Domain Name Basics
Extensible Provisioning Protocol

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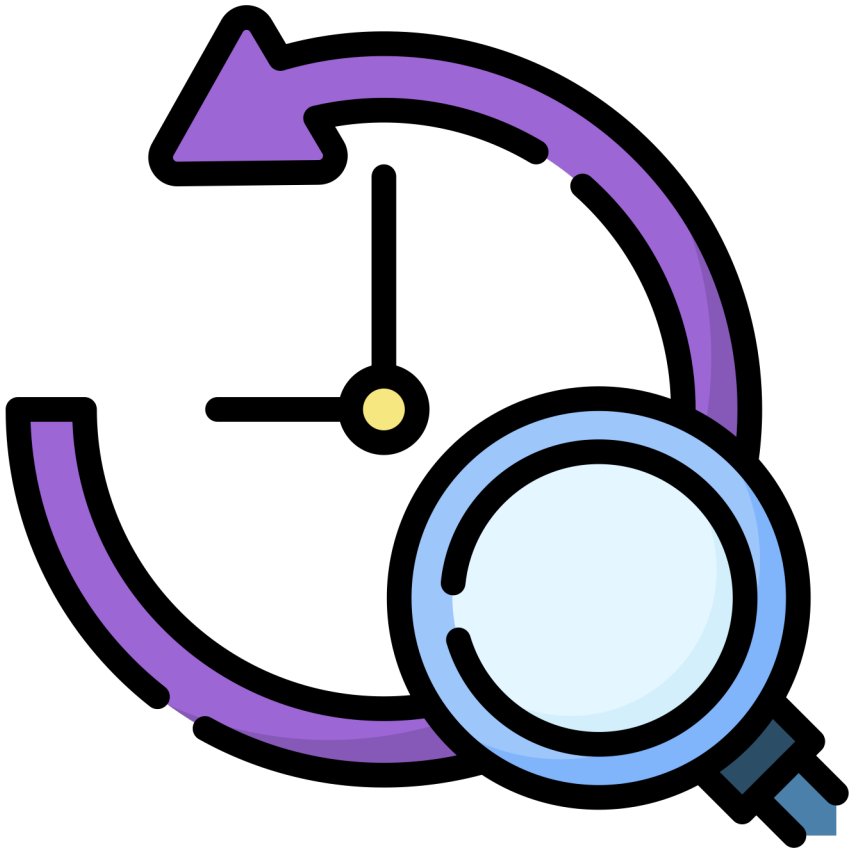
History

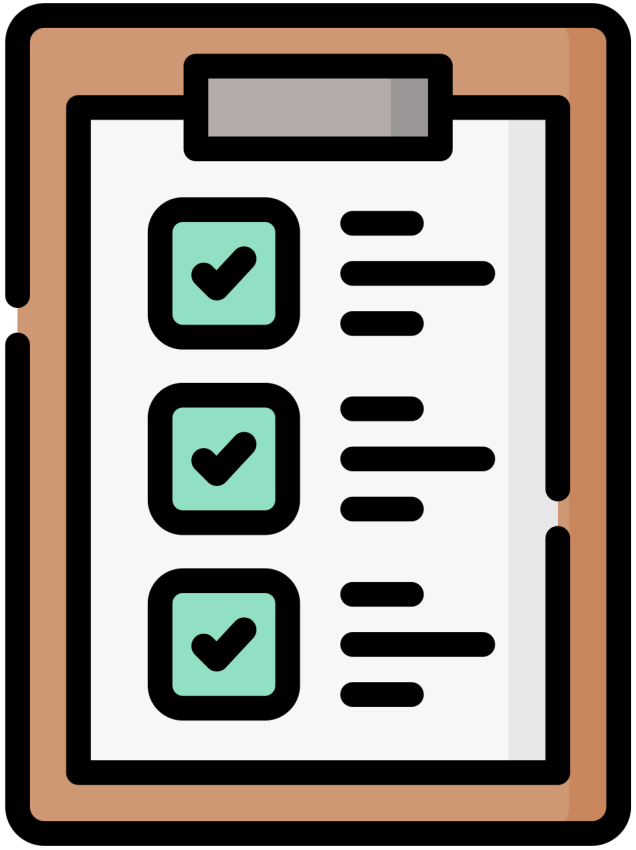
The Extensible Provisioning Protocol (**EPP**) is a flexible protocol designed **to allocate objects**, such as **domain name** registrations and transfers, within domain name **registries** and to provide a robust protocol to communicate between registries and registrars.

Before its introduction, registries had no uniform approach, and many different proprietary interfaces existed.



Milestones

- 11/2000 – **Scott Hollenbeck** published the **first** protocol **drafts**.
- 03/2004 – proposed standard documents (RFCs 3730 to 3734) were published.
- 05/2007 – draft standard documents (RFCs 4930 to 4934) were published.
- 08/2009 – IETF granted EPP the status of **full standard**.



Technology

EPP is **XML-based** – a structured, text-based format and defined in the related RFCs 3735, 3915, 5730 to 5734, and 5910.

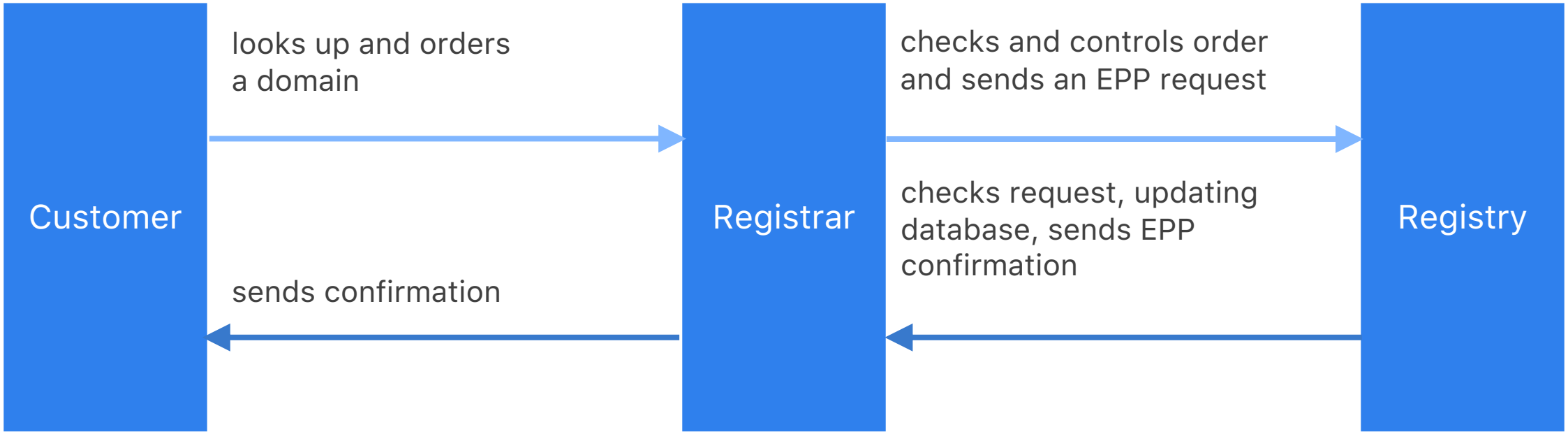
The underlying network transport is flexible, although the only currently specified method is **over TCP**.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<epp xmlns="urn:iana:xml:ns:epp-1.0"
     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
     xsi:schemaLocation="urn:iana:xml:ns:epp-1.0 epp-1.0.xsd">
  <command>
    <check>
      <domain:check xmlns:domain="urn:iana:xml:ns:domain-1.0"
       xsi:schemaLocation="urn:iana:xml:ns:domain-1.0 domain-
1.0.xsd">
        <domain:name>example1.tld</domain:name>
        <domain:name>example2.tld</domain:name>
        <domain:name>example3.tld</domain:name>
      </domain:check>
    </check>
    <unspec/>
    <clTRID>ABC-12346</clTRID>
  </command>
</epp>
```

Source: https://www.isoc.org/dotorg/bid/images/xml02.gif - Effective 08/2016

Registration Flow Chart

This **simplified** flow chart explains a **domain name registration**.

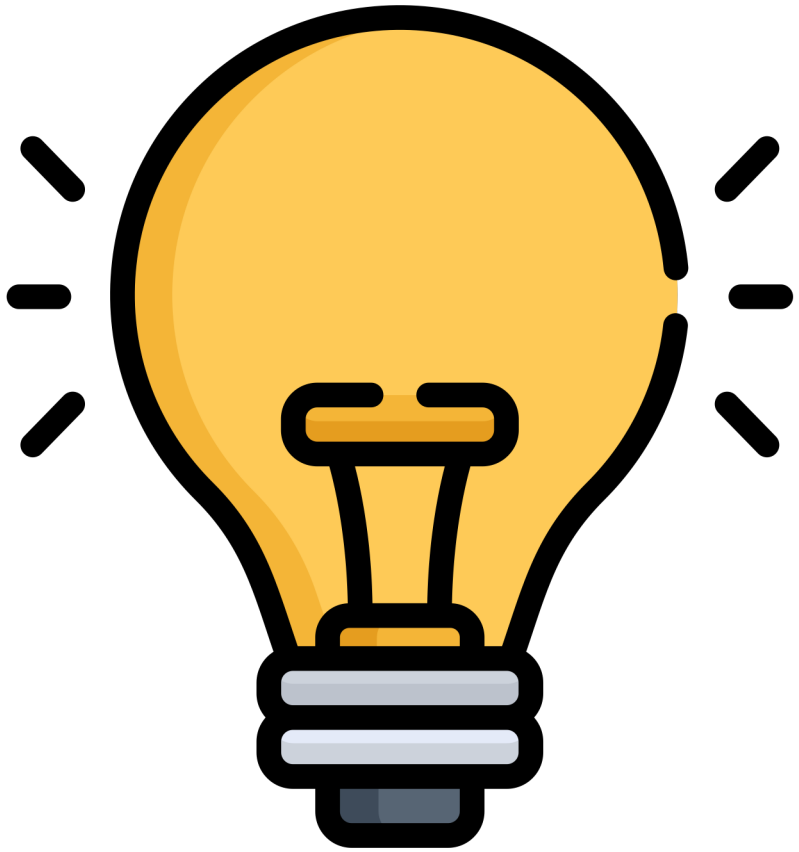


Status Codes #1

EPP domain status codes also called domain name status codes, **indicate** a **domain** name registration **status**.

Following the RFCs, there are **23 standardized** EPP status **codes**.

For further information about EPP status codes, please see https://icann.org/epp



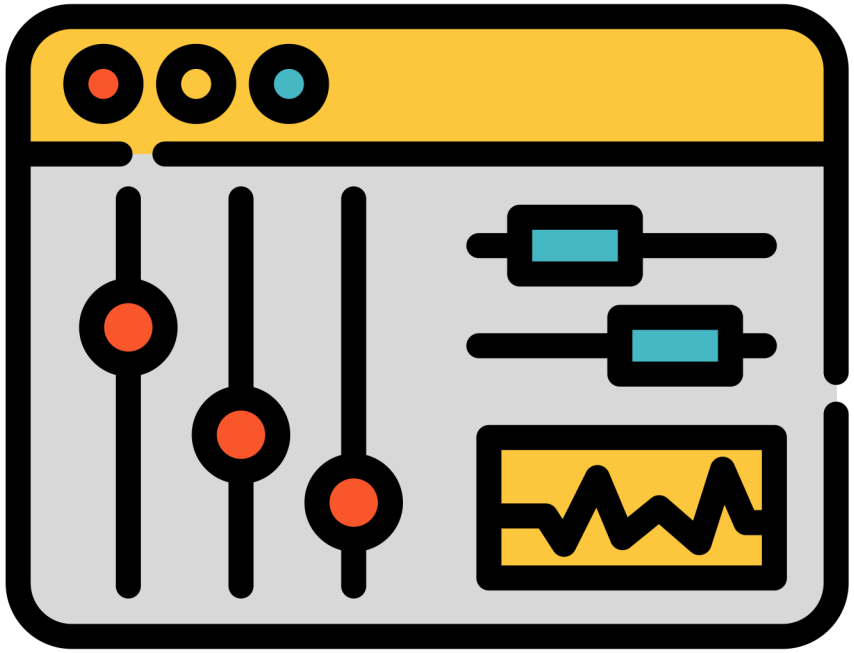
Status Codes #2

A domain name **registry** may **set** these **status** codes:

- addPeriod, autoRenewPeriod, inactive, ok, pendingCreate, pendingDelete, pendingRenew, pendingRestore, pendingTransfer, pendingUpdate, redemptionPeriod, renewPeriod, serverDeleteProhibited, serverHold, serverRenewProhibited, serverTransferProhibited, serverUpdateProhibited and transferPeriod

A domain name **registrar** may **set** these **status** codes:

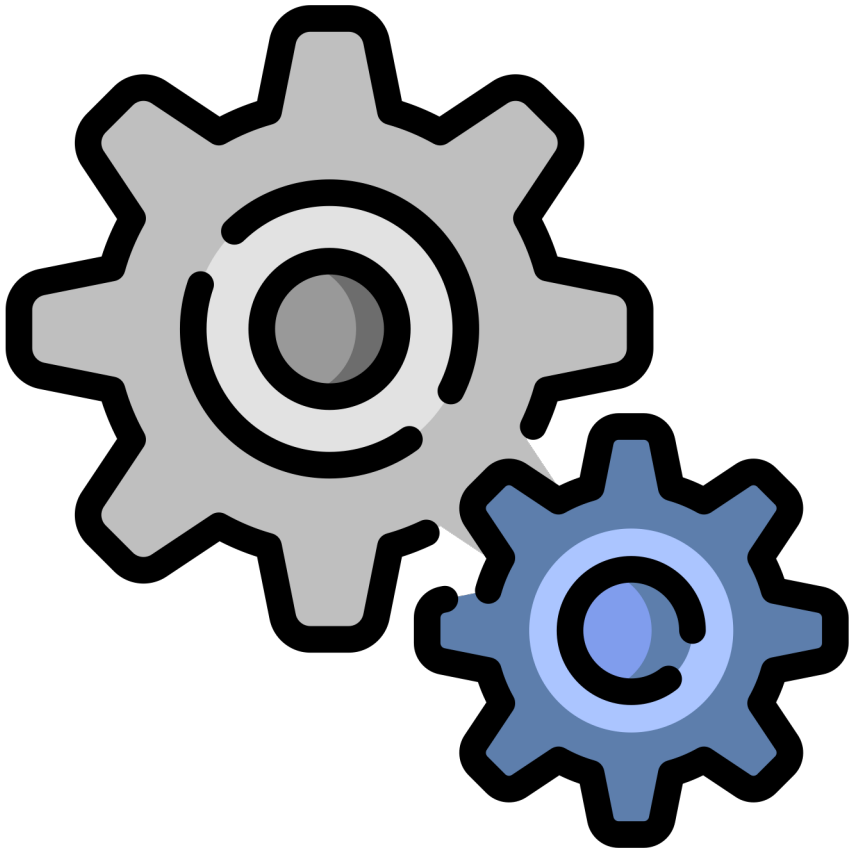
- clientDeleteProhibited, clientHold, clientRenewProhibited, clientTransferProhibited, clientUpdateProhibited



Extensions #1

EPP is **adjustable** with **extensions** to allow registries to adjust it for their need, such as providing the birthdate, ID number, commercial register number, or attachments of the registrant or additional contacts.

The **IANA lists** several EPP **extensions** on their website, but there are a lot more extensions in use.
(See also http://www.iana.org/assignments/epp-extensions/epp-extensions.xhtml)



Extensions #2

One of the most recent used extensions is the new ’Registry **Fee Extension** for EPP’ by Roger Carney, Gavin Brown, and Jothan Frakes, which allows us to set multiple price points for domain names. In March 2020, it became **RFC 8748**.

Adoption

EPP has been **adopted** by a **large number** of domain name **registries**, among others

- .cn, .co, .com, .eu, .in, .io, .me, .mx, .net, .org, .uk, and many more.

The protocol is a **must** for **new gTLDs**, such as

- .berlin, .club, .guru, .online, .rocks, .shop, .web, .xyz, and so on.

Some ccTLD registries **do not support** EPP, hence still using proprietary interfaces, for instance

- .ad, .am, .ba, .bg, .cy, .de, .hu, .ie, .md, .mt, .sk, and .tk

Challenges #1

- A lot of **registries** are **building** their **EPP system** instead of buying a solution; in many cases, they are reinventing the wheel.

- Some ccTLD domain name registries do **not support EPP**, which makes it very **inconvenient** for registrars to work with them.

Challenges #2

- A couple of registries rely on EPP **extensions**, and some are using extensions very **extensively**. Hence implementation and maintaining **efforts** are growing. Furthermore, the registrant's user experience isn't optimal due to the additional data that needs to be collected during the registration process.

Future

From a domain name registrar perspective, I encourage **registries** to **support EPP without** any **extension** and over TCP. If an extension is inevitable, please check if another registry is already using a similar one to avoid duplicates.

I would also hope that some EPP extensions would be consolidated and submitted as an **RFC** instead of proprietary ones. That would help the whole domain name industry.

Thank you!

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