

Pivotal Cloud Foundry (PCF) on the AWS Cloud

Quick Start Reference Deployment

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Contents

| | |
|---|----|
| Overview..... | 2 |
| PCF on AWS | 3 |
| High Availability for PCF on AWS | 3 |
| Costs and Licenses..... | 3 |
| Architecture..... | 4 |
| Prerequisites | 6 |
| Specialized Knowledge | 6 |
| Technical Requirements..... | 6 |
| Deployment Details..... | 8 |
| Stacks..... | 8 |
| AWS Resources..... | 8 |
| Deployment Steps | 9 |
| Step 1. Prepare Your AWS Account..... | 9 |
| Step 2. Create a Hosted Zone | 9 |
| Step 3. Import the SSL Certificate for Your Domain into AWS Certificate Manager | 10 |
| Step 4. Launch the Quick Start | 10 |

| | |
|---|----|
| Step 5. Test the Deployment | 14 |
| Deleting the PCF Deployment | 16 |
| Delete the Main Stack..... | 16 |
| Delete the S3 Buckets | 17 |
| Deploying Your First Application to PCF | 17 |
| Troubleshooting..... | 17 |
| Using CloudWatch Logs | 17 |
| Using Bootstrap Logs | 17 |
| Advanced Troubleshooting with BOSH | 17 |
| Common Errors | 18 |
| Support | 18 |
| Additional Resources | 18 |
| Send Us Feedback | 19 |
| Document Revisions | 20 |

This Quick Start deployment guide was created by Amazon Web Services (AWS) in partnership with Pivotal.

[Quick Starts](#) are automated reference deployments for key technologies on the AWS Cloud, based on AWS best practices for security and high availability.

Overview

This Quick Start reference deployment guide provides step-by-step instructions for deploying Pivotal Cloud Foundry (PCF) on the AWS Cloud.

[Cloud Foundry](#) is the industry's leading cloud-native application platform, and is used by half of the Fortune 500 corporations. [Pivotal Cloud Foundry](#) (PCF) is the leading commercial distribution of Cloud Foundry. For more information about PCF, see the [Pivotal website](#). For detailed documentation on PCF, see the [Pivotal documentation](#).

PCF on AWS

This Quick Start deploys a single installation of PCF; each installation is called a *PCF foundation*. The PCF foundation is deployed either as a Starter or as a Multi-AZ environment. In the Starter deployment, most jobs will exist in one Availability Zone on a single Amazon Elastic Compute Cloud (Amazon EC2) instance (VM). In the Multi-AZ configuration, jobs will exist in two Availability Zones with redundant instances.

The deployment includes three primary PCF components:

- [Ops Manager](#) – A dashboard that operators and administrators can use to manage their PCF instance
- [Elastic Runtime \(ERT\)](#) – A scalable runtime environment, extensible to most modern frameworks
- [Apps Manager](#) – A tool that helps developers manage applications and service bindings

After you deploy the Quick Start, you can scale the PCF environment by using Pivotal Ops Manager. Once PCF is up and running, you can also install complementary products and services such as [PCF Service Broker for AWS](#), [PCF Metrics](#), [Spring Cloud Services for PCF](#), and [PCF Runtime for Windows](#) from the Ops Manager.

High Availability for PCF on AWS

This Quick Start provides four layers of high availability within the PCF foundation:

- Health management for app instances – New instances are brought online if a failure is detected.
- Monitored processes – Failed platform component processes are automatically restarted.
- Health management for virtual machines – Failed instances are automatically resurrected.
- Availability Zones – If you choose the Multi-AZ configuration, PCF automatically routes traffic across two Availability Zones. If a failure occurs in one zone, traffic is routed to the other zone.

For more information about high availability for PCF, see the [PCF documentation](#).

Costs and Licenses

The Quick Start includes a 90-day free evaluation of Pivotal Cloud Foundry on AWS. You can use the trial version to independently evaluate the platform and its capabilities, or contact Pivotal for a proof of concept installation.

During the Quick Start deployment, you will need to accept the Pivotal Cloud Foundry End User License Agreement (EULA). You must also supply a [Pivotal Network](#) API token, as explained in the [Prerequisites](#) section.

This Quick Start deploys a recent major version of PCF by default. However, there could be a delay before a new PCF version published in the Pivotal Network becomes available in the Quick Start.

You are responsible for the cost of the AWS infrastructure, storage, and data services used while running this Quick Start reference deployment. There is no additional cost for using the Quick Start.

The AWS CloudFormation template for this Quick Start includes configuration parameters for PCF. Some of these settings, such as the deployment size, will affect the cost of deployment.

Architecture

The Quick Start offers two deployment options for PCF:

- **Starter** — This option deploys about 22 EC2 instances. You can scale the platform in the Ops Manager to add more capacity after the initial deployment.
- **Multi-AZ** — This deployment is almost twice the size of the Starter deployment. It includes about 40 EC2 instances spanning two Availability Zones and provides a fourth layer of availability, as discussed earlier.

The Multi-AZ option is designed for near production-grade environments. We recommend that you choose the Starter option if you're evaluating the platform or if you want to begin with a smaller environment and add capacity later.

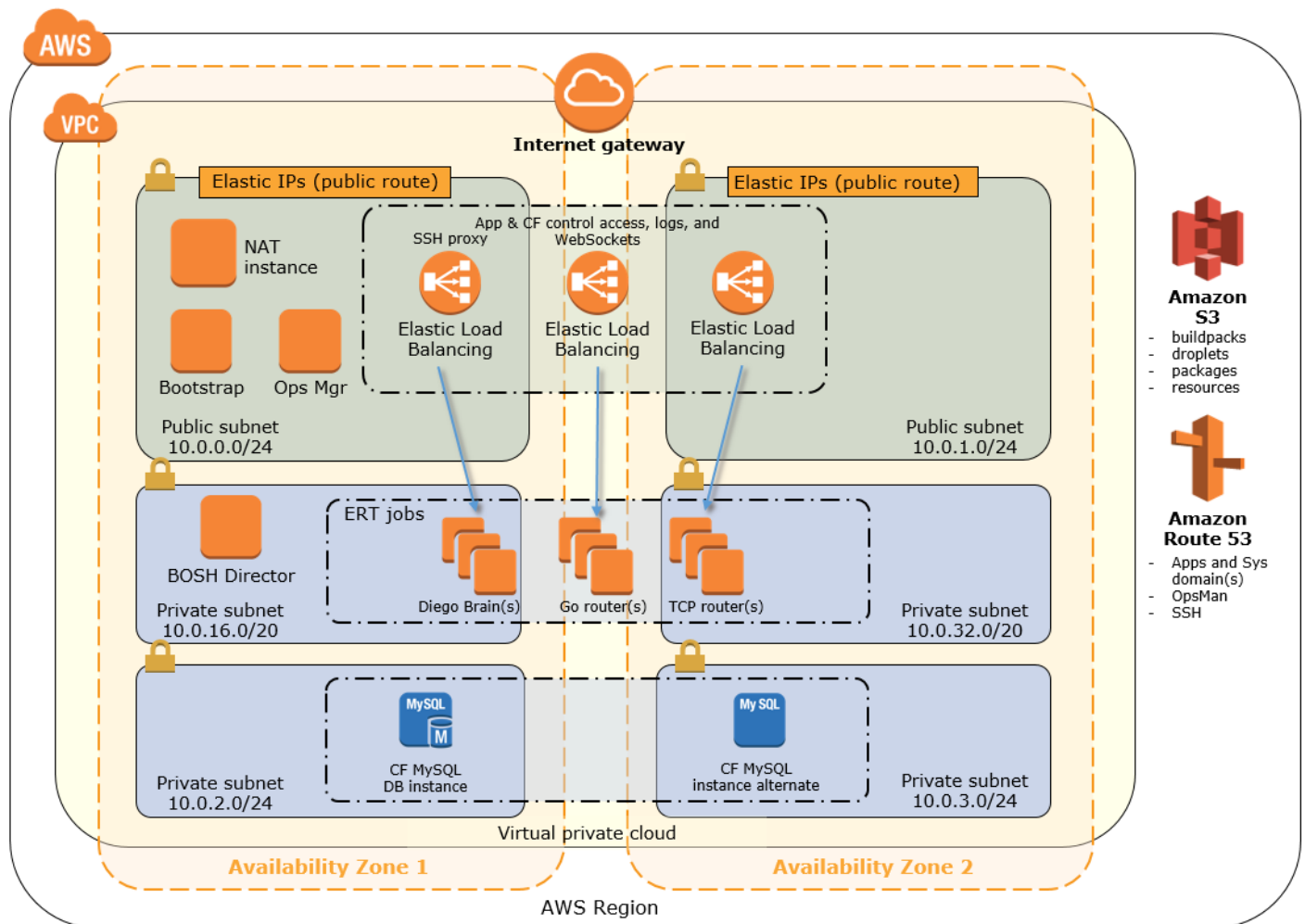


Figure 1: Quick Start architecture for PCF across two Availability Zones on AWS

The Quick Start deploys and configures the following components:

- A virtual private cloud (VPC) configured with two public and four private subnets. The Quick Start builds a **new** VPC for your deployment; it doesn't support deployments into an existing VPC.
- An internet gateway to provide access to the internet.
- In a public subnet, a network address translation (NAT) instance to allow outbound internet connectivity for resources in the private subnets.
- Three Elastic Load Balancing (ELB) load balancers.
- All required Pivotal Cloud Foundry components, including Bootstrap, Ops Manager, BOSH Director, and ERT instances.

- Amazon Simple Storage Service (Amazon S3) buckets for storage of buildpacks, droplets, packages, and resources.
- Amazon Relational Database Service (Amazon RDS) MySQL DB instance and alternate instance for PCF internal use.
- Amazon Route 53 for creating a hosted zone for your PCF domain.
- Secure Shell (SSH) access to application containers.
- Optional support for TCP routing with TCP routers.

Prerequisites

Specialized Knowledge

Before you deploy this Quick Start, we recommend that you become familiar with the following AWS services. (If you are new to AWS, see the [Getting Started Resource Center](#).)

- [Amazon VPC](#)
- [Amazon EC2](#)
- [Amazon S3](#)
- [Elastic Load Balancing](#)
- [Amazon Route 53](#)
- [Amazon RDS](#)

This Quick Start also assumes that you're familiar with PCF components and concepts. For more information, see the [Pivotal website](#).

Technical Requirements

Domain

For this Quick Start, you must provide a single, pre-existing domain. You'll specify the domain name in the **Domain** parameter when you deploy the Quick Start, in [step 4](#). The Quick Start auto-configures a system domain to host system components, and an apps domain, to host applications, from the domain name.

For example, let's say you specified **pcf.example.com** for the PCF domain. The Quick Start will configure the following:

- PCF system domain: `sys.pcf.example.com`
- PCF apps domain: `apps.pcf.example.com`

SSL Certificate

You'll need an SSL certificate that supports the necessary domains. The certificate can be self-signed if you're using the deployment for testing and development. For production environments, we recommend that you obtain a certificate verified by a certificate authority (CA).

To generate a self-signed certificate, you can use the [gen_ssl_certs.sh script](#) we've provided in the GitHub repository.

For example, if you run this script for **pcf.example.com**, it will output two files:

- pcf.example.com.crt
- pcf.example.com.key

This certificate will support the following domains:

- *.pcf.example.com
- *.sys.pcf.example.com
- *.apps.pcf.example.com
- *.login.sys.pcf.example.com
- *.uaa.sys.pcf.example.com

You'll then import pcf.example.com.crt and pcf.example.com.key by using the AWS Certificate Manager, as described in [step 3](#).

Pivotal Network (Pivnet) Account

The Quick Start deployment downloads the necessary software for the installation from the Pivotal Network ([Pivnet](#)). To initiate this download, you'll need to provide a Pivotal Network API token when you deploy the Quick Start. To find this token:

1. Create a Pivnet account at <https://network.pivotal.io/>.
2. Log in to your Pivnet account from a web browser.
3. Click your name in the upper-right corner.
4. Choose **Edit Profile**.

You'll find your API token at the bottom of this page.

Deployment Details

Stacks

The Quick Start template creates a CloudFormation stack with the default name *Pivotal-Cloud-Foundry*. This main stack creates two child stacks, so the PCF deployment results in three stacks.

AWS Resources

The PCF deployment provisions the following AWS resources:

| Resource | Quantity | Names and details |
|---|---|---|
| VPCs | 1 | pcf-vpc |
| Elastic IP addresses for the NAT instance | 1 | |
| Network interfaces | 6 | <ul style="list-style-type: none"> 2 public subnets 4 private subnets |
| ELB load balancers | 3 | stackname-pcf-elb stackname-pcf-ssh-elb stackname-pcf-tcp-elb |
| Security groups | 12 | |
| S3 buckets | 5 | |
| Instances (VMs) | 22 instances (Starter) 40 instances (Multi-AZ) | 1 NAT instance (t2.medium, user-configurable) 1 Ops Manager instance (m4.large) 1 Bootstrap instance (t2.micro) 1 BOSH instance (m4.large) Cloud Foundry Elastic Runtime (ERT) instances: <ul style="list-style-type: none"> Starter deployment: <ul style="list-style-type: none"> 12 t2.micro instances 3 r4.xlarge instances 2 m4.large instances 1 t2.small instance Multi-AZ deployment: <ul style="list-style-type: none"> 27 t2.micro instances 3 r4.xlarge instances 4 m4.large instances 1 t2.small instance |
| Key pairs | 2 | <ul style="list-style-type: none"> User-specified: This is the key pair you specify in the Quick Start template. It is used for the NAT, Ops Manager, and Bootstrap instances. Autogenerated: The Quick Start generates a key pair named <i>stackname-pcf-keypair</i> for all PCF Elastic Runtime instances. |

Deployment Steps

Step 1. Prepare Your AWS Account

1. If you don't already have an AWS account, create one at <https://aws.amazon.com> by following the on-screen instructions.
2. Use the region selector in the navigation bar to choose the AWS Region where you want to deploy PCF on AWS.

Note This Quick Start isn't currently supported in all AWS Regions. For a current list of supported regions, see the AMIMapping section of the [AWS CloudFormation template](#).

3. Create a [key pair](#) in your preferred region and save the .pem file on your computer. You can also use an existing key pair. The key pair is used for the NAT, Bootstrap, and Ops Manager instances.
4. If necessary, [request a service limit increase](#) for the AWS resources you'll be using. You might need to do this if you already have existing deployments that use these resources, and you think you might exceed the [default limits](#) with this reference deployment. The following table lists the required resources.

| Resource | Default limit | Quick Start requirement |
|--------------------|---------------|---|
| ELB load balancers | 20 per region | 3 |
| Amazon RDS storage | 100 TiB | db.m4.xlarge instance with 100 GiB of allocated storage |
| S3 buckets | 100 | 5 |
| EC2 instances | 20 | 22 for Starter deployment 40 for Multi-AZ deployment |

Step 2. Create a Hosted Zone

Create a hosted zone for your PCF domain in Amazon Route 53. You may use an existing domain that's defined in Route 53. If your domain is registered with a DNS provider other than AWS, you'll need to create a subdomain in Route 53, and then create a hosted zone for the subdomain. For instructions, see the [Route 53 documentation](#).

For example, if you have a domain called `example.com` registered with a different service provider, you may optionally create a subdomain called `pcf.example.com` and its corresponding hosted zone in Route 53. The Quick Start will use this hosted zone.

Step 3. Import the SSL Certificate for Your Domain into AWS Certificate Manager

You'll need to import the SSL certificate for your domain into the AWS Certificate Manager. If your PCF domain is **pcf.example.com**, at the minimum, your certificate must support the following domains:

- *.**sys**.pcf.example.com
- *.**apps**.pcf.example.com

You may also add the following domains to your certificate. This will be helpful if you plan to install products like [Spring Cloud Services for PCF](#) in the future. By including them now, you can avoid having to generate the certificate again later, when you add services.

- *.**login**.sys.pcf.example.com
- *.**uaa**.sys.pcf.example.com

For more information about how to import SSL certificates, see the [AWS Certificate Manager documentation](#).

Step 4. Launch the Quick Start

Note You are responsible for the cost of the AWS services used while running this Quick Start reference deployment. There is no additional cost for using this Quick Start. For full details, see the pricing pages for each AWS service you will be using in this Quick Start. Prices are subject to change.

1. [Launch the AWS CloudFormation template into your AWS account.](#)

Launch Quick
Start

This stack takes 2.5 to 3 hours to create.

2. Check the AWS Region that's displayed in the upper-right corner of the navigation bar, and change it if necessary. This is where the PCF environment will be built. The template is launched in the US West (Oregon) Region by default.

Note This Quick Start isn't currently supported in all AWS Regions. For a current list of supported regions, see the AMIMapping section of the [AWS CloudFormation template](#).

3. On the **Select Template** page, keep the default setting for the template URL, and then choose **Next**.
4. On the **Specify Details** page, change the stack name if needed. Review the parameters for the template. Provide values for the parameters that require input. For all other parameters, review the default settings and customize them as necessary. When you finish reviewing and customizing the parameters, choose **Next**.

Parameters are grouped in six categories and described in the following tables.

Amazon EC2 Configuration:

| Parameter label (name) | Default | Description |
|---|-----------------------|---|
| Keypair (PCFKeyPair) | <i>Requires input</i> | Public/private key pair, which allows you to connect securely to your instances after launch. When you created an AWS account, this is the key pair you created in your preferred region. You'll use this key pair for the Pivotal Ops Manager and NAT instances. |
| NAT Instance Type (NATInstanceType) | t2.medium | EC2 instance type to use for the NAT instance. |
| SSL Certificate ARN (SSLCertificateARN) | <i>Requires input</i> | ARN for the pre-uploaded SSL certificate. The certificate should cover the PCF domain and its subdomains, i.e., *.pcfdomain, *.sys.pcfdomain, *.apps.pcfdomain, *.login.sys.pcfdomain, and *.uaa.sys.pcfdomain, where pcfdomain represents your existing PCF domain, as specified in the Domain parameter. For more information, see Technical Requirements and step 3 . |
| ELB Prefix (ElbPrefix) | <i>Requires input</i> | Prefix for the name of the ELB load balancers provisioned. This is a 1-19 character string. |
| Allow HTTP on ELB (AllowHttpOnElb) | true | Set to false if you don't want to allow HTTP traffic on the PCF ELB load balancer on port 80. By default, HTTP traffic is allowed. |
| Forward Log Output (ForwardLogOutput) | false | Set to true if you want to send installation logs to Amazon CloudWatch Logs, to debug deployment issues. For more information, see Using CloudWatch Logs . Important Setting this parameter to true potentially exposes secrets used during the bootstrapping process. We recommend that you use this setting only for testing and debugging purposes. |

Network and DNS Configuration:

| Parameter label (name) | Default | Description |
|---|-----------------------|---|
| Ops Manager & Bootstrap Ingress (OpsManagerIngress) | <i>Requires input</i> | CIDR range allowed to connect to the Pivotal Ops Manager and Bootstrap instances. Note that a value of 0.0.0.0/0 will allow access from any IP address. |

| Parameter label (name) | Default | Description |
|--|-----------------------|--|
| Route 53 Hosted Zone ID (HostedZoneId) | <i>Requires input</i> | Existing hosted zone in which to create DNS records, from step 2 . |
| Domain (Domain) | <i>Requires input</i> | Root or subdomain for all Pivotal Cloud Foundry DNS entries (e.g. example.com or pcf.example.com). This must match the hosted zone ID. |

Pivotal Cloud Foundry Configuration:

| Parameter label (name) | Default | Description |
|--|-----------------------|--|
| Size of the Deployment (DeploymentSize) | <i>Requires input</i> | The size of the deployment. You can choose Starter or Multi-AZ. Choosing Multi-AZ creates a highly available deployment, with nearly double the number of instances of the Starter deployment. For more information, see the Architecture section. |
| Skip SSL Validation (SkipSSLValidation) | false | Set to true if you don't want SSL certificates to be validated (not recommended for a production environment). |
| Pivotal Network Token (PivnetToken) | <i>Requires input</i> | Pivotal Network API token to accept EULA (requires a Pivotal Network account). For information about how to obtain this token, see the Prerequisites section. |
| Admin Email (AdminEmail) | <i>Requires input</i> | Administrator email used to monitor the MySQL service. |
| Ops Manager Admin Password (OpsManagerAdminPassword) | <i>Requires input</i> | Administrator password for Pivotal Ops Manager. The password must be at least 14 characters, including alphanumeric characters, dashes, and underscores. |
| Custom Branding Company Name (CompanyName) | PCF Quickstart | The company name for custom-branding Apps Manager. For more information, see the Pivotal documentation . |

Amazon RDS:

| Parameter label (name) | Default | Description |
|--------------------------------------|-----------------------|---|
| RDS DB Name (RdsDBName) | bosh | The name of the Amazon RDS database. |
| RDS Username (RdsUsername) | <i>Requires input</i> | The user name for the Amazon RDS database. |
| RDS Password (RdsPassword) | <i>Requires input</i> | The password for accessing the Amazon RDS database. |

AWS Quick Start Configuration:

| Parameter label (name) | Default | Description |
|---|--------------------------------------|---|
| Quick Start S3 Bucket Name (QSS3BucketName) | quickstart-reference | S3 bucket where the Quick Start templates and scripts are installed. Use this parameter to specify the S3 bucket name you've created for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. The bucket name can include numbers, lowercase letters, uppercase letters, and hyphens, but should not start or end with a hyphen. |
| Quick Start S3 Key Prefix (QSS3KeyPrefix) | pivotal/ cloudfoundry/ latest/ | The S3 key name prefix used to simulate a folder for your copy of Quick Start assets, if you decide to customize or extend the Quick Start for your own use. This prefix can include numbers, lowercase letters, uppercase letters, hyphens, and forward slashes. |

Pivotal's End User License Agreement:

| Parameter label (name) | Default | Description |
|------------------------------------|---------|--|
| Accept EULA (AcceptEULA) | No | Choose Yes to confirm that you have reviewed the Pivotal Software Evaluation Agreement for On-Demand Services at https://pivotal.io/evaluation-agreement , and you agree that your use of the software will be governed by the terms of this agreement. |

- On the **Options** page, you can [specify tags](#) (key-value pairs) for resources in your stack and [set advanced options](#). When you're done, choose **Next**.
- On the **Review** page, review and confirm the template settings. Under **Capabilities**, select the check box to acknowledge that the template will create IAM resources.
- Choose **Create** to deploy the stack.
- Monitor the status of the stack. When the status is **CREATE_COMPLETE**, the deployment is ready. Approximately 20-30 minutes into your deployment, you should see the *PCF Ops Manager* VM instance and running. At this point, you can log into Ops Manager as described in the next section, and follow the PCF installation logs from there.
- Use the URLs displayed in the **Outputs** tab for the stack to view the resources that were created.

Step 5. Test the Deployment

After a successful deployment, you can access the following PCF resources.

Access Ops Manager

To access the PCF Ops Manager, open the following URL in a web browser:

```
https://opsman.pcfdomain
```

where *pcfdomain* is the domain name you specified in the Quick Start parameters; for example, `https://opsman.pcf.example.com`.

Note If you provided a self-signed certificate, you'll see a warning in your web browser. To proceed, you'll need to trust the self-signed certificate. For production environments, we recommend that you obtain a CA-verified certificate.

Log in with these credentials:

- User: *admin*
- Password: The password you specified for the **Ops Manager Admin Password** parameter during deployment

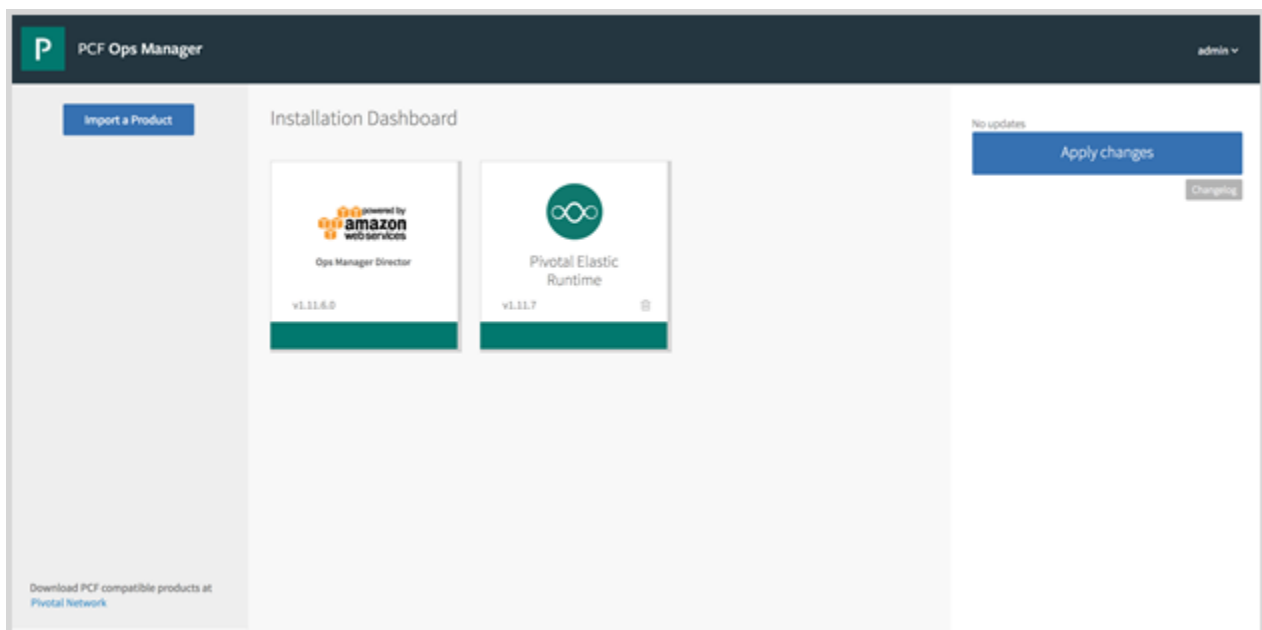


Figure 2: Ops Manager dashboard

For more information about Ops Manager, see the [PCF documentation](#).

Access Apps Manager

To access the PCF Apps Manager, open the following URL in a web browser:

```
https://apps.pcfdomain
```

where *pcfdomain* is the domain name you specified in the Quick Start parameters; for example, `https://apps.pcf.example.com`.

Note If you provided a self-signed certificate, you'll see a warning in your web browser. To proceed, you'll need to trust the self-signed certificate. For production environments, we recommend that you obtain a CA-verified certificate.

Log in with these credentials:

- User: *admin* (note that this is different from the Ops Manager *admin* user name)
- Password: You can find the password in the Elastic Runtime tile in Ops Manager. For instructions, see the [Pivotal documentation](#).

For more information about Apps Manager, see [Getting Started with Apps Manager](#) in the Pivotal documentation. For information about creating and managing users and roles in your PCF instance, see [Managing User Roles with Apps Manager](#) in the Pivotal documentation.

Log in from the Cloud Foundry CLI

You can also log in from the [Cloud Foundry Command Line Interface \(cf CLI\)](#). After you install the Cloud Foundry CLI on your workstation, run the following command to log in to your PCF instance:

```
cf login
```

If you provided a self signed certificate for your PCF instance, you'll need to provide the `skip-ssl-validation` flag:

```
cf login --skip-ssl-validation
```

You'll be prompted to enter the API endpoint, user name (email address), and password. For the API endpoint, enter `https://api.sys.pcfdomain`; for example:

```
cf login -a https://api.sys.pcf.example.com -u admin --skip-ssl-validation
```

For more information about the cf CLI, see the [Pivotal documentation](#).

Download and Save the Private Key from the Bootstrap Instance

As part of the deployment, the Quick Start generates a key pair for all the instances that are part of the Cloud Foundry Elastic Runtime. This key pair is different from the key pair you specify in step 4, during the deployment of the Quick Start. You can see the name of this key pair in the Amazon EC2 console as *stackname-pcf-keypair*. The private key of this key pair is saved on the Bootstrap instance, in the `/home/ubuntu/.ssh` folder. You may choose to download and save this private key, and then remove it from the Bootstrap instance.

Deleting the PCF Deployment

Delete the Main Stack

The Quick Start makes it easy to delete the entire PCF deployment. From the AWS CloudFormation console, delete the main stack (*Pivotal-Cloud-Foundry* by default, or the stack name you specified in the AWS CloudFormation console).

The deletion process is not reversible. Deleting the main stack will also delete any additional services (tiles) you may have installed from the Ops Manager.

If the stack deletion doesn't complete successfully, you'll need to manually delete all the AWS resources:

1. If you can still access Ops Manager, choose **Delete This Installation** in the **Admin, Settings, Advanced** menu. This is a long process that may take more than 30 minutes.
2. In the Amazon EC2 console, manually terminate the following resources:
 - All the remaining PCF instances
 - PCF security groups
 - PCF subnets
 - PCF load balancers

At each step, try to delete the stack again and see if it works. If it does, you won't need to execute the remaining steps.

Delete the S3 Buckets

You may need to manually delete S3 buckets after the stack is deleted. Look for S3 buckets with a name prefix that matches the Quick Start PCF stack name.

Deploying Your First Application to PCF

To deploy an application to PCF, follow the guidance in the [Cloud Foundry documentation](#).

Troubleshooting

Using CloudWatch Logs

If the Quick Start deployment fails for some reason, the AWS CloudFormation stack will roll back. To debug the deployment, you can delete the stack and any leftover resources, and relaunch the Quick Start with the **Forward Log Output** configuration parameter set to **true**. This will forward the deployment logs to CloudWatch Logs. To review the logs for errors, open the Amazon CloudWatch console at <https://console.aws.amazon.com/cloudwatch/>, and in the navigation pane, choose **Logs**.

Using Bootstrap Logs

The Quick Start deployment creates a Bootstrap instance, which orchestrates the PCF installation. This instance also plays a key role if you delete the PCF instance by deleting the parent stack. If you run into any deployment issues, you might find it useful to view the logs in this instance. The FQDN for the Bootstrap instance is `bootstrap.pcfdomain`.

To connect to the Bootstrap instance, use the private half of the key pair you specified in the template configuration in [step 4](#), with the username `ubuntu`:

```
ssh -i keyfile ubuntu@bootstrap.pcfdomain
```

After you connect, you can view the Quick Start deployment logs at `/var/log/cloud-init-output.log`. (These are the same logs you'll see in CloudWatch Logs.) We strongly discourage you from making any changes to the Bootstrap instance.

Advanced Troubleshooting with BOSH

PCF uses [BOSH](#) as the orchestration toolchain. You may run into a situation where you'll need to do [advanced troubleshooting with BOSH](#) for your PCF instance. This requires running BOSH CLI commands from an instance that's running on the same private network as the PCF instances, since these instances are not accessible over the internet. The Ops Manager instance has the BOSH CLI installed and is useful for this purpose. The default

Ops Manager ingress configuration allows access to the Ops Manager over the internet. The FQDN for the Ops Manager instance is `opsman.pcfdomain`.

For advanced troubleshooting, connect to the Ops Manager instance through SSH with the user name `ubuntu` and the private half of the key pair you specified at the time of deployment:

```
ssh -i keyfile ubuntu@opsman.pcfdomain
```

From Ops Manager, you can initiate BOSH troubleshooting by following the instructions in the [Pivotal documentation](#).

Common Errors

The following list identifies some of the common causes for deployment failures. Please make sure that you provide accurate values for all the parameters in the Quick Start template.

- Insufficient AWS quota in the AWS Region you are deploying to (see [step 1](#))
- Incorrect domain (see **Domain** parameter in [step 4](#))
- Bad SSL certificate (see **SSL Certificate ARN** in [step 4](#))
- Incorrect Pivotal Network token (see **Pivotal Network Token** in [step 4](#))

Support

If you run into any deployment issues that you're unable to resolve with the provided information, contact Pivotal for support at pcf-quickstart@pivotal.io.

Additional Resources

AWS services

- Amazon EC2
<https://docs.aws.amazon.com/AWSEC2/latest/WindowsGuide/>
- AWS CloudFormation
<https://aws.amazon.com/documentation/cloudformation/>
- Amazon VPC
<https://aws.amazon.com/documentation/vpc/>

Pivotal Cloud Foundry

- Documentation
<http://docs.pivotal.io/>
- Pivotal Network (for downloading PCF components and services)
<http://network.pivotal.io/>
- Manual installation instructions (for reference)
<https://docs.pivotal.io/pivotalcf/customizing/pcf-aws-manual-config.html>
- Pivotal Cloud Foundry on AWS
<https://pivotal.io/partners/aws>

Common data services

- MySQL
<https://docs.pivotal.io/p-mysql/>
- RabbitMQ
<https://docs.pivotal.io/rabbitmq-cf/>
- Redis
<https://docs.pivotal.io/redis/>
- Pivotal Cloud Foundry Service Broker for AWS
<http://docs.pivotal.io/aws-services/>

Quick Start reference deployments

- AWS Quick Start home page
<https://aws.amazon.com/quickstart/>

Send Us Feedback

You can visit our [GitHub repository](#) to download the templates and scripts for this Quick Start, to post your comments, and to share your customizations with others.

For general inquiries and feedback about Pivotal products, please contact Pivotal at pcf-quickstart@pivotal.io.

Document Revisions

| Date | Change | In sections |
|---------------|---------------------|-------------|
| November 2017 | Initial publication | — |

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