



Running your Spring Apps in the Cloud

Cornelia Davis
@cdavisafc

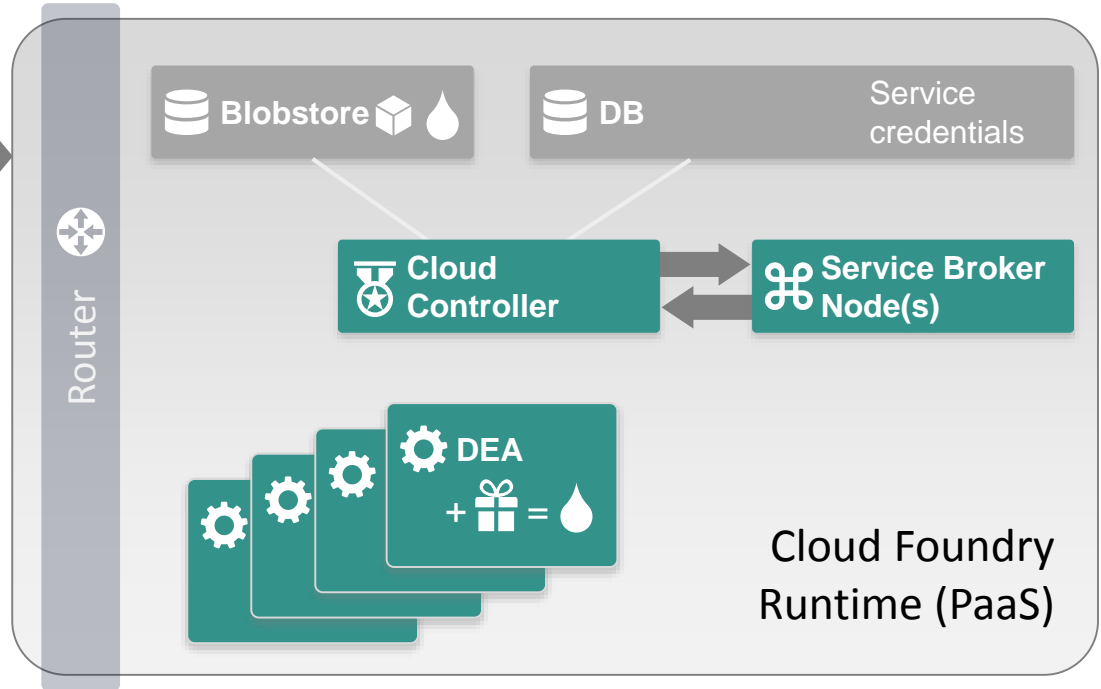
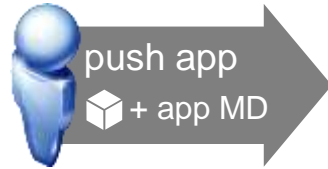
Let's push an app



Overview: Deploying *App* to Cloud Foundry *Runtime*

- ① Upload app bits and metadata
- ② Create and bind services
- ③ Stage application
- ④ Deploy application
- ⑤ Manage application health

...which is a whole 'nother topic



Software



Software is Changing Industries



\$3.5B valuation
– Financial Services



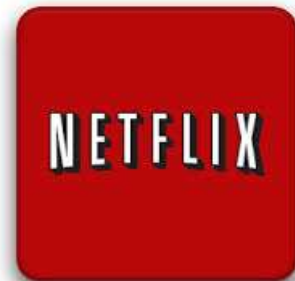
\$3.5B valuation
– Travel & Hospitality



\$3.5B valuation
– Transportation



\$1.1B acquisition by
Monsanto – Agriculture



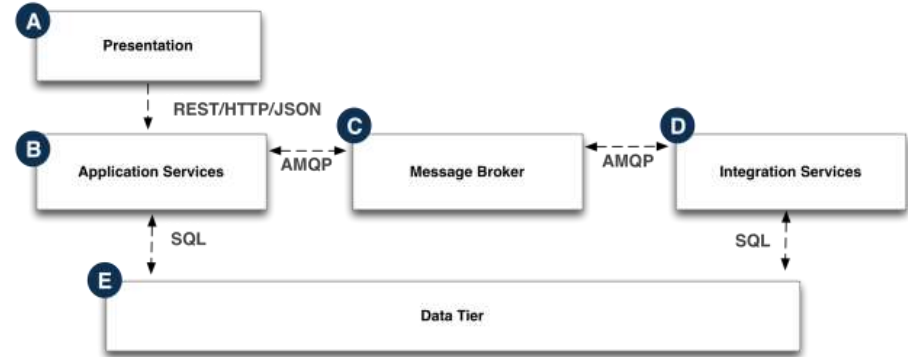
\$19B valuation
– Entertainment



\$3.2B acquisition by
Google – Digital Home

Spring Trader

Reference Application from VMWare to demonstrate the vFabric Suite



<https://github.com/cf-platform-eng/springtrader-cf>

From here ...











Getting Started Guide

- Prerequisite Software
- Installation and Configuration
 - Linux
 - Install to Server
 - Install SQLFire
 - Install Erlang
 - Install RabbitMQ
 - Host Configuration
 - Start RabbitMQ
 - Start SQLFire
 - Clone SpringTrader Repo
 - Setup SQLFire Client
 - Setup Gemfire
 - Build SpringTrader
 - Deploy SpringTrader
 - Mac
 - Install required software
 - Host Configuration
 - Start RabbitMQ
 - Start SQLFire
 - Clone SpringTrader Repo
 - Setup SQLFire Client
 - Setup Gemfire
 - Build SpringTrader
 - Deploy SpringTrader
- Using springtrader template in STS

Agenda (1/2)



Mar 04, 2014		
	add spring-cloud config of rabbitmq service binding <small>oDavisale authored 9 hours ago</small>	<small>1b9f614b5e8</small> <small>Browse code</small>
	remove unneeded, repetitive dependency <small>oDavisale authored 9 hours ago</small>	<small>e93f414d51</small> <small>Browse code</small>
Mar 03, 2014		
	insert replacement string <small>oDavisale authored a day ago</small>	<small>c8b128c2e2</small> <small>Browse code</small>
	update for Cloud Foundry deployment instructions <small>oDavisale authored a day ago</small>	<small>656e92b0e9</small> <small>Browse code</small>
	update manifest to point to service instances from the free plan <small>oDavisale authored a day ago</small>	<small>c03ece7e95</small> <small>Browse code</small>
Feb 20, 2014		
	change size of DB connection pool to make runnable with free tier of c... <small>oDavisale authored 13 days ago</small>	<small>7d8f8b2be7</small> <small>Browse code</small>
Feb 11, 2014		
	reduce duplication in app manifest <small>oDavisale authored 22 days ago</small>	<small>6253717c2d</small> <small>Browse code</small>
Feb 04, 2014		
	make deployable to cloud foundry <small>oDavisale authored a month ago</small>	<small>e576042269</small> <small>Browse code</small>

➤ Auto reconfiguration

➤ Services plans

➤ Apps and Manifests

➤ Cross-site scripting

➤ JNDI → Service Catalog

➤ Spring Cloud Connector

Agenda (2/2)



Jun 18, 2014



update README to remove one listed limitation

cdavisafc authored 5 days ago



add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago



pull web tier code out of services tier (hack removed!)

cdavisafc authored 5 days ago



add servlet to retrieve web service uri from service binding ...

cdavisafc authored 5 days ago



add CORS filter for cross site scripting between web tier and service... ...

cdavisafc authored 5 days ago



add spring-cloud extension for http-based web services

cdavisafc authored 5 days ago

➤ Apps as Services

➤ Define Service Type

➤ XSS

Feb 04, 2014



make deployable to cloud foundry ...

cdavisaf authored a month ago

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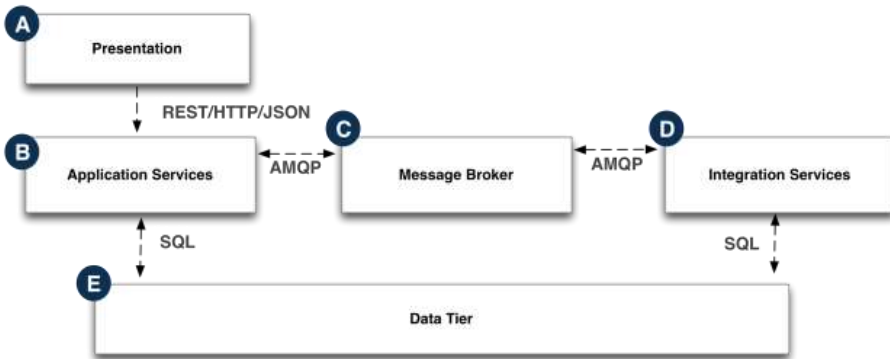
Browse code ➔



Cross-site Scripting

<http://springerwebapp/servlet>

<http://springerdevice/servlet>



Feb 04, 2014



make deployable to cloud foundry ...

cdavisaf authored a month ago

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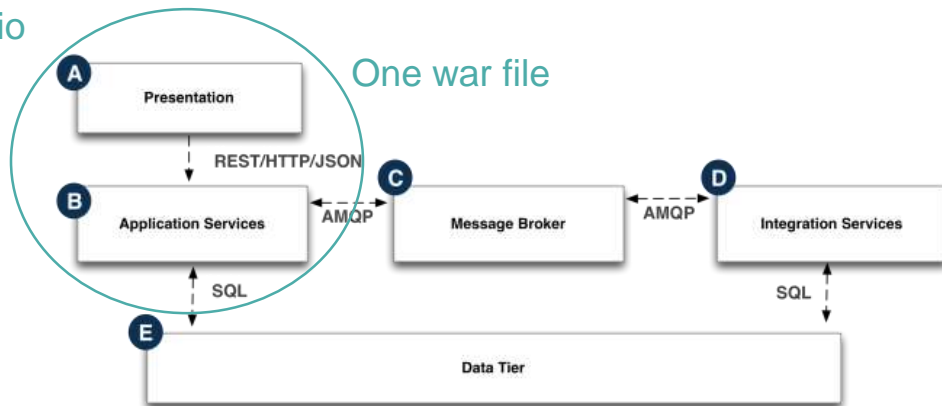
Browse code ➔



Cross-site Scripting

This is a hack!!

<http://traderfront.cfapps.io>



Feb 04, 2014



make deployable to cloud foundry

cdavisaf authored a month ago

e576042269

Browse code

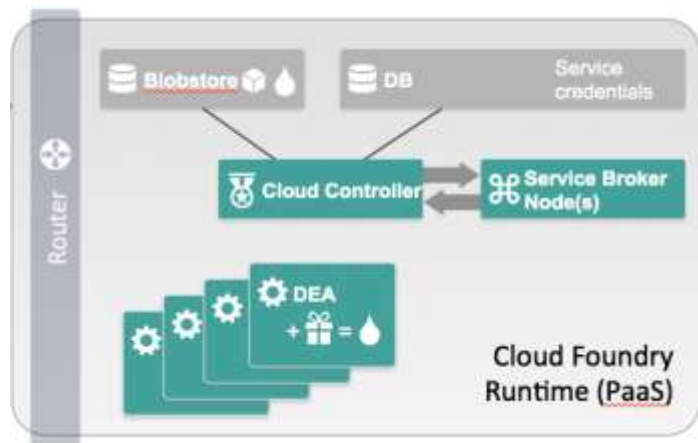


JNDI → Service Instances

Old: `<jee:jndi-lookup id="dataSource" jndi-name="jdbc/nanodb" />`

The screenshot shows the Pivotal Web Services (PWS) interface. On the left is a sidebar with a 'P' logo and 'Pivotal Web Services' text. Below it are tabs for 'cdavis-org' and 'staging'. The main content area is divided into two panels. The top panel is for the 'staging' environment, showing 'APPLICATIONS' and 'SERVICES'. The bottom panel is for the 'production' environment, also showing 'APPLICATIONS' and 'SERVICES'. The 'production' panel includes a table with columns 'SERVICE INSTANCE', 'SERVICE PLAN', and 'BOUND APPS'. The table lists two instances: 'tridentmessaging' with plan 'CloudAMQP lemur' and 'tridentdb' with plan 'CleanDB MySQL Database spark'. Each instance has links for 'Manage', 'Documentation', 'Support', and 'Delete'.

SERVICE INSTANCE	SERVICE PLAN	BOUND APPS
tridentmessaging	CloudAMQP lemur	0
tridentdb	CleanDB MySQL Database spark	0



Feb 04, 2014



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Browse code ➔



Spring Cloud Connector

```
cf bind-service traderfront tradersql
```

New:

```
<cloud:data-source id="dataSource" service-name="tradersql">
  <cloud:connection
    properties="sessionVariables=sql_mode='ANSI';
               characterEncoding=UTF-8;defaultTransactionIsolation=2"/>
  <cloud:pool pool-size="2" max-wait-time="200" />
</cloud:data-source>
```

OR

```
<cloud:data-source id="dataSource">
  ...
```

```
VCAP_SERVICES={
  "cleardb-n/a": [
    {
      "name": "tradersql",
      "label": "cleardb-n/a",
      "tags": [
        "mysql",
        "relational"
      ],
      "plan": "spark",
      "credentials": {
        "jdbcUrl": "jdbc:mysql://baf8a1e6a292a2:79581497@us-cdbr-east-05.cleardb.net:3306/ad_595d583f143adee",
        "uri": "mysql://baf8a1e6a292a2:79581497@us-cdbr-east-05.cleardb.net:3306/ad_595d583f143adee?reconnect=true",
        "name": "ad_595d583f143adee",
        "hostname": "us-cdbr-east-05.cleardb.net",
        "port": "3306",
        "username": "baf8a1e6a292a2",
        "password": "79581497"
      }
    },
    {
      "name": "tradermessaging",
      "label": "cloudamqp-n/a",
      "tags": [
        "amqp",
        "rabbitmq"
      ],
      "plan": "lemur",
      "credentials": {
        "uri": "amqp://klrddpgee:mlpx_XtpEY7eJg-rG489FRs-J-jArqP6Qtiger.cloudamqp.com/klrddpgee"
      }
    }
  ]
}
```

VCAP_SERVICES locally

Feb 11, 2014



reduce duplication in app manifest

cdavisafc authored 22 days ago

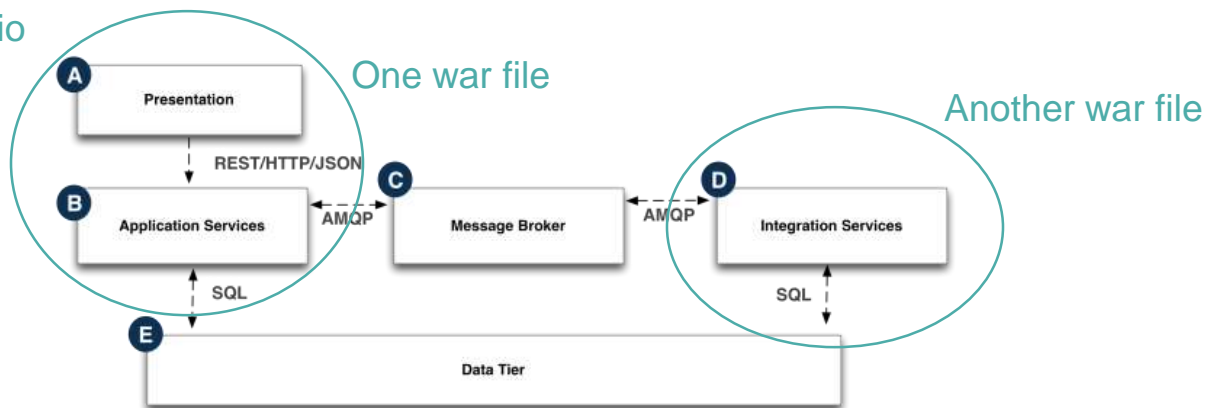
6253717c2d

Browse code



(Big-A) Applications and Manifests

<http://traderfront.cfapps.io>



Feb 11, 2014



reduce duplication in app manifest

cdavisafc authored 22 days ago

6253717c2d

[Browse code](#)



(Big-A) Applications and Manifests

timeout: 180

memory: 1G

domain: cfapps.io

instances: 1

services:

- tradersql

- tradermessaging

applications:

- name: traderback

 - path: dist/spring-nanotrader-asynch-services-1.0.1.BUILD-SNAPSHOT.war

 - host: traderback

- name: traderfront

 - path: dist/spring-nanotrader-services-1.0.1.BUILD-SNAPSHOT.war

 - host: traderfront

Global properties apply to all applications

Feb 20, 2014



change size of DB connection pool to make runnable with free tier of c...

cdavisaf authored 13 days ago

7d8f8b2ba7

Browse code ➔



Services Marketplace and Plans

```
<cloud:data-source id="dataSource">
  <cloud:connection
    properties="sessionVariables=sql_mode='ANSI';
               characterEncoding=UTF-8;defaultTransactionIsolation=2"/>
  <cloud:pool pool-size="2" max-wait-time="200" />
</cloud:data-source>
```

spark	free
boost	\$30.00/MONTH
amp	\$50.00/MONTH
shock	\$100.00/MONTH

- ✓ Price: FREE!
- ✓ DB size: up to 5 MB
- ✓ Connections: 4
- ✓ I/O Performance: Low
- ✓ Daily Backups
- ✓ Perfect for proof-of-concept and initial development.

[BUY THIS PLAN](#)

Mar 04, 2014



add spring-cloud config of rabbitmq service binding

cdavisafc authored 9 hours ago

b0f614b8e8

Browse code ➡



Auto-reconfiguration

Old:

```
<rabbit:connection-factory id="connectionFactory"
                             host="${NANO_RABBIT_HOST:localhost}"
                             port="${NANO_RABBIT_PORT:5672}"/>
```

New:

```
<cloud:rabbit-connection-factory id="connectionFactory"/>
```

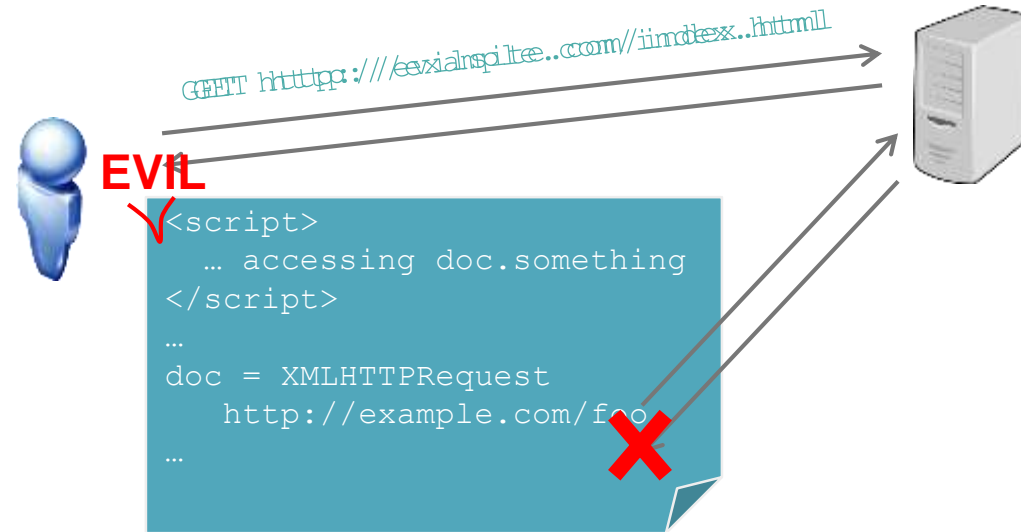
USE AUTORECONFIGURATION WITH CARE!! (esp. in production)



add CORS filter for cross site scripting between web tier and service...

cdavisaf authored 5 days ago

Deal with Cross-site Scripting



When different domains:

- Request will be sent
- Browser will not make response available

To accommodate:

- Service lists domains from which requests will be allowed

CORS Filter

add spring-cloud extension for http-based web services

cdavisafc authored 5 days ago

add servlet to retrieve web service uri from service binding



Spring Cloud Connector Extension: HTTP Web Service

SpringCloud Connector built in:

- Amqp
- Mongo
- Monitoring
- Mysql
- Oracle
- Postgresql
- Redis
- Smtip

```
public class BasicHttpWebServiceInfo extends UriBasedServiceInfo {  
  
    public BasicHttpWebServiceInfo(String id, String host,  
                                   int port, String username,  
                                   String password, String virtualHost)  
    {  
        super(id, "http", host, port, username, password, virtualHost);  
    }  
  
    public BasicHttpWebServiceInfo(String id, String uri)  
                                   throws CloudException {  
        super(id, uri);  
    }  
  
    ...  
}
```

add spring-cloud extension for http-based web services

cdavisafc authored 5 days ago

add servlet to retrieve web service uri from service binding



Spring Cloud Connector Extension: HTTP Web Service

```
public class BasicHttpWebServiceInfoCreator extends CloudFoundryServiceInfoCreator<BasicHttpWebServiceInfo>{

    public BasicHttpWebServiceInfoCreator() {
        super(new Tags(), "http");
    }

    public BasicHttpWebServiceInfo createServiceInfo(Map<String, Object> serviceData) {
        @SuppressWarnings("unchecked")
        Map<String, Object> credentials = (Map<String, Object>) serviceData.get("credentials");

        String id = (String) serviceData.get("name");

        String uri = getStringFromCredentials(credentials, "uri", "url");

        return new BasicHttpWebServiceInfo(id, uri);
    }
}
```

Here's the tricky part:

Put a file called `org.springframework.cloud.cloudfoundry.CloudFoundryServiceInfoCreator` on your classpath containing

`com.gopivotal.cloudfoundry.example.springcloud.BasicHttpWebServiceInfoCreator`

<https://github.com/spring-cloud/spring-cloud-connectors/tree/master/spring-cloud-core>

Feb 04, 2014



make deployable to cloud foundry ...

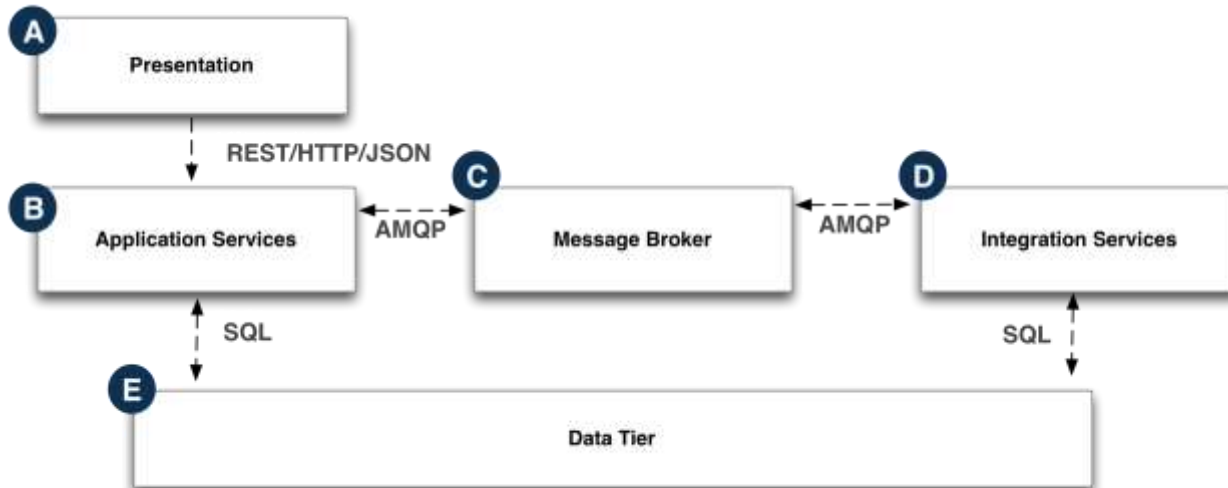
cdavisafc authored a month ago

e576042269

[Browse code](#)



Cross-site Scripting





add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago



Apps as Services

```
cf create-service ... tradersql  
cf create-service ... tradermessaging
```

Message Broker

Data Tier



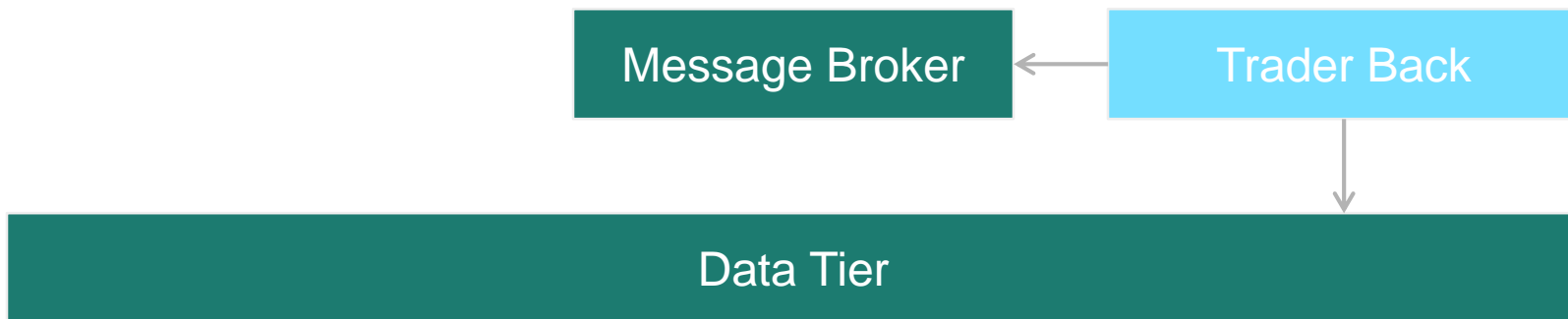
add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago



Apps as Services

```
cf push traderback  
cf bind-service traderback stsqr  
cf bind-service traderback stmessaging
```





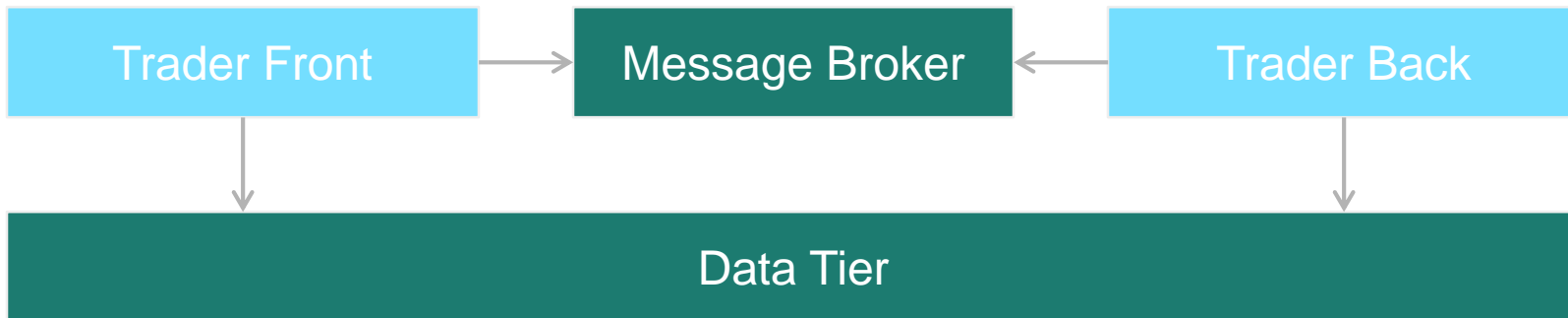
add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago



Apps as Services

```
cf push traderfront  
cf bind-service traderfront stsdb  
cf bind-service traderfront stmessaging
```



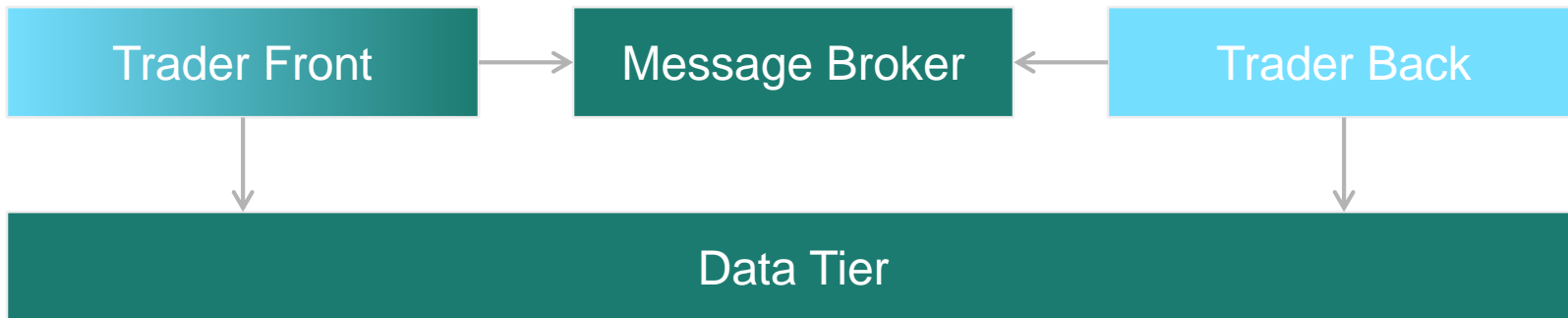
add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago



Apps as Services

```
cf cups traderfront  
-p '{"uri":  
    "http://traderfront.cfapps.io/api/"}'
```

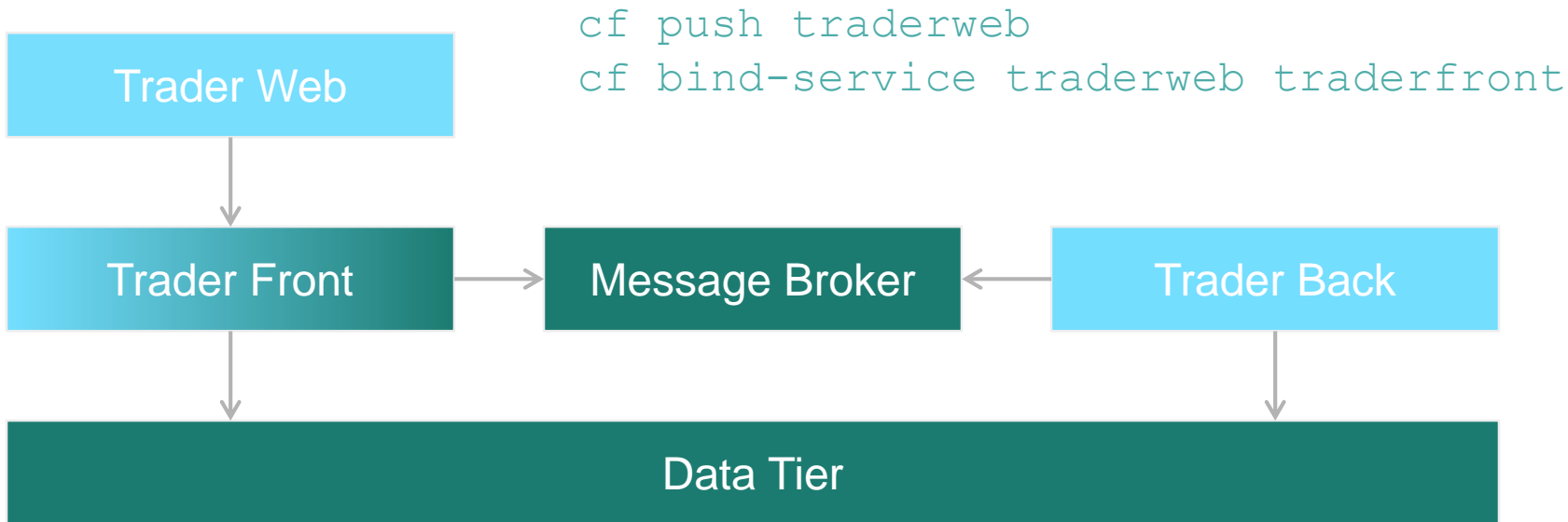


add scripts for deployment and deletion of deployment

cdavisafc authored 5 days ago

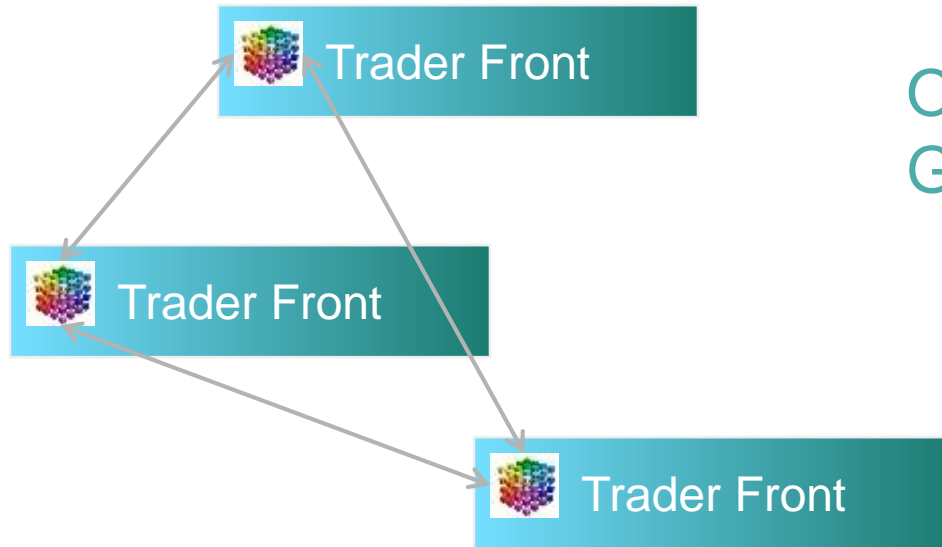


Apps as Services



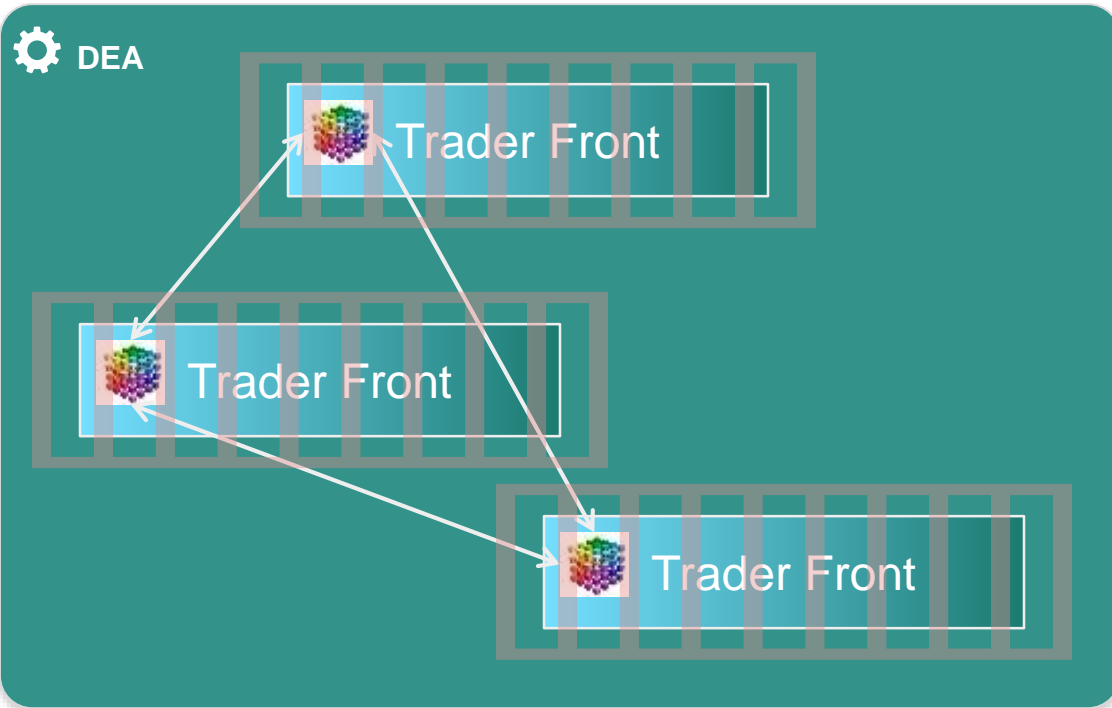


Session State Caching



Originally designed to use
Gemfire peer to peer

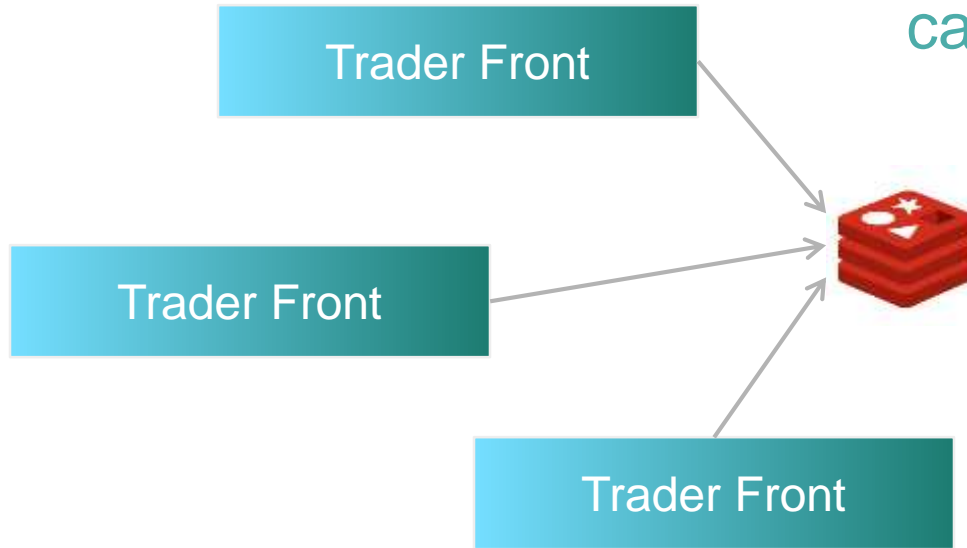
Session State Caching



Firewalled application
containers restrict this!

Session State Caching

Redis for session state
caching – Java buildpack v2.1



**Pull Requests
Welcome!!**

<https://github.com/cloudfoundry/java-buildpack/blob/master/docs/container-tomcat.md#session-replication>

... to here

Getting Started Guide

- Prerequisite Software
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- Using springtrader template in STS

Getting Started Guide

- Prerequisite Software
- Installation and Configuration
 - Build SpringTrader
 - Create Service Instances
 - Push Application Components
- Run SpringTrader
- Deploy from STS



Learn More. Stay Connected

- Try it out!
 - Register for a free trial account at run.pivotal.io
 - <https://github.com/cf-platform-eng/springtrader-cf>
- Further Sessions:
 - 10:45: Simplify Cloud Applications using Spring Cloud
 - 2:30: Developing Microservices for PaaS with Spring and Cloud Foundry



Thank you!

Contents

- Title slide
- Contents
- Using this template
 - Intro
 - Inserting slide & applying layout
 - Layouts
 - Fonts
 - Colors
 - Notes for reviewers
- Logos and clip art
 - Logos
 - Event logos and icons
 - Project icons
 - Tool suite icons
 - Document icons
 - Additional icons
 - Clip art
 - Clip art

Using this Template

Intro

This template has been carefully prepared with specific layouts, colors, fonts and more. This short intro will outline the basic components of this template.

Note: This template includes slides with approved color palette, fonts, logos and clip art. It's a good idea to keep these slides in order to quickly access these assets then delete the slides when you have finished creating your presentation.

Inserting New Slides and Applying Layouts

- To create different types of slides, select New Slide and apply desired Layout
- If you make formatting changes to a slide and want to reapply the default settings, click Reset



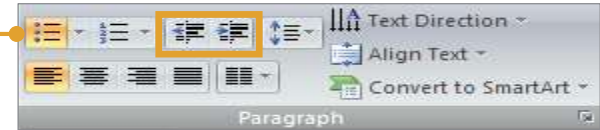
Layouts

There are 11 layouts

- Title Slide – Presentation title with author name and contact info. Use only once in presentation.
- Title Only – Standard slide with no text content box, do not use for section title
- Title and Content (1 Col) – Standard slide with title and text content box
- Title and Content (2 Col) – Standard slide with title and two text content boxes
- Comparison – Standard slide with title and two text content boxes with subtitles
- Section Title – Use between sections
- Table – Quick and easy way to get a table with brand colors
- Bar Chart – Quick and easy way to get a bar chart with brand colors
- Line Chart – Quick and easy way to get a line chart with brand colors
- Pie Chart – Quick and easy way to get a pie chart with brand colors
- Code Formatting – Quick and easy way to get preferred code formatting

Fonts – Title (24pt, bold)

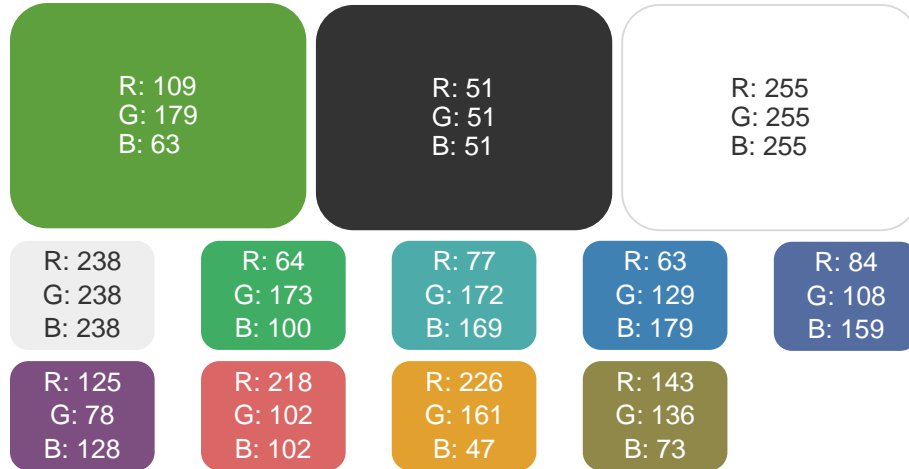
- All body text is Arial
- Subhead (22pt)
 - Level Two (18pt)
 - Level Three (16pt)
 - Level Four (16pt)
- Use the “Decrease/Increase Indent” tools to change bullet levels
 - Click on the **Home** ribbon, **Paragraph** tab
- Line spacing is set in master slides



Brand Colors



SpringOne 2GX 2014 Theme Colors



Spring Brand Colors



Notes for Reviewers

To provide comments, click the speech icon.

If you're viewing this deck online, the icon is in the footer

If you're a collaborator, the icon is on the lower left hand side

To view the proposed dialog for each slide, you need to be added as a collaborator, login to SlideShare, then View > Show Notes.

To be added as a collaborator (which also allows slide editing), please setup a SlideRocket account with your VMware address and email Ben.

Logos and Clip Art

Logos



GRAILS



CLOUD FOUNDRY™



Event Logos and Icons



Project Icons



Spring
Framework



Spring
Security



Spring
Data



Spring
Batch



Spring
Integration



Spring
Reactor



Spring
AMQP



Spring
Hateoas



Spring
Mobile



Spring
Android



Spring
Social



Groovy



Spring
Web Services



Spring
Web Flow



Spring
XD



Spring
Boot



Spring
LDAP



Grails

Tool Suite Icons

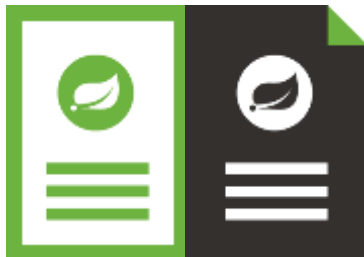


Spring Tool Suite



Groovy / Grails Tool Suite

Document Icons



Spring Framework



Support



Tools



Guides



Tutorials



Reference App

Additional Icons



Twitter



Github



Stack
Overflow



Continuous
Integration



Issues



Metrics



Forums /
Discussion



Blog



@



All



Author



Broadcast



Date



Engineering



News
Event



Releases



Apple



Linux



Windows



Professional
Support



Community
Support



Location

Clip Art



Clip Art

