Course Guide

# IBM Cloud Pak for Automation, Installation and Administration

Course code WB318 / ZB318 ERC 1.0

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## October 2019 edition

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# Course description

## IBM Cloud Pak for Automation, Installation and Administration

## Duration: 2 days

## Purpose

This course is designed to teach the skills that are needed to work with IBM Cloud Pak for Automation. Through a presentation and three hands-on lab exercises, you learn to deploy the IBM Operational Decision Manager (ODM) and IBM FileNet P8 Content Platform Engine products in containerized environments by using IBM Cloud Pak for Automation. You use Network File System (NFS), Db2, and Lightweight Directory Access Protocol (LDAP) as required by ODM and Content running in docker containers. You also learn some basic skills to manage, troubleshoot, and administer the installed containerized products that are deployed on the Red Hat OpenShift environment. In the lab exercises, you interact with the OpenShift cluster by using both the OpenShift Command-line interface (CLI) and the web console.

## Audience

This course is intended for administrators and operators responsible for installing and managing containerized environments.

## Prerequisites

Before taking this course, you should have some experience working with Docker and Kubernetes. You should also have:

- Experience with, or prior education on, Red Hat Enterprise Linux
- Experience with, or prior education on, Red Hat OpenShift Container platform (RHOCP)

## Objectives

- Describe IBM Cloud Paks
- Explain IBM Cloud Pak for Automation
- Connect to Red Hat OpenShift Container (RHOCP)
- Load BM Operational Decision Manager (ODM) docker images for Cloud Pak for Automation (CP4A)
- Create and secure the ODM database
- Deploy the ODM container on RHOCP
- Verify the successful ODM deployment

- Connect to the ODM container and successfully log in to the Decision Server console and Rule Execution Server console
- Create the Persistent Volumes and Persistent Volume Claims that are required by IBM FileNet P8 Content Platform Engine
- Prepare the database required by Content Platform Engine
- Prepare Lightweight Directory Access Protocol LDAP required by Content Platform Engine
- Load the Content Platform Engine docker images for Cloud Pak for Automation
- Deploy the Content Platform Engine container
- Verify successful Content Platform Engine deployment
- Connect to the Content Platform Engine container and successfully log in to the Administrative Console for Content Engine (ACCE)
- Troubleshoot the deployment
- Explore the Red Hat OpenShift container (RHOCP) web console for container management
- Examine the available open source monitoring options - metrics, alerts, and dashboards
- Scale an application deployment by using OpenShift
- Monitor containers by using probes

# Agenda

**Note**

The following unit and exercise durations are estimates, and might not reflect every class experience.

## Day 1

(00:15) Course introduction
(01:00) Unit 1. IBM Cloud Pak for Automation Overview
(01:00) Unit 2. Education Lab Environment Overview
(05:00) Exercise 1. Deploying the IBM Operational Decision Manager (ODM) container

## Day 2

(05:00) Exercise 2. Deploying the IBM FileNet P8 Content Platform Engine (CPE) container
(02:00) Exercise 3. Administering the IBM Cloud Pak for Automation containers
(00:30) Course summary, badge, and other learning resources

# Unit 1. IBM Cloud Pak for Automation Overview

## Estimated time

01:00

## Overview

This unit introduces IBM Cloud Paks and provides an overview of IBM Cloud Pak for Automation. It also defines some key terminology and lists the skills that are required by Administrators and Operators who work with IBM Cloud Pak for Automation.

## How you will check your progress

- Checkpoint

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## Unit objectives

- Describe IBM Cloud Paks
- Explain IBM Cloud Pak for Automation
- Define key terminology
- Understand the learning prerequisites




*Figure 1-1. Unit objectives*

# 1.1. IBM Cloud Paks

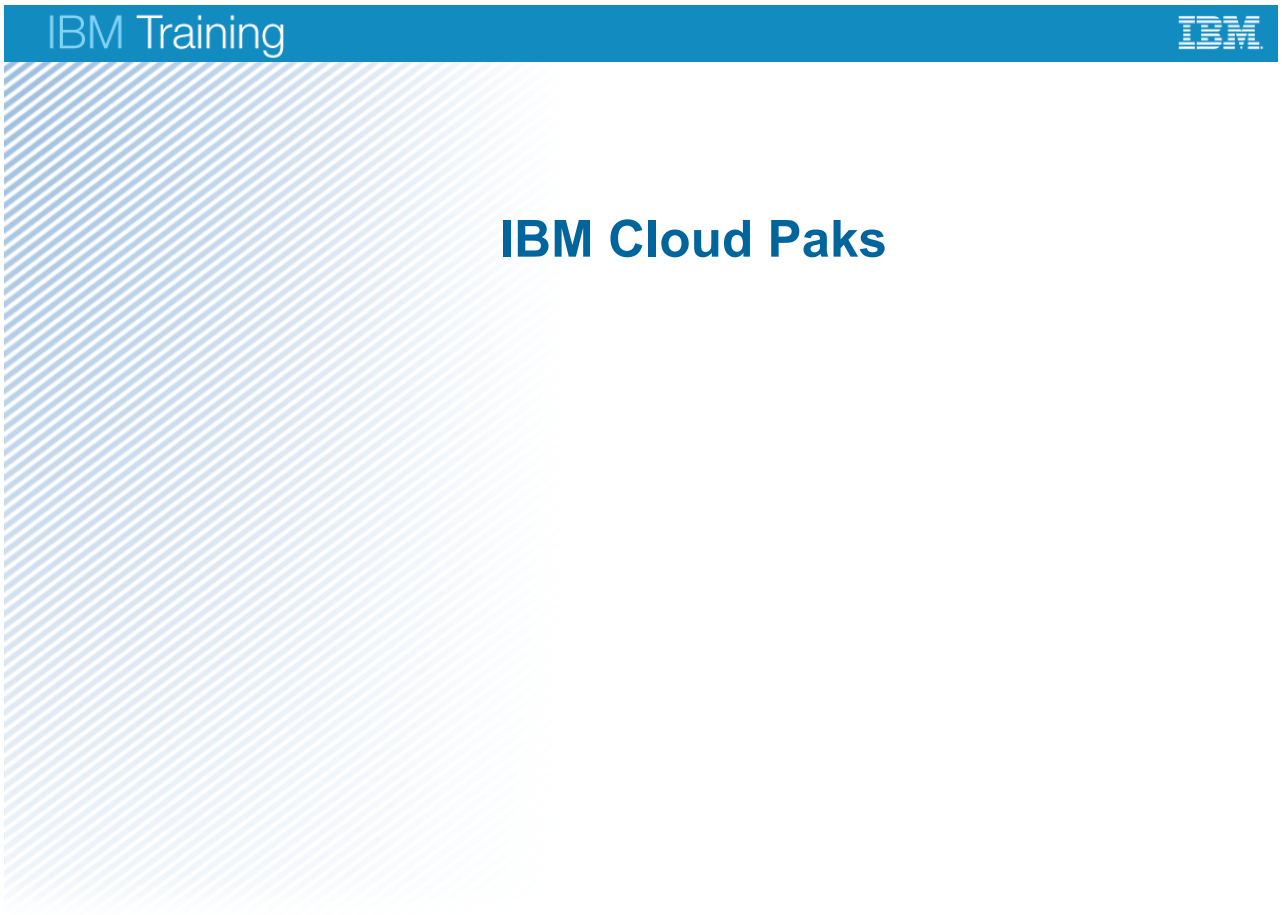


*Figure 1-2. IBM Cloud Paks*

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## Topics

- IBM Cloud Paks
- IBM Cloud Pak for Automation
- Key terminology and concepts




*Figure 1-3. Topics*

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# What are IBM Cloud Paks?

- Enterprise-ready cloud software
- A fast and secure way to move your applications to any cloud through containerized solutions
- Run anywhere
  - On-premises, on private and public clouds, and in pre-integrated systems
- IBM Certified
  - Full software stack support, with ongoing security, compliance, and version compatibility





*Figure 1-4. What are IBM Cloud Paks?*

IBM Cloud Paks are one of the largest modernization projects IBM has ever went through. IBM combined the enterprise and industry expertise with best practices for Kubernetes into “Enterprise-ready containerized solutions” that is called IBM Cloud Paks. These Cloud Paks simplify moving core business applications onto a modern platform that provides the benefits of Kubernetes and containers. It can be a core banking application in Java, or an application that has automated your business processes and decisions.

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# Cloud Paks – Pre-integrated for cloud use cases

- IBM offers five IBM Cloud Paks
- IBM is releasing new Cloud Paks:
  - Security Cloud Pak
  - System Cloud Pak

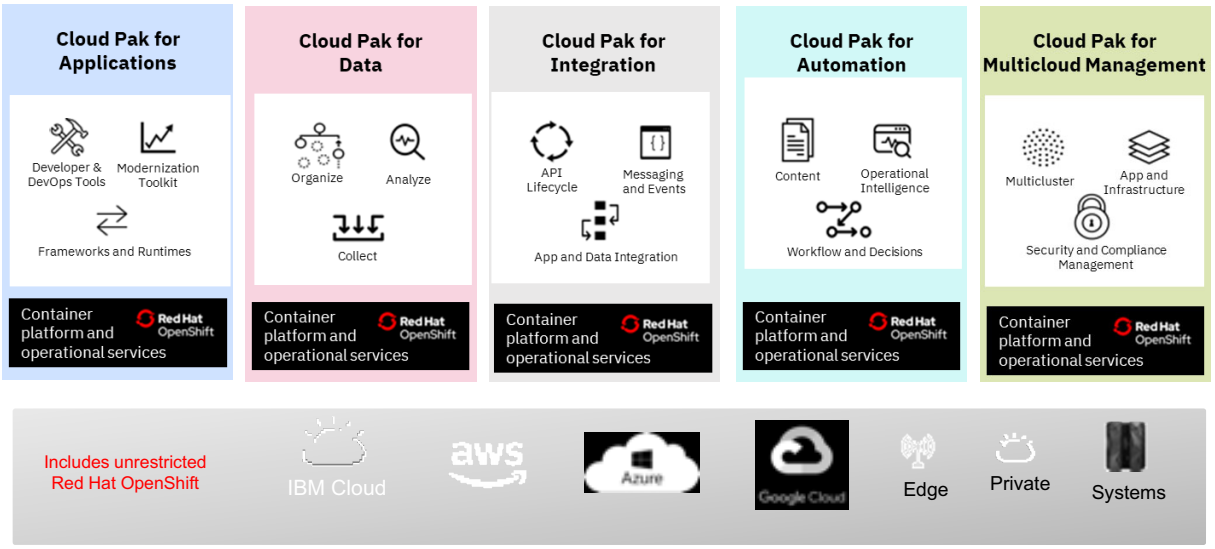





*Figure 1-5. Cloud Paks – Pre-integrated for cloud use cases*

These first five cloud Paks provide rich sets of capabilities that support modernizing and transforming your business applications, all include a consistent Red Hat OpenShift container platform, ready to run across multiple clouds.

Applications, Data, Integration, Automation, and Multi-cloud Management.

All these across cloud environments provide portability with security

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# IBM Cloud Paks - IBM certified and production ready

| Capability | Containers Alone<br>Client creates containers or receives software as standalone container(s) | IBM Cloud Paks<br>Complete solutions certified for enterprise use cases |
|---|---|---|
| **Runs anywhere** | Yes | Yes |
| **Vulnerability scanned** | Yes | Yes |
| **Red Hat container certification** | Depends on product | Yes |
| **Complete solution with container platform** | No | Yes |
| **Flexible & modular: Pay for what you use** | No | Yes |
| **IBM certified/orchestrated for production**<br>(Built for Kubernetes by experts; certified against 250+ criteria) | No | Yes |
| **Multicloud validation** | No | Yes |
| **Integrated deployment experience** | No | Yes |
| **Full stack support by IBM**<br>(Base OS, software, and container platform) | No | Yes |
| **License metering integration** | No | Yes |
| **Scalable and resilient** | No | Yes |
| **Encrypted secrets / limited privileges** | Do it yourself | Yes |
| **Management and operations** | Build your own | Yes |
| **Lifecycle Management** | Manage it yourself | Yes |




*Figure 1-6. IBM Cloud Paks - IBM certified and production ready*

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# Multiple ways to deploy Digital Business Automation (DBA) platform

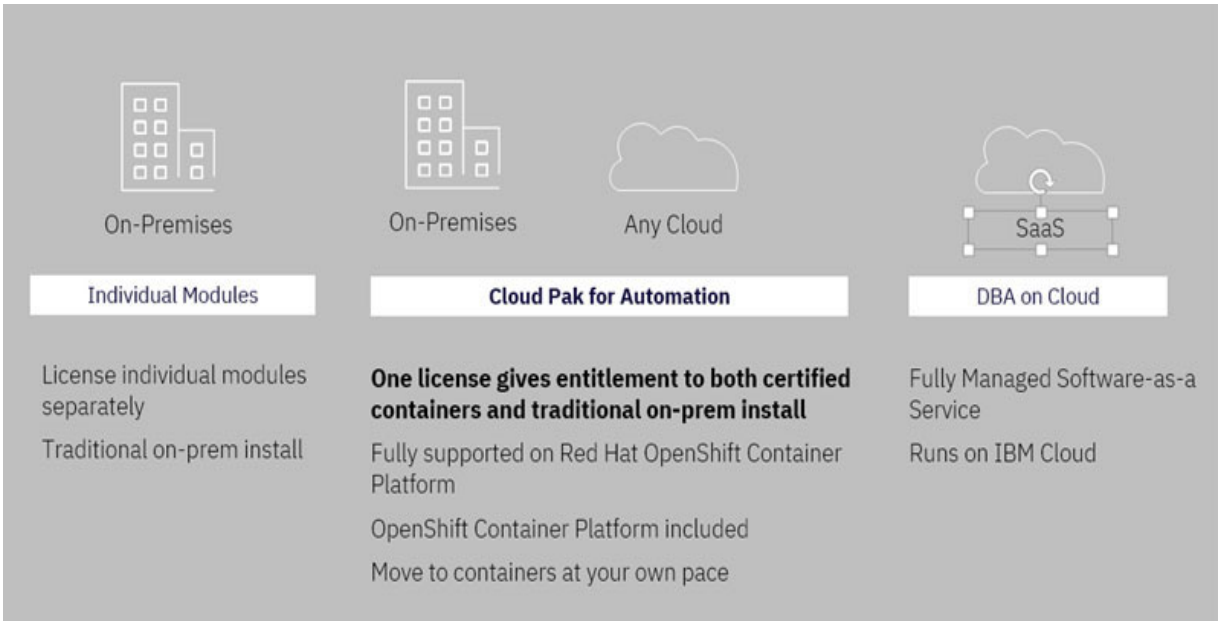





*Figure 1-7. Multiple ways to deploy Digital Business Automation (DBA) platform*

The IBM Digital Business Automation platform is offered in various ways.

It provides entitlement to both the certified container and traditional on-premises components. For the containerized components, there is full support and includes the Red Hat OpenShift Container Platform. Providing both types of components allows you to move to containers at your own pace.

Additionally,

- The traditional on-premise components are available to license separately
- There are also SaaS versions of the components in DBA on Cloud.

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# IBM Cloud Pak Architecture

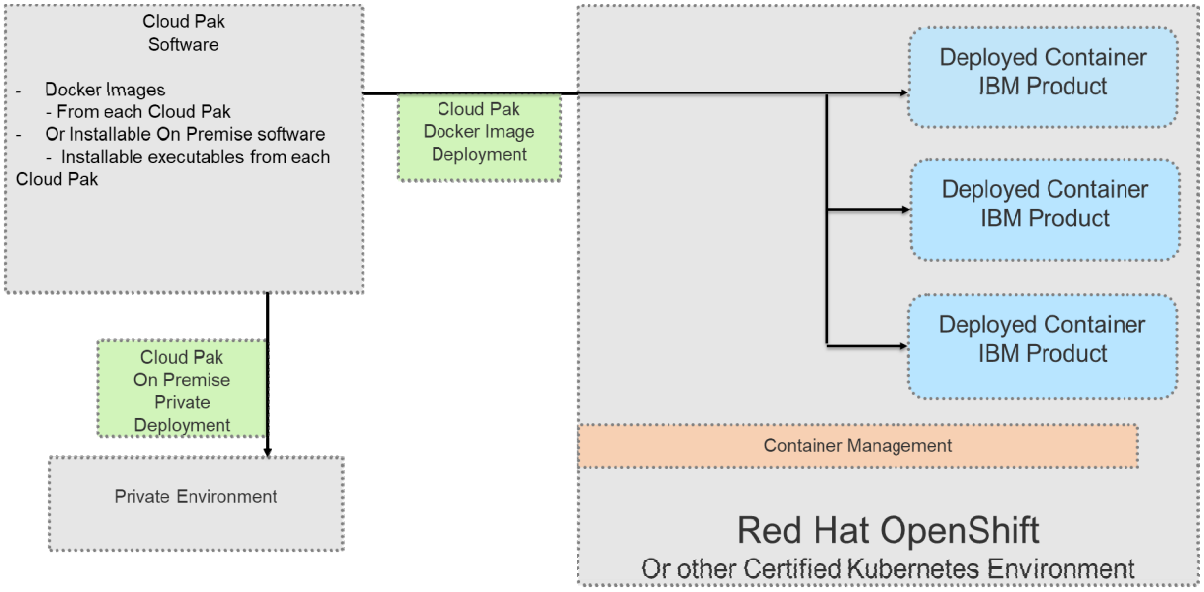





*Figure 1-8. IBM Cloud Pak Architecture*

# 1.2. IBM Cloud Pak for Automation

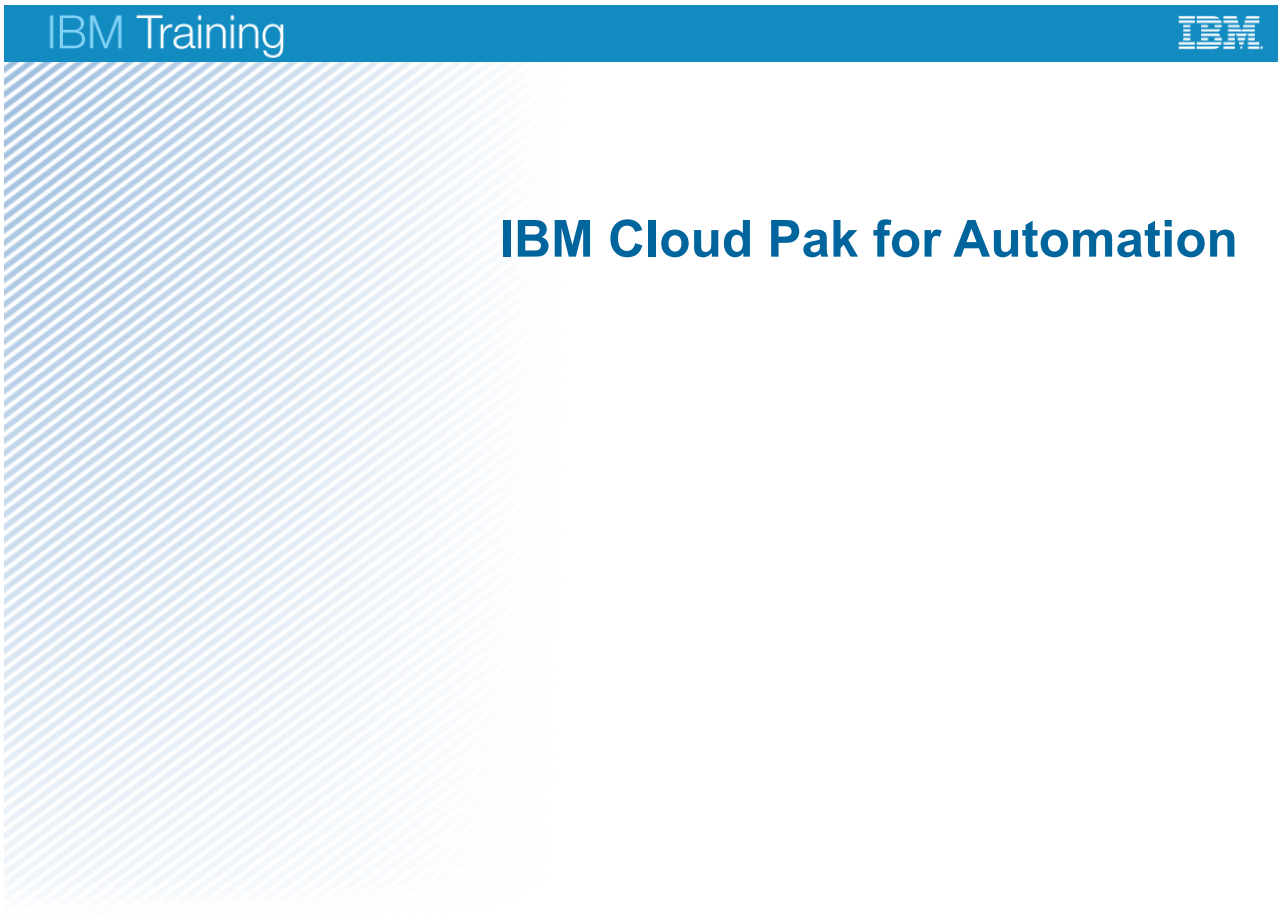


*Figure 1-9. IBM Cloud Pak for Automation*

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## Topics

- IBM Cloud Paks
- IBM Cloud Pak for Automation
- Key terminology and concepts




*Figure 1-10. Topics*

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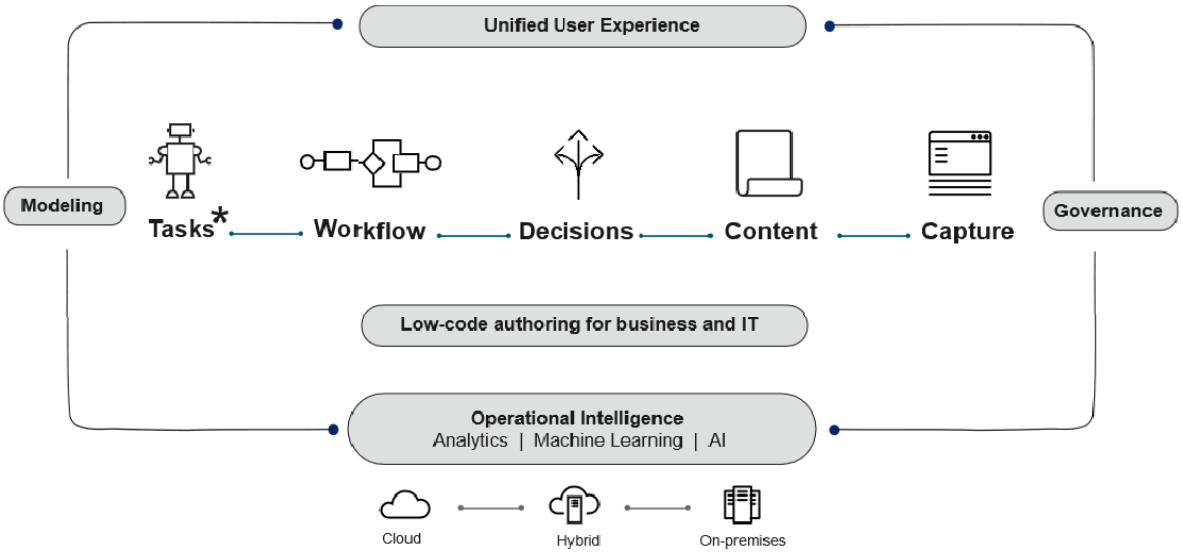
# IBM Cloud Pak for Automation




* IBM RPA with Automation anywhere is sold separately




*Figure 1-11. IBM Cloud Pak for Automation*

IBM Cloud Pak for Automation includes the following integrated capabilities:

Spectrum of workflow – covering traditional IBM BPM (human centric) and Case Management scenarios

Digital decisioning – It is the marriage of workflow, decisions, and analytics

Content services – Enterprise Content Management

Data capture & document management

Analytics, ML & AI – Automation Insights

Offers a low-code platform, easy to be implemented

This is complemented by BlueworksLive for discovery and documentation and RPA for task automation (sold separately)

Note that RPA is sold separately and Workflow is not available in a Docker containers

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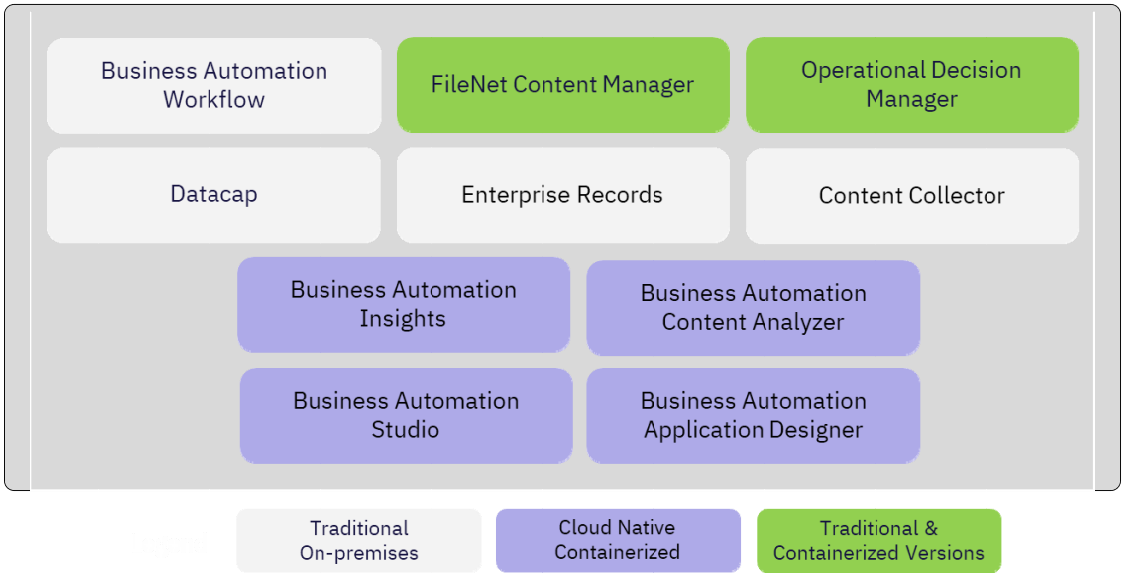
# Cloud Pak for Automation - Traditional and Containerized




Entitlement for Red Hat OpenShift Container Platform included to support containerized components.




*Figure 1-12. Cloud Pak for Automation - Traditional and Containerized*

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# Red Hat OpenShift Included

- Cloud Pak for Automation provides entitlement to OpenShift Container Platform (RHOCP)
  - You can now install OpenShift as part of the Cloud Pak for Automation offering
- OpenShift is a market-leading container platform by Red Hat to manage hybrid cloud and multi-cloud deployments.

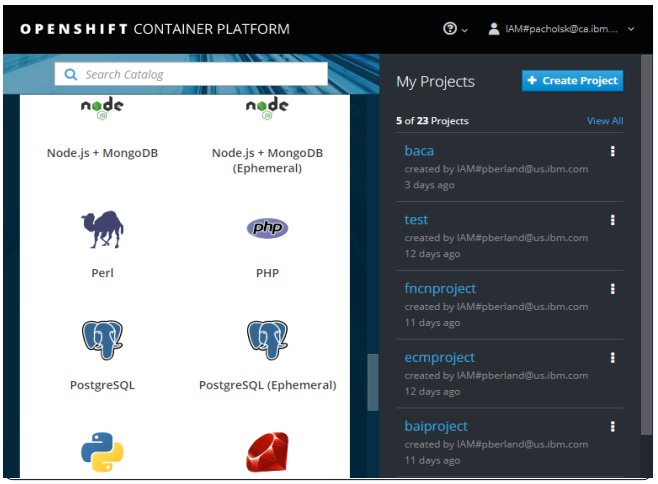





*Figure 1-13. Red Hat OpenShift Included*

Cloud Pak for Automation runs on and includes entitlements for OpenShift Container Platform.

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# Installing IBM Cloud Pak for Automation (1 of 2)

- It is not a traditional executable software that you run to install IBM Cloud Pak for Automation.
- When you download the software, you get product binaries that consist of several Docker images
  - You load the images to your Docker registry
- Two installation options:
  - Managed installation - for example, Managed OpenShift on IBM Cloud
  - VMware installation - requires manual installation of RHOCP
- Install on any Certified Kubernetes 1.1 platform

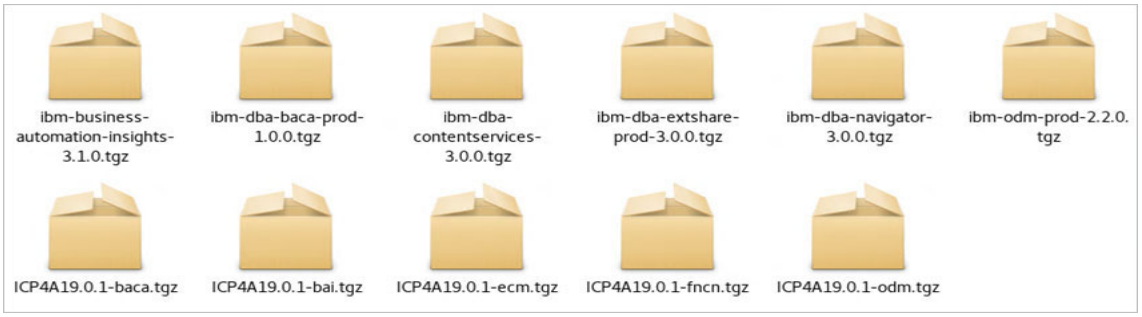





*Figure 1-14. Installing IBM Cloud Pak for Automation (1 of 2)*

Make sure that your environment is compatible with Cloud Native Computing Foundation (CNCF) Certified Kubernetes.

If you are not sure which Certified Kubernetes platform is right for you, see Picking the right solution -

https://v1-13.docs.kubernetes.io/docs/setup/pick-right-solution/

Since both AWS and Azure are Kubernetes certified, you can install CP4A on AWS and Azure. While OpenShift is not a requirement when installing CP4A on AWS or Azure, it is recommended as it makes the cluster management easier.

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# Installing IBM Cloud Pak for Automation (2 of 2)

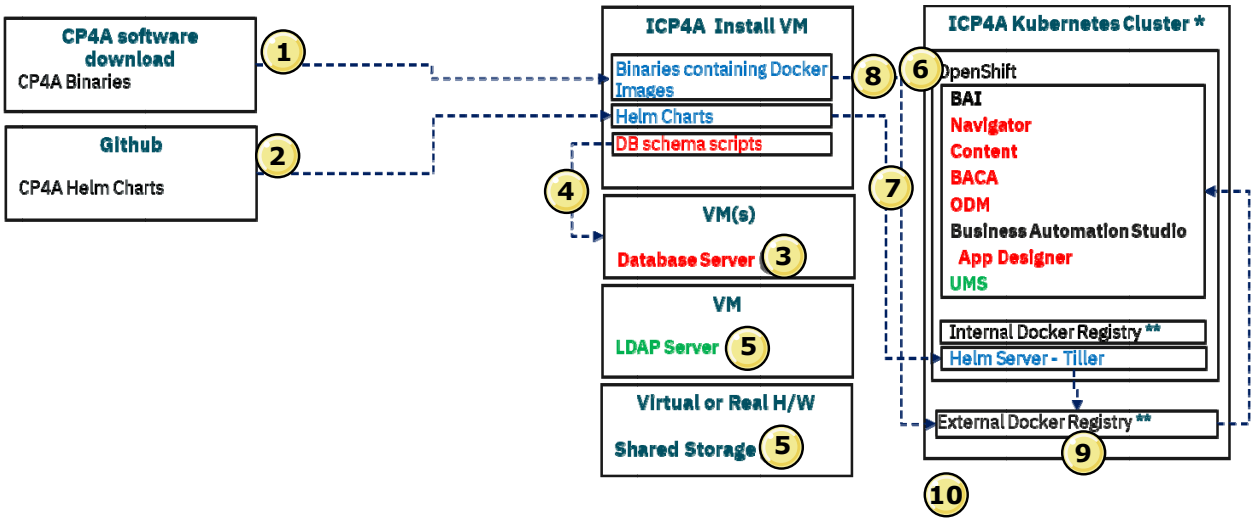





*Figure 1-15. Installing IBM Cloud Pak for Automation (2 of 2)*

1. Extract the product binaries all Docker Images
2. For all DBA products extract DBA Helm Charts from Github
3. Install Db2 (ensure the correct version)
4. Use the DB schema (extracted from various sources – depending on the DBA product) to create the databases required by DBA products in RED
5. Install LDAP server and setup NFS
6. Install OpenShift
7. Install Helm (Tiller Pod shows up)
8. Push Docker Images to Docker Registry
9. Use Helm Server to install a DBA offering.
    a. Create secrets
    b. Configure xxx-configuration.yaml (for Db2, LDAP, and so on…) and secret.yaml for security, These files are input to the Helm install command
    c. Run the Helm install command. This command install pods (defined in Docker Registry) and configures them according to Helm charts and parameter files (configuration and secret)

10. Configure routing to expose consoles as services

# 1.3. Key terminology and concepts

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# Key terminology and concepts




*Figure 1-16. Key terminology and concepts*

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## Topics

- IBM Cloud Paks
- IBM Cloud Pak for Automation
- Key terminology and concepts




*Figure 1-17. Topics*

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## Docker basic concepts

- Image
  - A read-only snapshot of a container that is stored in a Docker registry and used as a template for building containers
- Container
  - The standard unit in which the application service resides or is transported
- Registry
  - Available in SaaS or Enterprise to deploy anywhere you choose
    Stores, distributes, and shares container images
- Engine
  - A program that creates, ships, and runs application containers
    Runs on any physical or virtual machine locally, in private, or public cloud
- Client
  - Communicates with engine to execute commands




*Figure 1-18. Docker basic concepts*

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## Docker and containers

- Docker provides a standard way to create images for Containers
- A Container is standard way to package an application and all its dependencies so that it can be moved between environments and run without change
- Containers work by hiding the differences between applications inside the container so that everything outside the container can be standardized
- Benefits of containers:
  - Can run on many different platforms
  - Processes share OS resources, but remain segregated
  - Isolate the different requirements between the applications that run inside the container, and the operations that run outside the container
  - Quick and easy to create, delete, start, stop, download, and share
  - Use hardware resources more efficiently than virtual machines, and are more lightweight
  - Can be treated as unchangeable




*Figure 1-19. Docker and containers*

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## Container Orchestration

- Container Orchestration is the management of the deployment, placement, and lifecycle of workload containers
- Cluster management creates unified targets for varied workload
- Scheduling intelligently distributes containers across nodes
- Service discovery knows where containers are located and provides a method to direct requests to them
- Replication allows the workload to be scaled
- Health management creates a method to ensure that the application is assured to be viable by allowing unhealthy containers to be replaced




*Figure 1-20. Container Orchestration*

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## Kubernetes

- Fully open source container orchestrator inspired and informed by Google's experiences and internal systems
- Unified API for deploying web applications, batch jobs, and databases maintaining and tracking the global view of the cluster
- Supports multiple cloud and bare-metal environments
- Manage applications, not machines providing a better framework to support rolling updates, canary deploys, and blue-green deployments
- Designed for extensibility
- Rich ecosystem of plug-ins for scheduling, storage, and networking
- Open source project managed by the Linux Foundation




*Figure 1-21. Kubernetes*

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## Kubernetes concepts

- Pod
  - All containers in a pod are co-located and co-scheduled, and share the kernel namespace (process, storage, network, etc.)
- ReplicaSet
  - ReplicaSets run one-to-many instances of the desired pod
- Scaling
  - Allows you to scale the number of running pods in a replicaset based on resource (or application custom) metrics
- Persistence & Storage
  - Some pods must be able to persist data so that if Kubernetes restarts them on the same or another node data loss is avoided
- Deployment
  - When a new version of the application is available, the Deployment provides the ability to scale down the previous version of the application and scale up the new version in a controlled fashion with zero downtime
- Helm
  - Helm allows you to manage all of the artifacts that build your application




*Figure 1-22. Kubernetes concepts*

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## Skills that are required by Cloud Pak for Automation Administrators and Operators

- To install and manage the containerized environment, you do not need to be an expert in the Digital Business Automation products such as ODM or Content.
- Skills needed are:
  - Red Hat Enterprise Linux
  - Red Hat OpenShift
  - Docker
  - Kubernetes
- Strong OpenShift skills are essential to using IBM Cloud Paks
- OpenShift training is offered by Red Hat Education
- Courses and credentials can by found here: https://www.redhat.com/en/services/training/all-courses-exams
  - Scroll down and select “Courses by Curriculum” and select “OpenShift”.




*Figure 1-23. Skills that are required by Cloud Pak for Automation Administrators and Operators*

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## Skills that are required by Business Analyst and Developers

- To develop solutions by using the individual software products that are deployed from the Cloud Paks, you need to know the specific product skills only, such as being an ODM or Content developer.
- A developer works with the product that is running on the deployed container and need not be an expert in RHOCP, Docker, or Kubernetes.




*Figure 1-24. Skills that are required by Business Analyst and Developers*

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## Unit summary

- Describe IBM Cloud Paks
- Explain IBM Cloud Pak for Automation
- Define key terminology
- Understand the learning prerequisites




*Figure 1-25. Unit summary*

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## Review questions

1. True or False: IBM Cloud Pak for Automation containers only install on the Red Hat OpenShift Container (RHOCP) platform.

2. Which of the following products is available in a Docker container when working with IBM Cloud Pak for Automation?
   A. FileNet Content (Content)
   B. Business Automation Workflow (BAW)
   C. Robotic Process Automation (RPA)

3. True or False: Before installing IBM Cloud Pak for Automation, a developer needs to have a strong knowledge of either Operational Decision Manager or IBM Business Automation Workflow.




*Figure 1-26. Review questions*

## Review answers

1. The answer is False. While RHOCP is the preferred way, and an entitlement limited edition is included with the purchase of a Cloud Pak, the IBM Cloud Pak for Automation containers can install on any certified kubernetes container platform.

2. A. Content is one of the products that is available in a Docker container

3. The answer is False. To install and manage the containerized environment, you do not need to be an expert in the Digital Business Automation products such as ODM or IBM BPM. Instead, skills on RHOCP, Docker, and Kubernetes are needed.




*Figure 1-27. Review answers*

# Unit 2. Education Lab Environment Overview

## Estimated time

01:00

## Overview

This unit describes the Education Lab Environment that you work with in this course. It also explains the steps that you need to take when working with the lab environment to ensure a pleasant experience.

## How you will check your progress

- Checkpoint
- Lab exercises

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# Unit objectives

- Understand the Education lab environment




*Figure 2-1. Unit objectives*

# 2.1. Education lab environment

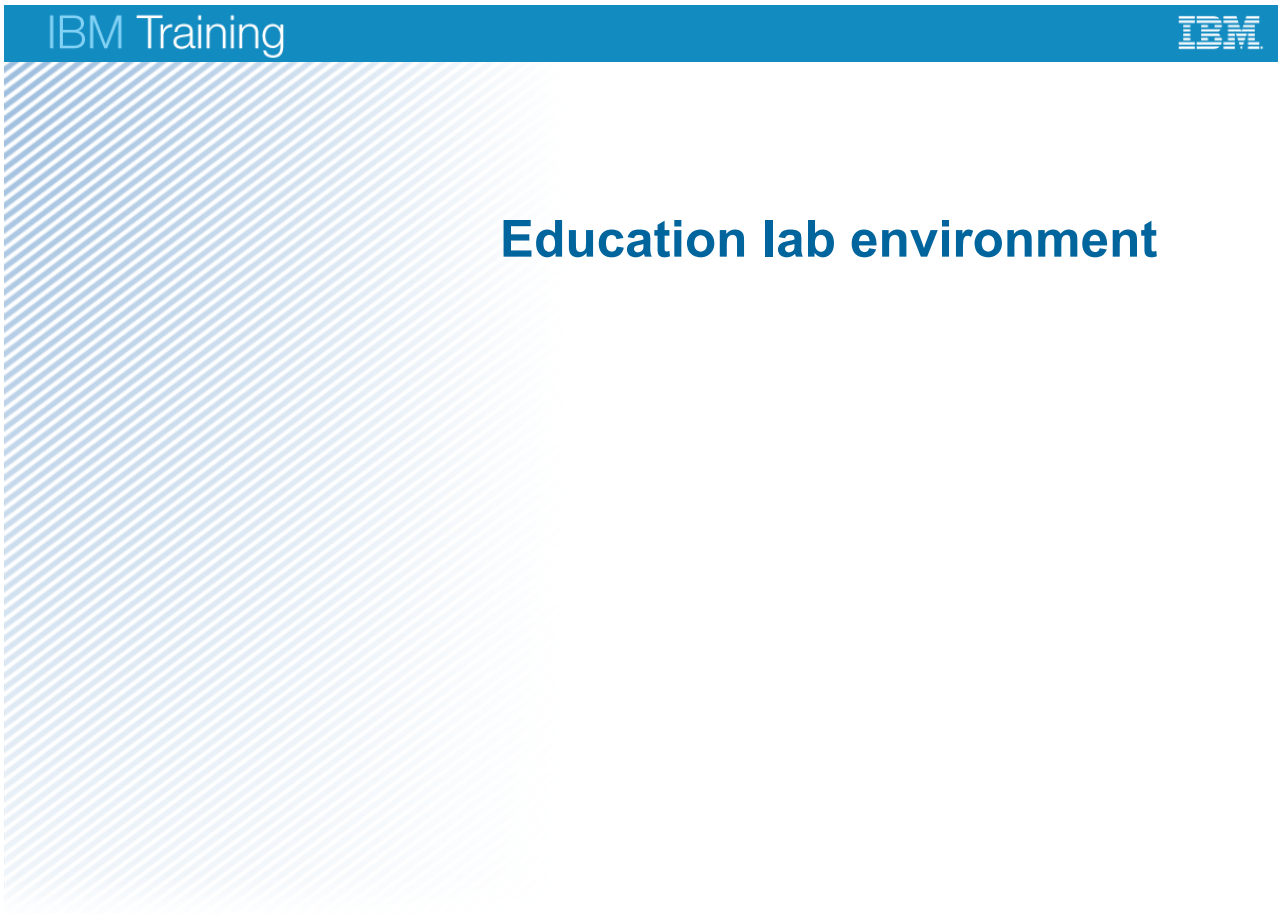


*Figure 2-2. Education lab environment*

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## Topics

Education lab environment




*Figure 2-3. Topics*

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## Lab environment

- Includes three virtual machines (VM) running Red Hat Enterprise Linux 7.7 operating system

| VM | RHCOCP Node type | IP address | Hostname |
|---|---|---|---|
| VM1- OCP master | Master | 10.0.0.1 | master.cp4a.com |
| VM2- OCP compute1 | Compute | 10.0.0.2 | compute1.cp4a.com |
| VM3- OCP compute 2 | Compute | 10.0.0.3 | compute2.cp4a.com |

- Each VM has:
  - 300 GB disk space
  - 8 CPU
  - 16 GB RAM

- The Master also has Network File System (NFS), Db2, and Lightweight Directory Access Protocol (LDAP) installed and configured.
- Red Hat OpenShift Container Platform (RHOCP) 3.11 is already installed in the lab environment




*Figure 2-4. Lab environment*

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## Accessing the VMs in the lab environment

- Two ways to connect to your VMs
  - Remote Desktop Protocol (RDP): Click the **RDP** icon for the VM
  - Browser: Click the VM thumbnail image
- Which one to use?
  - Depends on your preference
- Things to consider:
  - Using browser is easier but might have some mouse lag issues that can depend on your connection. If you decide to use the browser, then use Chrome as that is preferred
  - RDP opens a new console window and might give a better performance when you type or use the mouse
  - Try out both and then decide




*Figure 2-5. Accessing the VMs in the lab environment*

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# User ID and Passwords

| Entry Point | User ID | Password |
|---|---|---|
| OpenShift web console: https://master.cp4a.com:8443 | admin | passw0rd |
| Red Hat Linux VM | root | passw0rd |
| Db2 Enterprise | db2admin | passw0rd |
| LDAP console: https://master.cp4a.com:6443 | cn=admin, dc=ibm,dc =edu | passw0rd |




*Figure 2-6. User ID and Passwords*

# Lab environment states - Running state

- All the three VMs must be in the Running state before you can work with either of them
  - All the VMs communicate with each other
  - The first time that you access the environment, the state might be Running, Suspended, or Powered Off

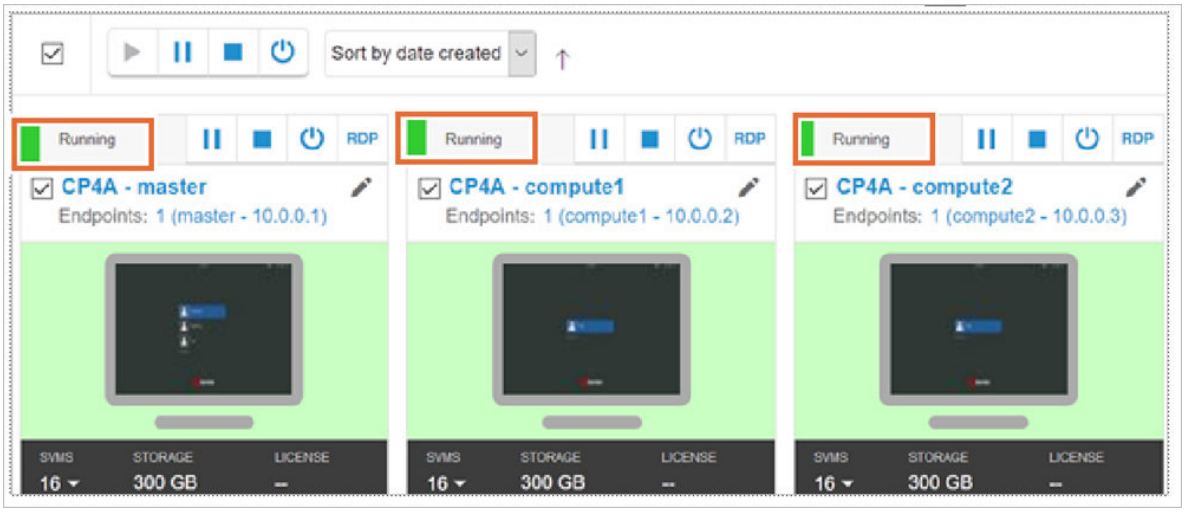






*Figure 2-7. Lab environment states - Running state*

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# Education lab environment states - Suspended state

- After 2 hours of inactivity, the **Education lab environment** goes into **Suspended** state to conserve valuable network resources
  - All the three VMs are suspended
  - Cannot work with a suspended VM
  - Cannot log in to a suspended VM
  - Must bring the environment to a Running state before you start work

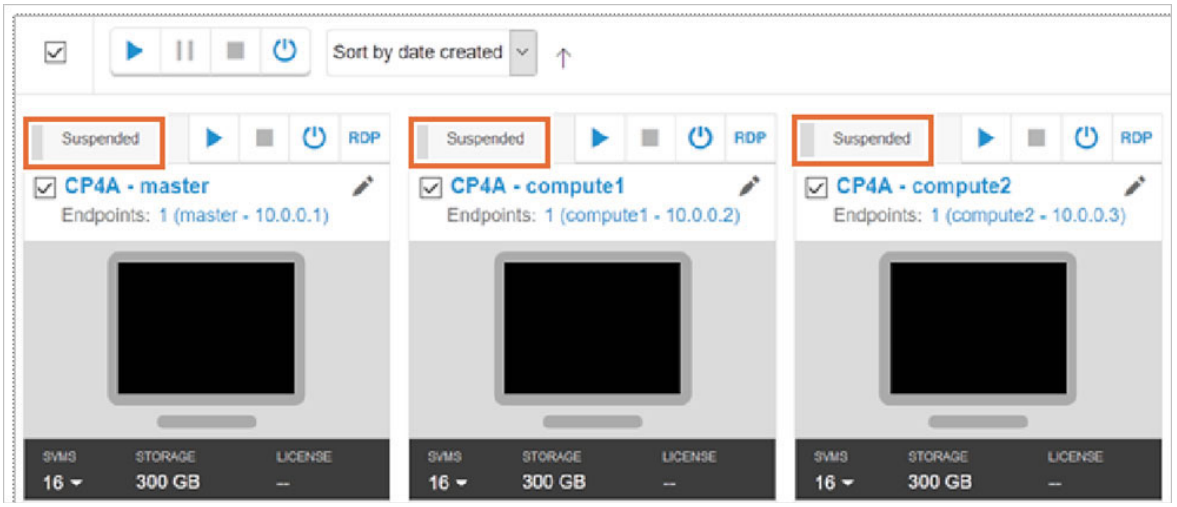





*Figure 2-8. Education lab environment states - Suspended state*

IBM Training

# Education lab environment states - Powered off state

- The environment is in Powered off state when you shut down the lab environment.
  - Must bring to Running state before you start work

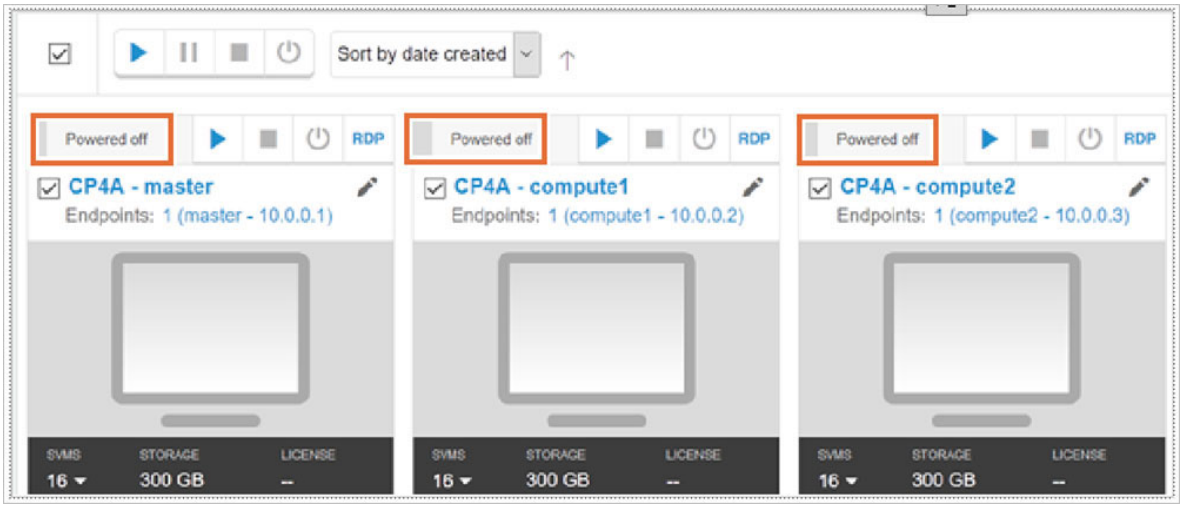





*Figure 2-9. Education lab environment states - Powered off state*

## Switching to a Running state

- Click the **Run VM(s)** icon at the top to start all the three VMs together.
- Do NOT click the **Run this VM** icon next to each VM to start them one at a time.

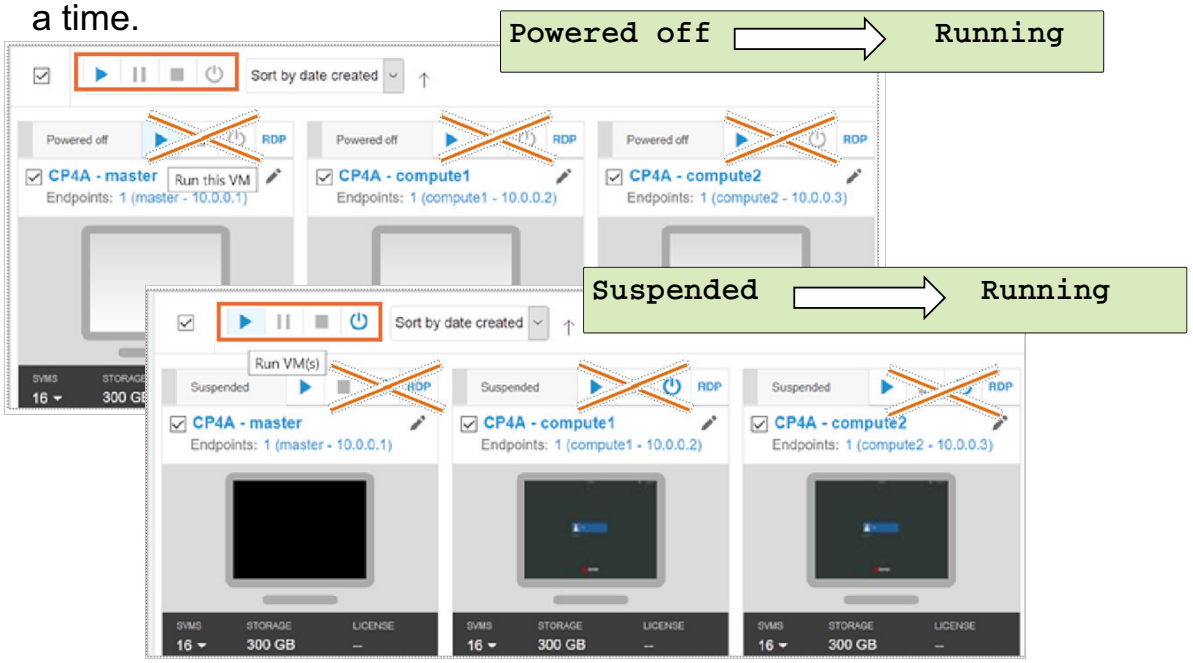





*Figure 2-10. Switching to a Running state*

## Shutting the environment

- When you step away from the labs for extended time:
  - Try to manually Power off the environment
  - This Power off prevents the lab environment from being suspended after 2 hours of inactivity
  - Start the environment at the beginning of the next day
- Click the **Shut down VM(s)** icon that is displayed at the top of the lab environment
- Do **NOT** click the **Shutdown this VM** next to each VM

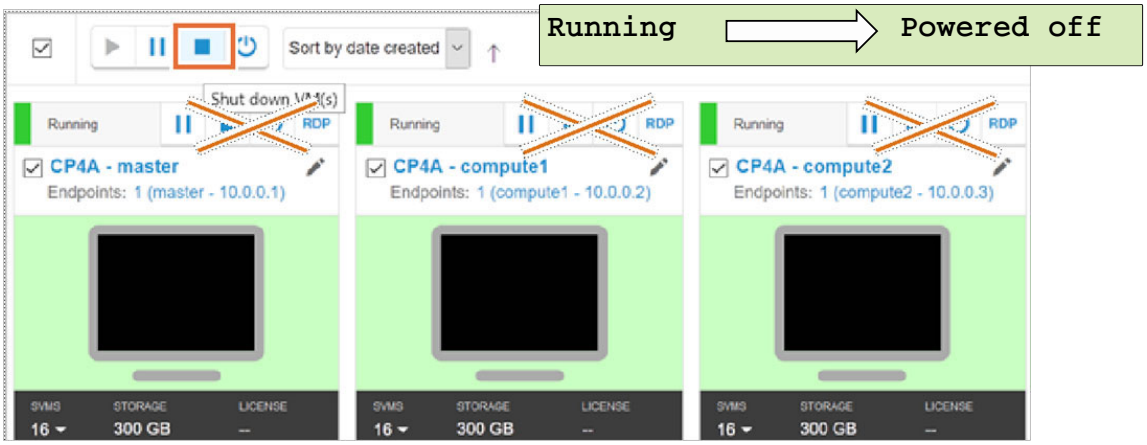





*Figure 2-11. Shutting the environment*

IBM Training

## Why shut and start the environment this way?

- The Master VM needs to communicate with the two compute nodes always
- If you power off or start the three VMs one by one, then it can cause one VM (usually a compute VM) to hang
  - Do not use the **Shutdown this VM** or **Run this VM** icon
- If you power off or start the three VMs together, then the environment is configured to start the VMs in proper sequence
  - Use the **Shutdown VM(s)** or **Run VM(S)** icon
- Wait 5 - 10 minutes after the status of the environment changes to the Running state. This wait ensures that all network services are up and the VMs are communicating




*Figure 2-12. Why shut and start the environment this way?*

IBM Training

# Unit summary

- Understand the Education lab environment




*Figure 2-13. Unit summary*

IBM Training

## Review questions

1. True or False: The hostname of the Master VM is compute1.cp4a.com.

2. What credentials do you use to log in to the Linux VM?
   A. admin / passw0rd
   B. Administrator / passw0rd
   C. linux / passw0rd
   D. root / passw0rd

3. True or False: Before you go for an extended break longer than 2 hours, it is a good idea to leave the Education lab Environment running so it goes to Suspended state by default.




*Figure 2-14. Review questions*

## Review answers

1. The answer is False. The hostname of the Master VM is master.cp4a.com.

2. D. root / passw0rd.

3. The answer is False. When you step away from the labs for extended time, try to manually Power off the Education lab environment. This Power off prevents the Education lab environment from being suspended after 2 hours of inactivity.




*Figure 2-15. Review answers*

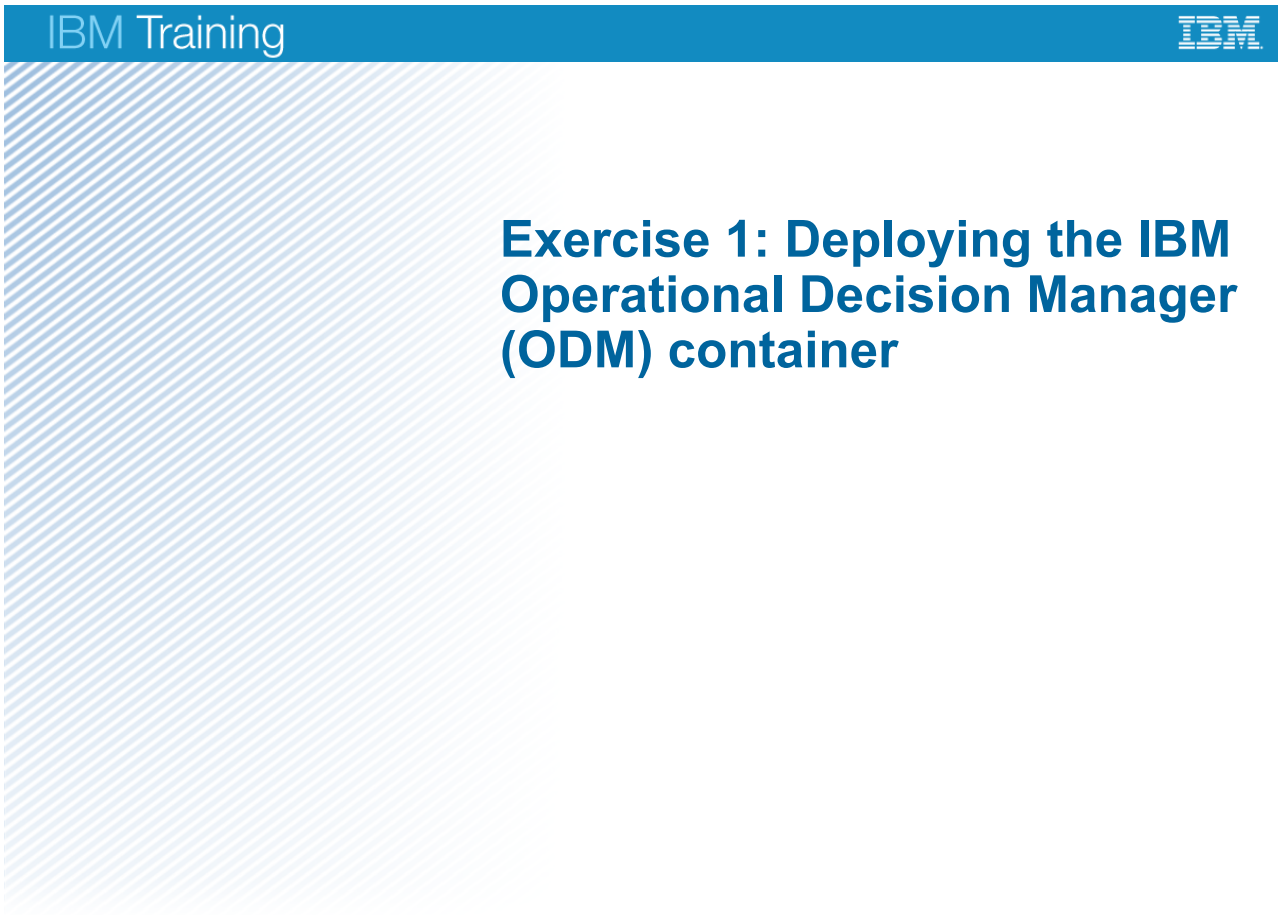


*Figure 2-16. Exercise 1: Deploying the IBM Operational Decision Manager (ODM) container*

IBM Training

## Exercise objectives

- Start and shut the lab environment
- Connect to Red Hat OpenShift Container Platform (RHOCP)
- Load ODM docker images for Cloud Pak for Automation (CP4A)
- Create and secure the ODM database
- Deploy the ODM container on RHOCP
- Verify the successful ODM deployment
- Troubleshoot the deployment
- Connect to the ODM containers and successfully log in to the Decision Center console and Rule Execution Server console




*Figure 2-17. Exercise objectives*

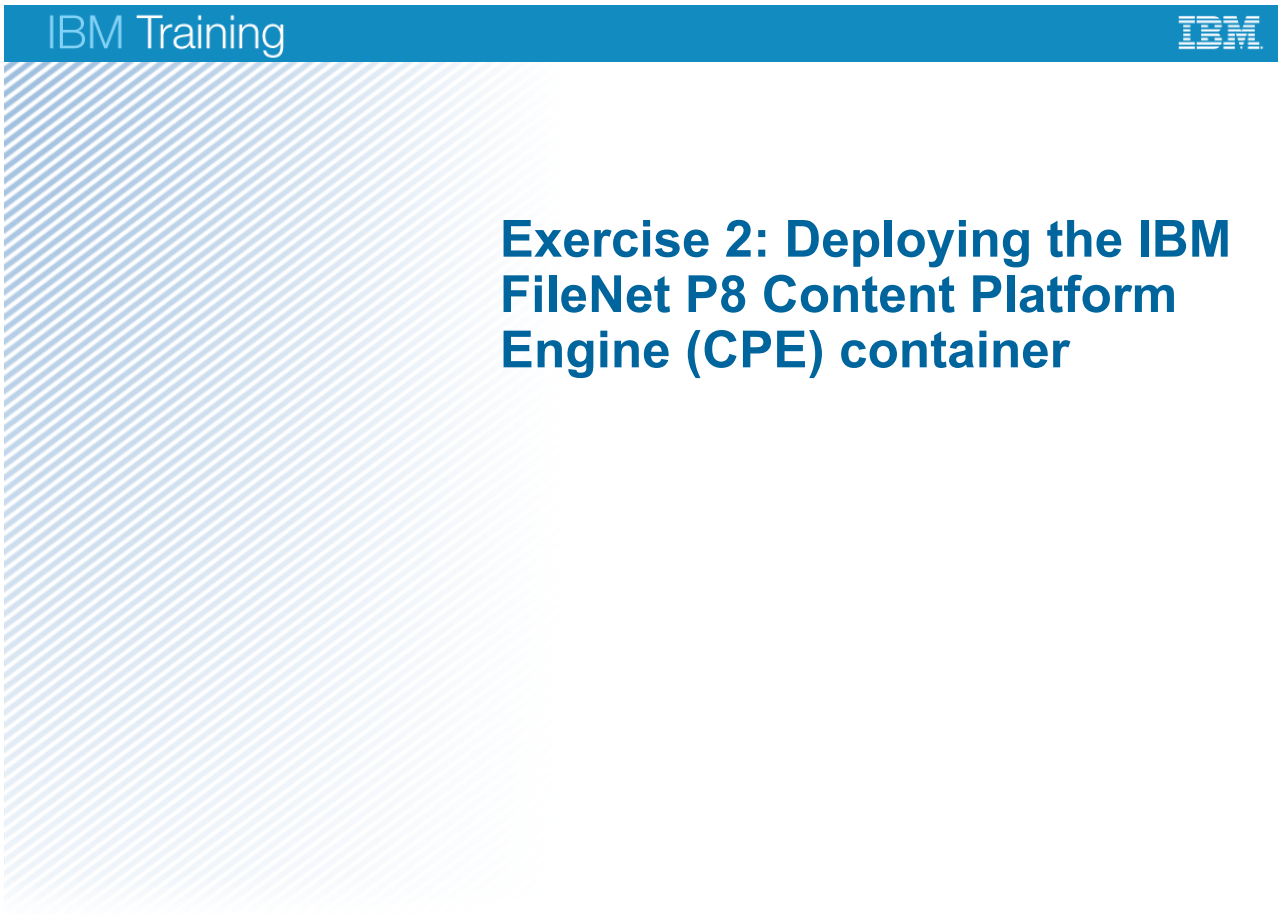


*Figure 2-18. Exercise 2: Deploying the IBM FileNet P8 Content Platform Engine (CPE) container*

IBM Training

## Exercise objectives

- Start and shut the lab environment
- Connect to Red Hat OpenShift Container (RHOCP)
- Create the Persistent Volumes and Persistent Volume Claims that are required by Content Platform Engine
- Prepare the database required by Content Platform Engine
- Prepare LDAP required by Content Platform Engine
- Load the Content Platform Engine Docker images for Cloud Pak for Automation
- Deploy the Content Platform Engine container
- Verify successful Content Platform Engine deployment
- Connect to the Content Platform Engine container and successfully log in to the Administrative Console for Content Engine (ACCE)




*Figure 2-19. Exercise objectives*

IBM Training

# Exercise 3: Administering the IBM Cloud Pak for Automation containers




*Figure 2-20. Exercise 3: Administering the IBM Cloud Pak for Automation containers*

IBM Training

## Exercise objectives

- Explore the Red Hat OpenShift container (RHOCP) web console for container management
- Examine the available open source monitoring options - metrics, alerts, and dashboards
- Scale an application deployment by using OpenShift
- Monitor containers by using probes




*Figure 2-21. Exercise objectives*

# Unit 3. Course summary, badge, and other learning resources

## Estimated time

00:30

## Overview

This unit summarizes the course and provides information for future study.

IBM Training

## Unit objectives

- Describe the course objectives and what you learned
- Earn a badge for this course
- Identify and describe product certifications that are related to this course
- Identify resources that can help you learn more



*Figure 3-1. Unit objectives*

IBM Training

## Course objectives

- Describe IBM Cloud Paks
- Explain IBM Cloud Pak for Automation
- Connect to Red Hat OpenShift Container (RHOCP)
- Load IBM Operational Decision Manager (ODM) docker images for Cloud Pak for Automation (CP4A)
- Create and secure the ODM database
- Deploy the ODM container on RHOCP
- Verify the successful ODM deployment
- Connect to the ODM container and successfully log in to the Decision Server console and Rule Execution Server console



*Figure 3-2. Course objectives*

IBM Training

## Course objectives

- Create the Persistent Volumes and Persistent Volume Claims that are required by IBM Content Platform Engine
- Prepare the database required by IBM FileNet P8 Content Platform Engine
- Prepare Lightweight Directory Access Protocol (LDAP) required by Content Platform Engine
- Load the Content Platform Engine docker images for Cloud Pak for Automation
- Deploy the Content Platform Engine container
- Verify successful Content Platform Engine deployment
- Connect to the Content Platform Engine container and successfully log in to the Administrative Console for Content Engine (ACCE)



*Figure 3-3. Course objectives*

IBM Training

## Course objectives

- Troubleshoot the deployment
- Explore the Red Hat OpenShift container (RHOCP) web console for container management
- Examine the available open source monitoring options - metrics, alerts, and dashboards
- Scale an application deployment by using OpenShift
- Monitor containers by using probes



*Figure 3-4. Course objectives*

IBM Training

## IBM badge

- Earn a Skills badge for this course by passing a quiz
- To earn the badge for this course:
  https://www.youracclaim.com/org/ibm/badge/ibm-cloud-pak-for-automation-installation-and-administration
- Other IBM Cloud badges:
  https://ibm-learning-skills-dev.github.io/ibm-learning-skills-dev.github.io/badges/badgemain.html



*Figure 3-5. IBM badge*

IBM Training

## IBM Professional Certifications

- By achieving an IBM Professional Certification, you can demonstrate your IBM Cloud product mastery to your employer or clients
- Certifications are a higher level of credential than a Skills badge for a single education course
- Product certifications demonstrate a strong knowledge of the product and typically require several months of work with the product
- IBM Cloud certifications are available for several roles, including developers, administrators, and business analysts
- For information on specific certifications and their requirements, see http://www.ibm.com/certify,



*Figure 3-6. IBM Professional Certifications*

IBM Training

# Other learning resources (1 of 4)

- **IBM Skills Gateway**
  - Search the new IBM Training and Skills website (formerly IBM Authorized Training website) to find and access the content you want.
  - https://www-03.ibm.com/services/learning/ites.wss/zz-en?pageType=page&c=a0011023,
- **IBM Cloud Education Wiki Home**
  - Go to the wiki to find course abstracts, course correction documents, and curriculum development plans for IBM Cloud offerings.
  - https://www.ibm.com/developerworks,
- **Role-based Learning Journeys**
  - Learning Journeys describe the appropriate courses, in the recommended order, for specific products and roles.
  - https://www.ibm.com/services/learning/ites.wss/us/en?pageType=journey_category&c=&tag=o-itns-01-02,



*Figure 3-7. Other learning resources (1 of 4)*

IBM Training

## Other learning resources (2 of 4)

- **IBM Professional Certification Program**
  - IBM Professional Certification enables skilled IT professionals to demonstrate their expertise to the world. It validates skills and proficiency in the latest IBM technology and solutions.
  - https://www.ibm.com/certify,
- **IBM Training blog, Twitter, and Facebook**
  - These official IBM Training and Skills accounts provide information about IBM course offerings, industry information, conference events, and other education-related topics.
  - https://www.ibm.com/blogs/ibm-training,
  - https://twitter.com/IBMTraining,
  - https://www.facebook.com/ibmtraining,



*Figure 3-8. Other learning resources (2 of 4)*

IBM Training

## Other learning resources (3 of 4)

- **Business Partner Technical Enablement Portal**
  - https://ibm.box.com/s/695khv9nyzekaorykqmsjrematz3v9xh,
  - This program provides technical training content modules to IBM software partners (via PartnerWorld) and IBM Business Partners.

- **IBM Developer**
  - IBM's official developer program offers access to software trials and downloads, how-to information, and expert practitioners.
  - https://developer.ibm.com,

- **IBM Education Assistant**
  - These multimedia educational modules help users gain a better understanding of IBM Software products and use them more effectively to meet business requirements.
  - https://www.ibm.com/products/software,



*Figure 3-9. Other learning resources (3 of 4)*

IBM Training

## Other learning resources (4 of 4)

- **IBM Knowledge Center**
  - The IBM Knowledge Center is the primary home for IBM product documentation.
  - https://www.ibm.com/support/knowledgecenter,
- **IBM Marketplace**
  - IBM Marketplace is the landing page for all IBM Cloud products. Go to the Marketplace to learn about IBM offerings for Cloud, Cognitive, Data and Analytics, Mobile, Security, IT Infrastructure, and Enterprise and Business Solutions.
  - https://www.ibm.com/products,
- **IBM Redbooks**
  - IBM Redbooks are developed and published by the IBM International Technical Support Organization (ITSO). Redbooks typically provide positioning and value guidance, installation and implementation experiences, typical solution scenarios, and step-by-step "how-to" guidelines.
  - http://www.redbooks.ibm.com,



*Figure 3-10. Other learning resources (4 of 4)*

IBM Training

# Unit summary

- Describe the course objectives and what you learned
- Earn a badge for this course
- Identify and describe product certifications that are related to this course
- Identify resources that can help you learn more



*Figure 3-11. Unit summary*

IBM Training

## Course completion

**You have completed this course:**

IBM Cloud Pak for Automation, Installation and Administration

**Do you have any questions?**



*Figure 3-12. Course completion*

# Appendix 4. List of abbreviations

| | |
|---|---|
| **IBM** | International Business Machines Corporation |
| **Ajax** | Asynchronous JavaScript and XML |
| **API** | application programming interface |
| **APQC** | American Productivity Quality Center |
| **ATM** | automated teller machine |
| **BAM** | business activity monitoring |
| **BEP** | business event processing |
| **BI** | business intelligence |
| **BM** | business measures |
| **BPC** | Business Process Choreographer |
| **BPEL** | Business Process Execution Language |
| **BPM** | business process management |
| **BPMN** | Business Process Modeling Notation |
| **CBD** | component-based development |
| **CEI** | Common Event Infrastructure |
| **CEO** | chief executive officer |
| **CPE** | Content Platform Engine |
| **CSV** | comma-separated values |
| **DB** | database |
| **DBA** | database administrator |
| **DDL** | Data Definition Language |
| **DDT** | database design tool |
| **DEF** | Dynamic Event Framework |
| **DHCP** | Dynamic Host Configuration Protocol |
| **DMS** | data movement services |
| **EAR** | enterprise archive |
| **ECM** | Enterprise Content Management |
| **EJB** | Enterprise JavaBeans |
| **ESB** | enterprise service bus |
| **EWMA** | exponentially weighted moving average |

| | |
|---|---|
| **FTP** | File Transfer Protocol |
| **GBS** | Global Business Services |
| **HTTP** | Hypertext Transfer Protocol |
| **IBM** | International Business Machines Corporation |
| **IDE** | integrated development environment |
| **IMS** | Information Management System |
| **I/O** | input/output |
| **IP** | Internet Protocol |
| **IT** | information technology |
| **ITC** | Integrated Test Client |
| **ITE** | integrated test environment |
| **ITSO** | International Technical Support Organization |
| **Jacl** | Java Command Language |
| **JAR** | Java archive |
| **Java EE** | Java Platform, Enterprise Edition |
| **JDBC** | Java Database Connectivity |
| **JMS** | Java Message Service |
| **JNDI** | Java Naming and Directory Interface |
| **JSF** | JavaServer Faces |
| **JSON** | JavaScript Object Notation |
| **KAI** | key agility indicator |
| **KPI** | key performance indicator |
| **LAN** | local area network |
| **LDAP** | Lightweight Directory Access Protocol |
| **LTPA** | Lightweight Third Party Authentication |
| **MC** | monitoring context |
| **MDB** | message-driven bean |
| **MM** | monitor model |
| **MME** | Monitor model editor |
| **MQ** | Message Queue |
| **MQT** | materialized query table |
| **ND** | network deployment |
| **NTB** | net tangible benefit |
| **ODM** | IBM Operational Decision Manager |

| | |
|---|---|
| **OS** | operating system |
| **PCF** | Process Classification Framework |
| **PDF** | Portable Document Format |
| **PHP** | Hypertext Preprocessor |
| **PI** | project interchange |
| **POS** | point-of-sale |
| **RHEL** | Red Hat Enterprise Linux |
| **RHOCP** | Red Hat OpenShift Container Platform |
| **REST** | Representational State Transfer |
| **RIA** | rich Internet application |
| **RIID** | root instance ID |
| **RSS** | Really Simple Syndication |
| **SCA** | Service Component Architecture |
| **SDO** | Service Data Object |
| **SIB** | service integration bus |
| **SIBus** | service integration bus |
| **SKU** | stock keeping unit |
| **SMS** | short message service |
| **SOA** | service-oriented architecture |
| **SSL** | Secure Sockets Layer |
| **SVG** | Scalable Vector Graphics |
| **TCP** | Transmission Control Protocol |
| **TCP/IP** | Transmission Control Protocol/Internet Protocol |
| **UDB** | Universal Database |
| **UDF** | user-defined function |
| **UI** | user interface |
| **URI** | Uniform Resource Identifier |
| **URL** | Uniform Resource Locator |
| **UTE** | unit test environment |
| **VMM** | Virtual Member Manager |
| **WSDL** | Web Services Description Language |
| **XML** | Extensible Markup Language |
| **XPath** | XML Path Language |
| **XSD** | XML Schema Definition |

IBM Training