

# How to GET a cup of coffee

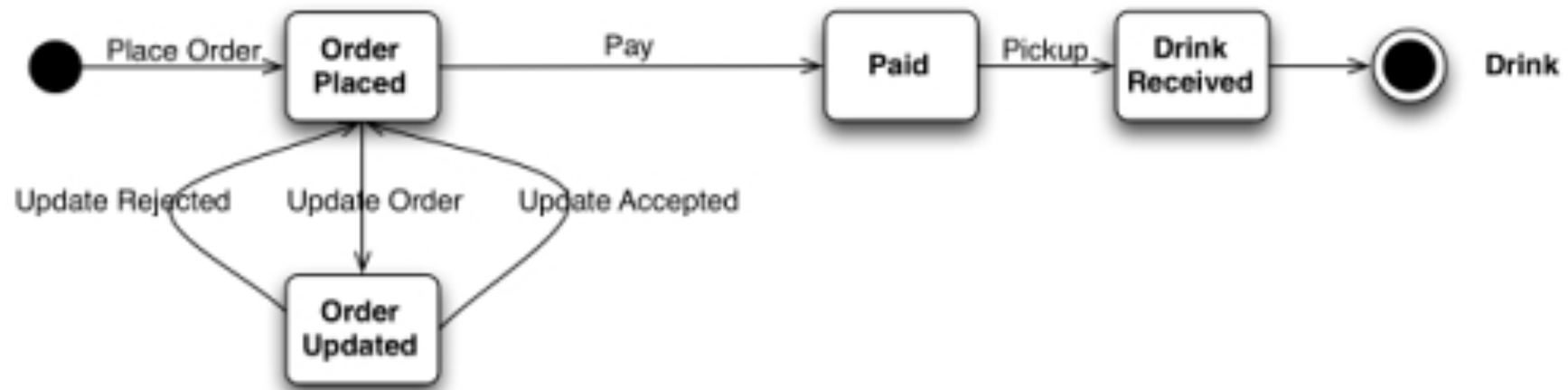
Based on Jim Webber's Article:

[http://www.infoq.com/articles/  
webber-rest-workflow/](http://www.infoq.com/articles/webber-rest-workflow/)



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# The customer state machine



# The barista's state machine

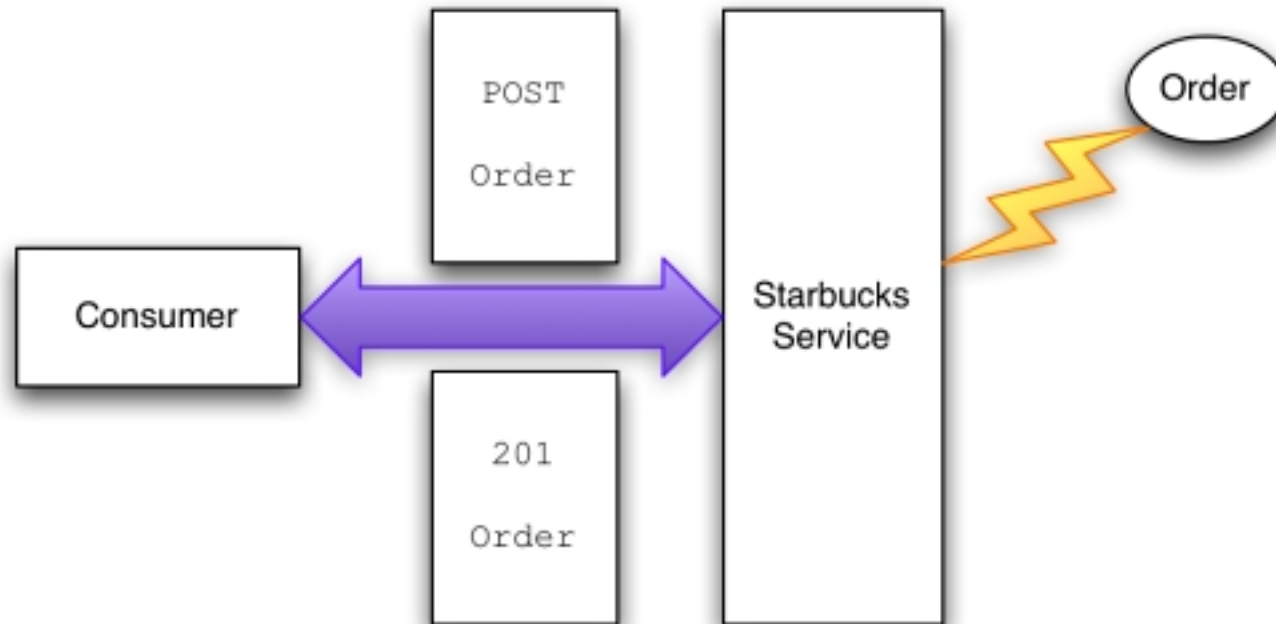


## Story 1:

As a customer, I want to order a coffee  
so that Starbucks can prepare my drink



# Story 1. POST



# POST

```
POST /order HTTP 1.1
Host: starbucks.example.org
Content-Type: application/xml
Content-Length: ...
```

```
<order xmlns="http://starbucks.example.org/">
  <drink>latte</drink>
</order>
```

```
201 Created
Location: http://starbucks.example.org/order/1234
Content-Type: application/xml
Content-Length: ...
```

```
<order xmlns="http://starbucks.example.org/">
  <drink>latte</drink>
  <cost>3.00</cost>
  <next xmlns="http://example.org/state-machine"
    rel="http://starbucks.example.org/payment"
    uri="https://starbucks.example.com/payment/order/1234"
    type="application/xml"/>
</order>
```



## Story 2:

As a customer, I want to be able to  
change my drink to suit my tastes



# OPTIONS

OPTIONS /order/1234 HTTP 1.1

Host: starbucks.example.org

200 OK Allow: GET, PUT





# Look before you leap

PUT /order/1234 HTTP 1.1

Host: starbucks.example.com

Expect: 100-Continue

100 Continue

or

417 Expectation Failed



# PUT

```
PUT /order/1234 HTTP 1.1
Host: starbucks.example.com
Content-Type: application/xml
Content-Length: ...

<order xmlns="http://starbucks.example.org/">
  <additions>shot</additions>
</order>
```

```
200 OK
Location: http://starbucks.example.com/order/1234
Content-Type: application/xml
Content-Length: ...

<order xmlns="http://starbucks.example.org/">
  <drink>latte</drink>
  <additions>shot</additions>
  <cost>4.00</cost>
  <next xmlns="http://example.org/state-machine"
    rel="http://starbucks.example.org/payment"
    uri="https://starbucks.example.com/payment/order/1234"
    type="application/xml"/>
</order>
```



### Story 3:

As a customer, I want to be able to pay  
my bill to receive my drink



# How to pay?

```
<next xmlns="http://example.org/state-machine"
  rel="http://starbucks.example.org/payment"
  uri="https://starbucks.example.com/payment/order/1234"
  type="application/xml"/>
```

OPTIONS/payment/order/1234 HTTP 1.1  
Host: starbucks.example.com

Allow: GET, PUT



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# Payment PUT Headers

```
PUT /payment/order/1234 HTTP 1.1
Host: starbucks.example.com
Content-Type: application/xml
Content-Length: ...
Authorization: Digest username="Jane Doe"
realm="starbucks.example.org"
nonce="..."
uri="payment/order/1234"
qop=auth
nc=00000001
cnonce="..."
reponse="..."
opaque="..."
```



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# PUT Entity

```
<payment xmlns="http://  
starbucks.example.org/">  
  <cardNo>123456789</cardNo>  
  <expires>07/07</expires>  
  <name>John Citizen</name>  
  <amount>4.00</amount>  
</payment>
```



# PUT Response

201 Created

Location: https://starbucks.example.com/payment/order/1234

Content-Type: application/xml

Content-Length: ...

```
<payment xmlns="http://starbucks.example.org/">  
  <cardNo>123456789</cardNo>  
  <expires>07/07</expires>  
  <name>John Citizen</name>  
  <amount>4.00</amount>  
</payment>
```



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### Story 4:

As a barista, I want to see the list of drinks that I need to make, so that I can serve my customers





# GET Drinks to be made

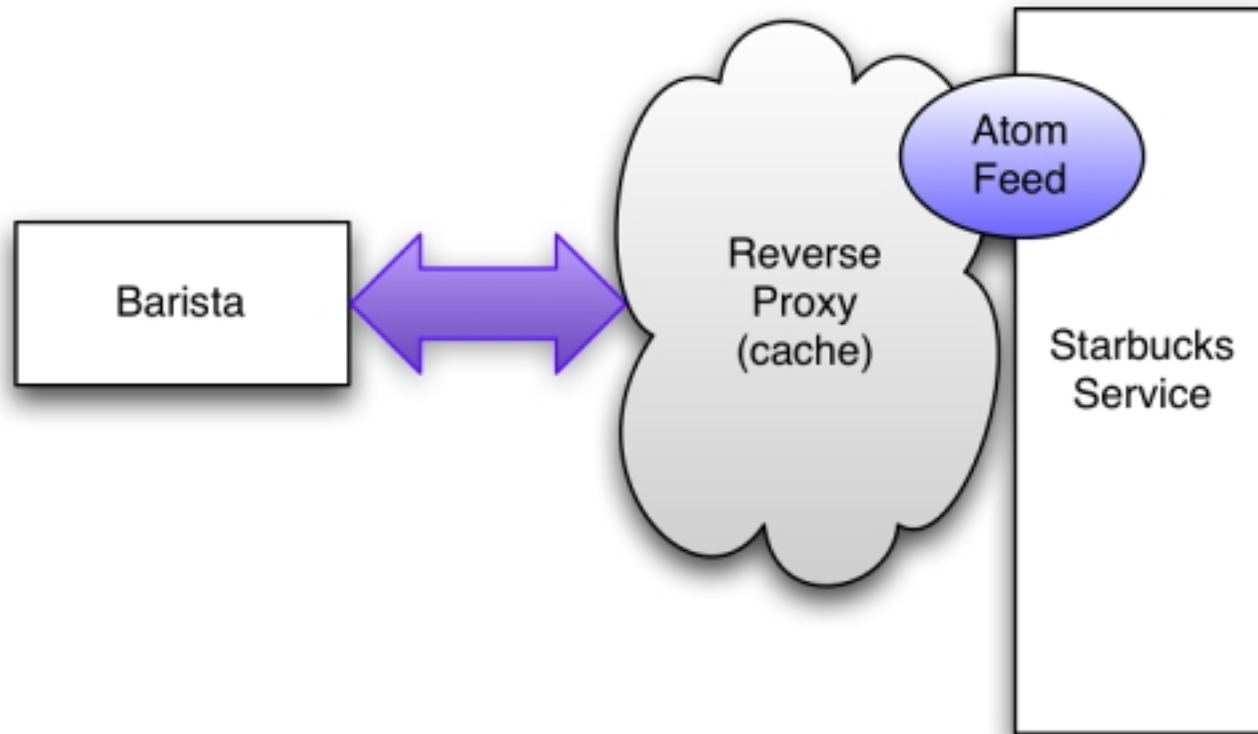
```
200 OK
Expires: Thu, 12Jun2008 17:20:33 GMT
Content-Type: application/atom+xml
Content-Length: ...

<?xml version="1.0" ?>
<feed xmlns="http://www.w3.org/2005/Atom">
  <title>Coffees to make</title>
  <link rel="alternate"
    uri="http://starbucks.example.org/orders"/>
  <updated>2008-06-10T19:18:43Z</updated>
  <author><name>Barista System</name></author>
  <id>urn:starkbucks:barista:coffees-to-make</id>

  <entry>
    <link rel="alternate" type="application/xml"
      uri="http://starbucks.example.org/order/1234"/>
    <id>http://starbucks.example.org/order/1234</id>
    ...
  </entry>
  ...
</feed>
```



# Cacheing



# AtomPub lets us update state

```
<entry>
  <published>2008-06-10T19:18:43Z </published>
  <updated>2008-06-10T19:20:32Z</updated>
  <link rel="alternate" type="application/xml"
    uri="http://starbucks.example.org/order/1234"/>
  <id>http://starbucks.example.org/order/1234</id>
  <content type="text+xml">
    <order xmlns="http://starbucks.example.org/">
      <drink>latte</drink>
      <additions>shot</additions>
      <cost>4.00</cost>
    </order>
    <link rel="edit"
      type="application/atom+xml"
      href="http://starbucks.example.org/order/1234/>
    ...
  </content>
</entry>
```



# Update state

```
PUT /order/1234 HTTP 1.1
Host: starbucks.example.com
Content-Type: application/atom+xml
Content-Length: ...

<entry>
  ...
  <content type="text+xml">
    <order xmlns="http://starbucks.example.org/">
      <drink>latte</drink>
      <additions>shot</additions>
      <cost>4.00</cost>
      <status>preparing</status>
    </order>
    ...
  </content>
</entry>
```



### Story 5:

As a barista, I want to check that a customer has paid for their drink so that I can serve it



# GET

GET /payment/order/1234 HTTP 1.1 Host:  
starbucks.example.org

401 Unauthorized WWW-Authenticate: Digest  
realm="starbucks.example.org", qop="auth",  
nonce="ab656...", opaque="b6a9..."



# Retry with credentials

```
GET /payment/order/1234 HTTP 1.1
Host: starbucks.example.org
Authorization: Digest username="barista joe"
realm="starbucks.example.org" nonce="..."
uri="payment/order/1234" qop=auth nc=00000001
cnonce="..." reponse="..." opaque="..."
```

```
200 OK
Content-Type: application/xml
Content-Length: ...
<payment xmlns="http://starbucks.example.org/">
  <cardNo>123456789</cardNo>
  <expires>07/07</expires>
  <name>John Citizen</name>
  <amount>4.00</amount>
</payment>
```



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## Story 6:

As a barista, I want to remove drinks I  
have made from the pending list so that  
I don't make duplicates





# DELETE

```
DELETE /order/1234 HTTP 1.1  
Host: starbucks.example.org
```

```
200 OK
```



# Enjoy



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