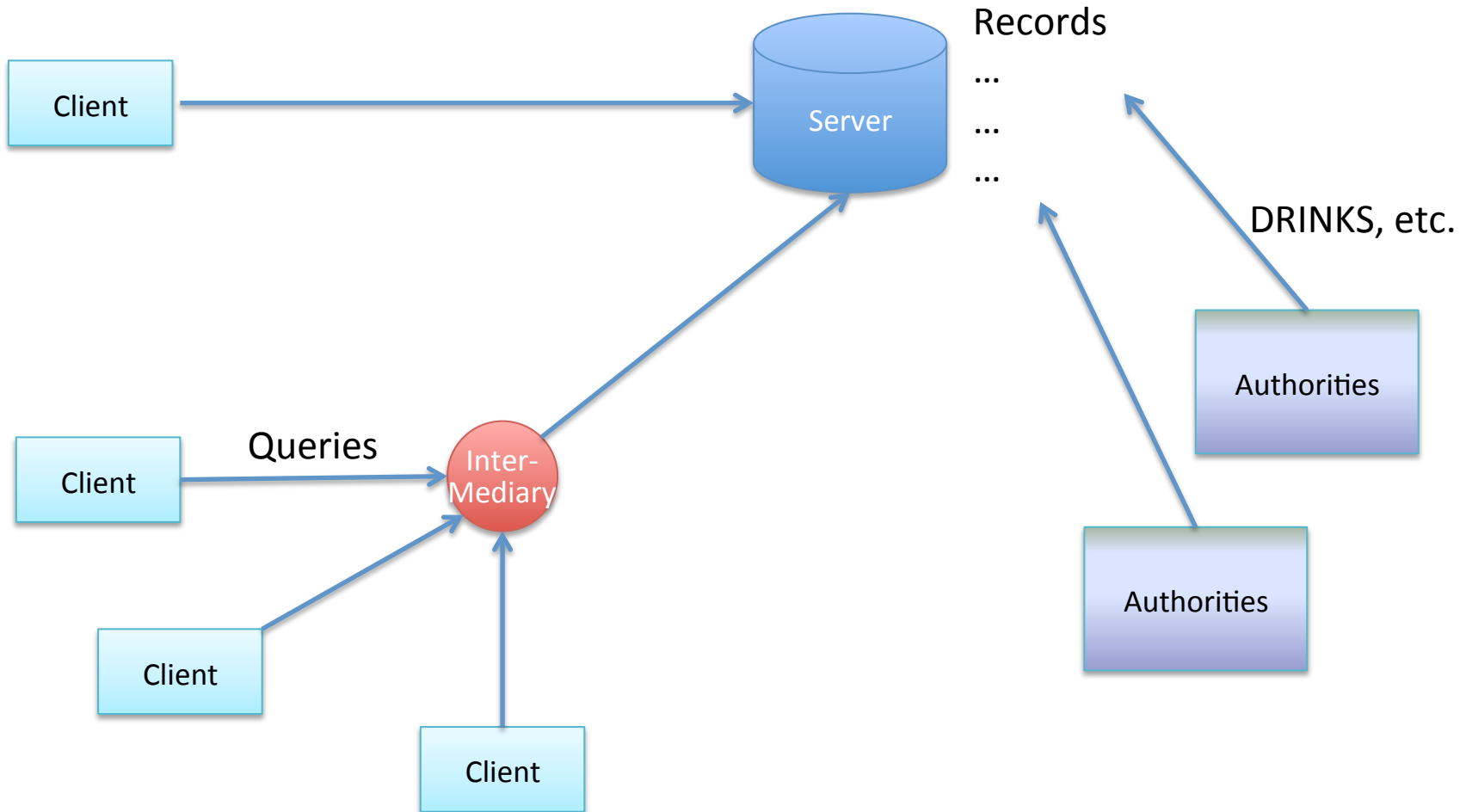
Telephones and the Internet

- Our long-term goal: migrate telephone routing and directory services to the Internet
- ENUM: Deviated significantly from its initial model
 - In deployments, non-standard solutions are prevalent
 - Path to getting those solutions standardized is not clear
 - Not here to rehash E2MD arguments, again
- Requirements in the field aren't going away, though
 - New RTCWeb work, mobile smart phone are changing the game
 - Need a way to ask rich questions about telephone routing and get rich answers
- The proposal: would it help to approach these problems without factoring in the constraints of any underlying protocol? Without:
 - A legacy public “golden root” anchor
 - Semantics of DNS queries (exact match on label)
 - Exclusive focus on TN
 - Requirement to return a URI (limiting syntactically)

TeRQ

- Method: Establish a data model first, then worry about underlying transports and encoding
- Query Elements:
 - Source (Query Source, Query Intermediary, Route Source)
 - Subject (Telephone Number, SPID)
 - Attributes (constrains query: e.g., “voip” if only looking for VoIP)
- Response Elements:
 - Response Code
 - Subject (Optional)
 - Records
 - Authority (Source of the data)
 - Attributes (Name/Value pairs)
 - Priority
 - Expiration

The TeRQ Architecture



Transporting TeRQ

- Once we agree on semantics, work on bindings
 - A binding is defined as an encoding and a transport
 - We want to allow for multiple bindings for different environments
 - Could build on JSON/HTTP, could build on ASN.1/UDP
 - Bindings need to detail how the elements of the data model are mapped to the encoding
 - Other low-level details like chunking, representation of cryptographic security, etc.
 - Also must be possible to transcode between bindings without losing data (at an Intermediary)
- Aim for maximum applicability
 - Not just a telco protocol, a web protocol
 - Something to work for both Verizon and Google

Element Types

- Data model current specifies:
 - Telephone Number (RFC3966 – but should we revisit?)
 - Ranges – need some work here
 - Domain Name
 - URI
 - IP Address
 - IPv4/IPv6
 - SPID
 - Currently specified as four-digits, other SPID types possible
 - GSPID, ITAD, etc.
 - Trunk Group
 - Currently points to the Gurbani/Jennings RFC
 - Display Name
 - Support for CNAM as well as a SIP “From” header field
 - Expiry
 - Absolute time
 - Priority
 - Value from 0 to 1
 - Extension
 - Reserved for further use

Charter (background)

- Several IETF efforts have studied the handling of telephone numbers on the Internet. For example, the ENUM working group specified a DNS-based approach to transforming telephone numbers into URIs; the DRINKS working group produced a provisioning system suitable for populating Internet directories of telephone numbers. The overall goal of this work has been to migrate the routing and directory functions of the telephone network onto the Internet, in order to simplify the implementation of Internet telephony and reduce the Internet's reliance on the infrastructure of the public switched telephone network. Ultimately, the requirements for this project diverged significantly from the original architecture and applicability of ENUM. Moreover, in the twelve years since ENUM was first chartered, Internet telephony has changed a great deal. Today, web-based applications are becoming more significant to Internet telephony, as are intelligent mobile devices. In these environments, there exists a capacity for richer queries and responses, as well as more sophisticated application logic to process requests. As such, this working group reconsiders the migration of routing and directory functions from the telephone network to the Internet by generalizing the base semantics of queries and responses in an abstract framework, and then defining possible transports and encodings for these messages.

Charter (goals)

- 1. A framework and data model for the construction queries and responses. The data model will provide an abstract description of the semantics of the various elements and attributes that make up TeRQ messages. The framework will further establish the semantics of TeRQ transactions, describe how responses are matched with queries, and give an overview of the operation of the protocol.
- 2. A process for specifying bindings for the data model, which comprise transports and encodings. Transports specify the underlying protocols that will encapsulate TeRQ queries and responses. This working group is not chartered to define new underlying protocols, but will specify how the transaction model of TeRQ maps onto these underlying protocols. Potential underlying protocols include HTTP. The encoding determines how TeRQ elements and attributes will be rendered in the object format carried by the transport; potential object formats would include JSON and XML and well as lower-layer binary encodings.
- 3. A set of one or more bindings compliant with the process described in (2), which provide a concrete instantiation of the protocol. This group will be initially chartered to create a binding suitable for the web environment, though other bindings for different environments will be a potential subject for ongoing work. These bindings may accompany profiles that detail particular sets of attributes or elements relevant to a given deployment.

Charter (wrap-up)

- The TeRQ working group will coordinate with ongoing work in the DRINKS space in order to make sure that the TeRQ data model conforms with the needs of provisioning systems. Whenever possible, TeRQ will reuse existing IETF work. The syntax and semantics of telephone numbers, for example, have been the subject of a great deal of previous IETF work (notably RFC 3966), and the TeRQ working group will rely on this and related prior work.
- Goals and Deliverables:
- Aug 2013 Submit Framework for Telephony Related Queries as Proposed Standard
- Nov 2013 Submit Application-layer TeRQ Binding as Proposed Standard
- Feb 2013 Recharter for additional bindings