

#BullhornEngage

ENGAGE

# Evolution of the Bullhorn REST API

Craig Kapp, Amrutha Rajiv

Bullhorn



Amrutha Rajiv  
Principal Software  
Architect



Craig Kapp  
Principal Software  
Architect

ENGAGE

# Topics

- Auth process
- REST API Basics
- Bullhorn One enhancements
- Taurus - javascript REST sdk for the front end
- Custom Cards

# Auth Process

# Auth Process

## Step 1 - get the authentication code

**URL:** <https://auth.bullhornstaffing.com/oauth/authorize>

**Method:** Post

**Payload:**

client\_id={client\_id}

response\_type=code

state={recommended state value}

username={username}

password={password}

action=Login

**Response:** code

# Auth Process

## Step 2 - get the access\_token

**URL:** <https://auth.bullhornstaffing.com/oauth/token>

**Method:** Post

**Payload:**

client\_id={client\_id}

client\_secret={client\_secret}

grant\_type={authorization\_code}

code={auth\_code}

**Response:** access\_token

# Auth Process

## Step 3 - get the rest token

### URL:

<https://rest.bullhornstaffing.com/rest-services/login>

**&Method:** Post

### Payload:

*version=\**

*access\_token={xxxxxxxxx}*

### Response:

BhRestToken, restUrl

# Easier Auth with Customizations

- Skip step 1, get authCode directly from the customization
  - Custom Card
  - Custom Tab
  - Custom Action
- Get access\_token followed by BhRestToken



# REST API Basics

# Important Links

- Top Level REST URL
  - <https://rest.bullhornstaffing.com/rest-services>
- Rest SDK (Java) - Software Development Kit
  - <https://github.com/bullhorn/sdk-rest>
- Documentation
  - <http://bullhorn.github.io/docs/>
- Postman collection
  - <https://documenter.getpostman.com/view/1437253/S1TZxadJ>

# Meta

- What entities are available?
  - /meta
- What properties do those entities have?
  - /meta/Candidate?field=\*

# Entity

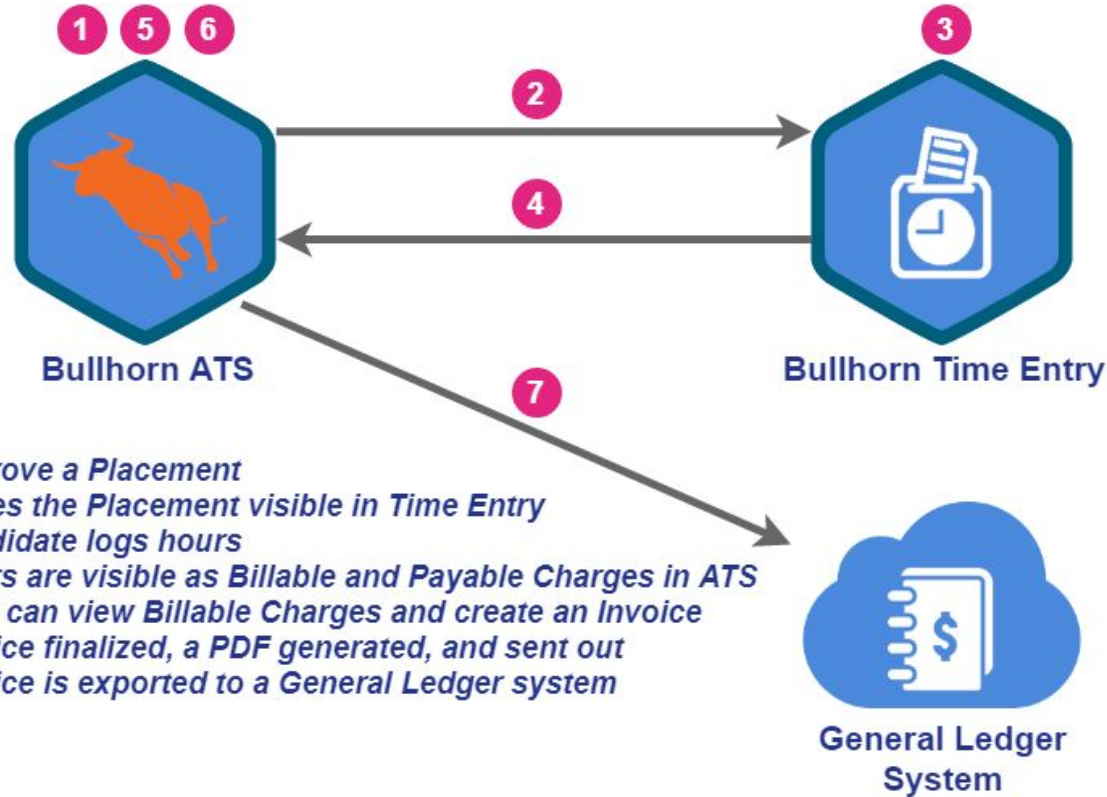
- GET - Read
- PUT - Create
- POST - Update
- DELETE - Delete

# Search and Query

- /search/Candidate
- /query/Tearsheet

# Bullhorn One Enhancements

# Time Entry Workflow



Menu

## Billable Charges

Billable Charges

ITEMS PER PAGE: 25

<input type="checkbox"/>	ID	Date Added	Period End Date
<input type="checkbox"/>	91	05/29/2019, 4:12 PM	06/01/2019
<input type="checkbox"/>	89	05/23/2019, 6:01 PM	05/17/2019
<input type="checkbox"/>	88	05/23/2019, 5:59 PM	05/17/2019
<input type="checkbox"/>	87	05/23/2019, 5:56 PM	05/17/2019
<input type="checkbox"/>	86	05/23/2019, 2:24 PM	05/17/2019
<input type="checkbox"/>	84	05/22/2019, 12:26 PM	05/18/2019
<input type="checkbox"/>	82	05/21/2019, 11:33 AM	05/18/2019
<input type="checkbox"/>	81	05/20/2019, 3:10 PM	05/11/2019
<input type="checkbox"/>	80	05/20/2019, 1:50 PM	05/11/2019
<input type="checkbox"/>	79	05/16/2019, 8:47 AM	05/16/2019

Parse Resume

CLOSE ALL TABS

## Jeremy Bearimy - New - 2019-06-01 - 06/01/2019

STATUS

Not Ready to Bill

CLIENT CORPORATION

Swanson Safe Co

PLACEMENT

Jeremy Bearimy - Professor of Ethical Philosophy

BILLING PROFILE

Swanson Safe Co Billing Profile - HQ

DESCRIPTION

✓ Jeremy Bearimy - New - 2019-06-01

ATTACHMENTS

Choose a file  
or [click to browse](#)

JPG, PNG, and TIFF files that are 10 MB or smaller are accepted

## Transactions

EARN CODE	TRANSACTION DATE	QUANTITY	UNIT OF MEASURE	BILLING RATE	AMOUNT
REG - Regular pay	05/28/2019	8	Hours	25	200
ADD TRANSACTION +					
NET AMOUNT					\$200.00

CANCEL

SAVE ✓





## Payable Charges



Billable Charges

Payable Charges

ITEMS PER PAGE: 25

&lt; 1 2 &gt;

CLEAR

ADD PAYABLE CHARGE +

Candidate	Employee Type	Period End Date	Placement	Client Corporation	Total	Status
Jeremy Bearimy	W2	06/01/2019	#22	Amazon.com, Inc	1,600.00	Not Ready to Pay
Jeremy Bearimy	W2	06/01/2019	#21	Swanson Safe Co	200.00	Not Ready to Pay
Jake Peralta	W2	05/18/2019	#27	Swanson Safe Co	6,100.00	Not Ready to Pay
Gina Linetti	W2	05/18/2019	#23	Swanson Safe Co	7,000.00	Not Ready to Pay
Gina Linetti	W2	05/11/2019	#23	Swanson Safe Co	5,075.00	Not Ready to Pay
Perd Hapley	W2	05/11/2019	#24	Swanson Safe Co	3,000.00	Ready to Pay
Perd Hapley	W2	05/04/2019	#24	Swanson Safe Co	3,000.00	Not Ready to Pay
Mose Schrute	W2	04/27/2019	#25	Swanson Safe Co	600.00	Ready to Pay
Perd Hapley	W2	04/13/2019	#24	Swanson Safe Co	3,000.00	Ready to Pay
Jeremy Bearimy	W2	04/13/2019	#21	Swanson Safe Co	1,000.00	Not Ready to Pay
Mose Schrute	W2	04/13/2019	#25	Swanson Safe Co	3,000.00	Ready to Pay
Mose Schrute	W2	04/06/2019	#25	Swanson Safe Co	1,800.00	Ready to Pay
Jake Peralta	W2	04/06/2019	#27	Swanson Safe Co	4,000.00	Ready to Pay
Jeremy Bearimy	W2	04/06/2019	#21	Swanson Safe Co	1,075.00	Ready to Pay
Jeremy Bearimy	W2	04/06/2019	#21	Swanson Safe Co	1,075.00	Ready to Pay
Jeremy Bearimy	W2	03/23/2019	#21	Swanson Safe Co	1,000.00	Ready to Pay
Gina Linetti	W2	03/23/2019	#23	Swanson Safe Co	8,400.00	Ready to Pay
Jake Peralta	W2	03/23/2019	#27	Swanson Safe Co	4,800.00	Ready to Pay

Parse Resume

CLOSE ALL TABS



## Menu

Billable Charges

Payable Charges

Invoices

00008 | Entertainment 720



## 00008 | Entertainment 720



STATUS	INVOICE STATEMENT DATE	DUE DATE	TOTAL AMOUNT	GENERAL LEDGER EXPORT STATUS
Finalized	04/21/2019	05/06/2019	\$18,045.00	Not Ready to Export

DETAILS

ACTIVITY

LAYOUT



## INVOICE CREDITED

This invoice was credited on 05/07/2019 by WFR User1. [View Credit Memo 10137.](#)

## BILLING CONTACT

Raymond Holt

## BILLING ADDRESS

Billing Address 1

Billing Address 2

Billing City

Billing State

Billing Zip

United States



Santiago, Amy

DESCRIPTION	QUANTITY	PRE-TAX A...	TOTAL AM...
Linetti, Gina - Engineer	2	15,045.00	15,045.00
Schrute, Mose - Engineer	40	3,000.00	3,000.00
LINE ITEM TOTAL AMOUNT			18,045.00

Parse Resume



CLOSE ALL TABS

# New Entities

- Billable Charge
- Payable Charge
- Invoice Statement
- Invoice Statement Line Item

# Effective Dated Entities

- Location
- Invoice Term
- Billing Profile

# Using EDEs

- Add new root
- Add new version
- Update version
- GET with effectiveOn date

# Taurus – javascript REST sdk for the *front end*

# Taurus Capabilities

- Auto caching
- Reactive API
- Easy query construction syntax
- Front-end Only

<https://github.com/bullhorn/taurus>

# Taurus examples



# Retrieve Meta

```
// Get meta
const meta = await new MetaService('Candidate')
    .params({ showReadOnly: true })
    .get(['firstName', 'lastName', 'occupation', 'email', 'phone']);
```

# Retrieving List Data

```
this.payableCharges = new EntityList(EntityTypes.PayableCharge, {
  fields: ['id', 'readyToPay', 'subTotal'],
  startAt: 0,
  limitTo: 100,
  orderBy: '-dateAdded',
  filter: {
    id: { min: 0 },
  },
  params: { showTotalMatched: true },
});
this.results = this.payableCharges.pipe(
  map((resp: PayableCharge[]) => {
    return { results: resp, total: this.payableCharges.info.total };
  }),
);
```

# Filter Query Syntax

```
const filterQuery = {  
  billingClientContact: {  
    name: 'First Last',  
  },  
};
```

billingClientContact.name = 'First Last'

```
const record = {  
  jobOrder: {  
    clientContact: {  
      name: 'First Last',  
    },  
  },  
};  
Peter Monroe, a month ago
```

jobOrder.clientContact.name = 'First Last'

# Range Queries

```
const query = {  
  currency: {  
    min: 120,  
    max: 10000,  
  },  
};
```

For Search endpoint: currency: [120 TO 10000]

For query endpoint: currency > 120 AND currency < 10000

# Reactive Programming

- Deals with event streams
- A sequence of events that happen over time
- Whenever an event occurs, we react to it by doing something.

# RXJS & Observables

- An observer subscribes to an Observable.
- Observer reacts to whatever item or sequence of items the Observable emits.
- Concurrent operations - non blocking

Source: <http://reactivex.io>

# bullhorn-types

## Typing in line with meta

### Example:

```
export interface MessageTemplate {  
  id?: number;  
  dateAdded?: Date;  
  isPublic?: boolean;  
  messageText?: Strings;  
  name?: Strings;  
  owner?: CorporateUser;  
  templateType?: Strings;  
}
```

# Custom Cards



# Configuring Custom Cards/Tabs

The screenshot displays the Bullhorn application interface. The top navigation bar includes the Bullhorn logo, a search bar with 'Find', an 'Add' button, and user information for 'lava user01'. A sidebar on the left contains a 'Menu' and links to 'Payable Charges' and 'View Layout'. The main content area is titled 'View Layout:' and features a tabbed interface with 'Custom Cards' selected. The configuration form for a custom card includes fields for 'Private Label' (set to 'Lava - all fields on and visible'), 'Field Map Entity' (set to 'Company'), 'Name' (set to 'Invoices to Watch'), 'Enabled' (checked), 'Location' (set to 'In a record, on the overview'), 'URL' (set to 'https://dry-lake-72199.herokuapp.com'), and 'Partner Name' (set to 'okemoAPI', which is highlighted with a red rectangle). A 'Save' button is located at the top right of the configuration area. The bottom of the screen shows the start of another custom card configuration.

**Bullhorn** Find + Add Privacy ? Help lava user01

≡ Menu

Payable Charges

View Layout

**View Layout:**

Private Label: \* Lava - all fields on and visible

Field Map Entity: \* Company

Profile Record Overview Tab List Mobile Fast Find Search **Custom Cards** Custom Tabs Custom Menu Actions Custom List Buttons

Save

Name: \* Invoices to Watch

Enabled: ☒

Location: \* ☒ In a record, on the overview ☐ In the dashboard

URL: https://dry-lake-72199.herokuapp.com  
Specify card height by adding "#bh-iframe-height=900px" to the end of the url  
e.g. www.example.com/#bh-iframe-height=900px

Partner Name: okemoAPI

User Types:

Name: \*

# Demo: Invoices to Watch Card

# Resources

- Taurus: <https://github.com/bullhorn/taurus>
- Bullhorn-types: <https://github.com/bullhorn/bullhorn-types>
- Novo-elements: <https://github.com/bullhorn/novo-elements>
- Custom Tab and authCode: <http://bullhorn.github.io/REST-Backed-Custom-Components/>

# Recap

- Auth simplified
- SDKs make life easier
- New Bullhorn One entities
- EDEs respect effectiveOn
- Taurus & bullhorn-types make your life easier



Questions?