Cloud Foundry Services

Introduction and Overview

What is a Service?
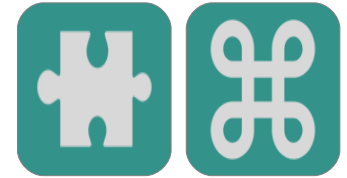What Services are available?

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Roadmap

- **Services**
- Managed (Marketplace) Services
- Pivotal CF Standard Services
- PWS and App Direct Services

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Cloud Foundry Services
What is a service?

- **Service** is an **external** application **dependency** or **component** such as
  - Database
  - Message Queue
  - Monitoring App
  - Security
  - Hadoop instance
  - Generic Service Endpoint (Web Services)
  - Other dependent applications

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Cloud Foundry Services
Features and Functionality

- Provide *functionality* to your applications
- *External* to your applications
  - Add-on provisioned alongside an application.
- May be *shared* among many applications
  - Example – Relational DB, Messaging system
- Are *bound* to (associated with) an application
  - Using a "Service Broker"
- Provide connection information to application via environment variables
  - `VCAP_SERVICES`

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Cloud Foundry Services
Why use a service?

- Applications are the deployment unit
  - Must be self-contained
  - Anything else they need is provided by the PaaS
    - By a service
- Services in a PaaS are
  - One of the main possible charging units / elements
    - Instead of hardware resources like an IaaS
  - Make commercial PaaS possible
  - Enable charge-back in your organization

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Cloud Foundry Services
Two Types of Services


CF Managed

- Managed Services (a.k.a. *"Marketplace"* Services)
  - Available 'out-of-the-box'
  - Selected from marketplace 'catalog'
  - Instances provisioned by PaaS, for use by application

User Managed

- User Defined Services
  - Services running external to Cloud Foundry
  - Connection information stored and used to connect
  - PaaS does not provision resources, only supplies connection information.

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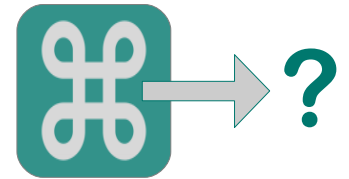
Accessing External Services

- Typically these exist already
  - Your ERP and CRM systems (Oracle, SAP ...)
  - Mainframe and other legacy applications
  - Applications developed/running in-house
  - Cloud-based services such as sales, CRM or payroll
- Two options
  - User-defined Service
    - Your ops people continue to manage and provision
  - Custom Service
    - CF uses service-broker to provision and bind

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Cloud Foundry Services
Custom Services

Also CF Managed

- **Custom Built Services**
  - Custom service created and installed into Cloud Foundry
    - Looks like any other managed service once added
    - Appears in the Marketplace
  - Alternative to user-defined services
    - Full integration with CF

- **Requirements**
  - Custom development of *service broker* by *developer*
  - And *operator* installation into Cloud Foundry
  - Optionally create an Ops Manager *Tile*

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Services Summary

- Question: Within a Cloud Foundry App, How do I…
    - Connect to a relational database?
    - Connect to a messaging system?
    - Connect to an email system?
    - Utilize NoSql databases?
    - Read and write files
    - Save and retrieve sessions
    - Access anything *not* coded in my application
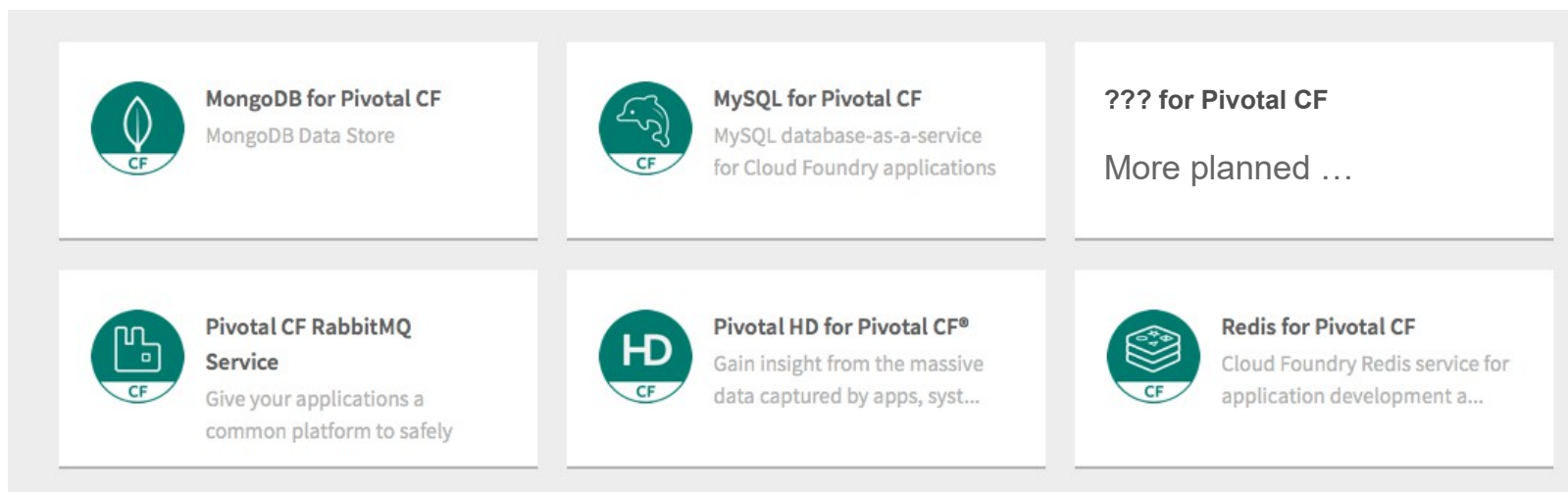
- **Answer: Via Services**

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Roadmap

- Services
- **Managed (Marketplace) Services**
- Pivotal Cloud Foundry Standard Services
- PWS and App Direct Services

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Accessing Managed Services

- Easily available via *Marketplace*
  - Allow you to sign-up, select plans, etc
  - Once bound to application, can be used easily
- Many pre-packaged services for Pivotal CF
  - See https://network.pivotal.io/products

Managed Services

- Services preconfigured and made available to Cloud Foundry
  - Typically by operations personnel
- On-premise/private cloud
  - Your company controls what is available
  - Services typically run in your data-centre
- Public cloud
  - Cloud provider controlled
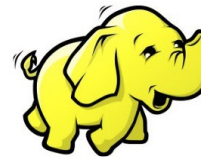 - Services may run *anywhere* – locality considerations

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Roadmap

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- **Pivotal CF Standard Services**
- PWS and App Direct Services
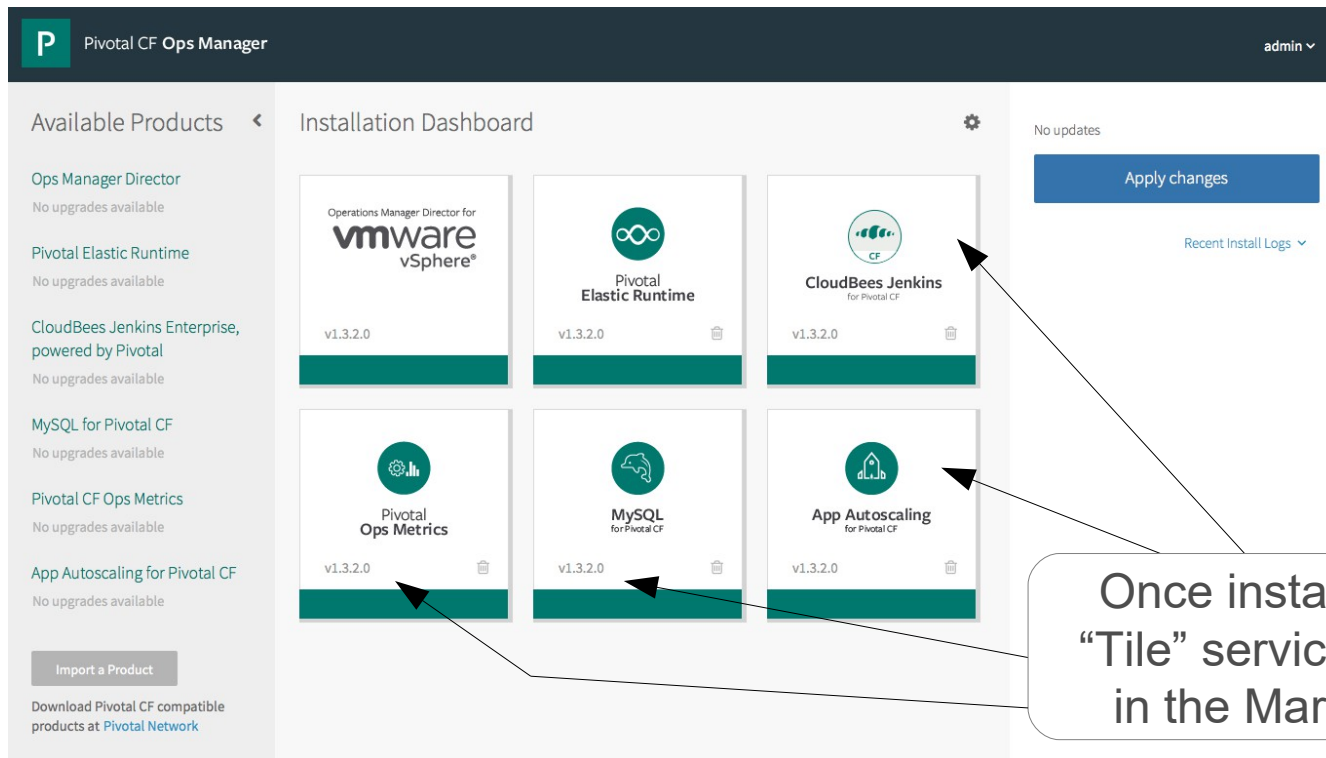
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Pivotal CF Services
What Services are Available

- Whatever your company chooses
  - Services added after Pivotal CF installation by Ops
  - Available as `.pivotal` files from Pivotal Network
    - See: https://network.pivotal.io
- PCF provides many services
  - They may not be available to your private cloud

Pivotal CF Services

- Typically installed by PCF Operators as "Tiles"
  - Each tile sets up service by deploying its service broker

Once installed each "Tile" service appears in the Marketplace

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Pivotal Services

- PCF supplies many service "Tiles"
  - MySQL (MariaDB)
  - Rabbit/MQ
  - MongoDB, Redis, Riak, Neo4j, Gemfire, Cassandra ...
  - Jenkins CI
  - Autoscaler
- *Only* available in Marketplace if *Tile* previously deployed by PCF *Operators*
  - Developers can only create instances of services already in the marketplace

Roadmap

- Services
- Managed (Marketplace) Services
- Pivotal Cloud Foundry Standard Services
- **PWS and App Direct**

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Pivotal Web Services (PWS)

- Public Cloud Foundry instance
  - Hosted on AWS
  - Provides extensive marketplace of services via *App Direct*
    - Some free
    - Some pay-per use
  - Examples
    - Postgres DB, MySQL, MongoDB, Redis
    - Rabbit MQ
    - Blazemeter monitoring
    - Many, many more ...

Pivotal Web Services (PWS)
Marketplace Home Page in App Manager Console

App-Direct

- Commercial provider of services
  - Provide third-party service *market*
    - Teamed up with well-known providers, like Redis Labs
    - Various plans and fees
  - The provider of services offered by PWS
  - Your company *may* choose to use App-Direct as well
- Services run by *providers*
  - For example a Redis instance would run at Redis Labs
  - *External* to your data-centre
  - Locality issues: performance, connectivity, security, legal

PWS Cloud-Foundry Services

- Marketplace services in PWS offered via App-Direct

http://www.appdirect.com
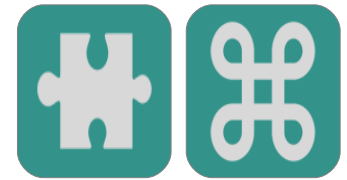
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Running Cloud Foundry *On Premise*

- All services typically run in your data-centre
  - Many may already exist
    - Databases, message-brokers, mail servers …
  - CF ops decide what services to install and/or make available to applications
- Your company *may* choose to use third-party services
  - For services it does not wish to manage
  - Cloud-based services such as sales, CRM, payroll
  - And/or a Commercial provider like AppDirect

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Using a Public Service

- Services provided for you by your cloud provider
  - For example PWS
  - You have little control over what services are offered
  - Services may or may not be hosted by cloud provider
- Considerations around service location
  - Network reliability
  - Legal jurisdiction of host servers
  - Security

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Services – Summary

- External dependencies your application relies on
  - Connection information provided to application at runtime
- Two types
  - Managed
    - Either predefined (by Pivotal) or Custom (by you)
  - User-Defined
- Many predefined services available
  - MySQL, NoSQL, Mobile, Hadoop, …
- App Direct provides Marketplace services for PWS
  - You *may* choose to use them in your own CF setup

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What You Have Learned

- Services

- Managed (Marketplace) Services

- Pivotal Cloud Foundry Standard Services

- PWS and App Direct Services

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