



T24

API Testing

Thursday, May 3rd, 2018

3:00 PM

API Testing: How to Write Tests, Integrate into CI, and Track What You're Testing

Presented by:

Elise Carmichael

QASymphony

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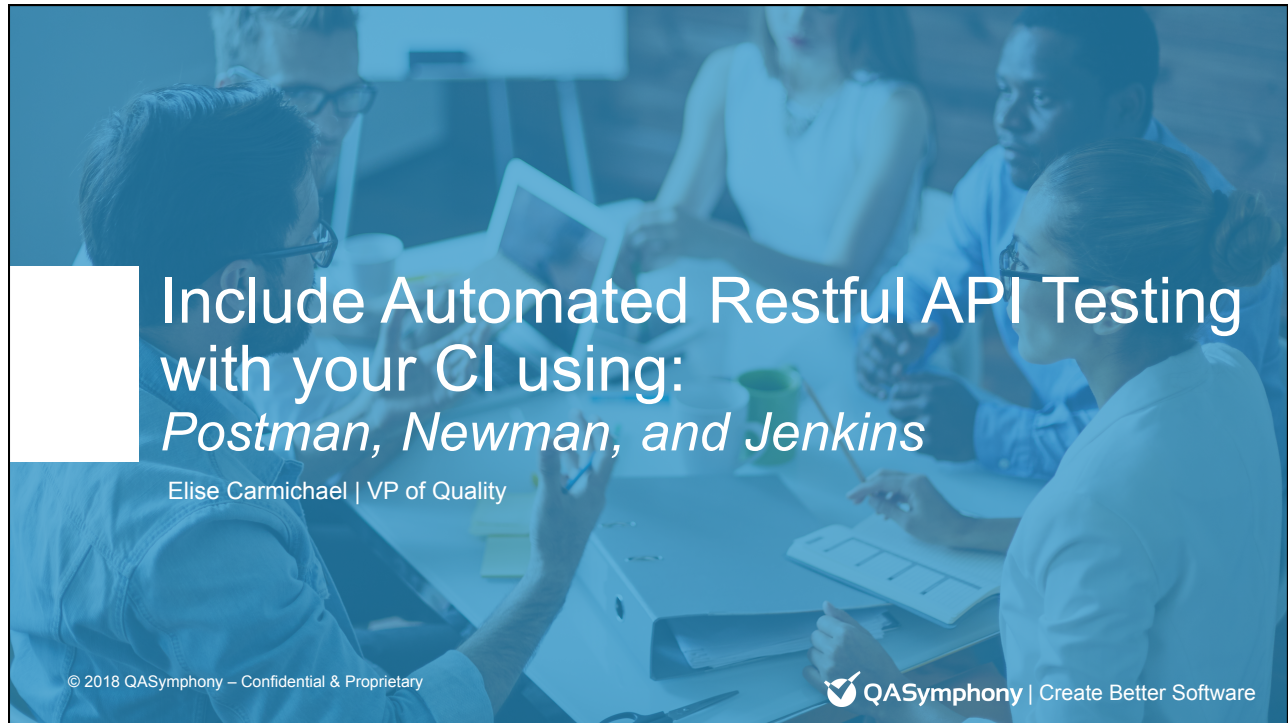


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Elise Carmichael

QASymphony

VP of quality at QASymphony Elise Carmichael is responsible for helping customers improve their QA process, expand test automation, and maximize their investments in QASymphony solutions. She has a strong desire to help people get their testing solutions organized—from security testing to functional testing. Elise has nearly twenty years of experience in the healthcare, trucking and logistics, online bidding, and construction management industries, and knowledge of a wide variety of programming languages and test frameworks. Previously, Elise directed a global software engineering and testing organization at Mobiquity.



Housekeeping

- ✔ This is HANDS ON!

- ✔ Pull your laptops out and experiment.
 - Go ahead and install Postman

 - If possible, also NPM (node package manager), and Newman

- ✔ Ask Questions!

Who is this for?

- ✔ You've done some API testing, or this is new to you.
- ✔ You want to learn (or make a case) for why you should start doing API tests in your organization.
- ✔ You are interested in how we can include these tests into your build pipeline with Postman, Newman, and Jenkins.

Who Am I?

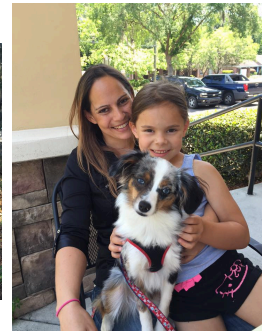


Elise Carmichael

Vice President of Quality



- **Roles:** Developer, Tester, Technical Lead, Product Manager, Engineering Director
- **Domains:** Tech, Financial, Healthcare, ecommerce, Construction, Trucking
- **Hobbies:** Playing Flute, Cycling, Tennis

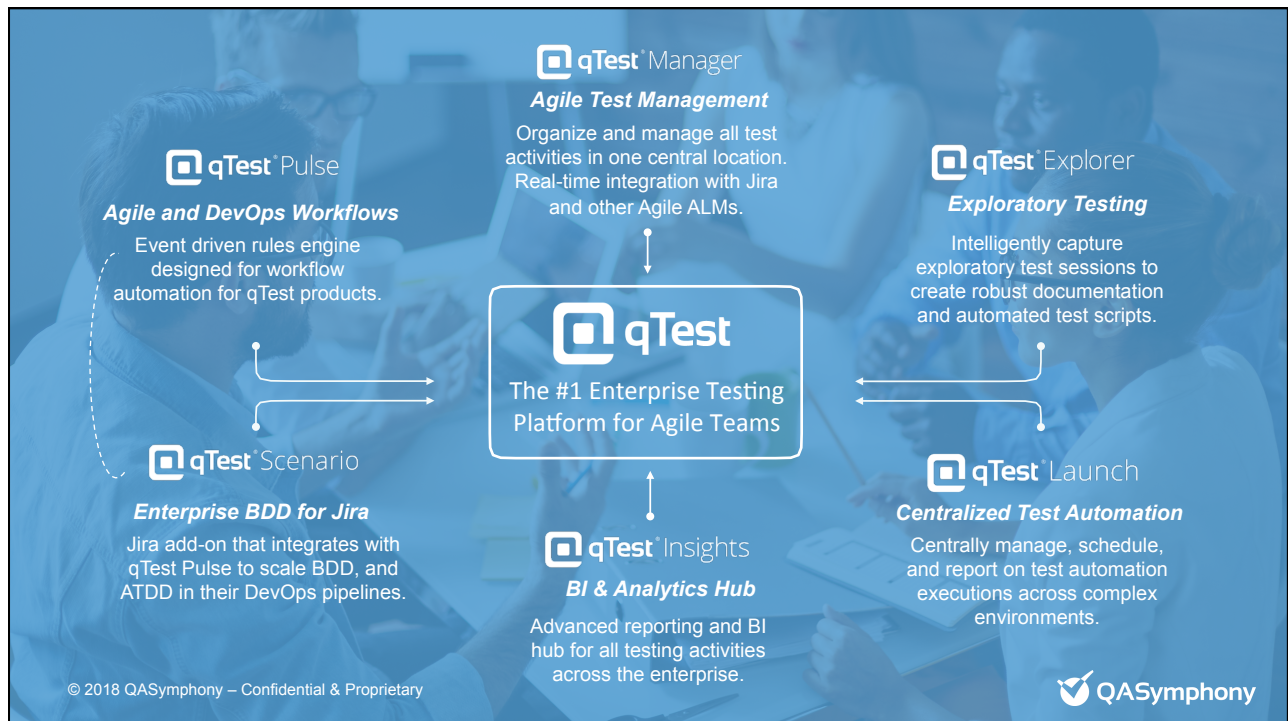


Company Profile

Our Vision *Transform the Way Global Enterprises Create Quality Software*

- **Corporate Headquarters:** Atlanta, Georgia
- **Global Offices:** London (Sales), Vietnam (Development)
- **Customer Growth:** June 2014: 150 customers | Jan 2018: 600+ customers
- **Funding:** Raised \$50m equity
- **Technology Partners:** Atlassian, CA, TestPlant, Neotys, GenRocket, Katalon, APIFortress
- **Channel Partners:** cPrime, Clearvision, Go2Group, Rightstar, Capgemini, MouSoft, Aservo, Column Technologies

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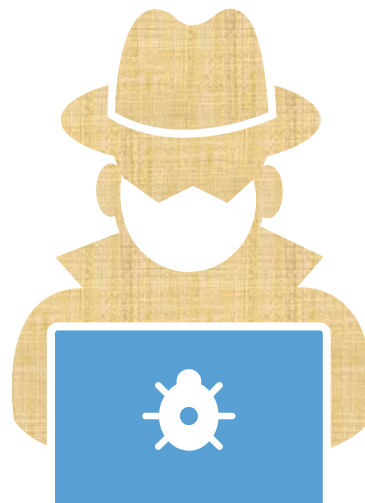


Agenda

- ✓ Why API Testing over other tests
- ✓ How do we write the tests
- ✓ Integration into your pipeline using Newman and Jenkins
- ✓ Q&A

Why API Testing?

- ✓ Security!
- ✓ Security!!
- ✓ Security!!!
- ✓ Security!!!!
- ✓ Security!!!!!
- ✓ Security!!!!!!!
- ✓ Security!!!!!!!!
- ✓ Security!!!!!!!!!!



Why API Testing?

- ✔ Quick tests to write, run, quick feedback in CI jobs
- ✔ Reusability for performance testing
- ✔ Put some basic scenarios into your production monitoring system to be aware of outages before your customer



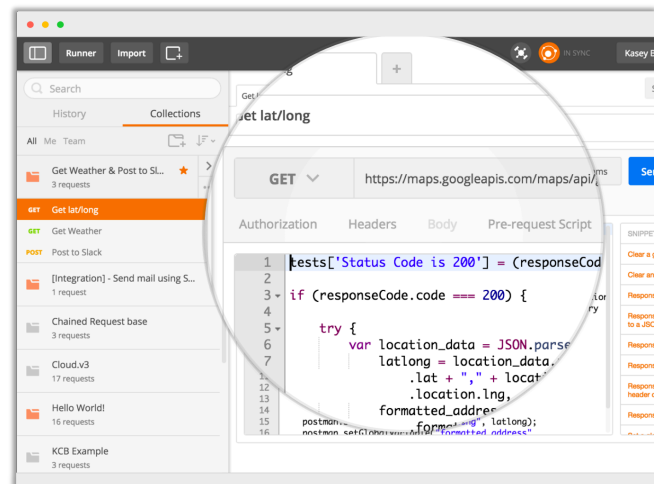
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Postman

<https://www.getpostman.com/>

- ✔ We use Postman at QASymphony for our REST API tests.
- ✔ It's
 - Free
 - Very Popular
 - Easy to use
 - Works well with CI



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Newman

https://www.getpostman.com/docs/postman/collection_runs/command_line_integration_with_newman

✔ We use Newman to integrate API tests into CI at QA Symphony

✔ It's

- Free
- Works seamlessly with Postman
- Executes tests from the command line so that they can be included in CI

```

454 $ node_modules/.bin/newman run tests/bitcoinz_postman_collection_correct.json -e tests/postman_environment.json
455 newman
456
457 bitcoinz
458
459 • Get Bitcoin Exchange Rate
460 GET https://api.coindesk.com/v1/bpi/currentprice.json [200 OK, 1.15KB, 107ms]
461 ✓ Status code is 200
462 ✓ Bitcoin rate is a Float
463 ✓ Updated in the last day
464
465
466 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
467 |               | executed | failed |
468 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
469 | assertions |         1 |         0 |
470 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
471 | requests   |         1 |         0 |
472 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
473 | test-scripts |         1 |         0 |
474 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
475 | pre-request-scripts |         1 |         0 |
476 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
477 | assertions |         3 |         0 |
478 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
479 | total run duration: 275ms
480 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
481 | total data received: 673B (approx)
482 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
483 | average response time: 107ms
484 |-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
485
486 The command "node_modules/.bin/newman run tests/bitcoinz_postman_collection_correct.json -e tests/postman_environment.json"
487 exited with 0.
488
489 Done. Your build exited with 0.

```

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Jenkins

<https://jenkins.io/>

✔ Jenkins is one of several tools we use at QASymphony to assist with Continuous Integration

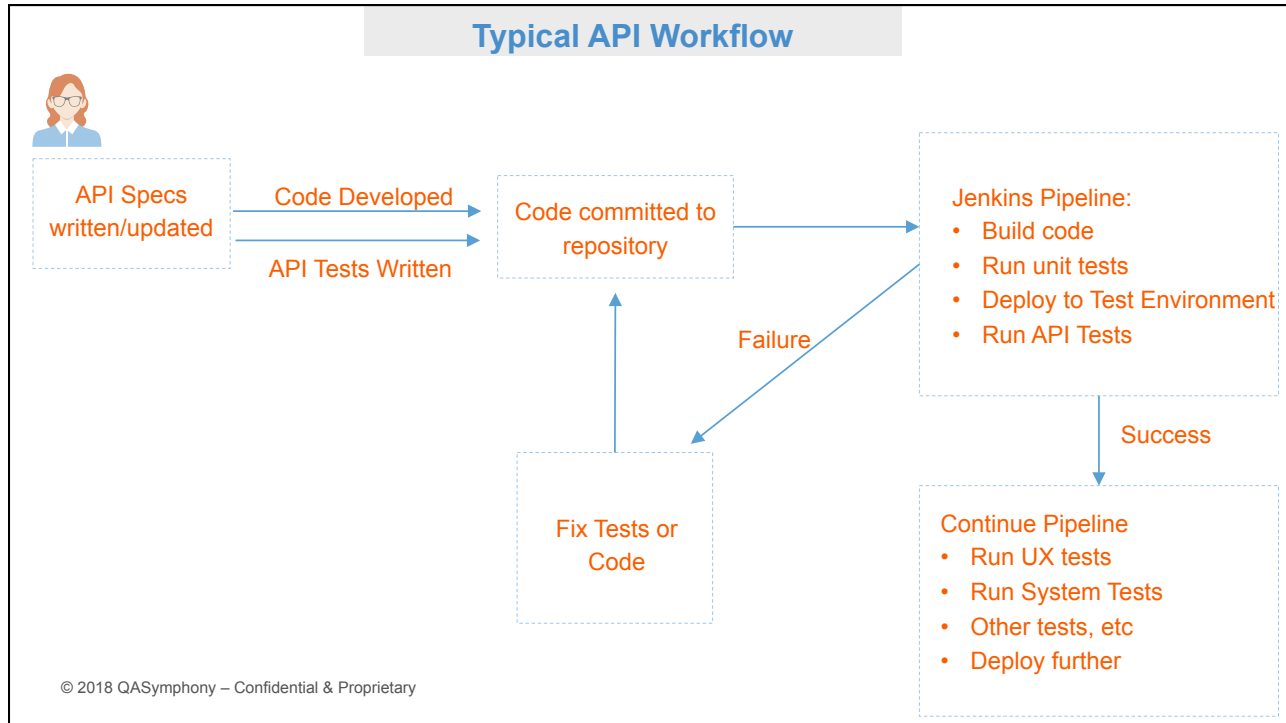
✔ It's

- Free
- Popular
- Very, very flexible with many plugins (even QASymphony has one!)



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Let's Write Some Tests!

1. Read Documentation (we'll use qTest's API)
2. Make a call
 - Create A Test Case
3. Test the call
 - Verify Status Code
 - Verify Performance
 - Verify Response Values

Name	Description
grant_type string (FormData)	always use grant_type=password
username string (FormData)	Your qTest Manager username
password string (FormData)	Your qTest Manager password
Authorization string (header)	Basic + [base64 string of "your qTest Manager site name:"] Example: qTest Manager site is: apityout.qtestnet.com then site name is: apityout, then Authorization is: Basic YXp5dXouqtestnet.com

Code	Description
200	

token_type and access_token are included in the response. Use them in Authorization key when making API calls to qTest Manager in following format: {token_type} {access_token}

Postman Examples (continued)

1. Set up variables (to use/store in the next call)
2. Check for a security flaw
 - Same verifications
3. Review the Runner GUI
4. Download a collection
5. Download the environment (staging/dev)

```

* Get And Store Test Case Field IDs
GET https://qas.qtestnet.com/api/v3/projects/45625/settings/test-cases/fields
Authorization Headers Body Pre-request Script Tests
1 var jsonData = JSON.parse(responseBody);
2
3 var testCaseFields = [];
4- jsonData.forEach(function(item, index) {
5-   var field = {
6-     id: item.id,
7-     name: item.label,
8-     required: item.required,
9-     type: item.attribute.type
10-   };
11
12-   if(item.allowed_values && item.allowed_values.length > 0) {
13-     var values = [];
14-     item.allowed_values.forEach(function(r, rindex) {
15-       if(r.is_active) {
16-         var val = {
17-           id: r.value,
18-           name: r.label
19-         };
20-         values.push(val);
21-       }
22-     });
23-     field.values = values;
24-   }
25-   testCaseFields.push(field);
26- }
27- }
28- console.log(testCaseFields);
29- postman.setEnvironmentVariable("testCaseFields", JSON.stringify(testCaseFields));
30
31
32

```

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Newman Example

1. Let's test that same collection from the commandline

```

newman-json-result.json
{
  "collection": {
    "info": {
      "id": "009f243e-02ec-9d9f-7727-6d78dc8f8a5",
      "name": "API Tests",
      "schema": "https://schema.getpostman.com/json/collection/v2.0.0/collection.json"
    },
    "event": [],
    "variable": [],
    "item": [
      {
        "id": "7bccc811-fe77-4706-a040-a079351f2990",
        "name": "AddTestCase",
        "description": {
          "content": "",
          "type": "text/plain"
        },
        "item": [
          {
            "id": "94682800-2307-4f5e-b5cc-ec0d7306746",
            "name": "11633035-Positive-AdminLogin",
            "request": {
              "url": "https://qas.qtestnet.com/oauth/token",
              "method": "POST",
              "header": [
                {
                  "description": {
                    "content": "",
                    "type": "text/plain"
                  },
                  "key": "Content-Type",
                  "value": "application/x-www-form-urlencoded"
                }
              ],
              "description": {
                "content": "",
                "type": "text/plain"
              }
            }
          }
        ]
      }
    ]
  }
}
~/Repos/qtest-api-samples/node/newman-json-result.json CMD: /Users/ellise/Repos/qtest-api-samples/node Line: 1 Column: 1
newman-json-result.json [noel] 54971, 685567C

```

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Jenkins Example

1. Simple shell to execute newman
2. Use script to upload test results to qTest, just to show the full cycle if we wanted to not just include API testing in our CI, but to have a documented, easy to read record of what was tested



Other Options!



I just showed you one example of a tool set that you could use, but there are *many* options.

Choose what works best for your organization.

What do you now know?

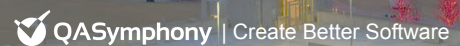
- Why you might start out with writing API tests
- How to write the tests
- How you can integrate your fast, simple tests into your build pipeline with Newman and Jenkins

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Go home and
test those APIs!

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Q&A

Thank You!

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