

# INDEX

SAN FRANCISCO

Discover. Collaborate. Deploy.

## Cloud Foundry Basics

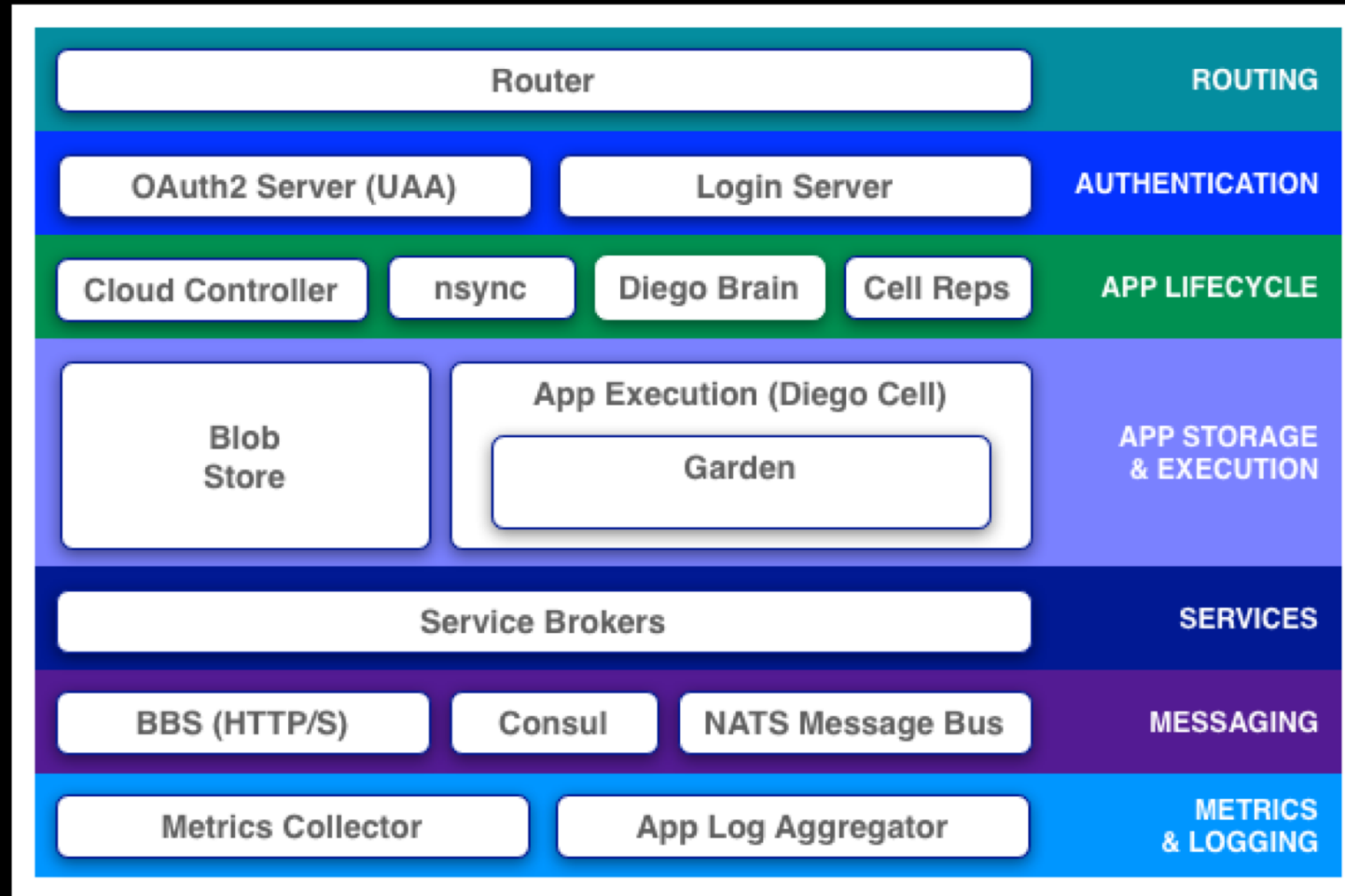
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# Agenda

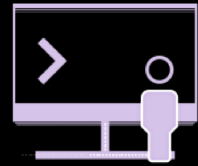
- Introduction
- Lab 1 – hands on with Cloud Foundry on IBM Cloud
- Cloud Foundry Basics  $\leq$  you are here!
- Lab 2 – hands on with Cloud Foundry CLI
- The 12-factors and IBM Cloud Foundry
- Lab 3 – Using toolchains for CD of Cloud Foundry apps

# Cloud Foundry component architecture

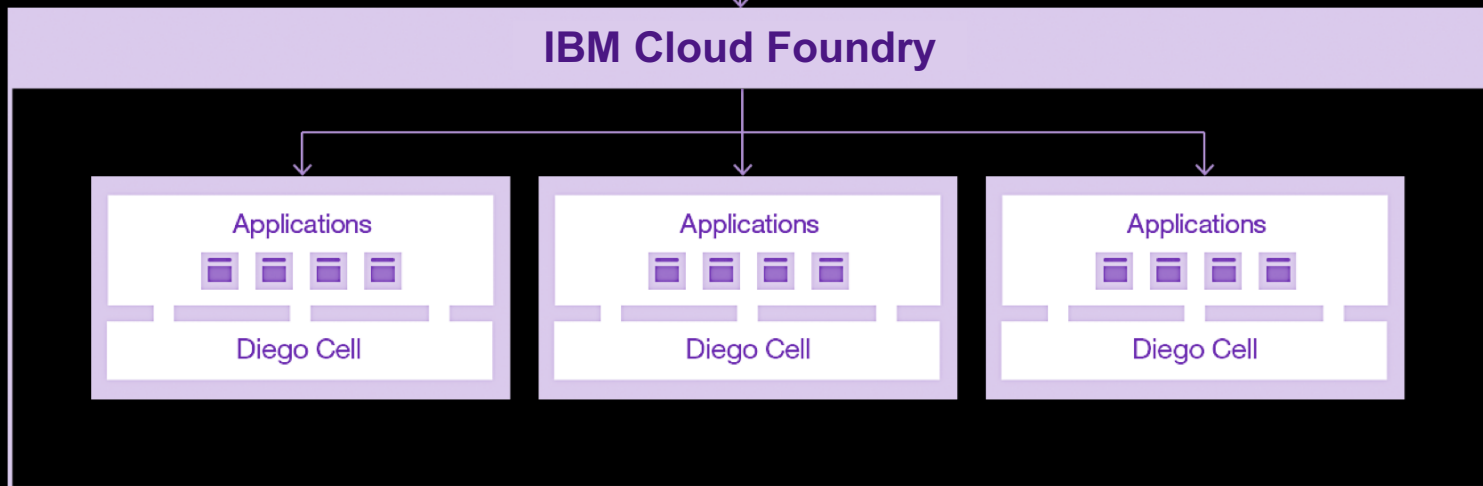


<http://docs.cloudfoundry.org/concepts/architecture/>

# Cloud Foundry Application Lifecycle



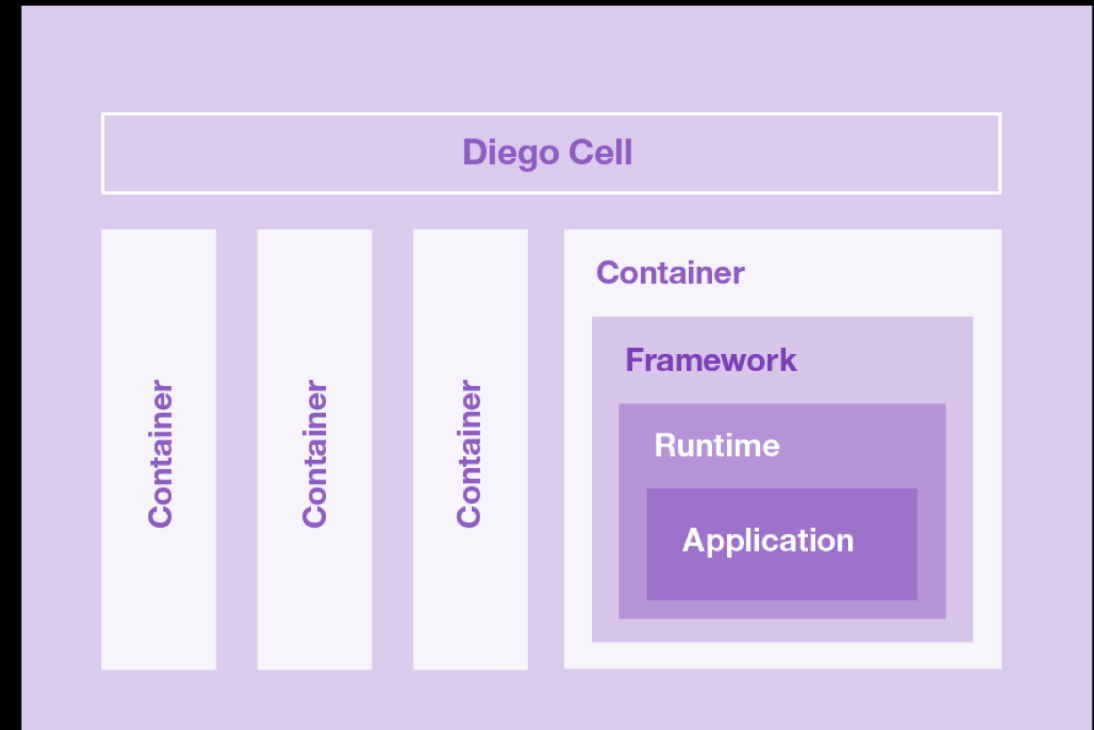
**Application developer:**  
Deploys an application with  
a runtime and framework.



1. Upload application components and metadata
2. Create and bind services
3. Stage application
4. Deploy application
5. Manage application health

# Buildpacks provide support for a language runtime

- Buildpack
  - collection of scripts
  - app framework dependencies
  - prepares runtime
  - packages application into a droplet for deployment
- Automatically selected



Simplifies Cloud deployment – just provide your application code

# Language Runtimes

- IBM provided and supported (on IBM Cloud Foundry)
  - Liberty for Java
  - SDK for Node.js
  - ASP.NET Core
  - Swift
- Community Buildpacks (from Cloud Foundry Community)
  - Java
  - Node.js
  - PHP
  - Ruby
  - Python
  - Go

# IBM Cloud Foundry Services

- A *service* is a application extension that is used over a network
- Building blocks of applications in PaaS or IaaS to add features
- Watson, Internet of Things, Analytics, Object Storage, Mobile and more
- The service provides functionality that is ready-for-use by the application code.
  - Services available from IBM, third-party providers, and open source communities



Cloud Foundry applications get access to service credentials through binding

Once bound, the environment contains credentials and service endpoints

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# Managed Services and User-Provided Services

- Managed Services
  - Available from IBM Cloud Foundry catalog and implement Open Service Broker API\*
  - Ordered through catalog, via web UI or CLI
- User-Provided Services
  - Created by the user to provide credentials to external services
  - Configure through CLI
  - Also used to configure external syslog drain

## User-provided service examples:

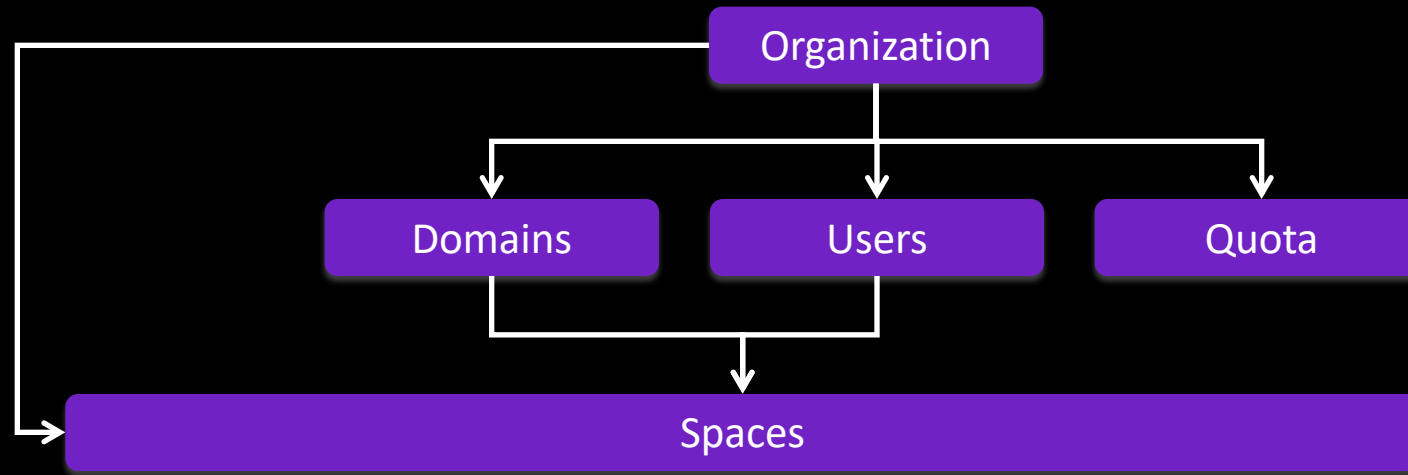
```
cf create-user-provided-create SERVICE_INSTANCE_NAME -p '{"username":"admin","password":"pa55woRD"}'  
cf create-user-provided-create SERVICE_INSTANCE_NAME -l syslog://example.log-aggregator.com
```

\*<https://github.com/openservicebrokerapi/servicebroker>

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# Organization - The grouping methodology in Cloud Foundry



- Contains domains, spaces, users and quota. Organization name must be unique in Cloud Foundry
  - Users in an org **share** memory and service instance quotas
  - Administrator can use *Manage Organizations* page to view and manage
  - Can be used to collaborate between users and to facilitate the logical grouping of project resources
  - When deleting an organization, all the spaces, applications, and services within the organization **are deleted**.
-

# Cloud Foundry Command Line Interface Summary

- CloudFoundry command line interface (CLI) shorthand
  - `cf` – A command line tool to interact with Cloud Foundry
  - `cf help` – provides help page showing all the commands
  - `cf help <command>` - provides help for specific command

<code>cf l</code> - login	<code>cf m</code> – list available catalog offerings
<code>cf t</code> – target space or organization	<code>cf s</code> – show service info
<code>cf p</code> – push (deploy or update) app	<code>cf cs</code> – create service
<code>cf a</code> – list apps in current space	<code>cf bs</code> – bind service to application
<code>cf app &lt;appname&gt;</code> - display status for specific app in current space	<code>cf ds</code> – delete service
<code>cf st</code> – start app	<code>cf scale</code> – scale app
<code>cf sp</code> – stop app	<code>cf logs</code> – tail or show logs for app
<code>cf d</code> – delete app	<code>cf r</code> – list all routes in current space

# Deploying applications with CLI

Run from top level folder of application, command-line options override manifest settings

1. `cf login -a https://region.api.bluemix.net [-u user] [-p passwd]`
2. `cf push [APP] [-b URL] [-c COMMAND] [-d DOMAIN] [-i NUM_INSTANCES] [-m MEMORY] [-n HOST] [-p PATH] [-s STACK] [--no-hostname] [--no-route] [--no-start]`

```
---
applications:
- name: GetStartedJava
  path: target/GetStartedJava.war
  memory: 256M
  instances: 1
  host: myhostname
```

Application name – **mandatory** in manifest or command line

Where to find application bits

Hostname to append to domain to form route: myhostname.mybluemix.net

<https://docs.cloudfoundry.org/devguide/deploy-apps/manifest.html>

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# Managing applications with CLI

```
cf logs <appname> [--recent]
```

Stream log events from application and Cloud Foundry components. When using --recent, a buffer of recent events is displayed instead of the stream.

```
cf ssh <appname>
```

Establish an ssh session to the diego container running the application. Enables access to liberty messages.log, setup of tracing or triggering dumps. **Note:** the container filesystem is not persistent and any changes made using ssh will be lost on restart/restage/redeploy.

```
cf env <appname>
```

Display the environment variables for the application instance(s).

<https://docs.cloudfoundry.org/cf-cli/cf-help.html>

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# Lab 2 – Use Cloud Foundry CLI

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