PCF Developer 1.6 - 1.11 Certification Study Guide

COMPLETED: DECEMBER 2015

UPDATED & REVISED: AUGUST 2017

Table of Contents

Overview

This guide is designed to help you prepare for the PCF Developer certification exam. The guide is valid regardless of whether you took the 1.6, 1.7 or 1.11 versions of Pivotal's accompanying PCF Developer course. Please be aware that it should *not* be used if you have attended the PCF Immersion or PCF Administration courses.

This certification exam is based on the 3-day PCF Developer training and the materials provided with it are the ideal source to use for preparation. In addition, viewing the free, online course "*Introduction to Pivotal Cloud Foundry*" at http://pivotal.io/academy is a great way to kick off the certification preparation process. Of course, as with any certification, the most valuable part, besides recognition, is the learning process. Hence we encourage you to take time to experiment and follow your curiosity when questions arise.

A 3-day course contains a lot of material. To help you focus your efforts and to know when you're ready we've put together this guide. The guide contains a list of topics and a list of further resources. Topics are organized by subject area, where each topic contains a description of what you should make sure you know.

The list of topics can be used as a checklist. The training materials can be used as a point of reference and as a learning ground. The list of resources is where you can go further for getting answers. Everything in the exam is covered somewhere in the course notes. One possible way to prepare is to do the following for a given training module:

1. Review the slides, making notes of questions
2. Work through the labs
3. Review the list of topics that matches to the module by subject area
4. Use the lab to experiment with anything you need to spend more time on
5. Use the provided list of resources to look for further answers
6. Reading (at least partially) the reference documentation
7. Memorize the "big pictures", tables, overviews, …
8. Be familiar with the most common **cf** commands

Of course there are many more ways to organize your efforts. You can pair up with someone else planning to take the exam or review all presentations for a given subject area before going through the labs. Or maybe you have access to actual applications you can review to test your knowledge.

Please keep in mind that you are expected to have good working knowledge of all the topics listed. Most of the questions will be very general, however you will be asked a few advanced questions.

Logistics

When you are ready to test and validate your product knowledge, please visit pivotal.io/training/certification to *purchase* an industry-recognized Pivotal certification exam.

Pivotal partners with Exams Local to remotely proctor our exams. Our certification exams may be taken from a location of your choosing anywhere in the world provided you can meet the basic system and test environment requirements and have a valid form of photo identification.

For help with your exam purchase, exam registration process, credentials verification, or other questions related to our certification program, process, and procedures, please visit pivotal.io/training/faq/certification.

The Exam

The exam itself is a computer-based exam. The exam software first gives you some general instructions: how to navigate, how to mark a question, and so forth - please read it carefully.

Once you have agreed that you want to start, you have 90 minutes to answer 50 multiple-choice questions. You must answer 38 questions correctly (76%) in order to pass the exam.

Basic exam technique applies: read each question *carefully* and answer the question that was asked *not* what you *thought* was asked.

Exam FAQ

1. *Is there anything in the exam, which was not covered in the course?*
   No.

2. *Do I have to recall syntax?*
   Generally, the answer is no. However you should be familiar with the most common **cf** commands.

3. *Do I have to write code?*
   No.

4. *Will I have to read or know programming languages such as Java, PHP, etc.?*
   No.

Topics

The following is a list of topics, each of which is likely to have questions on the exam.

Several of the bullet points below overlap, asking the same (or a related) question in a different way. The answer to more than one bullet point question may be the *same* as the answer to another question just before or after. *Don't let this confuse you.*

Cloud Foundry Overview

- Do you understand Cloud Foundry concepts like spaces, organizations, routes, services, domains, users, quotas?
- How do you login to Cloud Foundry?
- How do you deploy an application? What are three activities involved?
- Can you remember the steps Cloud Foundry goes through when deploying applications? What components are involved?
- What is the difference between a public, private and hybrid cloud?
- What infrastructures does Cloud Foundry run on?
- What is BOSH? Why is it useful?
- What is staging? What does it do?
- Do you know the difference between restarting, restaging and redeploying and application? How does each of these affect the services, environment-variables available to an application?
- What is meant by ephemeral? What are the design implications for an application?
- What are the 12 Factor Design patterns? Could you list each one from memory?
- Why does Cloud Foundry rely on environment-variables?
- Can you manage environment-variables manually? If so how?
- Can you name two predefined environment-variables available to any application?

Command Line Utility **cf**

- Do you know what *cf* command is used to perform the following:
    - View organizations?
    - View routes?
    - View spaces?
    - View a single organization, route or space?
    - Deploy an application?
    - Select a space and/or organization to deploy to?
    - View logs?
    - Connect (login) to the Cloud Controller?
    - Start, stop or restart an application?
    - What does *cf target* do? What information does it give you?

Cloud Foundry Architecture

- Can you name the main components running inside Cloud Foundry? Do you know what each of them does?
- What does Diego refer to?
- What is Garden?
- What components run in a Diego Cell?
- What is the System domain? And the application domain?
- What is Cloud Foundry's API endpoint for?
- What is a container? What is it used for?
- What is a droplet? How is it created? Where is it stored?
- What are the purposes of the two data stores used by the Cloud Controller?

Logging, Scaling and High Availability

- How do you access application logs?
- What are the components of the Loggregator system?
- How do you scale an application manually?
- What are the four levels of high-availability provided by PCF?
- What is the difference between scaling up and scaling out?

Managed and User-Provided Services

- What is a service? Can you name some examples?
- What is the "marketplace"? Does it show all services?
- What is the difference between a managed and user-provided service?
- How would you create a managed service?
- How would you use a managed service?
- How would you create a user-provided service?
- How would you use a user-provided service?
- What is `VCAPS_SERVICES`? Why is it important?
- How do services interact with spaces?

Manifests

- What is a manifest? What type of file is it? What is its purpose?
- How do you create a manifest?
- If I specify a command in a manifest and on the command line what happens?
- What happens if I don't specify a deployment option at all?

Application Security Groups

- What is an application security group (ASG)? What does it do?
- How do you define one?
- What can an ASG apply to?
- What is the difference between white and black listing? Which do you use when defining an ASG?

Log Drains

- What is a log drain?
- How do you create one?
- Why would you use it?
- What is "*Syslog*"?

Blue-Green Deployments

- What is a blue-green deployment? Why would you use it?
- How do you map and unmap routes with *cf*?
- How does route mapping enable a blue-green deployment?
- What other steps are involved in a blue-green deployment?

Application Autoscaler

- What is the autoscaler?
- How would you use it?
- What can you configure?
- Do you understand autoscaler schedules?

Application Performance Monitor

- What is performance monitoring? How is it implemented for Cloud Foundry applications?
- Why is a buildpack involved?
- What APM tools are available with Cloud Foundry?

Metrics

- What is "PCF Metrics"? What information does it provide?
- Do you understand how to use the metrics to spot a badly performing application? For example: CPU or memory usage?

Buildpacks

- What is a buildpack? Why are they important?
- Can you name some buildpacks?
- How does Cloud Foundry know which buildpack to run?
- How does a buildpack work? Are you aware of the scripts that run and how they might be written or modified?
- Can you tell what buildpack was used when an application was deployed?
- Why might you customize a buildpack? In general, would you know what to do?

Service Brokers

- What is a service broker?
- Why do we need service brokers?
- How do a service broker and the Cloud Controller interoperate?
- What is the purpose of each broker endpoint?
- In general terms, how would you write your own service broker? How would you test it? How would you deploy it for everyone else to use?

Continuous Delivery

- What is Continuous Integration? Continuous Delivery? Continuous Deployment?
- How does Continuous Delivery compare to traditional development methodologies?
- Can you name some common Continuous Delivery tools?
- Can you outline the basic workflow behind Continuous Delivery?

Route Services

- What is a route service?
- Why might you create a route service? Can you think of some examples?
- How would you create a route service?
- How does a route service work?
- How does a route service know where to send a request once it has performed its function?

Resources

https://docs.pivotal.io/pivotalcf/1-6/installing/pcf-docs.html

Documentation for PCF 1.6.

https://docs.pivotal.io/pivotalcf/1-7/installing/pcf-docs.html

Documentation for PCF 1.7.

https://docs.pivotal.io/pivotalcf/1-11/installing/pcf-docs.html

Documentation for PCF 1.11.

https://docs.cloudfoundry.org/#read-the-docs

Open Source Cloud Foundry documentation

Conclusion

When you worked through this guide and know all the answers, we are pretty confident that you should pass the certification. It's recommended to do it as soon as possible and we wish you good luck with it.

Thank you again for choosing Pivotal as your education partner and good luck with your projects.

If you have encountered any errors, have any suggestions or enquiries please don't hesitate to contact your trainer or send an email to education@pivotal.io.