RESTful Web Services

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Web API options

- SOAP - XML-based envelope passing method that uses HTTP and/or STMP
- WSDL - Web Services Description Language
  - Describes what services are provided
- RESTful

What does REST Mean?

Representational State Transfer
- Defined by Roy Fielding in 2000
- Method was used for creating the World Wide Web

What is REST?

Architectural style that places constraints on components, connectors, and data resources.

What makes REST?

1. Client-server separation

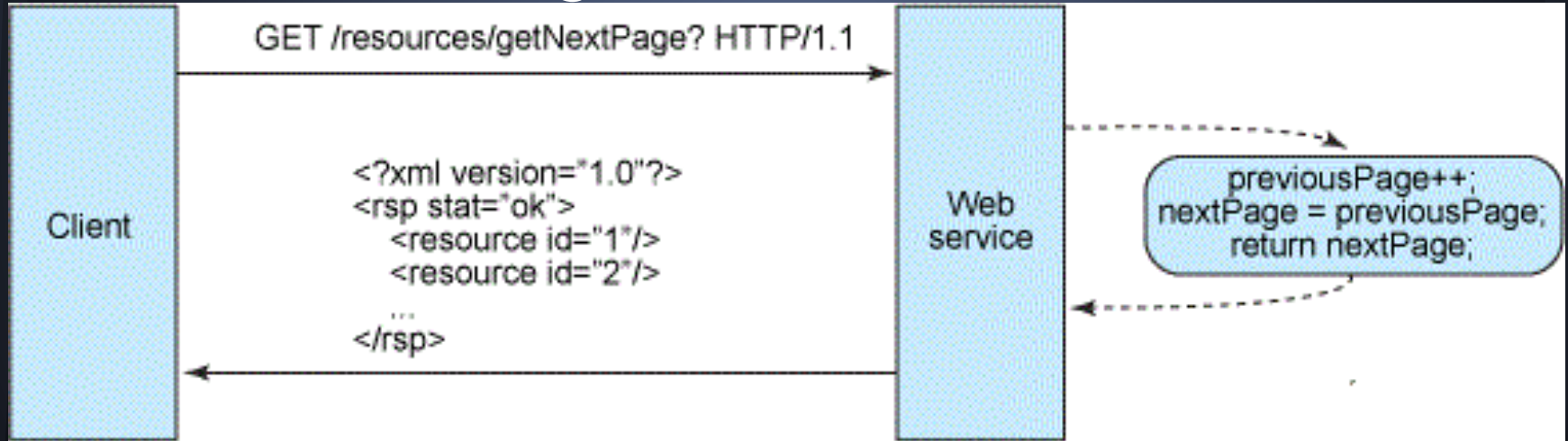Breaking down the concerns simplifies developer decisions for each component.

What makes REST?

2. Stateless

    All client information is stored on the client if no request is being made. Each request can be handled with all information given by a client
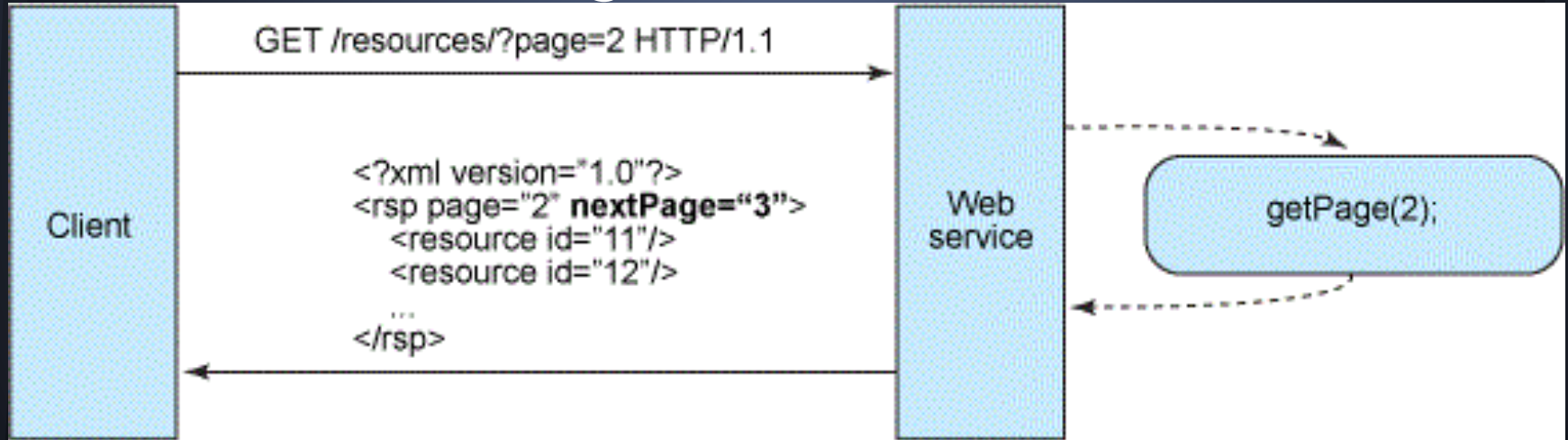
What makes REST?

2.1 Stateful design

What makes REST?

2.2 Stateless design

What makes REST?

3. Cacheable

   Resources identify if they can be cached, and how long they can be cached for.

What makes REST?

4. Uniform Interface
- ○ Core component of REST.
- ○ Covers resource identification, manipulation, and traversal through the server.

Optional RESTful features

- Code on Demand
  - Extending Client features through Javascript/Java applets
- Transfer through JSON or XML

RESTful Web Service

Based off of REST definition, a web service made of four components

RESTful Web Service Requirements

Base URI for API
- How you interact with the API

RESTful Web Service Requirements

List type of media that is being transferred

- Often JSON or XML
- Can be other media types

RESTful Web Service Requirements

Uses HTTP methods (GET, POST, PUT, DELETE)

- Must use them in a method consistent with web standards.

RESTful Web API HTTP Methods

Resource	GET	POST	PUT	DELETE
Collection URI, such as: http://example.com/resources	**List** the URIs and perhaps other details of the collections members	**Replace** the entire collection with another collection	**Create** a new entry in the collection. The new entries URI is assigned automatically and is usually returned by the operation	**Delete** the entire collection
Element URI, such as: http://example.com/resources/item17	**Retrieve** a representation of the addressed member of the collection, expressed in an appropriate internet media type	**Replace** the addressed member of the collection, or, if it doesn't exist, **create** it	Not generally used. Treat the addressed member as a collection in its own right and **create** a new entry in it	**Delete** the addressed member of the collection

http://en.wikipedia.org/wiki/REST
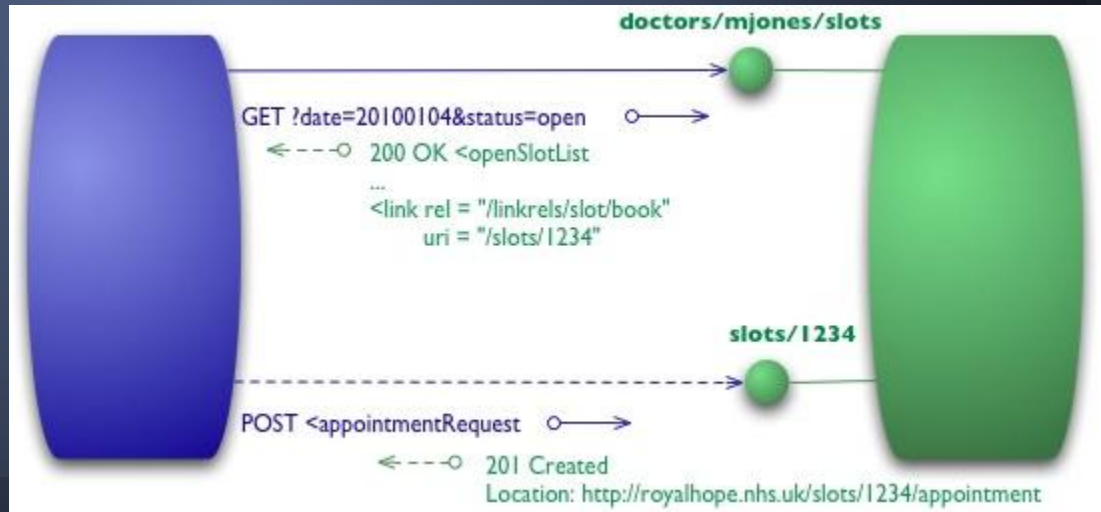
RESTful Web Service Requirements

Hypertext based

- Response is given through a URI with the type of data.
- Actions available are given as links or hypermedia controls

RESTful Web Service Requirements

Hypermedia Controls

- Actions the user can take is listed in the response

Volley

Volley is a library that makes networking for Android apps easier and most importantly, faster.

https://developers.google.com/events/io/sessions/325304728

Volley example

http://www.captechconsulting.com/blog/clinton-teegarden/android-volley-library-tutorial

RESTful Web Service Listing

http://www.programmableweb.
com/apis/directory/1?protocol=REST

Sources

- http://www.ics.uci.edu/~taylor/documents/2002-REST-TOIT.pdf

- http://www.ibm.com/developerworks/webservices/library/ws-restful/

- http://martinfowler.com/articles/richardsonMaturityModel.html