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DRIP Registry EPP Interface

Abstract

This document defines extensions to the Extensible Provisioning Protocol (EPP) to support DRIP Entity Tag (DET) and its additional information registration into a DRIP Identity Management Entity (DIME). The Registry is a logically required component of a DIME that handles the various DNS functions for DRIP registration and lookup using DETs.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

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This Internet-Draft will expire on 31 March 2023.

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1. Introduction

The Registry is one of the required components in a DIME for it to fulfill the role of registration of DRIP Entity Tags (DETs) of clients. A standardized interface is needed for this to avoid interoperability issues between vendors supporting DRIP and the various logical components of the DIME.

Per [drip-detim] the Registry MUST:

> provided an interface for interactions with the DPA. This interface MAY use the Extensional Provisioning Protocol (EPP) [RFC5730].

This document is the definition of this interface and its behavior; specifically between the Registry and a DPA.

2. Terminology

2.1. Required Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

3. Command Mappings

3.1. Common Attributes

There are a number of common attributes between the various EPP commands under DRIP that has specific encoding rules.

*The hi attribute is a Base64 encoding of the Host Identity.

*The det attribute is a string from of the DET.

3.2. Query Commands

3.2.1. <check> Command

3.2.1.1. Registry

3.2.1.2. Operator

3.2.1.3. Aircraft Serial Number

3.2.1.4. Aircraft Session ID

3.2.2. <info> Command

3.2.2.1. Registry

3.2.2.2. Operator

3.2.2.3. Aircraft Serial Number

3.2.2.4. Aircraft Session ID

3.2.3. <transfer> Command

Transfer semantics do not apply in DRIP, so there is no mapping defined for the EPP <transfer> command.

3.3. Transform Commands

3.3.1. <create> Command

3.3.1.1. Registry

The mfrCode field is only used by an MRA when registering with an IRM and holds the ICAO assigned Manufacturer Code for ANSI CTA2063-A Serial Numbers. It has a max of 4 characters.

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<extension>
  <dripRegistry:dripRegistry xmlns:dripRegistry="urn:ietf:params:xml:ns:
    <dripRegistry:det>2001:0030:00a0:0145:a3ad:1952:0ad0:a69e</dripRegis
    <dripRegistry:hi></dripRegistry:hi>
    <dripRegistry:selfAttestation>Hex of SelfAttestation(Registry)</drip
    <dripRegistry:raa>10</dripRegistry:raa>
    <dripRegistry:hda>20</dripRegistry:hda>
    <dripRegistry:abbreviation>FAA</dripRegistry:abbreviation>
    <dripRegistry:mfrCode>MFR0</dripRegistry:mfrCode>
    <dripRegistry:postalInfo type="int">
      <dripRegistry:name>Federal Aviation Administration</dripRegistry:n
      <dripRegistry:phys_addr>
        <dripRegistry:street1>Orville Wright Federal Building</dripRegis
        <dripRegistry:street2>800 Independence Avenue SW</dripRegistry:s
        <dripRegistry:city>Washington</dripRegistry:city>
        <dripRegistry:sp>DC</dripRegistry:sp>
        <dripRegistry:pc>20591</dripRegistry:pc>
        <dripRegistry:cc>US</dripRegistry:cc>
      </dripRegistry:phys_addr>
    </dripRegistry:postalInfo>
    <dripRegistry:voice x="1234">1 (866) 835-5322</dripRegistry:voice>
    <dripRegistry:email>stephen.dickson@faa.gov</dripRegistry:email>
  </dripRegistry:dripRegistry>
</extension>
```

3.3.1.2. Operator

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<extension>
  <dripOperator:dripOperator xmlns:dripOperator="urn:ietf:params:xml:ns:
    <dripOperator:postalInfo type="int">
      <dripOperator:phys_addr>
        <dripOperator:street1>123 Example Dr.</dripOperator:street1>
        <dripOperator:street2>Suite 100</dripOperator:street2>
        <dripOperator:city>Dulles</dripOperator:city>
        <dripOperator:sp>VA</dripOperator:sp>
        <dripOperator:pc>20166-6503</dripOperator:pc>
        <dripOperator:cc>US</dripOperator:cc>
      </dripOperator:phys_addr>
    </dripOperator:postalInfo>
    <dripOperator:part107_acct_name>some_faa_account</dripOperator:part1
    <dripOperator:rec_flyer_id>123456</dripOperator:rec_flyer_id>
    <dripOperator:caaId></dripOperator:caaId>
    <dripOperator:det></dripOperator:det>
    <dripOperator:hi></dripOperator:hi>
    <dripOperator:selfAttestation>Hex of SelfAttestation(Operator)</drip
    <dripOperator:attestation>Hex of Attestation(Registry, Operator)</dr
  </dripOperator::dripOperator>
</extension>
```

3.3.1.3. Aircraft Serial Number

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<extension>
  <dripSerial:dripSerial xmlns:dripSerial="urn:ietf:params:xml:ns:dripSe
    <dripSerial:serial>0000F000000000000000</dripSerial:serial>
    <dripSerial:det></dripSerial:det>
    <dripSerial:hi></dripSerial:hi>
    <dripSerial:selfAttestation>Hex of SelfAttestation(Aircraft)</dripSe
    <dripSerial:broadcastAttestation>Hex of BroadcastAttestation(Registr
    <dripSerial:manufacturer>Drones R Us</dripSerial:manufacturer>
    <dripSerial:make>Fast Drone</dripSerial:make>
    <dripSerial:model>9000</dripSerial:model>
    <dripSerial:color>White</dripSerial:color>
    <dripSerial:material>Plastic</dripSerial:material>
    <dripSerial:weight>12.0</dripSerial:weight>
    <dripSerial:length>5.0</dripSerial:length>
    <dripSerial:width>4.0</dripSerial:width>
    <dripSerial:height>3.0</dripSerial:height>
    <dripSerial:numRotors>4</dripSerial:numRotors>
    <dripSerial:propLength>2.0</dripSerial:propLength>
    <dripSerial:batteryCapacity>5000</dripSerial:batterCapacity>
    <dripSerial:batteryVoltage>12</dripSerial:batteryVoltage>
    <dripSerial:batteryWeight>5.2</dripSerial:batteryWeight>
    <dripSerial:batteryChemistry>Lithium-Ion</dripSerial:batteryChemistr
    <dripSerial:takeOffWeight>15</dripSerial:takeOffWeight>
    <dripSerial:maxTakeOffWeight>25</dripSerial:maxTakeOffWeight>
    <dripSerial:maxPayloadWeight>10</dripSerial:maxPayloadWeight>
    <dripSerial:maxFlightTime>15</dripSerial:maxFlightTime>
    <dripSerial:minOperatingTemp>35</dripSerial:minOperatingTemp>
    <dripSerial:maxOperatingTemp>90</dripSerial:maxOperatingTemp>
    <dripSerial:ipRating>55</dripSerial:ipRating>
  </dripSerial:dripSerial>
</extension>
```

3.3.1.4. Aircraft Session ID

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<extension>
  <dripSession:dripSession xmlns:dripSession="urn:ietf:params:xml:ns:dri
    <dripSession:serial>0000F000000000000000</dripSession:serial>
    <dripSession:uasId></dripSession:uasId>
    <dripSession:sessionHi></dripSession:sessionHi>
    <dripSession:broadcastAttestation>Hex of BroadcastAttestation(Regist
    <dripSession:attestationCertificate>Hex of AttestationCertificate(Re
    <dripSession:operationalIntent></dripSession:operationalIntent>
    <dripSession:operationalIntentSrc>uss.example.com</dripSession:opera
    <dripSession:operatorId>NOP123456</dripSession:operatorId>
    <dripSession:operatorDet></dripSession:operatorDet>
    <dripSession:attestation>Hex of Attestation(Operator, Aircraft)</dri
    <dripSession:mutualAttestation>Hex of MutualAttestation(Registry, Op
    <dripSession:fa3>N1232456</dripSession:fa3>
    <dripSession:sessionStart>2022-04-09T15:43:13Z</dripSession:sessionS
    <dripSession:sessionEnd>2022-04-09T20:43:13Z</dripSession:sessionEnd
  </dripSession:dripSession>
</extension>
```

3.3.2. <delete> Command

3.3.2.1. Registry

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <delete>
      <dripRegistry:delete xmlns:dripRegistry="urn:ietf:params:xml:ns:dr
        <dripRegistry:det>2001:0030:00a0:0145:a3ad:1952:0ad0:a69e</dripR
      </dripRegistry:delete>
    </delete>
    <clTRID>DEL-REGIS</clTRID>
  </command>
</epp>
```

3.3.2.2. Operator

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <delete>
      <dripOperator:delete xmlns:dripOperator="urn:ietf:params:xml:ns:dr
        <dripOperator:caaId></dripOperator:caaId>
        <dripOperator:det></dripOperator:det>
      </dripOperator:delete>
    </delete>
    <clTRID>DEL-OPER</clTRID>
  </command>
</epp>
```

3.3.2.3. Aircraft Serial Number

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <delete>
      <dripSerial:delete xmlns:dripSerial="urn:ietf:params:xml:ns:dripSe
        <dripSerial:serial>0000F000000000000000</dripSerial:serial>
      </dripSerial:delete>
    </delete>
    <clTRID>DEL-AIRCRFT</clTRID>
  </command>
</epp>
```

3.3.2.4. Aircraft Session ID

Example:

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:ietf:params:xml:ns:epp-1.0">
  <command>
    <delete>
      <dripSession:delete xmlns:dripSession="urn:ietf:params:xml:ns:drip
        <dripSession:uasId></dripSession:uasId>
      </dripSession:delete>
    </delete>
    <clTRID>DEL-SID</clTRID>
  </command>
</epp>
```

3.3.3. <renew> Command

Renewal semantics do not apply in DRIP, so there is no mapping defined for the EPP <renew> command.

3.3.4. <transfer> Command

Transfer semantics do not apply in DRIP, so there is no mapping defined for the EPP <transfer> command.

3.3.5. <update> Command

3.3.5.1. Registry

3.3.5.2. Operator

3.3.5.3. Aircraft Serial Number

3.3.5.4. Aircraft Session ID

4. Acknowledgements

*Scott Hollenbeck for his initial guidance with EPP/RDAP

5. Contributors

*Len Bayles for his help in formatting EPP definitions and creating an extension for FRED

6. References

6.1. Normative References

[drip-detim] Wiethuechter, A., Card, S. W., Moskowitz, R., and J. Reid, "DRIP Entity Tag (DET) Identity Management Architecture", Work in Progress, Internet-Draft, draft-wiethuechter-drip-detim-arch-00, 27 September 2022, <https://www.ietf.org/archive/id/draft-wiethuechter-drip-detim-arch-00.txt>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <https://www.rfc-editor.org/info/rfc2119>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

[RFC9153] Card, S., Ed., Wiethuechter, A., Moskowitz, R., and A. Gurtov, "Drone Remote Identification Protocol (DRIP) Requirements and Terminology", RFC 9153, DOI 10.17487/RFC9153, February 2022, <https://www.rfc-editor.org/info/rfc9153>.

6.2. Informative References

[RFC5730] Hollenbeck, S., "Extensible Provisioning Protocol (EPP)", STD 69, RFC 5730, DOI 10.17487/RFC5730, August 2009, <https://www.rfc-editor.org/info/rfc5730>.

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