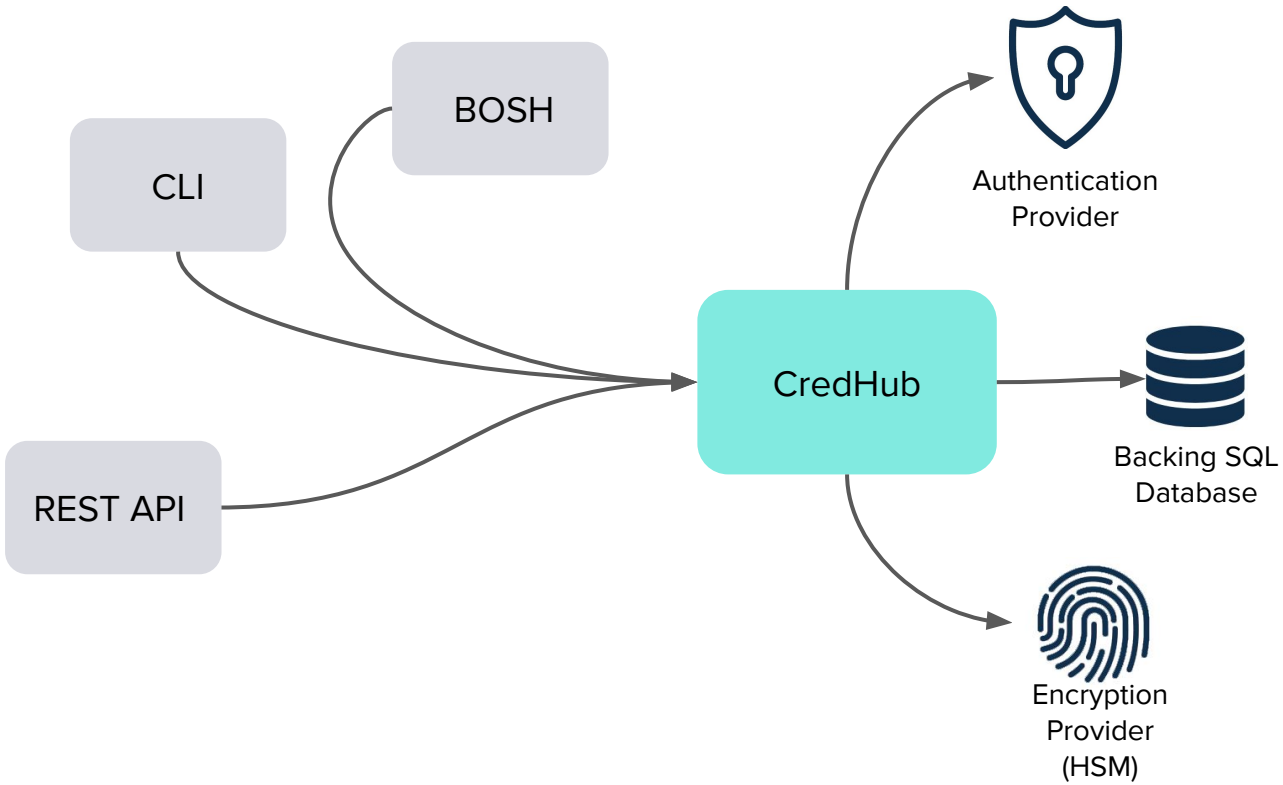
Pivotal

CredHub

Architecture



Credential Types

value - a simple string, used for configuration and other non-generated properties

password - a simple string, used for generated secrets

user - username and password pair

json - a JSON object

certificate - an object containing a root CA, certificate and private key

rsa - an object containing an RSA public key and private key

ssh - an object containing an SSH-formatted public key and private key

http://docs.cloudfoundry.org/credhub/credential-types.html

REST API

Secured via Mutual TLS, and/or OAuth2

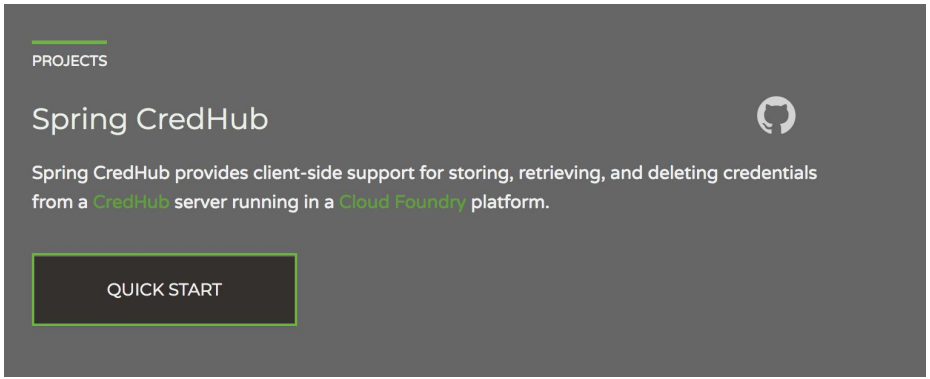
Get/Set/Generate/Delete **Credential**

Get/Add/Delete **Permission**

Interpolate VCAP_SERVICES

https://credhub-api.cfapps.io

Spring CredHub



Java mapping to CredHub REST API

Supports all credential types and operations

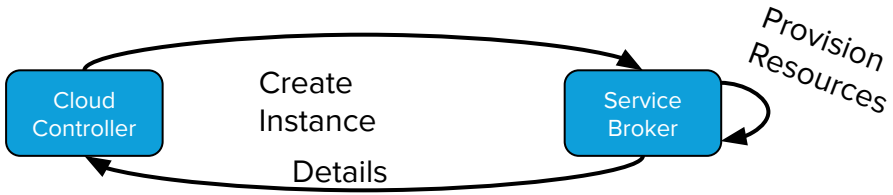
Spring Boot auto-configuration support

Apps deployed to CF with Java Buildpack automatically negotiate mutual TLS

Service Bindings

```
$ cf create-service service-name plan
   service-instance-name

$ cf bind-service app-name service-instance-name
```




```
“credentials”: {
  “uri”: “https://service-6yQVNrhZVP.example.com”,
  “username”: “VofTuQk2BH”,
  “password”: “fRqah7Wygi” }
```

Service Bindings

```
$ cf env app-name
“VCAP_SERVICES”: {
  “service-name”: [{
    “credentials”: {
      “uri”: “https://service-6yQVNrhZVP.example.com”,
      “username”: “VofTuQk2BH”,
      “password”: “fRqah7Wygi”
    },
  }]
}
```

Where Binding Credentials Live

Cloud Controller database (encrypted)

Cloud Controller REST API responses

- `/v2/apps/:guid/env`
- `/v2/service_bindings/:guid`

Staged application droplets

`cf ssh`

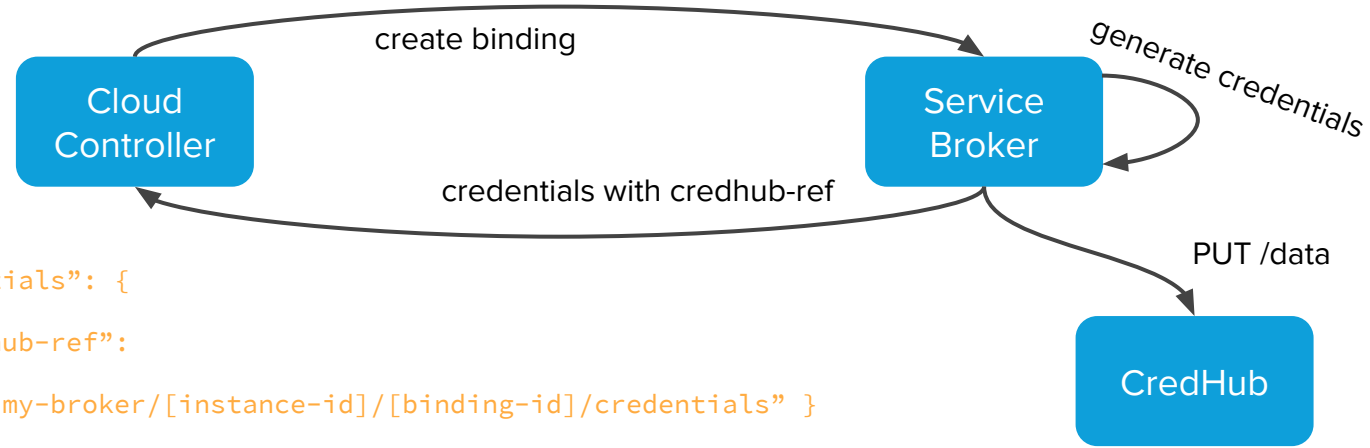
Manual `ssh`

Process Environment

Application Memory

Service Bindings With CredHub

```
$ cf bind-service app-name service-instance-name
```




```
“credentials”: {
  “credhub-ref”:
    “/c/my-broker/[instance-id]/[binding-id]/credentials” }
```

```
“credentials”: {
  “uri”: “https://service-6yQVNrhZVP.example.com”,
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Service Bindings

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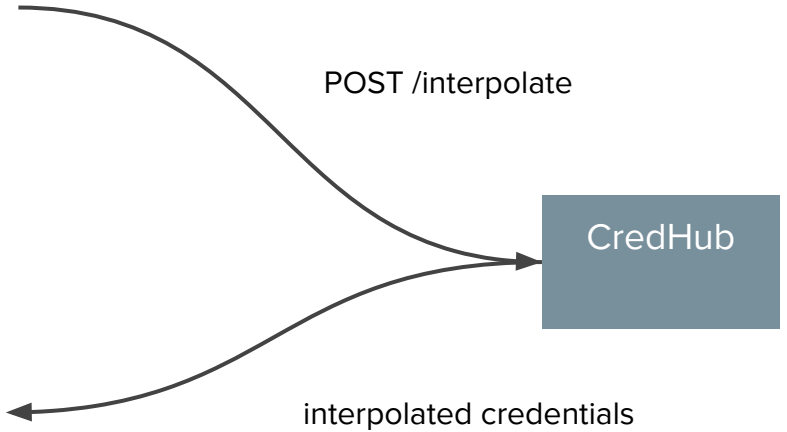
  “service-name”: [{
    “credentials”: {
      “credhub-ref”:
“/c/my-broker/[instance-id]/[binding-id]/credentials”
    },
  }]
}
```

Credential Interpolation

```
"VCAP_SERVICES": {
  "my-service": [{
    "credentials": {
      "credhub-ref": "/c/my-broker/1111/2222/credentials"
    },
  }]
}
```

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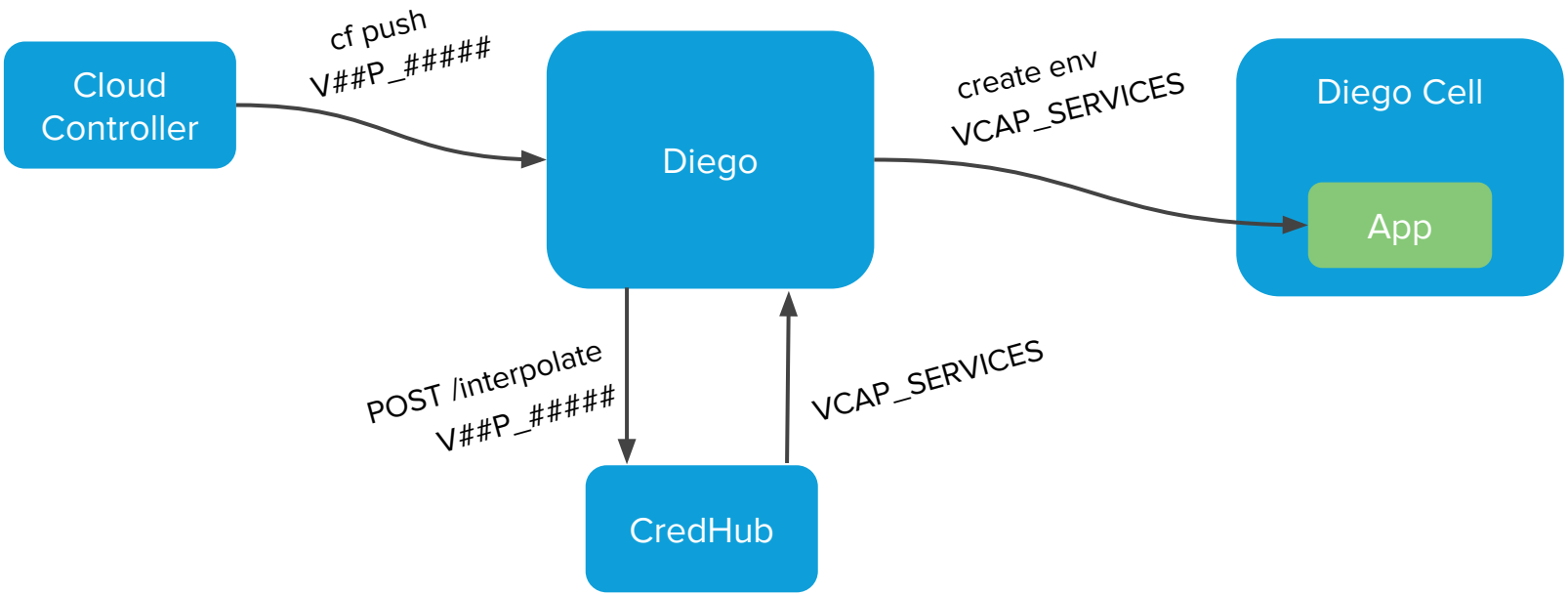
    },
  }]
}
```

Assisted Credential Resolution

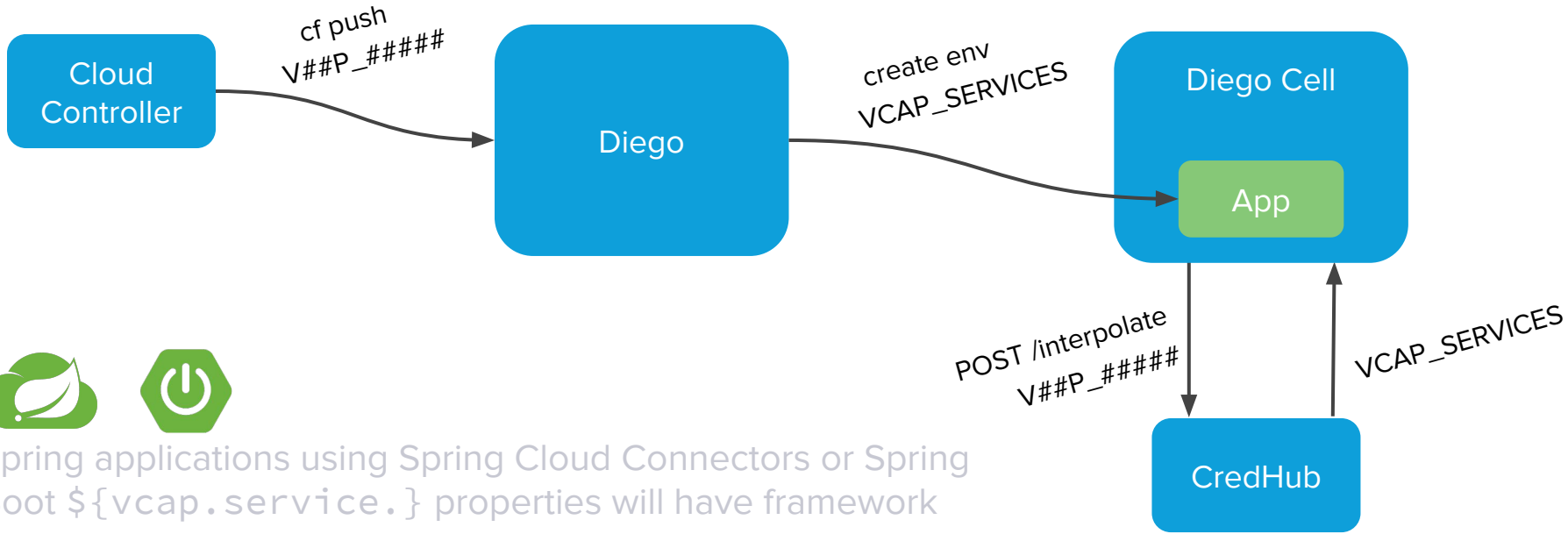


Application Benefits of Using CredHub

Assisted Mode

- Cloud Controller database (encrypted)
- Cloud Controller REST API responses
  - `/v2/apps/:guid/env`
  - `/v2/service_bindings/:guid`
- Staged application droplets
- `cf ssh`

Non-Assisted Credential Resolution



Spring applications using Spring Cloud Connectors or Spring Boot `${vcap.service.}` properties will have framework support to automate resolution

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Non-Assisted Mode

- Cloud Controller database (encrypted)
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- Process Environment

  Application Memory

Availability

CLOUD FOUNDRY

CredHub bits are included in *cf-deployment* since version v0.36.0

Deployment manifest customization required to enable secure service binding credentials workflow

Pivotal Cloud Foundry®

Starting in Pivotal CF 2.0

- Secure service binding credentials support can be enabled or disabled in PAS tile configuration
- Assisted mode only

Service brokers will be updated to support secure binding credentials on their own release schedules