Logging, Scale, and HA

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Estimated Time: 30 minutes

Requirements

This lab is part of a workshop available at https://github.com/Pivotal-Field-Engineering/DevNexus2017
General Pre-Requisites are available in the Readme.md

In general the Labs should be done in numerical order since they are interdependent.

What you will learn

- How to access application logs
- How to scale an application
- How to access events
- How Pivotal Cloud Foundry handles failed application instances

Exercises

Push the `articulate` application

1) Find the (/sample-apps/articulate/articulate-0.0.1-SNAPSHOT.jar) application.

This directory is a subdirectory of the "DevNexus2017" git project that you downloaded in Lab 1.

Source (https://github.com/pivotal-enablement/articulate) is not required, but you may be curious how it works as you move through the labs.

2) Push the `articulate` application.

```
$ cd sample-apps/articulate
$ cf push articulate -p ./articulate-0.0.1-SNAPSHOT.jar -m 512M --random-route --no-start
```

Access `articulate` logs

1) Review the documentation on application logging (http://docs.pivotal.io/pivotalcf/devguide/deploy-apps/streaming-logs.html).

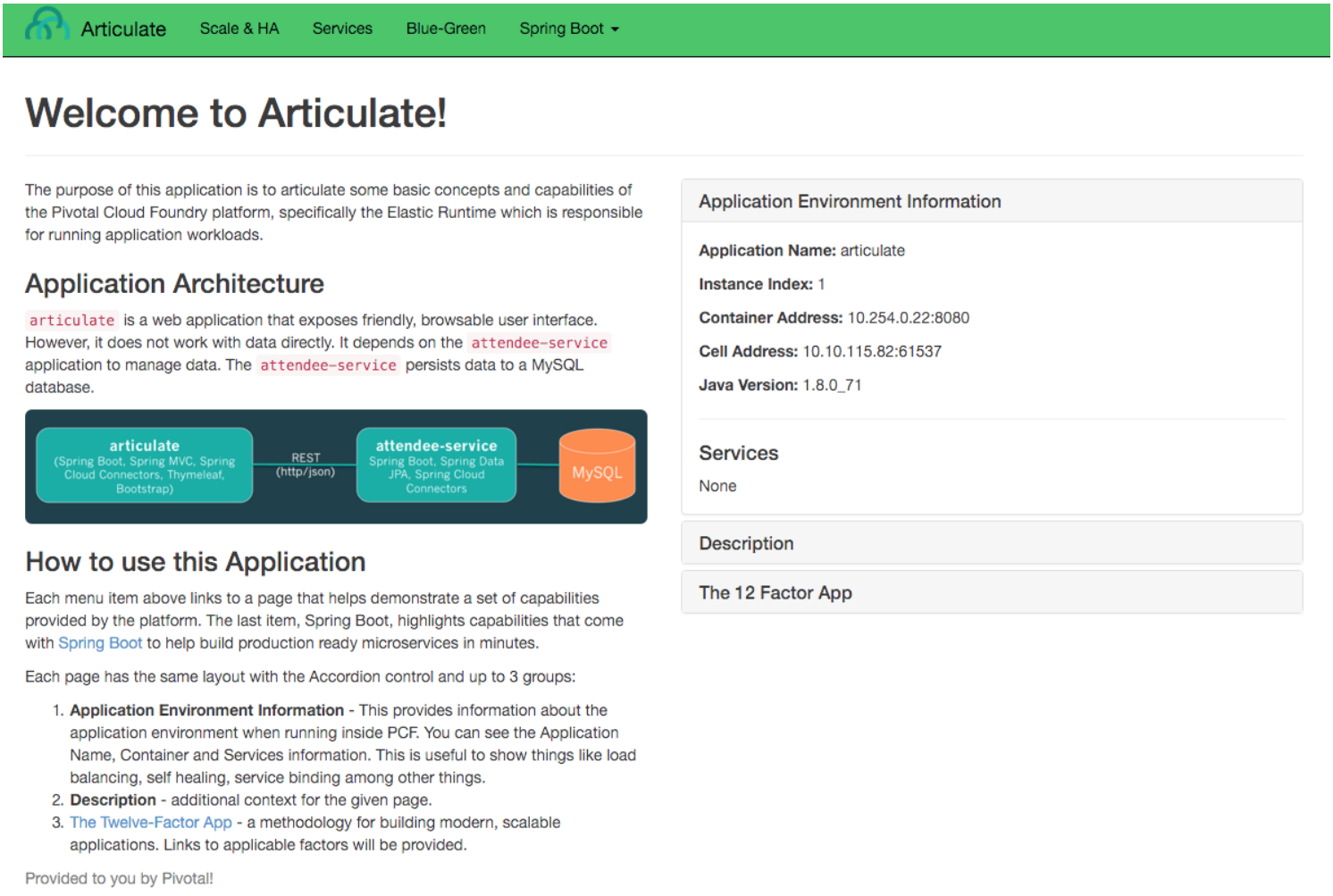
2) Tail the logs of the `articulate` application.

```
$ cf logs articulate
```

3) Open *another* terminal window and start the `articulate` application. Review the output from both terminal windows.

```
$ cf start articulate
```

4) Open a browser and view the `articulate` application. Read about our demo application.



5) Observe the log output when the `articulate` web page is refreshed. More logs are added!

6) Stop tailing logs

1. Go to the terminal tailing the logs
2. Send an interrupt (Control + c)

Questions

- Where should your application write logs?
- What are some of the different origin codes seen in the log?
- How does this change how you access logs today? At scale?

Access `articulate` events

Events for the application can also be used to compliment the logs in determining what has occurred with an application.

```
$ cf events articulate
```

Scale `articulate`

Scale up

1) Start tailing the logs again.

```
[mac, linux]
$ cf logs articulate | grep "API\|CELL"

[windows]
$ cf logs articulate | findstr "API CELL"
```

The above statement filters only matching log lines from the Cloud Controller (https://docs.pivotal.io/pivotalcf/concepts/architecture/cloud-controller.html) and Cell (https://docs.pivotal.io/pivotalcf/concepts/architecture/#diego-cell) components.

2) In *another* terminal window scale `articulate` .

```
$ cf scale articulate –m 1G
```

3) Observe log output.

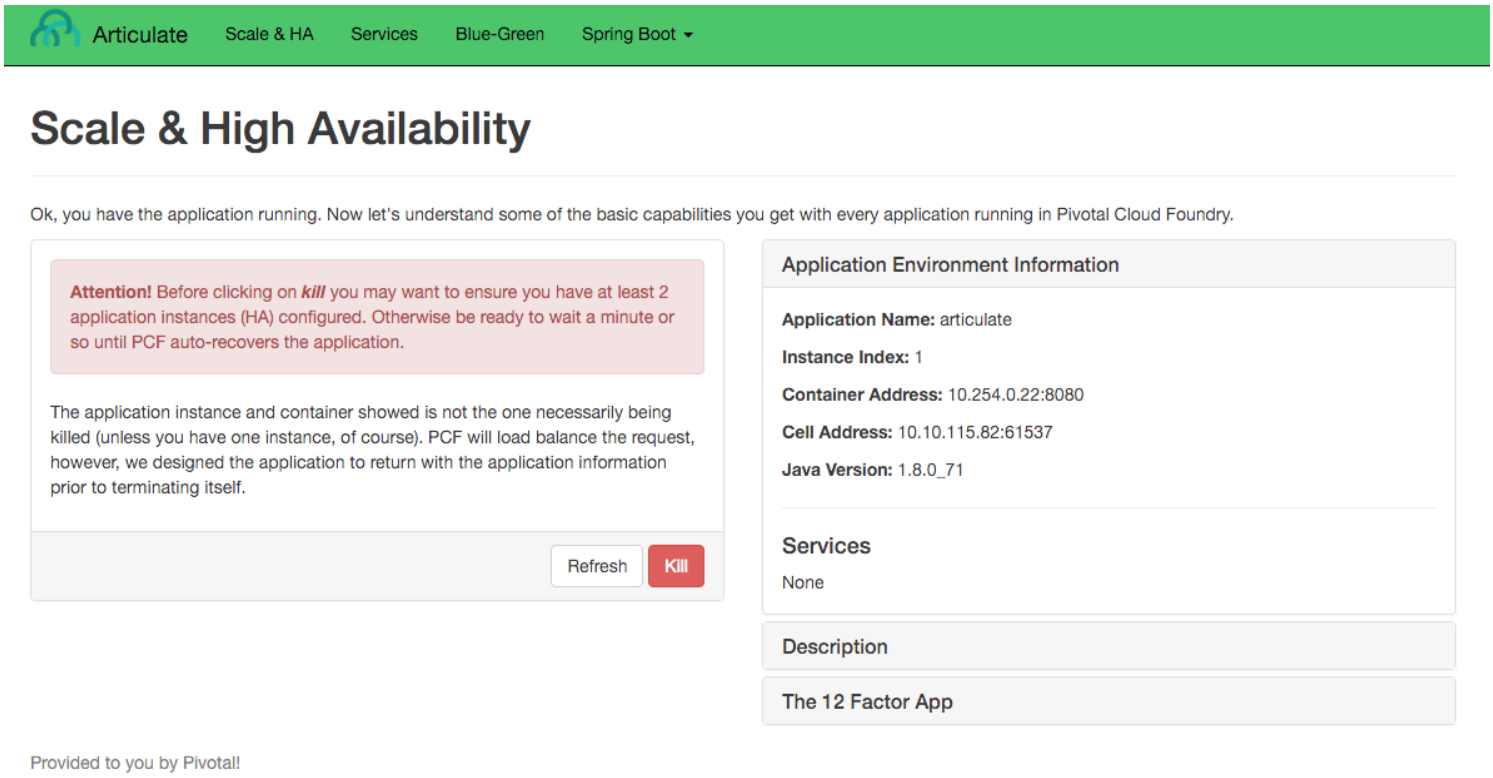
4) Stop tailing the logs.

5) Scale `articulate` back to our original settings.

```
$ cf scale articulate –m 512M
```

Scale out

1) Browse to the `Scale and HA` page of the `articulate` application.



Review the `Application Environment Information`.

2) Press the `Refresh` button multiple times. All requests are going to one application instance.

3) Start tailing the logs.

```
[mac, linux]
$ cf logs articulate | grep 'API\|CELL'

[windows]
$ cf logs articulate | findstr "API CELL"
```

4) In another terminal window, scale the `articulate` application.

```
$ cf scale articulate –i 3
```

5) Observe log output. Then stop tailing the logs.

6) Return to `articulate` in a web browser. Press the `Refresh` button several times. Observe the `Addresses` and `Instance Index` changing.

Notice how quickly the new application instances are provisioned and subsequently load balanced!

Questions

- What is the difference between scaling out versus scaling up?

High Availability

Pivotal Cloud Foundry has 4 levels of HA (https://blog.pivotal.io/pivotal-cloud-foundry/products/the-four-levels-of-ha-in-pivotal-cf) (High Availability) that keep your applications and the underlying platform running. In this section, we will demonstrate one of them. Failed application instances will be recovered.

1) At this time you should be running multiple instances of `articulate` . Confirm this with the following command:

```
$ cf app articulate
```

2) Return to `articulate` in a web browser (`Scale and HA` page). Press the `Refresh` button. Confirm the application is running.

3) Kill the app. Press the `Kill` button!

4) Check the state of the app through the `cf` CLI.

```
$ cf app articulate
```

Sample output below (notice the `requested state` vs actual `state`). In this case, Pivotal Cloud Foundry had already detected the failure and is starting a new instance.

```
requested state: started
instances: 3/3
usage: 512M x 3 instances
urls: articulate.pcfi1.fe.gopivotal.com
last uploaded: Mon Mar 21 20:27:57 UTC 2016
stack: cflinuxfs2
buildpack: java-buildpack=v3.5.1-offline-http://github.com/pivotal-cf/pcf
-java-buildpack.git#d6c19f8 java-main open-jdk-like-jre=1.8.0_65 open-jdk
-like-memory-calculator=2.0.1_RELEASE spring-auto-reconfiguration=1.10.0_
RELEASE

     state      since                    cpu     memory           disk
        details
#0   starting   2016-03-21 04:16:23 PM   0.0%    692K of 512M     93.4M o
f 1G
#1   running    2016-03-21 03:28:58 PM   0.5%    410.4M of 512M   158.8M
of 1G
#2   running    2016-03-21 04:15:57 PM   23.9%   357.8M of 512M   158.8M
of 1G
```

Repeat this command as necessary until `state = running`.

5) In your browser, `Refresh` the `articulate` application.

The app is back up!

A new, healthy app instance has been automatically provisioned to replace the failing one.

6) View which instance was killed.

```
$ cf events articulate
```

7) Scale `articulate` back to our original settings.

```
$ cf scale articulate –i 1
```

Questions

- How do you recover failing application instances today?
- What effect does this have on your application design?
- How could you determine if your application has been crashing?

Beyond the class

- Try the same exercises, but using Apps Manager instead

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