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APPLICATION PROGRAMMING INTERFACES

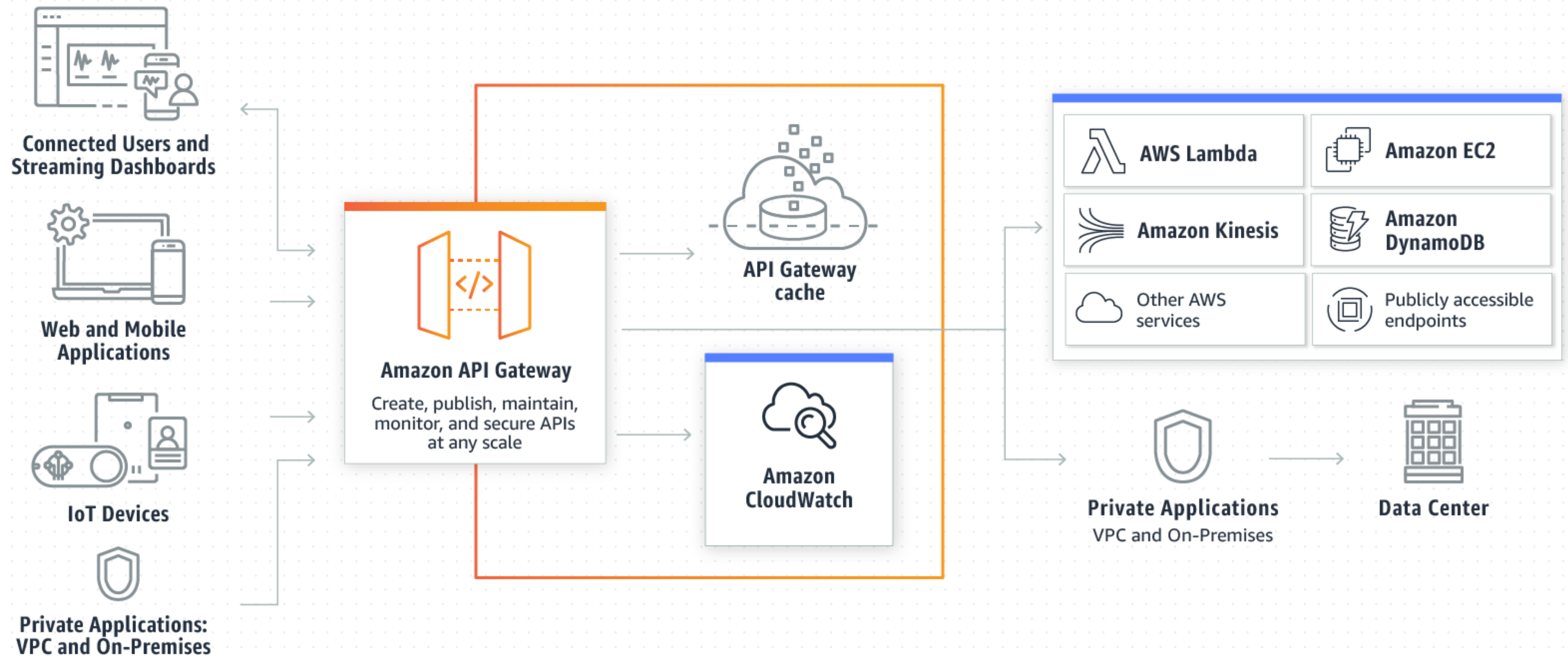A Introduction to Interacting with Systems on the Web

ABOUT ME

- **Matthew Barlowe**

- **Application Developer, National Hockey League**

- **Operations Intelligence Analyst, McKesson**

SO WHAT IS AN API?

WHAT IS AN API?

- **Definition: *a computing interface to a software component or a system, that defines how other components or systems can use it.***

Example of AWS API Service

WHY USE AN API?

WHY USE AN API?

- **Ease of Use for 3rd Parties**

- **Scalability**

- **Accessibility**

- **Encapsulation**

WHAT DOES AN API RETURN?

WHAT DOES AN API RETURN

- **XML**

- **JSON**

```xml
<mediawiki xml:lang="en">
  <page>
    <title>Page title</title>
    <!-- page namespace code -->
    <ns>0</ns>
    <id>2</id>
    <!-- If page is a redirection, element "redirect" contains title of the page redirect to -->
    <redirect title="Redirect page title" />
    <restrictions>edit=sysop:move=sysop</restrictions>
    <revision>
      <timestamp>2001-01-15T13:15:00Z</timestamp>
      <contributor>
        <username>Foobar</username>
        <id>65536</id>
      </contributor>
      <comment>I have just one thing to say!</comment>
      <text>A bunch of [[text]] here.</text>
      <minor />
    </revision>
    <revision>
      <timestamp>2001-01-15T13:10:27Z</timestamp>
      <contributor><ip>10.0.0.2</ip></contributor>
      <comment>new!</comment>
      <text>An earlier [[revision]].</text>
    </revision>
    <revision>
      <!-- deleted revision example -->
      <id>4557485</id>
      <parentid>1243372</parentid>
      <timestamp>2010-06-24T02:40:22Z</timestamp>
      <contributor deleted="deleted" />
```

Example of XML from Wikipedia

```json
[
  {
    "ast": 3.7,
    "blk": 0.6,
    "dreb": 5.8,
    "fga": 12.6,
    "fgm": 5.4,
    "fta": 3.5,
    "ftm": 2.4,
    "gp": 58,
    "mins": 33.0,
    "oreb": 1.8,
    "pf": 2.1,
    "player_id": 203932,
    "player_name": "Aaron Gordon",
    "plus_minus": -1.4,
    "points": 14.4,
    "position": "Forward",
    "season": 2020,
    "stl": 0.9,
    "teams": "ORL",
    "tov": 1.6,
    "tpa": 3.9,
    "tpm": 1.2
  },
  {
    "ast": 3.3,
    "blk": 0.2,
    "dreb": 1.9,
    "fga": 8.6,
    "fgm": 3.5,
    "fta": 1.2,
    "ftm": 1.1,
    "gp": 58,
    "mins": 23.6,
    "oreb": 0.4,
    "pf": 1.8,
    "player_id": 1628988,
    "player_name": "Aaron Holiday",
    "plus_minus": 1.8,
    "points": 9.4,
    "position": "Guard",
    "season": 2020,
    "stl": 0.8,
    "teams": "IND",
    "tov": 1.3,
    "tpa": 3.5,
    "tpm": 1.4
  }
```

JSON Example

ACCESSING THE API

ACCESSING THE API

- **Base URL**

- **The Path**

- **Parameters**

ANATOMY OF AN API URL

- **Root: https://stats.theseventhman.net/**

- **Path: stats/api/v1/players/**

- **Parameters: ?agg=no&player=&season=2020&team=&toc=**

- **Use '+' to pass more than one filter i.e. &season=2020+2019**

THE CODE

- **Using my own API**

- **Docs for my API on my GitHub page https://github.com/ mcbarlowe/seventhmanapi**

- **Completely open source**

TIME TO CODE

NOT ALL API'S ARE PUBLIC

- **Use web browser developer tools**

- **look for JSON/XML type or xhr/fetch cause**

- **copy as cURL**

NOT ALL API'S ARE PUBLIC

- curl 'https://stats.theseventhman.net/stats/api/v1/players/distinct/' -H 'User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.15; rv:74.0) Gecko/20100101 Firefox/74.0' -H 'Accept: */*' -H 'Accept-Language: en-US,en;q=0.5' --compressed -H 'Referer: https://theseventhman.net/' -H 'Origin: https://theseventhman.net' -H 'Connection: keep-alive' -H 'Cache-Control: max-age=0' -H 'TE: Trailers'

- everything with "-H" is a header to pass

QUESTIONS?

MY OTHER PROJECTS

- **theseventhman.net**

- **nba_scraper**

- **nba_parser**

SOURCES

- **Application Programming Interfaces, Wikipedia.**

- **Amazon API Diagram, AWS**

- **What is an API and Why Should I Use One?, Tyler Elliot Bettilyon, Medium**

- **Has JSON Overtaken XML, Bhuvanesh Mohankumar, C# Corner**

- **A Technical Introduction to XML, xml.com**

- **Understanding and Using REST APIs, Zell Liew, Smashing Magazine**

- **Query String, Wikipedia**

- **Accessing Web Data (JSON) in R using httr, Akshay Mahale, Data Science Plus**

- **What is an API? In English Please, Petr Gazarov, FreeCodeCamp**