

# IBM Cloud Pak for Business Automation on the AWS Marketplace

Deployment Guide

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## Overview

This deployment guide provides step-by-step instructions for deploying IBM Cloud Pak for Business Automation on a Red Hat OpenShift Container Platform cluster on the AWS Cloud. You can automatically deploy a multi-master production instance of Cloud Pak for Business Automation.

IBM Cloud Pak for Business Automation enables enterprise users to connect, catalog, govern, transform, and analyze the data regardless of the location of the data.

## Cloud Pak for Business Automation capabilities

IBM Cloud Pak for Business Automation offers design, build, run, and automation services to rapidly scale your programs and fully execute and operationalize an automation strategy. IBM Cloud Pak for Business Automation helps you to achieve scale by providing an integrated, coordinated software platform that offers capabilities to digitize your business operations.

The IBM Cloud Pak for Business Automation on AWS offers the following capabilities:

- [FileNet Content Manager](#)
- [Operational Decision Manager](#)
- [Business Automation Workflow](#)
- [Automation Decision Services](#)
- [Automation Document Processing](#)
- [Business Automation Application](#)
- [Workflow Process Service](#)

### FileNet Content Manager

IBM FileNet Content Manager digitizes content and manages the content lifecycle by enabling users to focus on their work and collaborate within the enterprise and with external Business Partners. IBM FileNet Content Manager offers enterprise-level scalability and flexibility to handle the most demanding content challenges, the most complex business processes, and integration to all your existing systems. For more information, see [Automation Capabilities - Content Services](#).

### Operation Decision Manager

IBM Operational Decision Manager automates decision-making at your organization. You commit your policies to business rules that are easy to develop and maintain. Most of the time, these decisions involve detailed, repetitive work that is done according to business policies or industry regulations. These repeatable business decisions can be captured and automated to improve your responsiveness, minimize compliance risk, and streamline workflow processes. For more information, see [Decision Management - Operational Decision Manager](#).

## Business Automation Workflow

IBM Business Automation Workflow automates steps in your end-to-end process workflow, you can increase agility, visibility, and consistency across hundreds of processes. A workflow strings particular work items and content that is used in doing business together to create processes, and helps to identify patterns that can be improved. IBM Business Automation Workflow generates BPMN and Case events that can be captured in IBM Business Automation Insights, aggregated into business-relevant KPIs, and displayed on meaningful dashboards to analyze business data. For more information, see [Workflow Automation - IBM Business Automation Workflow](#).

If you deployed Business Automation Workflow only, you can choose to add IBM Automation Workstream Services. Workstream Services provides a no-code solution that enables non-technical users to put together, publish, and run their own workstreams to streamline inefficient processes and fast-track activities in their everyday work. After adding workstreams capability, you can create and publish custom workstreams, configure your own workstreams using predefined activities, or use the out-of-the-box preconfigured workstreams in Workplace. For more information, see [Workflow - Workstream Services](#)

## Automation Decision Services

IBM Automation Decision Services is an automation solution that helps business users capture and automate repeatable intelligent business decisions. It enables flexible and scalable deployment of automated decisions running on premises or in the cloud. For more information, see [Decision Management - Automation Decision Services](#).

## Automation Document Processing

Automation Document Processing provides the capabilities that help you build an AI-powered data enrichment tool for document processing and storage. For more information, see [Document Processing - IBM Automation Document Processing](#).

## Business Automation Application

Use Business Automation Application to create and run business applications that use the capabilities of the platform. Build low-code business applications using Application Designer, test them with Application Engine

playback server and run them in Application Engine. These applications are available to users in IBM Business Automation Navigator. For more information, see [Business Applications - IBM Business Automation Application](#).

## Workflow Process Service

Workflow Process Service is a process capability with a smaller footprint and resource usage for developing, testing, and running workflow processes that orchestrate human tasks and services. For more information, see [Workflow automation - IBM Workflow Process Service](#).

# Cloud Pak for Business Automation on AWS

IBM Cloud Pak for Business Automation helps to automate business operations with an integrated platform of automation capabilities. IBM Cloud Pak for Business Automation offers design, build, run, and automation services to rapidly scale your programs and fully execute and operationalize an automation strategy. The platform relies on Kubernetes, an open-source application container orchestration software that makes it easier to configure, deploy, and manage containerized applications. For more information, see the [IBM Cloud Pak for Business Automation](#) documentation.

Cloud Pak for Business Automation uses AWS services and features, including virtual private clouds (VPCs), Availability Zones, security groups, Amazon Elastic Block Storage, and Elastic Load Balancing to build a reliable and scalable cloud platform.

This reference deployment provides AWS CloudFormation templates to deploy Cloud Pak for Business Automation on a new OpenShift cluster. This cluster includes:

- A Red Hat OpenShift Container Platform cluster created in a new or existing VPC on Red Hat CoreOS (RHCOS) instances using the [Red Hat OpenShift Installer Provisioned Infrastructure](#). See the [OpenShift Container Platform Installation overview](#) for details about the underlying OpenShift deployment architecture.
- A highly available storage infrastructure with Red Hat OpenShift Container Storage.
- Scalable OpenShift compute nodes running Cloud Pak for Business Automation services.

For more information about Cloud Pak for Business Automation, see the [IBM Cloud Pak for Business Automation](#) documentation.

This product requires an internet connection to deploy the Cloud Pak for Business Automation on AWS where container images are pulled from IBM Entitled Registry: cp.icr.io



## Cost and licenses

The Cloud Pak for Business Automation environment uses the AWS CloudFormation template for deployment. You are responsible for the cost of the AWS services used for the infrastructure.

The AWS CloudFormation template for this deployment includes configuration parameters you can customize. You can use it to build a new AWS VPC for your Cloud Pak for Business Automation on the AWS cluster or deploy it on an existing AWS VPC. Some of these settings, such as instance type, will affect the cost of deployment. For cost estimates, see the pricing pages for each AWS service you will be using. Prices are subject to change. The IBM Cloud Pak for Business Automation Hyperscaler Edition offering is not eligible for user-based licensing. If you purchased from the [Product Page](#) on the AWS Marketplace, then you have purchased entitlements for the Hyperscaler Edition. Do not select "user" when completing the CloudFormation Template as part of the deployment process.

For more information on Cloud Pak for Business Automation license, see [software license agreement](#).

**Disclaimer:** Please note that Cloud Pak for Business Automation deploys IBM Fusion Data Foundation (FDF) for storage. Customers might observe large amount of data being replicated across the different availability zones (AZs) in AWS, which could increase the cost depending on the usage. For more information on FDF, see [IBM Fusion Data Foundation \(FDF\) documentation](#).

## Architecture

Deploying the [AWS Marketplace](#) template for a new VPC with **default parameters** builds the following Cloud Pak for Business Automation environment in the AWS Cloud. Please note that this automation deploys the VPC, OpenShift Container Platform cluster, and Cloud Pak for Business Automation with the exception of prerequisites (i.e., S3 buckets, Route 53, directory service, and database)

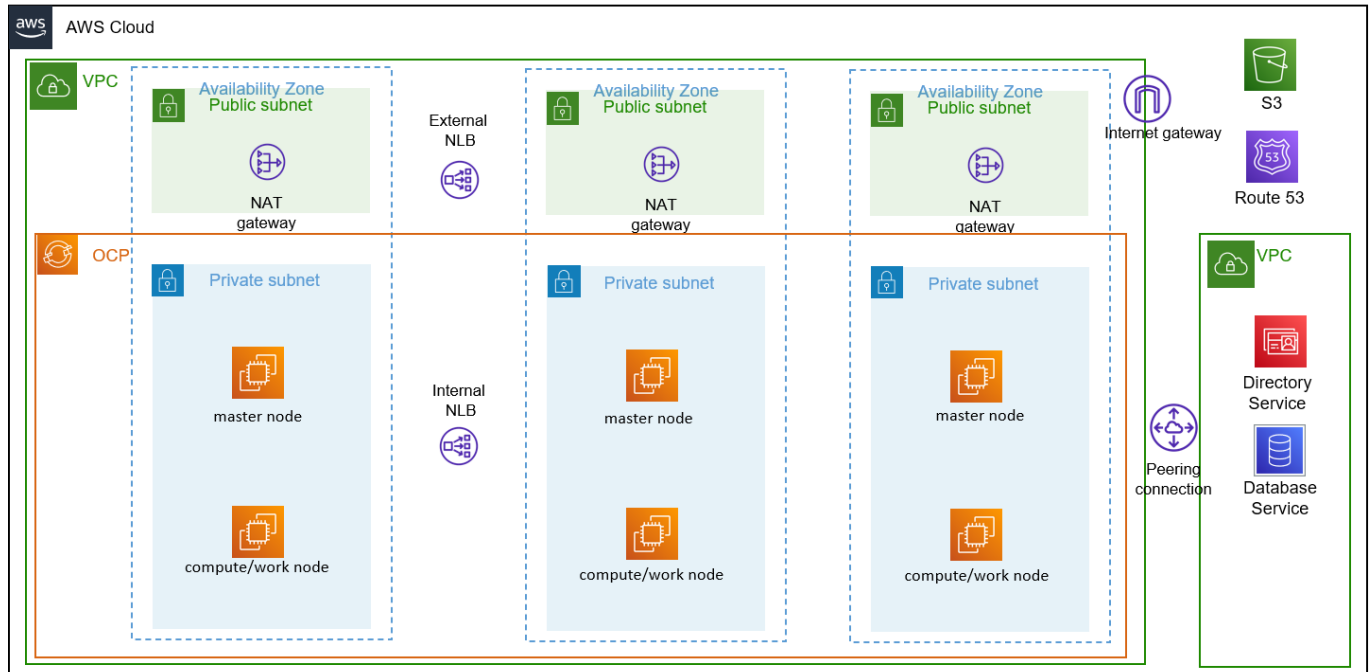


Figure 1: Deployment architecture for Cloud Pak for Business Automation on AWS in new VPC

Deploying the [AWS Marketplace](#) template for an existing VPC with **default parameters** builds the following Cloud Pak for Business Automation environment in the AWS Cloud. Please note that this automation deploys the VPC, OpenShift Container Platform cluster, and Cloud Pak for Business Automation with the exception of prerequisites (i.e., S3 buckets, Route 53, directory service, and database)

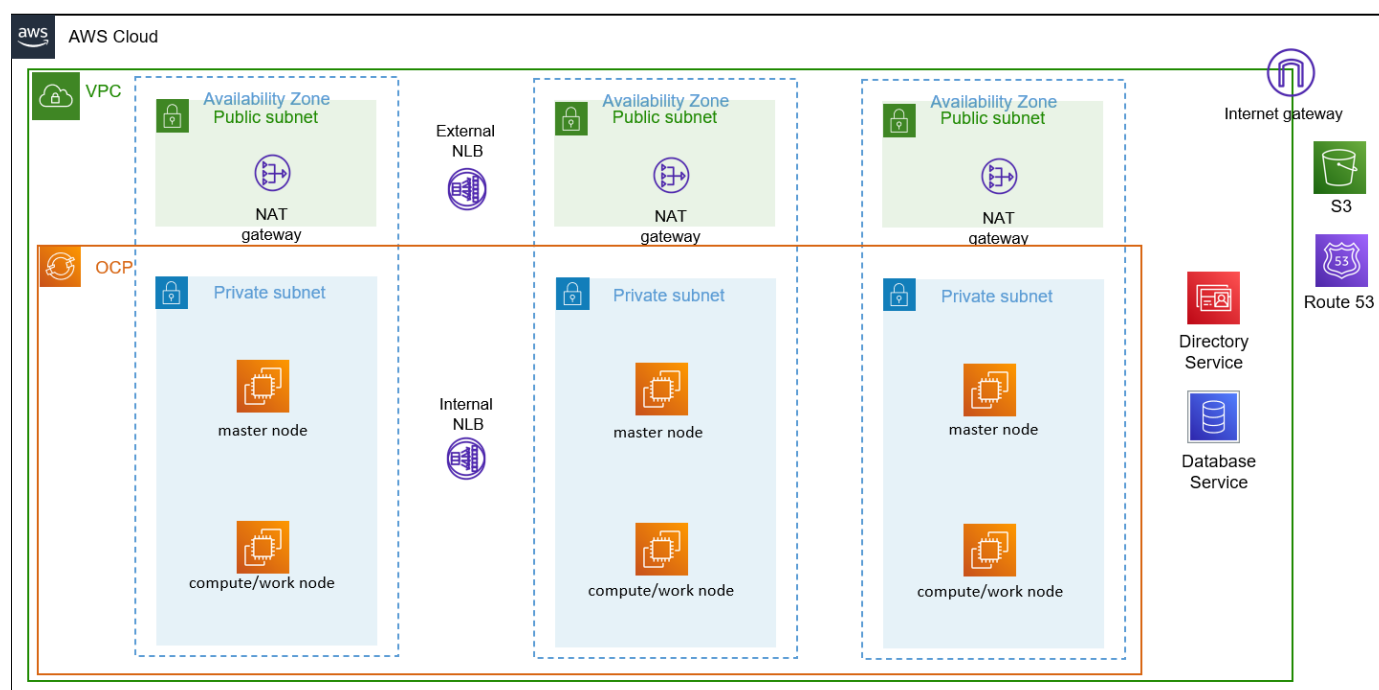


Figure 2: Deployment architecture for Cloud Pak for Business Automation on AWS in an existing VPC

The Cloud Formation Stack sets up the following:

- A highly available architecture that spans three Availability Zones.\*
- A VPC configured with public and private subnets according to AWS best practices to provide you with your own virtual network on AWS. \*
- In the public subnets:
  - Managed network address translation (NAT) gateways to allow outbound internet access for resources in the private subnets.\*
  - A boot node Amazon Elastic Compute Cloud (Amazon EC2) instance that also serves as a bastion host to allow inbound Secure Shell (SSH) access to EC2 instances in private subnets.
- In the private subnets:
  - OCP master instances spans three Availability Zones.
  - OpenShift Container Platform (OCP) compute nodes that, combined, contain Cloud Pak for Business Automation capabilities.
  - Elastic Block Storage disks are mounted on the compute nodes for container-persistent data.
- A Classic Load Balancer spanning the public subnets for accessing Cloud Pak for Business Automation from a web browser.

- A Classic Load Balancer spanning the public subnets for accessing the OCP master instances.
- A Network Load Balancer spanning the private subnets for routing internal OpenShift application programming interface (API) traffic to the OCP master instances.
- Amazon Route 53 as the public Domain Name System (DNS) for resolving domain names of the IBM Cloud Pak for Business Automation web console and applications deployed on the cluster.

\* The template deployed into an existing VPC skips the components marked by asterisks and prompts you for your existing VPC configuration.

## Prerequisites

Ensure the following prerequisites are met before you start deploying Cloud Pak for Business Automation on AWS:

- Ensure the following subscriptions are in place with your existing Cloud Pak for Business Automation entitlements or obtained from [AWS Marketplace](#).
  - **IBM Cloud Pak for Business Automation Subscription:** When you purchase Cloud Pak for Business Automation from Marketplace, you will get the Cloud Pak for Business Automation entitlement username and API key. Keep it handy, as it is a required parameter in the AWS CloudFormation template.
  - **Red Hat Subscription:** Ensure you have the Red Hat [OpenShift pull secret](#) with your purchase. You must upload the secret file to an S3 bucket. The Cloud Formation Template will pull this secret file from the specified S3 bucket location to provision the cluster.
- Configure your AWS account correctly, as discussed in the [Technical requirements](#) earlier in this guide.
- The following resources must be made available for Cloud Pak for Business Automation deployment:
  - A key pair to SSH to the cluster nodes. In the navigation pane of the [Amazon EC2 console](#), choose **Key Pairs**, and then select your key pair from the list.
  - A new or an existing S3 Bucket location with Red Hat pull secret.
  - A new or an existing [Route 53](#) domain and a Hosted Zone Id, which will be used for adding DNS records for Cloud Pak for Business Automation applications.
  - An existing S3 Bucket to store deployment log files.
  - An existing database server or service deployed on AWS. For example, AWS RDS PostgreSQL

**Note:**

If you are deploying Cloud Pak for Business Automation to a new VPC, both the database server/service and the directory server/service must reside in the same existing VPC. The deployment creates a VPC peering from the new VPC (where Cloud Pak for Business Automation resides) to the existing VPC. If you are deploying Cloud Pak for Business Automation to an existing VPC, make sure both the database server/service and the directory server/service are already present in this existing VPC.

- An existing directory service server deployed or hosted on AWS. For example, AWS Managed Microsoft Active Directory.

## GitHub repository

The [GitHub repository](#) comprises the property files required for the Cloud Pak for Business Automation deployment process. You need to download the property files from the GitHub repository for the capabilities you want to deploy, edit the file and upload them onto a new or existing S3 bucket. You need to provide the path to the S3 bucket location while customizing the parameters for the Cloud Pak for Business Automation deployment.

The following property files are available in the GitHub repository:

- adp\_dev
  - adp\_dev.property
  - cp4ba\_db\_name\_user\_adp\_dev.property
- adp\_runtime
  - adp\_runtime.property
  - cp4ba\_db\_name\_user\_adp\_runtime.property
- ads
  - ads.property
  - cp4ba\_db\_name\_user\_ads.property
- aws
  - aws.property
  - cp4ba\_db\_name\_user\_aws.property
- baa
  - baa.property
  - cp4ba\_db\_name\_user\_baa.property

- baw\_authoring
  - baw\_authoring.property
  - cp4ba\_db\_name\_user\_baw\_authoring.property
- baw\_runtime
  - baw\_runtime.property
  - cp4ba\_db\_name\_user\_baw\_runtime.property
- common
  - cp4ba\_db\_server.property
  - cp4ba\_LDAP.property
- fncm
  - content.property
  - cp4ba\_db\_name\_user\_content.property
- odm
  - odm.property
  - cp4ba\_db\_name\_user\_odm.property
- wfpsa
  - wfpsa.property
  - cp4ba\_db\_name\_user\_wfpsa.property

## Planning the deployment

You must plan the deployment of the Cloud Pak for Business Automation capabilities which needs you to identify the resources required, regions and key pairs, and permissions.

### Specialized knowledge

This deployment assumes basic familiarity with Cloud Pak for Business Automation components and services. If you're new to Cloud Pak for Business Automation and Red Hat OpenShift, see the [Additional resources](#) section. This deployment also assumes familiarity with the OpenShift command line interface and Linux, in addition to a moderate level of understanding of AWS services.

**Note:**

The values mentioned in the table above are the default values, and you can change them based on your requirement.

## Technical requirements

For Cloud Pak for Business Automation requirements, see [System requirements for Cloud Pak for Business Automation](#).

[Red Hat Enterprise Linux CoreOS \(RHCOS\)](#) is used for the OpenShift compute node instances in this deployment.

## Resources

Before you launch the template, your account must have [resource quotas](#) as specified in the following table.

If necessary, request [service quota increases](#) for the following resources. You might need to do this if an existing deployment uses these resources, and you might exceed the default quotas with this deployment. The [Service Quotas console](#) displays your usage and quotas for some aspects of some services. For more information, see [Service Quotas](#).

Resource	This deployment uses
VPCs	1
Elastic IP addresses	3
Network Load Balancers	1
Classic Load Balancers	2
i3.large instances	1 (boot node)
m5.xlarge instances	3 (master node)
m5.4xlarge instances	3 (worker node)
m4.4xlarge instances	3 (IBM Fusion Data Foundation node)

## Regions

**Note:**

The existing database server and directory service server must be present in this VPC.

(Microsoft Active Directory) must be present in an existing VPC where the deployment creates a VPC peering.

2. You must ensure that the CIDR range does not conflict or overlap with the CIDR range of the existing VPC where the deployment creates a VPC peering.

This deployment requires a minimum of three Availability Zones. However, some AWS [Regions](#) do not support three availability zones. For more information on the current list of supported Regions, see [Service Endpoints and Quotas](#) in the AWS documentation.

## Key pair

Ensure that at least one Amazon EC2 [key pair](#) exists in your AWS account in the Region where you plan to deploy the template. Make a note of the key pair name. You need to provide this information during deployment. To create a key pair, follow the [instructions in the AWS documentation](#).

If you are deploying for testing or proof-of-concept purposes, IBM recommends creating a new key pair instead of specifying a key pair that is already being used by a production instance.

## IAM permissions

To deploy the template, you must log in to the AWS Management Console with [AWS Identity and Access Management \(IAM\) permissions](#) for the resources and actions the templates will deploy. The AdministratorAccess managed policy within IAM provides sufficient permissions.

The AdministratorAccess is required for the creation of the OpenShift cluster. For more information, see [Creating an IAM user](#).

## Deployment options

This template provides the following deployment options:

- **Deploy Cloud Pak for Business Automation into a new VPC.** This option builds a new AWS environment consisting of the VPC, subnets, NAT gateways, security groups, bastion hosts, and other infrastructure components and then deploys Cloud Pak for Business Automation into a new VPC.
- **Deploy Cloud Pak for Business Automation into an existing VPC.** This option provisions Cloud Pak for Business Automation in your existing VPC infrastructure.

The template also lets you configure CIDR blocks, instance types, and Cloud Pak for Business Automation settings, as discussed later in this guide.

A Cloud Pak for Business Automation standard deployment takes about 120 minutes.

## Preparing the deployment

Before you deploy the Cloud Pak for Business Automation on AWS, you must prepare your environment, which involves downloading and configuring the property files available on the [GitHub repository](#). The configured property files must be added to an existing or new S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Preparing the databases

Before you start the deployment of Cloud Pak for Business Automation on AWS, you need to set up the database and table space on the server.

Perform the following steps:

1. Go to the [GitHub repository](#) and click the **templates** folder and select the folder with the capability name you want to deploy:
  - Automation Document Processing Development (adp\_dev)
  - Automation Document Processing Runtime (adp\_runtime)
  - Automation Decision Services (ads)
  - Automation Workstream Services (aws)
  - Business Automation Application (baa)
  - Business Automation Workflow Authoring (baw\_authoring)
  - Business Automation Workflow Runtime (baw\_runtime)
  - FileNet Content Management (fncm)
  - Operational Decision Manager (odm)
  - Workflow Process Service Authoring (wfpsa)
2. Click the **dbscripts** folder and select the folder with the database type you want to deploy (some capabilities do not support all database servers):
  - PostgreSQL (postgresql)
  - DB2 (db2)
  - Oracle (oracle)
  - Microsoft SQL server (mssql)

**Note:**

If you are deploying more than one capability, you need to apply the common database scripts only once.

For PostgreSQL, ensure that **max\_prepared\_transactions** be at least as large as **max\_connections** so that every session can have a prepared transaction pending.

- Download all database scripts in the folder and enter the **<username>** and **<password>** in the database scripts. For Automation Document Processing deployment, please make sure you fill out **<database\_hostname>** and **<database\_port>** in `5_insertADPPProjectxxx.sql` files.
- Apply the database script to your database server.

## Common property files

You need to configure the following property files for all the capabilities:

Parameter name	Property file name
Database Server Configuration	cp4ba_db_server.property
Directory Server Service	cp4ba_LDAP.property

Perform the following steps to configure the property files:

- Go to the [GitHub repository](#) and click **templates > common > propertyfiles**.
- Download **cp4ba\_db\_server.property** and **cp4ba\_LDAP.property** and open the files using any text editor.
- For the fields marked **<Required>**, enter the appropriate values.
- Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

**Note:**

When filling in your property files, you might see duplicate parameters across the capabilities that you have chosen. Best practice is to removed duplicate parameters and only keep one set of parameters in any property file. Duplicate parameters with different values will result in errors in your deployment.

## Automation Document Processing property files

You need to configure the following property files for Automation Document Processing Authoring:

**Note:**

You can select either **Automation Document Processing Authoring** or **Automation Document Processing Runtime** when selecting the capabilities you want to install. You cannot select both capabilities.

Parameter name	Property file name
Automation Document Processing Configuration	adp_dev.property
Automation Document Processing database property file	cp4ba_db_name_user_adp_dev.property

You need to configure the following property files for Automation Document Processing Runtime:

Parameter name	Property file name
Automation Document Processing Configuration	adp_runtime.property
Automation Document Processing database property file	cp4ba_db_name_user_adp_runtime.property

Perform the following steps to configure the property files:

1. Go to the [GitHub repository](#) and click **templates > adp\_dev or adp\_runtime > propertyfiles**.
2. Download either **adp\_dev.property** and **cp4ba\_db\_name\_user\_adp\_dev.property** or **adp\_runtime.property** and **cp4ba\_db\_name\_user\_adp\_runtime.property** and open the files using any text editor.
3. For the fields marked **<Required>**, enter the appropriate values.
4. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Automation Decision Services property files

You need to configure the following property files for Automation Decision Services:

Parameter name	Property file name
----------------	--------------------

Automation Decision Services Configuration	ads.property
Automation Decision Services database property file	cp4ba_db_name_user_ads.property

Perform the following steps to configure the property files:

5. Go to the [GitHub repository](#) and click **templates > ads > propertyfiles**.
6. Download **ads.property** and **cp4ba\_db\_name\_user\_ads.property** and open the files using any text editor.
7. For the fields marked **<Required>**, enter the appropriate values.
8. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Automation Workstream Services property files

You need to configure the following property files for Automation Workstream Services:

Parameter name	Property file name
Automation Workstream Services Configuration	aws.property
Automation Workstream Services database property file	cp4ba_db_name_user_aws.property

Perform the following steps to configure the property files:

9. Go to the [GitHub repository](#) and click **templates > aws > propertyfiles**.
10. Download **aws.property** and **cp4ba\_db\_name\_user\_aws.property** and open the files using any text editor.
11. For the fields marked **<Required>**, enter the appropriate values.
12. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Business Automation Application property files

You need to configure the following property files for Business Automation Application:

Parameter name	Property file name
Business Automation Application Configuration	baa.property
Business Automation Application database property file	cp4ba_db_name_user_baa.property

Perform the following steps to configure the property files:

13. Go to the [GitHub repository](#) and click **templates > baa > propertyfiles**.
14. Download **baa.property** and **cp4ba\_db\_name\_user\_baa.property** and open the files using any text editor.
15. For the fields marked **<Required>**, enter the appropriate values.
16. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Business Automation Workflow property files

The IBM Cloud Pak for Business Automation provides two capabilities, namely, Business Automation Workflow Authoring and Business Automation Workflow Runtime.

You need to configure the following property files for Business Automation Workflow Authoring:

Parameter name	Property file name
Business Automation Workflow Configuration	baw_authoring.property
Business Automation Workflow database property file	cp4ba_db_name_user_baw_authoring.property

You need to configure the following property files for Business Automation Workflow Runtime:

Parameter name	Property file name
Business Automation Workflow Configuration	baw_runtime.property
Business Automation Workflow database property file	cp4ba_db_name_user_baw_runtime.property

**Note:**

You can select either **Automation Workflow Authoring Services** or **Automation Workflow/Workstream Runtime Services** when selecting the capabilities you want to install. You cannot select both capabilities.

Perform the following steps to configure the property files:

1. Go to the [GitHub repository](#) and click **templates > baw\_authoring** or **baw\_runtime > propertyfiles**.
2. Download either **baw\_authoring.property** and **cp4ba\_db\_name\_user\_baw\_authoring.property** or **baw\_runtime.property** and **cp4ba\_db\_name\_user\_baw\_runtime.property** and open the files using any text editor.
3. For the fields marked **<Required>**, enter the appropriate values.
4. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## FileNet Content Manager property files

You need to configure the following property files for FileNet Content Manager:

Parameter name	Property file name
FileNet Content Management Configuration	content.property
FileNet Content Manager database property file	cp4ba_db_name_user_content.property

Perform the following steps to configure the property files:

17. Go to the [GitHub repository](#) and click **templates > fncm > propertyfiles**.
18. Download **content.property** and **cp4ba\_db\_name\_user\_content.property** and open the files using any text editor.
19. For the fields marked **<Required>**, enter the appropriate values.
20. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Operational Decision Manager property files

You need to configure the following property files for Operational Decision Manager:

Parameter name	Property file name
Operational Decisions Manager Configuration	odm.property
Operational Decisions Manager database property file	cp4ba_db_name_user_odm.property

Perform the following steps to configure the property files:

1. Go to the [GitHub repository](#) and click **templates > odm > propertyfiles**.
2. Download **odm.property** and **cp4ba\_db\_name\_user\_odm.property** and open the files using any text editor.
3. For the fields marked **<Required>**, enter the appropriate values.
4. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Workflow Process Services Authoring property files

You need to configure the following property files for Workflow Process Services Authoring:

Parameter name	Property file name
Workflow Process Services Authoring Configuration	wfpsa.property
Workflow Process Services Authoring database property file	cp4ba_db_name_user_wfpsa.property

Perform the following steps to configure the property files:

5. Go to the [GitHub repository](#) and click **templates > wfpsa > propertyfiles**.
6. Download **wfpsa.property** and **cp4ba\_db\_name\_user\_wfpsa.property** and open the files using any text editor.
7. For the fields marked **<Required>**, enter the appropriate values.
8. Save the property file and add it to your S3 bucket. You need to provide the path to the S3 bucket location when customizing the parameters for the deployment.

## Preparing Cluster Storage

## IBM Fusion Data Foundation (Default – no setup needed)

IBM Fusion Data Foundation is the default storage type and is installed automatically if it is selected. For more information see [IBM Fusion Data Foundation](#).

## Cloud Pak for Business Automation deployment

The sections below provide the instructions to deploy the Cloud Pak for Business Automation on AWS.

### Select the type of deployment option, Region, and Software version

Perform the following steps to select the type of deployment option, Region, and Software version:

1. Sign in to your [AWS account](#) with an AWS Identity and Access Management (IAM) user role that has the necessary permissions. For more information, see [Planning the deployment](#).
2. In the Search bar, type **AWS Marketplace** and press **Enter**.
3. In the navigation pane, click **Discover products**.
4. Under **Search AWS Marketplace products**, in the Search bar, type **Cloud Pak for Business Automation** and press **Enter**. From the search results, click **Cloud Pak for Business Automation**.
5. On the **Product Overview** page, click **Continue to Subscribe**.
6. On the **Subscribe to this software** page, review the **Terms and Conditions** and click **Continue to Configuration**.
7. On the **Configure this software** page, do the following:
  - From the **Fulfilment options** drop-down list, select the type of deployment option. The available options are:
    - **Select a CloudFormation template**
    - **IBM Cloud Pak for Business Automation (Existing VPC)**
    - **IBM Cloud Pak for Business Automation (New VPC)**
  - From the **Software version** drop-down list, select **23.0.2**.
  - From the **Region** drop-down list, select the region where you want to deploy Cloud Pak for Business Automation on AWS. An IBM Cloud Pak for Business Automation high availability deployment is restricted to AWS Regions with at least three Availability Zones.

**Note:**

The instructions in this section reflect the current version of the AWS CloudFormation console. If you use the redesigned console, some user interface elements might be different.

You are responsible for the cost of the AWS services used while running this deployment. For full details, see the pricing pages for each AWS service you will be using for this deployment. Prices are subject to change.

- Click **Continue to Launch**.

## Launch the Deployment

Perform the following steps to launch the deployment:

2. On the **Launch this software** page, do the following:
  - Review the configuration details. Click **Usage instructions** to download the PDF of the Cloud Pak for Business Automation deployment guide.
  - From the **Choose Action** drop-down list, select **Launch CloudFormation**.
  - Click **Launch**.
3. The region is displayed on the navigation bar and you can change it if necessary. This is where the network infrastructure for Cloud Pak for Business Automation is built. By default, the template is launched in the US East (N. Virginia) region.
4. On the **Create stack** page, keep the default settings for **Prepare template**, **Template source**, and **Amazon S3 URL** and then click **Next**.
5. On the **Specify stack details** page, in the **Stack name** field, enter a name for the stack. Under **Parameters**, 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.

In the following tables, parameters are listed by category and described separately for these deployment options:

- [Parameters for deploying Cloud Pak for Business Automation into a new VPC](#)
- [Parameters for deploying Cloud Pak for Business Automation into an existing VPC](#)

## Parameters for deploying Cloud Pak for Business Automation into a new VPC

**VPC network configuration:**

Parameter label (name)	Default	Description
<b>Number of Availability Zones</b> (NumberOfAZs)	3	The number of Availability Zones to be used for the deployment. Keep in mind that some regions may be limited to 2 Availability Zones. For a single IBM Cloud Pak for Business Automation cluster to be highly available, a minimum of 3 Availability Zones are needed to avoid a single point of failure when using 3, 5 or 7 master nodes.
<b>Availability Zones</b> (AvailabilityZones)	<i>Requires input</i>	Select the list of Availability Zones to use for the subnets in the VPC. The template uses one or three Availability Zones and preserves the logical order you specify.
<b>VPC CIDR</b> (VPCCIDR)	10.0.0.0/16	When deploying to a new VPC, this CIDR block cannot conflict or overlap with the existing VPC where the database service and directory service reside. A VPC peering will be created between the two VPCs.
<b>Private subnet 1 CIDR</b> (PrivateSubnet1CIDR)	10.0.0.0/19	The CIDR block for the private subnet located in Availability Zone 1.
<b>Private subnet 2 CIDR</b> (PrivateSubnet2 CIDR)	10.0.32.0/19	The CIDR block for the private subnet located in Availability Zone 2.
<b>Private subnet 3 CIDR</b> (PrivateSubnet3CIDR)	10.0.64.0/19	The CIDR block for the private subnet located in Availability Zone 3.
<b>Public subnet 1 CIDR</b> (PublicSubnet1CIDR)	10.0.128.0/20	The CIDR block for the public subnet located in Availability Zone 1.
<b>Public subnet 2 CIDR</b> (PublicSubnet2CIDR)	10.0.144.0/20	The CIDR block for the public subnet located in Availability Zone 2
<b>Public subnet 3 CIDR</b> (PublicSubnet3CIDR)	10.0.160.0/20	The CIDR block for the public subnet located in Availability Zone 3.
<b>Boot node external access CIDR</b>	<i>Requires input</i>	Enter the CIDR IP range permitted to access the Boot Node instance. IBM

Parameter label (name)	Default	Description
(BootNodeAccessCIDR)		recommends that you set this value to a trusted IP range. The value 0.0.0.0/0 allows all IP addresses. Additional values can be added post-deployment from the Amazon EC2 console.
<b>Cluster network CIDR</b> (ClusterNetworkCIDR)	10.128.0.0/14	The cluster network CIDR IP range that is used as IP address pools for pods.

**DNS Configuration:**

Parameter label (name)	Default	Description
<b>Domain name</b> (DomainName)	<i>Requires input</i>	Enter the Amazon Route 53 domain name configured for the OpenShift Container Platform cluster. The name must consist of lower-case alphanumeric characters and must start and end with an alphanumeric character.

**Amazon EC2 configuration:**

Parameter label (name)	Default	Description
<b>Key pair name</b> (KeyPairName)	<i>Requires input</i>	Select the name of an existing public/private key pair, which allows you to securely connect to your instance after it launches. To create a key pair, follow the <a href="#">instructions in the AWS documentation</a> .

**OpenShift hosts configuration:**

Parameter label (name)	Default	Description
<b>Number of master nodes</b> (NumberOfMaster)	3	Enter the desired capacity for the OpenShift master instances. It must be an odd number. A minimum of 3 master nodes is required.
<b>Number of compute nodes</b> (NumberOfNodes)	3	Enter the desired capacity for the OpenShift node instances. A minimum of 3 nodes is required. Depends on your deployment profile size, we recommend 3 (small), 6 (medium), and 9 (large) nodes for the default EC2 instance type if all 3 capabilities are selected. For more details on the resources for each capability and their associated profile size, see <a href="#">IBM Knowledge Center</a> .  <b>Warning:</b> The stack will fail if the number of node instances exceeds your Red Hat entitlement limits or AWS instance quotas. Select a number that is within your limits.
<b>Master instance type</b> (MasterInstanceType)	m4.2xlarge	Select the EC2 instance type for the OpenShift master instances. The available options are: <ul style="list-style-type: none"> <li>• m4.xlarge</li> <li>• m4.2xlarge</li> <li>• m5.xlarge</li> <li>• m5.2xlarge</li> <li>• m5d.xlarge</li> <li>• m5d.2xlarge</li> </ul>
<b>Compute instance type</b> (NodesInstanceType)	m5.4xlarge	Select the EC2 instance type for the OpenShift node instances. The available options are:

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• m5.4xlarge</li> <li>• m5.8xlarge</li> <li>• m5.12xlarge</li> <li>• m5.24xlarge</li> <li>• m5a.4xlarge</li> <li>• m5a.8xlarge</li> <li>• m5a.12xlarge</li> <li>• m5a.24xlarge</li> <li>• c5.4xlarge</li> <li>• c5.9xlarge</li> <li>• c5.12xlarge</li> <li>• c5.18xlarge</li> <li>• c5.24xlarge</li> <li>• r5.4xlarge</li> <li>• r5.9xlarge</li> <li>• r5.12xlarge</li> <li>• r5.18xlarge</li> <li>• r5.24xlarge</li> </ul>
<b>Cluster name</b> (ClusterName)	<i>Requires input</i>	<p>Enter the custom cluster name for <a href="https://kubernetes.io/cluster/tags">kubernetes.io/cluster/tags</a>. If the <b>Cluster Name</b> field is left blank, the stack name suffixed with the AWS region is used as the cluster name.</p> <p>The cluster name can include lowercase letters (a-z), numbers (0-9), and dashes (-). The maximum cluster name length is 21 characters.</p>
<b>Enable FIPS for Openshift</b> (EnableFips)	false	Select <b>true</b> to enable FIPS for OpenShift. Select <b>false</b> if you do not want to enable FIPS for OpenShift.
<b>Disable external end points of your cluster</b>	false	Select <b>true</b> to deploy a private cluster. Select <b>false</b> for public cluster.

Parameter label (name)	Default	Description
(PrivateCluster)		
<b>Choose OpenShift Version</b> (OpenShiftVersion)	4.14.27	The OpenShift version. The support is limited to the default version.
<b>Choose username to login to OpenShift Console</b> (OpenShiftUsername)	ocadmin	The username to log in to OpenShift Console.
<b>Choose password to be used to login to OpenShift and Cloud Pak for Business Automation consoles</b> (OpenshiftPassword)	<i>Requires input</i>	Enter the password to be used to log in to OpenShift Console.

### Storage configuration:

Parameter label (name)	Default	Description
<b>IBM Storage Fusion Data Foundation instance type</b> (OCSInstanceType)	m5.4xlarge	Select the EC2 instance type for the IBM Fusion Data Foundation instances. The available options are: <ul style="list-style-type: none"> <li>• m5.4xlarge</li> <li>• m5.8xlarge</li> <li>• m5.12xlarge</li> <li>• c5.8xlarge</li> <li>• c5.12xlarge</li> <li>• c5.9xlarge</li> <li>• r5.4xlarge</li> <li>• r5.8xlarge</li> <li>• r5.12xlarge</li> </ul>

### RedHat subscription information:

Parameter label (name)	Default	Description
<b>Red Hat pull secret</b> (RedhatPullSecret)	<i>Requires input</i>	Enter the S3 path of OpenShift Installer Provisioned Infrastructure pull secret. For example, s3://my-bucket/path/to/pull-secret.

### SSL Certificate and Private Key:

Parameter label (name)	Default	Description
<b>SSL Certificate</b> (SSLCertificate)	<i>Optional</i>	SSL certificate and Private key needs to be provided together. Your SSL Certificate (e.g., s3://my-bucket/path/to/tls.cert).
<b>SSL Private Key</b> (SSLPrivateKey)	<i>Optional</i>	SSL certificate and Private key needs to be provided together. Your SSL Private Key (e.g., s3://my-bucket/path/to/tls.key).

### IBM Cloud Pak for Business Automation configuration:

Parameter label (name)	Default	Description
<b>IBM Cloud Pak for Business Automation License Agreement</b> (LicenseAgreement)	<i>Requires input</i>	Accept the product license for Cloud Pak for Business Automation License after reading it at <a href="https://ibm.biz/cp4ba_license_2400">https://ibm.biz/cp4ba_license_2400</a> or accept the license for Cloud Pak for Business Automation Reserved License after reading it at <a href="https://ibm.biz/cp4ba-reserved-license-2400">https://ibm.biz/cp4ba-reserved-license-2400</a> .
<b>IBM Cloud Pak for Business Automation entitlement key</b> (APIKey)	<i>Requires input</i>	Enter the IBM Cloud Pak for Business Automation entitlement key to access IBM Container Registry.

Parameter label (name)	Default	Description
<b>Output S3 bucket name</b> (ICPDDeploymentLogsBucket Name)	<i>Requires input</i>	Enter the name of the S3 bucket where IBM Cloud Pak Business Automation deployment logs are to be exported. The deployment logs provide a record of the bootstrap scripting actions and are helpful for problem determination if the deployment fails.

**Shared configuration for all of the Cloud Pak for Business Automation capabilities:**

Parameter label (name)	Default	Description
<b>JDBC and ICCSAP Driver URL</b> (SCDriversUrl)	<i>Optional</i>	<p>Enter the JDBC and ICCSAP Driver URL. This is necessary if you want to use your own JDBC drivers and/or need to provide ICCSAP (IBM Content Collector for SAP) drivers. If you are providing multiple JDBC drivers and ICCSAP drivers, all the files must be compressed in a single file. First you need to package your drivers into a compressed package in the format of "saplibs/drivers_files" and/or "jdbc/postgresql/driver_files". For example, if you are providing your own Postgres and ICCSAP drivers, then the compressed file should have the following structure and content</p> <pre>/jdbc/postgresql/postgresql-8.0-310.jdbc3.jar /saplibs/libicudata.so.50 /saplibs/...</pre> <p>Then you need to put the compressed package on an anonymously accessible web server and provide the link here. The CR can handle .zip files using unzip as well as .tar, .tar.gz, .tar.bz2, .tar.xz. Does not handle .gz files, .bz2 files, .xz, or .zst files that do not contain a .tar archive.</p> <p>For more information, see <a href="#">Optional: Preparing customized versions of JDBC drivers and ICCSAP libraries</a>.</p>
<b>Profile Size</b> (SCDeploymentProfileSize)	small	<p>Select the Cloud Pak for Business Automation deployment profile size.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>small</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>medium</b></li> <li>• <b>Large</b></li> </ul> <p>Please note that the value selected here is dependent on the <b>Number of compute nodes</b> parameter and the compute instance type.</p>
<b>Restrict network egress</b>	Yes	Do you want to restrict network egress to unknown external destination for this IBM Cloud Pak for Business Automation deployment.
<b>Purchased FileNet Content Manager License</b> (SCFncmLicense)	non-production	<p>Select the FileNet Content Manager (FNCM) license type.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>non-production</b></li> <li>• <b>production</b></li> <li>• <b>user</b></li> </ul>
<b>Purchased Business Automation Workflow License</b> (SCBawLicense)	non-production	<p>Select the Business Automation Workflow (BAW) license type.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>non-production</b></li> <li>• <b>production</b></li> <li>• <b>user</b></li> </ul>
<b>Purchased Cloud Pak for Business Automation License</b> (SCCP4BALicense)	non-production	<p>Select the Cloud Pak for Business Automation license type.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>non-production</b></li> <li>• <b>production</b></li> </ul>

Parameter label (name)	Default	Description
<b>Database Server Configuration</b> (SCDBServerPropertyFile)	<i>Requires input</i>	Enter the S3 bucket path that contains the user profile property files. For example, s3://my-bucket/path/to/cp4ba_db_server.property.
<b>Select the VPC where the database and the LDAP services are located to peer</b> (VPCPeering)	<i>Requires input</i>	Select the id of the VPC for peering. Note: Both database and LDAP services must reside in the same VPC
<b>Enter all VPC route table IDs that are associated with the database and LDAP services for VPC peering.</b> (VPCPeeringRouteTable)	<i>Requires input</i>	Enter all VPC route table IDs that are associated with database and LDAP services for VPC peering. Please enter IDs with comma separated. (rtb-1234, rtb-5678)
<b>Enter the VPC IPv4 CIDR for VPC peering</b> (VPCPeeringCidrBlock)	<i>Requires input</i>	Enter the VPC IPv4 CIDR that the database and LDAP services are located in for VPC peering.
<b>Enter the database server port number to connect</b> (DBPort)	5432	The database server port number to connect.
<b>Enter the default security groups of your database server</b> (DBSecurityGroup)	<i>Requires input</i>	Enter the default security group for your database server. For example, sg-1234.

**Capabilities:**

Parameter label (name)	Default	Description
<b>Select Capability</b> (Patterns)	<i>Requires input</i>	Select the Cloud Pak for Business Automation capability to install. The available options are: <ul style="list-style-type: none"> <li>• <b>FileNet Content Manager</b></li> <li>• <b>Operational Decision Manager</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>Automation Workflow/ Workstream Authoring Services</b></li> <li>• <b>Automation Workflow/Workstream Runtime Services</b></li> <li>• <b>Business Automation Application</b></li> <li>• <b>Automation Decision Services</b></li> <li>• <b>Automation Workstream Services</b></li> <li>• <b>Automation Document Processing Development Environment</b></li> <li>• <b>Automation Document Processing Runtime Environment</b></li> <li>• <b>Workflow Process Service Authoring</b></li> </ul> <p>You can select one or more capabilities.</p> <p><b>Note:</b> You can select either <b>Automation Workflow Authoring Services</b> or <b>Automation Workflow/Workstream Runtime Services</b> and <b>Automation Document Processing Development Environment</b> or <b>Automation Document Processing Runtime Environment</b> along with the other capabilities to install, but not both.</p>
<b>Select FileNet Content Manager optional components to be installed</b>	<i>Optional</i>	Enable or disable the optional components for FileNet Content Manager (FNCM) for production deployment.

Parameter label (name)	Default	Description
(ContentOptionalComponents)		<p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>Business Automation Insights</b></li> <li>• <b>Content Search Services</b></li> <li>• <b>Content Management interoperability Services</b></li> <li>• <b>Task Manager</b></li> <li>• <b>IBM Enterprise Records</b></li> <li>• <b>IBM Content Collector for SAP</b></li> </ul> <p><b>Note:</b> If you select the <b>IBM Content Collector for SAP</b> option, you must provide the ICCSAP driver URL in the <b>JDBC and ICCSAP Driver URL</b> field.</p>
<p><b>Select Operational Decision Manager optional components to be installed</b></p> <p>(ODMOptionalComponents)</p>	<i>Optional</i>	<p>Enable or disable optional components for Operational Decision Manager (ODM).</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>Decision Center</b></li> <li>• <b>Decision Runner</b></li> <li>• <b>Decision Server Runtime</b></li> <li>• <b>Business Automation Insights</b></li> </ul>
<p><b>Select Business Automation Workflow Authoring Optional components to be installed</b></p> <p>(BAWAuthoringOptionalComponents)</p>	<i>Optional</i>	<p>Enable or disable optional components for Business Automation Workflow Authoring.</p> <p>The available option is <b>Business Automation Insights</b>.</p>
<p><b>Select Business Automation Workflow Runtime Optional components to be installed</b></p>	<i>Optional</i>	<p>Enable or disable optional components for Business Automation Workflow Runtime.</p>

Parameter label (name)	Default	Description
(BAWRuntimeOptionalComponents)		The available option is <b>Business Automation Insights</b> .
<b>Select Automation Decision Service optional components to be installed</b> (ADSOOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Decision Services.  The available options are: <ul style="list-style-type: none"> <li>• <b>Decision Designer</b></li> <li>• <b>Decision Runtime</b></li> </ul>
<b>Select Automation Document Processing optional components to be installed</b> (ADPOOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Document Processing  The available options are: <ul style="list-style-type: none"> <li>• <b>Content Search Services</b></li> <li>• <b>Content Management Interoperability Services</b></li> <li>• <b>Task Manager</b></li> </ul>
<b>Select Business Automation Application optional components to be installed</b> (BAAOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Business Automation Application.  The available option is <b>Application Designer</b> .
<b>Select Automation Workstream Services optional components to be installed</b> (AWSOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Workstream Services  The available options are: <ul style="list-style-type: none"> <li>• <b>Exposed Kafka Services</b></li> <li>• <b>Exposed Elastic Search</b></li> </ul>
<b>Select Workflow Process Service Authoring optional components to be installed</b> (WFPSAOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Workflow Process Service Authoring  The available options are:

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>Business Automation Insights</b></li> <li>• <b>Data Collector and Data Indexer</b></li> <li>• <b>Exposed Kafka Services</b></li> </ul>

### Directory Services Server Configuration:

Parameter label (name)	Default	Description
<b>Directory Service Server Configuration</b> (LdapConfigurationPropertyFile)	<i>Requires input</i>	Enter the S3 bucket path that contains the Directory Server Service configuration property files. For example, s3://my-bucket/path/to/cp4ba_LDAP.property.

### FileNet Content Manager (FNCM):

Parameter label (name)	Default	Description
<b>FileNet Content Management Configuration</b> (FNCMConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the FileNet Content Manager configuration property file. For example, s3://my-bucket/path/to/content.property.
<b>FileNet Content Manager database property file</b> (FNCMDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the FileNet Content Manager database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_content.property.

**Operational Decisions Manager (ODM):**

Parameter label (name)	Default	Description
<b>Operational Decisions Manager Configuration</b> (ODMConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Operational Decisions Manager configuration property files. For example, s3://my-bucket/path/to/odm.property.
<b>Operational Decisions Manager database property file</b> (ODMDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Operational Decisions Manager database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_odm.property.

**Business Automation Workflow (BAW):**

Parameter label (name)	Default	Description
<b>Business Automation Workflow Configuration</b> (BAWConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Workflow configuration property files. For example, s3://my-bucket/path/to/baw_authoring.property or s3://my-bucket/path/to/baw_runtime.property
<b>Business Automation Workflow database property file</b> (BAWDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Workflow database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_baw_authoring.property or s3://my-bucket/path/to/cp4ba_db_name_user_baw_runtime.property.

**Automation Decision Services (ADS):**

Parameter label (name)	Default	Description
<b>Automation Decision Services Configuration</b> (ADSConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Decision Services configuration property files. For example, s3://my-bucket/path/to/ads.property.
<b>Automation Decision Services database property file</b> (ADSDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Automation Decision Services database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_ads.property.

**Business Automation Application (BAA):**

Parameter label (name)	Default	Description
<b>Business Automation Application Configuration</b> (BAAConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Application configuration property files. For example, s3://my-bucket/path/to/baa.property.
<b>Business Automation Application database property file</b> (BAADBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Business Automation Application database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_baa.property.

**Automation Workstream Services (AWS):**

Parameter label (name)	Default	Description
<b>Automation Workstream Services Configuration</b> (AWSConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Workstream Services configuration property files. For example, s3://my-bucket/path/to/aws.property.
<b>Automation Workstream Services database property file</b>	<i>Optional</i>	Enter the S3 bucket that contains the Automation Workstream Services database and username property files. For example, s3://my-

(AWSDBNameAndUserPropertyFile)		bucket/path/to/cp4ba_db_name_user_aws.property.
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**Automation Document Processing (ADP):**

Parameter label (name)	Default	Description
<b>Automation Document Processing Configuration</b> (ADPConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Document Processing configuration property files. For example, s3://my-bucket/path/to/adp_dev.property or s3://my-bucket/path/to/adp_runtime.property
<b>Automation Document Processing database property file</b> (ADPDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Document Processing database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_adp_dev.property or s3://my-bucket/path/to/cp4ba_db_name_user_adp_runtime.property.

**Workflow Process Service Authoring (WFPSA):**

Parameter label (name)	Default	Description
<b>Workflow Process Service Authoring Configuration</b> (WFPSAConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Workflow Process Service Authoring configuration property files. For example, s3://my-bucket/path/to/wfpsa.property.
<b>Workflow Process Service Authoring database property file</b> (WFPSANameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Workflow Process Service Authoring database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_wfpsa.property.

## Parameters for deploying Cloud Pak for Business Automation into an existing VPC

### Network configuration:

Parameter label (name)	Default	Description
<b>Number of Availability Zones</b> (NumberOfAZs)	3	The number of Availability Zones to be used for the deployment. Keep in mind that some regions may be limited to 2 Availability Zones. For a single IBM Cloud Pak for Business Automation cluster to be highly available, a minimum of 3 Availability Zones are needed to avoid a single point of failure when using 3, 5 or 7 master nodes.
<b>Availability Zones</b> (AvailabilityZones)	<i>Requires input</i>	Select the list of existing Availability Zones in the VPC. The deployment requires three Availability Zones.
<b>VPC ID</b> (VPCID)	<i>Requires input</i>	Select the ID of your existing VPC for deployment.
<b>VPC CIDR</b> (VPCCIDR)	10.0.0.0/16	The CIDR block of the existing VPC.
<b>Private subnet 1 ID</b> (PrivateSubnet1ID)	<i>Requires input</i>	Enter the ID of the private subnet in Availability Zone 1 for the workload. For example, subnet-a0246dcd.
<b>Private subnet 2 ID</b> (PrivateSubnet2ID)	<i>Requires input</i>	Enter the ID of the private subnet in Availability Zone 2 for the workload. For example, subnet-b1f432cd.
<b>Private subnet 3 ID</b> (PrivateSubnet3ID)	<i>Requires input</i>	Enter the ID of the private subnet in Availability Zone 3 for the workload. For example, subnet-b1f4a2cd.
<b>Public subnet 1 ID</b> (PublicSubnet1ID)	<i>Requires input</i>	Enter the ID of the public subnet in Availability Zone 1 for the ELB load balancer. For example, subnet-9bc642ac.

Parameter label (name)	Default	Description
<b>Public subnet 2 ID</b> (PublicSubnet2ID)	<i>Requires input</i>	Enter the ID of the public subnet in Availability Zone 2 for the ELB load balancer. For example, subnet-e3246d8e.
<b>Public subnet 3 ID</b> (PublicSubnet3ID)	<i>Requires input</i>	Enter the ID of the public subnet in Availability Zone 3 for the ELB load balancer. For example, subnet-e324ad8e.
<b>Boot node external access CIDR</b> (BootNodeAccessCIDR)	<i>Requires input</i>	Enter the CIDR IP range permitted to access the Boot Node instance. IBM recommends that you set this value to a trusted IP range. The value 0.0.0.0/0 allows all IP addresses. Additional values can be added post-deployment from the Amazon EC2 console.
<b>Cluster Network CIDR</b> (ClusterNetworkCIDR)	10.128.0.0/14	The Cluster Network CIDR IP range that is used as IP address pools for pods.

**DNS configuration:**

Parameter label (name)	Default	Description
<b>Domain name</b> (DomainName)	<i>Requires input</i>	Enter the domain name configured for the cluster.

**Amazon EC2 configuration:**

Parameter label (name)	Default	Description
<b>Key pair name</b> (KeyPairName)	<i>Requires input</i>	Select the name of an existing public/private key pair, which allows you to securely connect to your instance after it launches. To create a key pair, follow the <a href="#">instructions in the AWS documentation</a> .

**OpenShift Container Platform configuration:**

Parameter label (name)	Default	Description
<b>Number of master nodes</b> (NumberOfMaster)	3	Enter the desired capacity for the OpenShift master instances. It must be an odd number. For a development deployment, 1 master node is sufficient and a minimum of 3 master nodes for production deployments.
<b>Number of compute nodes</b> (NumberOfCompute)	3	Enter the desired capacity for the OpenShift node instances. A minimum of 3 nodes is required. Depends on your deployment profile size, we recommend 3 (small), 6 (medium), and 9 (large) nodes for the default EC2 instance type if all 3 capabilities are selected. For more details on the resources for each capability and their associated profile size, see <a href="#">IBM Knowledge Center</a> .  <b>Warning:</b> The stack will fail if the number of node instances exceeds your Red Hat entitlement limits or AWS instance quotas. Select a number that is within your limits.

Parameter label (name)	Default	Description
<b>Master instance type</b> (MasterInstanceType)	m4.2xlarge	Select the EC2 instance type for the OpenShift master instances. The available options are: <ul style="list-style-type: none"> <li>• m4.xlarge</li> <li>• m4.2xlarge</li> <li>• m5.xlarge</li> <li>• m5.2xlarge</li> <li>• m5d.xlarge</li> <li>• m5d.2xlarge</li> </ul>
<b>Compute instance type</b> (ComputeInstanceType)	m5.4xlarge	Select the EC2 instance type for the OpenShift node instances. The available options are: <ul style="list-style-type: none"> <li>• m5.4xlarge</li> <li>• m5.8xlarge</li> <li>• m5.12xlarge</li> <li>• m5.24xlarge</li> <li>• m5a.4xlarge</li> <li>• m5a.8xlarge</li> <li>• m5a.12xlarge</li> <li>• m5a.24xlarge</li> <li>• c5.4xlarge</li> <li>• c5.9xlarge</li> <li>• c5.12xlarge</li> <li>• c5.18xlarge</li> <li>• c5.24xlarge</li> <li>• r5.4xlarge</li> <li>• r5.9xlarge</li> <li>• r5.12xlarge</li> <li>• r5.18xlarge</li> <li>• r5.24xlarge</li> </ul>

Parameter label (name)	Default	Description
<b>Cluster name</b> (ClusterName)	<i>Requires input</i>	Enter the custom cluster name for kubernetes.io/cluster/tags. The cluster name can include lowercase letters (a-z), numbers (0-9), and dashes (-). The maximum cluster name length is 21 characters.
<b>Enable FIPS for Openshift</b> (EnableFips)	false	Select <b>true</b> to enable FIPS for OpenShift. Select <b>false</b> if you do not want to enable FIPS for OpenShift.
<b>Disable external endpoints of your cluster</b> (PrivateCluster)	false	Select <b>true</b> to deploy a private cluster. Select <b>false</b> to deploy a public cluster.
<b>Choose OpenShift Version</b> (OpenShiftVersion)	4.14.27	The OpenShift version. The support is limited to the default version.
<b>Choose username to login to OpenShift Console</b> (OpenShiftUsername)	ocadmin	The username to be used to log in to OpenShift Console.
<b>Choose password to login to OpenShift Console</b> (OpenshiftPassword)	<i>Requires input</i>	Enter the password to be used to log in to OpenShift and Cloud Pak for Business Automation Console.

**Storage Configuration:**

Parameter label (name)	Default	Description
<b>IBM Storage Fusion Data Foundation instance type</b> (OCSInstanceType)	m5.4xlarge	Select the EC2 instance type for the IBM Fusion Data Foundation instances. The available options are: <ul style="list-style-type: none"> <li>• m5.4xlarge</li> <li>• m5.8xlarge</li> <li>• m5.12xlarge</li> <li>• c5.8xlarge</li> <li>• c5.12xlarge</li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• c5.9xlarge</li> <li>• r5.4xlarge</li> <li>• r5.8xlarge</li> <li>• r5.12xlarge</li> </ul>

### Red Hat subscription information:

Parameter label (name)	Default	Description
<b>Red Hat pull secret</b> (RedhatPullSecret)	<i>Requires input</i>	Enter the S3 path of OpenShift Installer Provisioned Infrastructure pull secret. For example, s3://my-bucket/path/to/pull-secret.

### SSL Certificate and Private Key:

Parameter label (name)	Default	Description
<b>SSL Certificate</b> (SSLCertificate)	<i>Optional</i>	SSL certificate and Private key needs to be provided together. Your SSL Certificate (e.g., s3://my-bucket/path/to/tls.cert).
<b>SSL Private Key</b> (SSLPrivateKey)	<i>Optional</i>	SSL certificate and Private key needs to be provided together. Your SSL Private Key (e.g., s3://my-bucket/path/to/tls.key).

### IBM Cloud Pak for Business Automation configuration:

Parameter label (name)	Default	Description
<b>IBM Cloud Pak for Business Automation License Agreement</b> (LicenseAgreement)	<i>Requires input</i>	Accept the product license for Cloud Pak for Business Automation License after reading it at

		<a href="https://ibm.biz/cp4ba_license_2400">https://ibm.biz/cp4ba_license_2400</a> or accept the license for Cloud Pak for Business Automation Reserved License after reading it at <a href="https://ibm.biz/cp4ba-reserved-license-2400">https://ibm.biz/cp4ba-reserved-license-2400</a> .
<b>IBM Cloud Pak for Business Automation entitlement key</b> (APIKey)	<i>Requires input</i>	Enter the IBM Cloud Pak for Business Automation entitlement key to access IBM Container Registry.
<b>Output S3 bucket name</b> (ICPDDeploymentLogsBucketName)	<i>Requires input</i>	Enter the name of the S3 bucket where IBM Cloud Pak Business Automation deployment logs are to be exported. The deployment logs provide a record of the bootstrap scripting actions and are helpful for problem determination if the deployment fails in some way.

### Shared configuration for all of the Cloud Pak for Business Automation capabilities

Parameter label (name)	Default	Description
<b>JDBC and ICCSAP Driver URL</b> (SCDriversUrl)	<i>Optional</i>	This is necessary if you want to use your own JDBC drivers and/or need to provide ICCSAP (IBM Content Collector for SAP) drivers. If you are providing multiple JDBC drivers and ICCSAP drivers, all the files must be compressed in a single file. First you need to package your drivers into a compressed package in the format of "saplibs/drivers_files" and/or "jdbc/postgresql/driver_files". For example, if you are providing your own Postgres and ICCSAP drivers, then the compressed file should have the following structure and content /jdbc/postgresql/postgresql-8.0-310.jdbc3.jar /saplibs/libicudata.so.50 /saplibs/... Then you need to put the compressed package on an anonymously

Parameter label (name)	Default	Description
		<p>accessible web server and provide the link here. The CR can handle .zip files using unzip as well as .tar, .tar.gz, .tar.bz2, .tar.xz. Does not handle .gz files, .bz2 files, .xz, or .zst files that do not contain a .tar archive.</p> <p>For more information, see <a href="#">Optional: Preparing customized versions of JDBC drivers and ICCSAP libraries</a>.</p>
<b>Profile Size</b> (SCDeploymentProfileSize)	small	<p>Select the Cloud Pak for Business Automation deployment profile size.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>small</b></li> <li>• <b>medium</b></li> <li>• <b>Large</b></li> </ul> <p><b>Note:</b> The value selected here is dependent on the <b>Number of compute nodes</b> parameter and the compute instance type.</p>
<b>Purchased FileNet Content Manager License</b> (SCFncmLicense)	non-production	<p>Select the FileNet Content Manager (FNCM) license type.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>non-production</b></li> <li>• <b>production</b></li> <li>• <b>user</b></li> </ul>
<b>Purchased Business Automation Workflow License</b> (SCBawLicense)	non-production	<p>Select the Business Automation Workflow (BAW) license type.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>non-production</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>production</b></li> <li>• <b>user</b></li> </ul>
<b>Purchased Cloud Pak for Business Automation License</b> (SCCP4BALicense)	non-production	Select the Cloud Pak for Business Automation license type.  The available options are: <ul style="list-style-type: none"> <li>• <b>non-production</b></li> <li>• <b>production</b></li> </ul>
<b>Database server Configuration</b> (SCDBServerPropertyFile)	<i>Requires input</i>	Enter the S3 bucket path that contains the user profile property files. For example, s3://my-bucket/path/to/cp4ba_db_server.property.
<b>Enter the database server port number to connect</b> (DBPort)	5432	The database server port number to connect.
<b>Enter the default security groups of your database server</b> (DBSecurityGroup)	<i>Requires input</i>	Enter the default security group for your database server. For example, sg-1234.

### Capabilities:

Parameter label (name)	Default	Description
<b>Select Capability</b> (Patterns)	<i>Requires input</i>	Select the Cloud Pak for Business Automation capability to install.  The available options are: <ul style="list-style-type: none"> <li>• <b>FileNet Content Manager</b></li> <li>• <b>Operational Decision Manager</b></li> <li>• <b>Automation Workflow/ Workstream Authoring Services</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>Automation Workflow/Workstream Runtime Services</b></li> <li>• <b>Business Automation Application</b></li> <li>• <b>Automation Decision Services</b></li> <li>• <b>Automation Workstream Services</b></li> <li>• <b>Automation Document Processing Development Environment</b></li> <li>• <b>Automation Document Processing Runtime Environment</b></li> <li>• <b>Workflow Process Service Authoring</b></li> </ul> <p>You can select one or more capabilities.</p> <p><b>Note:</b> You can select either <b>Automation Workflow Authoring Services</b> or <b>Automation Workflow/Workstream Runtime Services</b> and <b>Automation Document Processing Development Environment</b> or <b>Automation Document Processing Runtime Environment</b> along with the other capabilities to install, but not both.</p>
<p><b>Select FileNet Content Manager optional components to be installed</b></p> <p>(ContentOptionalComponents)</p>	<p><i>Optional</i></p>	<p>Enable or disable the optional components for FileNet Content Manager (FNCM) for production deployment.</p> <p>The available options are:</p> <ul style="list-style-type: none"> <li>• <b>Business Automation Insights</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"> <li>• <b>Content Search Services</b></li> <li>• <b>Content Management interoperability Services</b></li> <li>• <b>Task Manager</b></li> <li>• <b>IBM Enterprise Records</b></li> <li>• <b>IBM Content Collector for SAP</b></li> </ul> <p><b>Note:</b> If you select the <b>IBM Content Collector for SAP</b> option, you must provide the ICCSAP driver URL in the <b>JDBC and ICCSAP Driver URL</b> field</p>
<b>Select Operational Decision Manager optional components to be installed</b> (ODMOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Operational Decision Manager (ODM). The available options are: <ul style="list-style-type: none"> <li>• <b>Decision Center</b></li> <li>• <b>Decision Runner</b></li> <li>• <b>Decision Server Runtime</b></li> <li>• <b>Business Automation Insights</b></li> </ul>
<b>Select Business Automation Workflow Authoring Optional components to be installed</b> (BAWAuthoringOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Business Automation Workflow Authoring. The available option is <b>Business Automation Insights</b> .
<b>Select Business Automation Workflow Runtime Optional components to be installed</b> (BAWRuntimeOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Business Automation Workflow Runtime. The available option is <b>Business Automation Insights</b> .

Parameter label (name)	Default	Description
<b>Select Automation Decision Service optional components to be installed</b> (ADSOOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Decision Services.  The available options are: <ul style="list-style-type: none"> <li>• <b>Decision Designer</b></li> <li>• <b>Decision Runtime</b></li> </ul>
<b>Select Automation Document Processing optional components to be installed</b> (ADPOOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Document Processing  The available options are: <ul style="list-style-type: none"> <li>• <b>Content Search Services</b></li> <li>• <b>Content Management Interoperability Services</b></li> <li>• <b>Task Manager</b></li> </ul>
<b>Select Business Automation Application optional components to be installed</b> (BAAOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Business Automation Application.  The available option is <b>Application Designer</b> .
<b>Select Automation Workstream Services optional components to be installed</b> (AWSOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Automation Workstream Services  The available options are: <ul style="list-style-type: none"> <li>• <b>Exposed Kafka Services</b></li> <li>• <b>Exposed Elastic Search</b></li> </ul>
<b>Select Workflow Process Service Authoring optional components to be installed</b> (WFPSAOptionalComponents)	<i>Optional</i>	Enable or disable optional components for Workflow Process Service Authoring  The available options are: <ul style="list-style-type: none"> <li>• <b>Business Automation Insights</b></li> </ul>

Parameter label (name)	Default	Description
		<ul style="list-style-type: none"><li>• <b>Data Collector and Data Indexer</b></li><li>• <b>Exposed Kafka Services</b></li></ul>

**Directory Services Server Configuration:**

Parameter label (name)	Default	Description
<b>Directory Service Configuration</b> (LdapConfigurationPropertyFile)	<i>Requires input</i>	Enter the S3 bucket path that contains the Directory Server Service configuration property file. For example, s3://my-bucket/path/to/cp4ba_LDAP.property.

**FileNet Content Manager (FNCM):**

Parameter label (name)	Default	Description
<b>FileNet Content Management Configuration</b> (FNCMConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the FileNet Content Manager configuration property files. For example, s3://my-bucket/path/to/content.property.
<b>FileNet Content Manager database property file</b> (FNCMDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the FileNet Content Manager database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_content.property.

**Operational Decisions Manager (ODM):**

Parameter label (name)	Default	Description
<b>Operational Decisions Manager Configuration</b> (ODMConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Operational Decisions Manager configuration property files. For example, s3://my-bucket/path/to/odm.property.
<b>Operational Decisions Manager database property file</b> (ODMDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Operational Decisions Manager database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_odm.property.

**Business Automation Workflow (BAW):**

Parameter label (name)	Default	Description
<b>Business Automation Workflow Configuration</b> (BAWConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Workflow configuration property file. For example, s3://my-bucket/path/to/baw_authoring.property or s3://my-bucket/path/to/baw_runtime.property
<b>Business Automation Workflow database property file</b> (BAWDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Workflow database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_baw_authoring.property or s3://my-bucket/path/to/cp4ba_db_name_user_baw_runtime.property.

**Automation Decision Services (ADS):**

Parameter label (name)	Default	Description
<b>Automation Decision Services Configuration</b> (ADSConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Decision Services configuration property files. For example, s3://my-bucket/path/to/ads.property.
<b>Automation Decision Services database property file</b> (ADSDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Automation Decision Services database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_ads.property.

**Business Automation Application (BAA):**

Parameter label (name)	Default	Description
<b>Business Automation Application Configuration</b> (BAAConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Business Automation Application configuration property files. For example, s3://my-bucket/path/to/baa.property.
<b>Business Automation Application database property file</b> (BAADBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Business Automation Application database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_baa.property.

**Automation Workstream Services (AWS):**

Parameter label (name)	Default	Description
<b>Automation Workstream Services Configuration</b> (AWSConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Workstream Services configuration property files. For example, s3://my-bucket/path/to/aws.property.
<b>Automation Workstream Services database property file</b> (AWSDBNameAndUserPropertyFile)	<i>Optional</i>	Enter the S3 bucket that contains the Automation Workstream Services database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_aws.property.

**Automation Document Processing (ADP):**

Parameter label (name)	Default	Description
<b>Automation Document Processing Configuration</b> (ADPConfigurationPropertyFile)	<i>Optional</i>	Enter the S3 bucket path that contains the Automation Document Processing configuration property files. For example, s3://my-bucket/path/to/adp_dev.property or s3://my-bucket/path/to/adp_runtime.property

<p><b>Automation Document Processing database property file</b></p> <p>(ADPDBNameAndUserPropertyFile)</p>	<p><i>Optional</i></p>	<p>Enter the S3 bucket path that contains the Automation Document Processing database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_adp_dev.property or s3://my-bucket/path/to/cp4ba_db_name_user_adp_runtime.property.</p>
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### Workflow Process Service Authoring (WFPSA):

Parameter label (name)	Default	Description
<p><b>Workflow Process Service Authoring Configuration</b></p> <p>(WFPSAConfigurationPropertyFile)</p>	<p><i>Optional</i></p>	<p>Enter the S3 bucket path that contains the Workflow Process Service Authoring configuration property files. For example, s3://my-bucket/path/to/wfpsa.property.</p>
<p><b>Workflow Process Service Authoring database property file</b></p> <p>(WFPSANameAndUserPropertyFile)</p>	<p><i>Optional</i></p>	<p>Enter the S3 bucket that contains the Workflow Process Service Authoring database and username property files. For example, s3://my-bucket/path/to/cp4ba_db_name_user_wfpsa.property.</p>

6. When you finish reviewing and customizing the parameters, click **Next**.
7. On the **Configure stack options** page, you can [specify tags](#) (key-value pairs) for resources in your stack and [set advanced options](#). When you are done, click **Next**.
8. On the **Review** page, review and confirm the template settings.

Under **Capabilities**, select the checkboxes to acknowledge that the template will create IAM resources based on the deployment option:

- For new VPC:
  - **I acknowledge that AWS CloudFormation might create IAM resources with custom names.**
  - **I acknowledge that AWS CloudFormation might require the following capability: CAPABILITY\_AUTO\_EXPAND.**
- For existing VPC:

- **I acknowledge that AWS CloudFormation might create IAM resources.**

9. Click **Submit** to deploy the stack.

10. Click the **Events** tab to monitor the status of the stack. The deployment on an average takes 90 to 120 minutes to complete. The status displays **CREATE\_COMPLETE** when the Cloud Pak for Business Automation cluster is ready. When the AWS CloudFormation template has successfully created the stack, all server nodes will be running with the software installed in your AWS account.

The Cloud Pak for Business Automation deployment on AWS is now complete.

## Access the Cloud Pak for Business Automation capabilities

You need to log in to the OpenShift Container Platform cluster to retrieve the URLs for the capabilities and additional components you selected while creating the stack.

Perform the following steps to retrieve the URLs:

1. On the **AWS CloudFormation** console page, go to **Stacks > Stack details**.
2. Select the Cloud Pak for Business Automation root stack and click the **Outputs** tab.

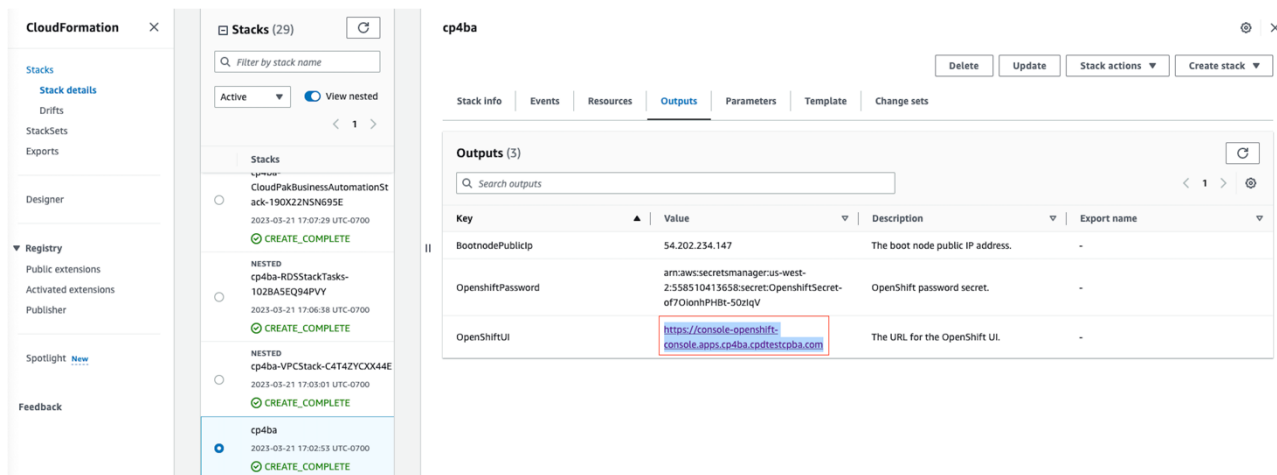


Figure 3: OpenShift URL

3. Click the URL in the **OpenShiftUI** field to access the OpenShift console.
4. Click **htpasswdProvider**.

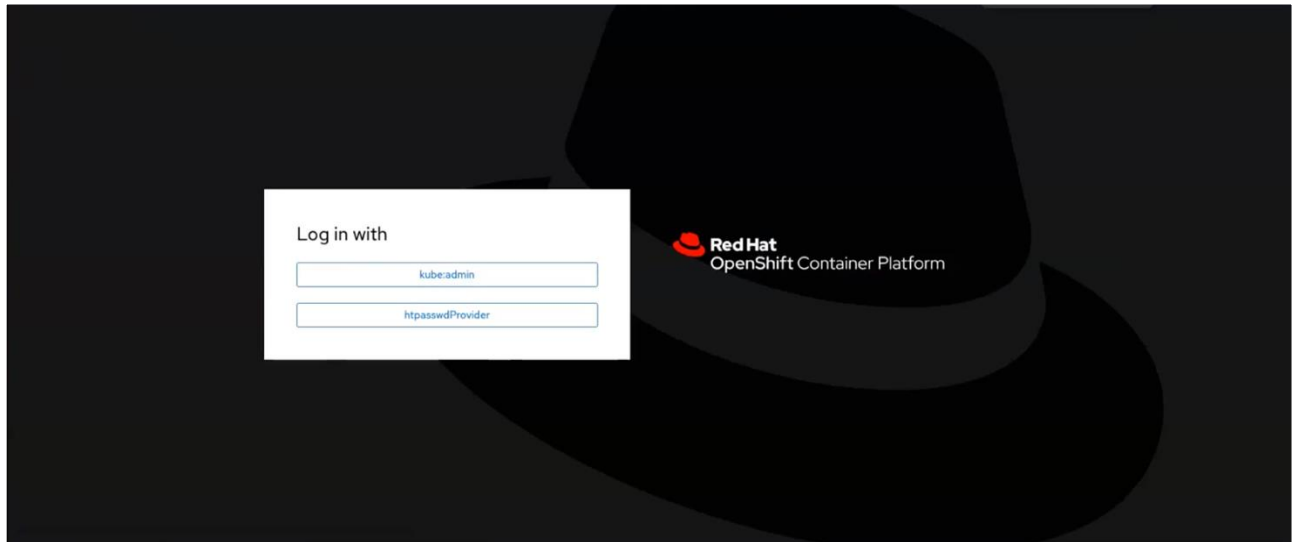


Figure 4: OpenShift login console

5. Enter the default administrator username **ocadmin** and the password you provided while creating the stack.
6. Click **Log in**.
7. In the navigation pane, click **Workloads > ConfigMaps**.
8. In the **Search by name** box, type **cp4ba-access-info** and press **Enter**.
9. From the search results, click **icp4adeploy- cp4ba-access-info**.

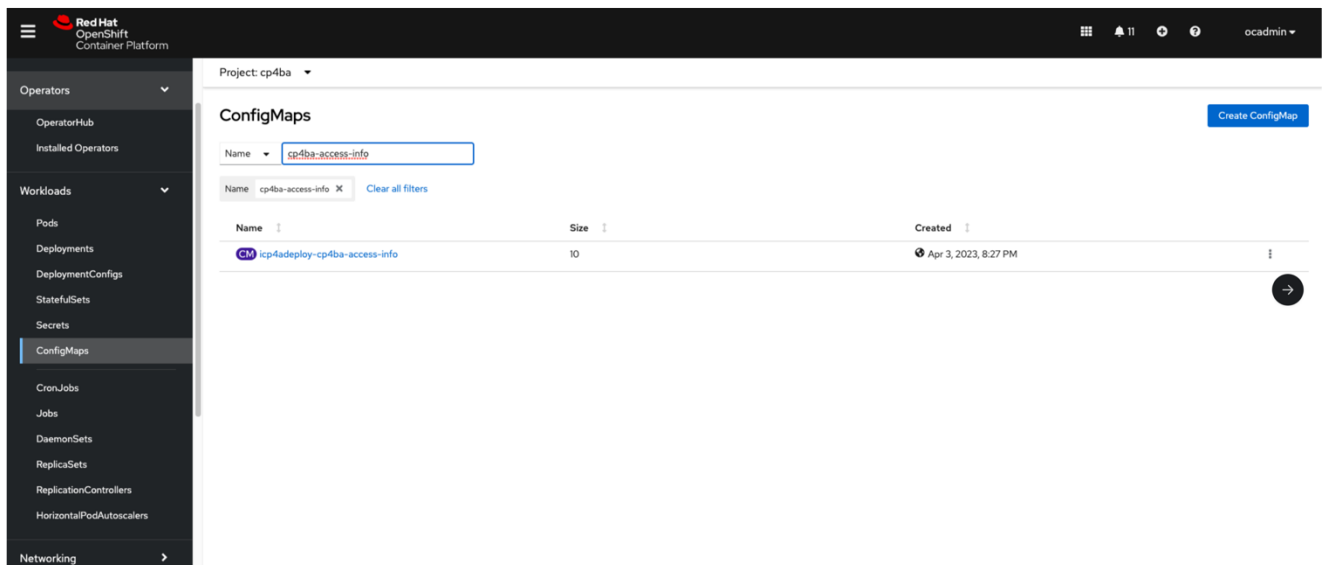


Figure 5: ConfigMaps

10. In the **Details** tab, under **Data**, you can view the URLs of the capabilities and the optional components you selected while creating the stack.

The following is an example of the FileNet Content Manager and the optional components URLs:

```
navigator-access-info
Business Automation Navigator for CP4BA: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/icn/navigator/
(Note: Above URL is meant to be used when CP4BA capabilities such as ADP, BAA, BAW, etc are installed)
Business Automation Navigator for FNCM: https://navigator-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/navigator/
(Note: Above URL is meant to be used when only FNCM capability is installed)
```

Figure 6: FileNet Content Manager URL

The following is an example of the Operational Decision Manager and the optional components URLs:

```
odm-access-info
CloudPak dashboard: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com
ODM Decision Center URL: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/odm/decisioncenter
ODM Decision Runner URL: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/odm/DecisionRunner
ODM Decision Server Console URL: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/odm/res
ODM Decision Server Runtime URL: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/odm/DecisionService
```

Figure 7: Operational Decisions Manager URL

The following is an example of the Business Automation Workflow and the optional components URLs:

```
bastudio-access-info
Cloudpak Dashboard: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com
Business Automation Workplace: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/Workplace
Business Automation Workflow Process Admin Console: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/ProcessAdmin
Business Automation Workflow REST API Tester: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/bpmrest-ui
Business Automation Process Portal: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/ProcessPortal
Business Automation Case Client: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/icn/navigator/?desktop=baw
Business Automation Case Builder: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/CaseBuilder

Business Automation Workflow External base URL: https://cpd-cp4ba.apps.harrison-newvpc.cpdtestcpba.com/bas/
(Note: External base URL is not something you can access directly. Business Automation Workflow provides REST APIs, Web Service APIs, Operations APIs etc. The endpoints start with http://host_name:port/[custom_prefix] or https://host_name:port/[custom_prefix], you can use External base URL to replace host_name:port/[custom_prefix])
```

Figure 8: Business Automation Workflow URL

For more details on further configuring the Cloud Pak for Business Automation and usage, see [What to do next topic](#).

## Log in to IBM Cloud Pak

Perform the following steps:

1. Click the URL of the required capability or optional components you retrieved in [Access the Cloud Pak for Business Automation capabilities](#).
2. From the **Log in with** drop-down list, select **Enterprise LDAP**.
3. In the **Username** and **Password** fields, enter the LDAP username and password which already exist in your LDAP server and associated to Zen roles.

**Note:**

The LDAP users and groups must have already been associated to Zen roles to be able to use them. For more information, see [associate your users and groups to Zen roles paragraph](#).

4. Click **Log in**.

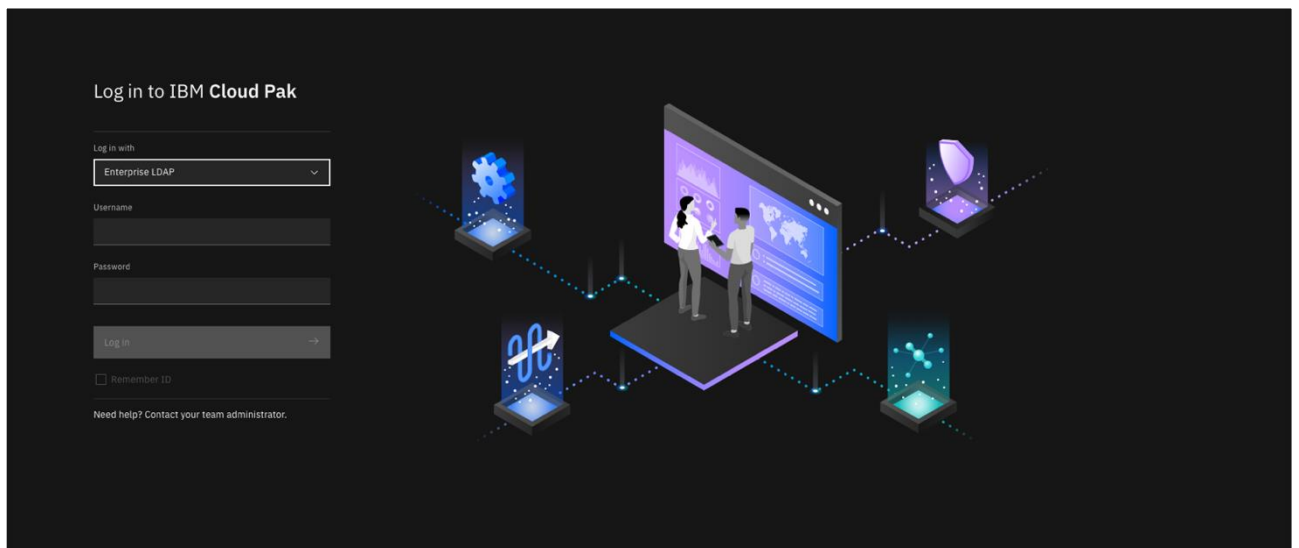


Figure 9: Log in to IBM Cloud Pak

## Cloud Pak for Business Automation post deployment

You can perform additional post-deployment tasks, such as providing SSH access to the OpenShift cluster instance.

### Accessing the control plane through the boot node

The recommended method of SSH access to the OpenShift cluster instances via the bastion host is by using SSH agent forwarding, as in the following Bash instructions:

1. Run the command `ssh-add -K <your-key.pem>` to store the key in your keychain.  
On Linux, you must omit the `-K` flag.

2. Log in to the [Amazon EC2 Dashboard](#).
3. In the navigation pane, click **Instances** > **Instances**.
4. Select the host name of the boot node.
5. Click the **Details** tab, copy the **Public IPv4 DNS** and save it for later use.

The screenshot displays the Amazon EC2 console interface. On the left is a navigation pane with 'Instances' selected. The main area shows a table of instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
cp4ba-bootnode	i-0fa33118e21fe7595	Running	i3.large	2/2 checks passed	No alarms	us-west-2a
harrison-bootnode	i-071b2f9cd6b764044	Running	i3.large	2/2 checks passed	No alarms	us-west-2a
harrison-existing-9-bootnode	i-09f6fdd35e76b3c33	Running	i3.large	2/2 checks passed	No alarms	us-west-2a

Below the table, the details for instance **i-0fa33118e21fe7595 (cp4ba-bootnode)** are shown. The 'Networking' tab is active, displaying the following information:

- Public IPv4 address:** 54.202.234.147
- Instance state:** Running
- Private IPv4 addresses:** 10.6.136.123
- Public IPv4 DNS:** ec2-54-202-234-147.us-west-2.compute.amazonaws.com
- Private IP DNS name (IPv4 only):** ip-10-6-136-123.us-west-2.compute.internal
- Instance type:** i3.large

Figure 10: Public IPv4 DNS

6. Run the following command to log in to the bastion host:
 

```
$ ssh -I <path-to-private-ssh-key> ec2-user@<bootnode-host-name>, where <bootnode-host-name> is the Public IPv4 DNS from the previous step.
```
7. Run the following commands to authenticate with OpenShift and verify that services are in a running state:
 

```
$ oc login
$ oc get pods
```

## Configuring event emitters with IBM Business Automation Insights (BAI)

If IBM Business Automation Insights is installed, you can install and configure the emitter that you need to send raw events to Flink jobs. [Configuring event emitters](#).

- FileNet Content Manager:
  - [Installing and configuring the Content event emitter](#)
- Operational Decision Manager:
  - [Configuring the ODM event emitter](#)
- Business Automation Workflow:
  - [Configuring the Workforce Insights event emitter](#)
  - [Configuring the BPM event emitter for IBM Business Automation Workflow container deployments](#)
  - [Configuring the Case event emitter for IBM Business Automation Workflow container deployments](#)

## Preparing users and groups for Task Manager and configuring the custom resource

If Task Manager (TM) is selected as an optional component, you must prepare and create users and groups for TaskAdmins, TaskUsers, and TaskAuditors in your directory server (e.g., Microsoft Active Directory, Security Directory Server, etc.) and update the Custom Resource (CR) accordingly.

- Follow the instructions here to [prepare users and groups for Task Manager](#).
- When you have the users and groups exist in your directory server, then update the custom resource (CR) and add the necessary parameters and users/groups. See below for an example and for more details, please see [additional parameters on Task Manager in the Knowledge Center](#).

See example below on the format and how to configure Task Manager where *taskAdmin1*, *taskUser1*, *taskAuditor1*, *taskAdmins*, *taskUsers*, and *taskAuditors* are users and groups in your directory server. Note that the excerpt below is part of the full CR. Please refer to the CASE package that can be downloaded. For more information, see [Cloud Pak for Business Automation Knowledge Center](#).

```
spec:
  ecm_configuration:
    tm:
      tm_production_setting:
        security_roles_to_group_mapping:
          task_admins:
            groups: [taskAdmins]
            users: [taskAdmin1]
          task_users:
            groups: [taskUsers]
            users: [taskUser1]
          task_auditors:
            groups: [taskAuditors]
            users: [taskAuditor1]
```

## Managing Resources

This section includes the resources created by the deployment, and where you can find them.

### AWS Secret Manager

**Note:**

If you have multiple deployment, please check the `aws:cloudformation:stack-name` under **Tags** to make sure you have selected the correct secret for your deployment.

AWS Secrets Manager is used to store the credentials that the user inputs for the OpenShift Container Platform username, password and apikey.

1. Log in to [AWS Secrets Manager](#)
2. Select the **Secret name** with prefix “OpenshiftSecret-”
3. Click on **Retrieve secret value** under **Secret value** section
4. You should be able to see your `ocpUsername` and `ocpPassword`

In AWS Secrets Manager you will also see two other secrets created by the deployment with prefix of “CPBASecret-” and “AWSCredentialSecret-”. These secrets are used to create the resources needed for deploying the OCP cluster and can also be located using the same method above.

## AWS Identity, Access Management (IAM) role and Access Key

IAM identity and roles:

1. **CPBAIAMUser** - IAM User with AdministratorAccess, which will create resources for OpenShift Container Platform (OCP)
2. **LambdaExecutionRole** - enables the function to destroy/clean up the environment.
3. **BootNodeIamRole** - gives permission to access credentials from SecretManager, to access S3 bucket, and to perform ssm actions

Access Key:

1. **CPBAIAMUserAccessKey** - Access Key for **CPBAIAMUser** to create resources for OpenShift Container Platform (OCP)

IAM identity and Access Key can be managed here:

1. Log in to [AWS Identity and Access Management](#)
2. Select Users under Access management on the navigation pane
3. Search “CPBAIAMUser”
4. **User name** should look like `<stack-name>-CPBAIAMUser-xxx`
5. Under this user you can locate the **Access Key**

IAM role can be managed here:

1. Log in to [AWS Identity and Access Management](#)
2. Select **Roles** under **Access management** on the navigation pane
3. Search either “BootnodeIamRole” or “LambdaExecutionRole” (These are the two IAM Role created during the deployment)

4. **Role name** should look like <stack-name>-xxxx-BootnodeIamRole-xxxx or <stack-name>-xxxx-LambdaExecutionRole-xxxx
5. Click on the **Role** you would like to manage

## Kubernetes and OpenShift Container Platform (OCP) Resources

The credentials provided by the users in the property files are located in the Secrets section in OCP console.

Getting to the location of all secrets:

1. Log in to the OCP console using URL from [Access the Cloud Pak for Business Automation capabilities](#)
2. On the Navigation pane, go to **Workloads > Secrets**
3. Make sure you are on **Project: cp4ba**
4. You should be able to find the following secrets in the list below depending on the capabilities deployed, which was created using the credentials entered in your property files

List of the secrets that can be managed by users (This list contains all secrets for all capabilities, if all capabilities are selected):

- ldap-bind-secret
- ibm-fncm-secret
- ibm-iccsap-secret
- ibm-icc-secret
- ibm-ier-secret
- ibm-ban-secret
- icp4adeploy-workspace-aae-app-engine-admin-secret
- ibm-odm-db-secret
- icp4adeploy-bas-admin-secret
- ibm-baw-wfs-server-db-secret
- ibm-cp4ba-db-ssl-secret-for-dbserver1
- ibm-cp4ba-ldap-ssl-secret

## Updating credentials in secrets

If the credentials associated with any of the secrets below change, you will need to update the corresponding secret with the updated username/password:

- ldap-bind-secret
- ibm-fncm-secret
- ibm-iccsap-secret
- ibm-icc-secret
- ibm-ier-secret
- ibm-ban-secret
- icp4adeploy-workspace-aae-app-engine-admin-secret
- ibm-odm-db-secret
- icp4adeploy-bas-admin-secret
- ibm-baw-wfs-server-db-secret

See [IBM Cloud Pak for Business Automation Knowledge Center for more details](#) on updating the secrets above.

## Updating TLS certificate in secrets

If TLS certificate associated with any of the secrets below changes, you will need to update corresponding secret with the new (updated) certificate:

- ibm-cp4ba-db-ssl-secret-for-dbserver1 (this is the secret associated with the DB server)
- ibm-cp4ba-ldap-ssl-secret (this is the secret associated with the Directory server (LDAP))

See [IBM Cloud Pak for Business Automation Knowledge Center for more details](#) on updating the secrets above.

## Monitoring

### Monitoring AWS Instance

- Log in to your [Amazon EC2 console](#) and verify that you're in the correct region.
- Choose **Instance** and select your launched instance.
- Select the server to display your metadata page and choose the **Status checks** tab at the bottom of the page to review if your status checks passed or failed.
- Choose **Monitoring** tab at the bottom of the page to view more usage details.

## Monitoring IBM Cloud Pak for Business Automation Components

To enable monitoring in IBM Cloud Pak for Business Automation deployment see [How to Monitor Components of the IBM Cloud Pak For Business Automation](#).

## Upgrading

Upgrade will need to be performed on the OpenShift Container Platform. See [Upgrading topic on IBM Cloud Pak for Business Automation](#).

## Limitations

Review the [known issues and limitations](#) for Cloud Pak for Business Automation.

## Troubleshooting

This section helps you to troubleshoot some of the common issues.

### CREATE\_FAILED error in the AWS CloudFormation template

#### Problem

The **BootnodeInstance** resource displays a CREATE\_FAILED error when you launch the AWS CloudFormation template.

#### Solution

- Check for any error messages in the stacks to see if you have entered any values incorrectly in the parameters. You need to enter the correct values in the parameters and deploy the stack again.
- Access the cp4ba-bootstrap.log and cp4ba-trace.log files in your S3 bucket and diagnose the issue. If you cannot resolve the issue, open a case with [IBM Support](#).

For more information, see [Troubleshooting AWS CloudFormation](#) on the AWS website.

### Domain zone already has record sets error in the log file

#### Problem

The Record Set in Route 53 domain may not get deleted after deleting a deployment stack, and the following error message appears in the cp4ba-bootstrap.log file when you redeploy the stack with the same name:

```
level=fatal msg=failed to fetch Terraform Variables: failed to fetch dependency of "Terraform Variables": failed to generate asset "Platform Provisioning
```

```
Check": baseDomain: Invalid value: "yourdomain.com": the zone already has record sets for the domain of the cluster: [api.your-stack-name.yourdomain.com. (A)]
```

### Solution

You must ensure that all records associated with the deleted stack in Route 53 are deleted before redeploying the stack with the same name.

Perform the following steps to delete all the records:

1. Log in to [AWS Route 53](#).
2. In the navigation pane, click **Hosted zones** and select the Route 53 domain with the deleted stack's record sets.
3. Click the **Records** tab, search for the stack name and delete all the records associated with the stack name that you deleted.

## Unable to log in to the OpenShift Container Platform (OCP)

### Problem

Unable to log in to the OpenShift Container Platform (OCP) console after 120 minutes of deployment.

### Solution

Access the cp4ba-bootstrap.log and cp4ba-trace.log files in your S3 bucket and diagnose the issue. If you cannot resolve the issue, gather the [logs](#) and open a case with [IBM Support](#).

## Capability URLs are not available

### Problem

The URLs of the capabilities are not available in **ConfigMaps > icp4adeploy-cp4ba-access-info** even though the deployment status shows CREATE\_COMPLETE.

### Solution

Access the cp4ba-bootstrap.log and cp4ba-trace.log files in your S3 bucket and diagnose the issue. If you cannot resolve the issue, gather the [logs](#) and open a case with [IBM Support](#).

## Broken capability URLs

### Problem

The URLs of the capabilities in **ConfigMaps > icp4adeploy-cp4ba-access-info** do not load the IBM for Cloud Pak page.

### Solution

Access the cp4ba-bootstrap.log and cp4ba-trace.log files in your S3 bucket and diagnose the issue. If you cannot resolve the issue, gather the [logs](#) and open a case with [IBM Support](#).

**Note:**

These steps assume access to the AWS CloudFormation console for the IBM Cloud Pak for Business Automation deployment.

## Unable to access the boot node

### Problem

Unable to access the boot node.

### Solution

The boot node EC2 instance is used for certain command-line cluster administration tasks, such as adding compute nodes. SSH access to the boot node is required for some cluster administrators.

After deployment, you only have access to the boot node. Provide the workstation IP address CIDR as the value of the `BootNodeSecurityGroup` rule.

This section describes the steps to modify the `BootNodeSecurityGroup` inbound rules.

1. Log in to the [Amazon EC2 Dashboard](#).
2. In the navigation pane, click **Instances** > **Instances**.
3. Select the host name of the boot node.
4. Click the **Security** tab and under **Security groups**, click the security group. The **Security Groups** page displays the ingress rules.
5. Click the **Inbound rules** tab and then click **Edit inbound rules**.

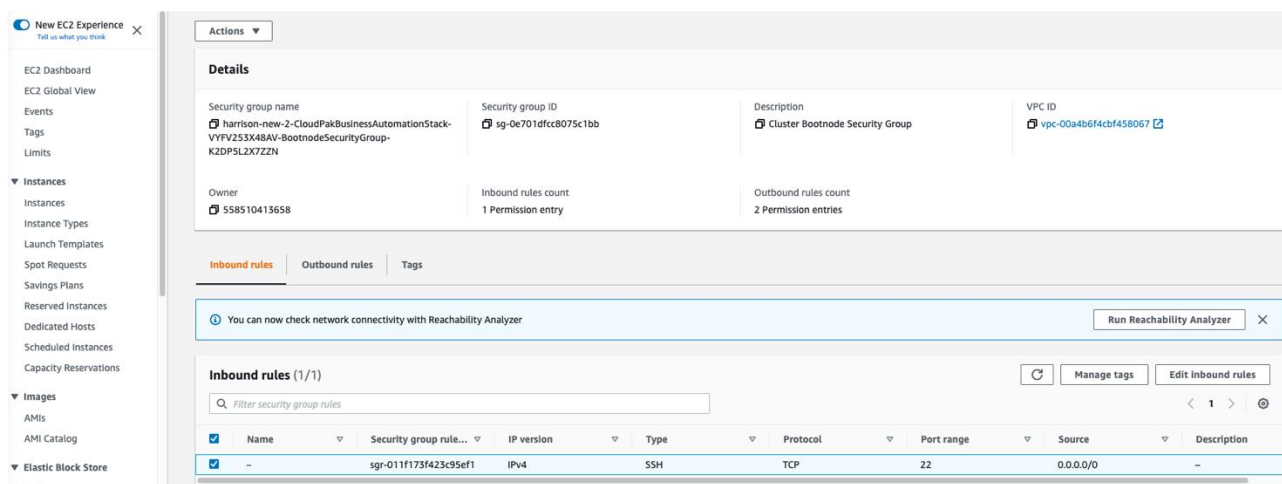


Figure 11: Inbound rules

6. Click **Add rule** to add the network CIDR for the group of IP addresses that you want to permit SSH access to the boot nodes.
7. From the **Type** drop-down list, select **SSH**.

8. In the **Source** field, select **0.0.0.0/0** to allow any IP address.
9. Click **Save rules**.

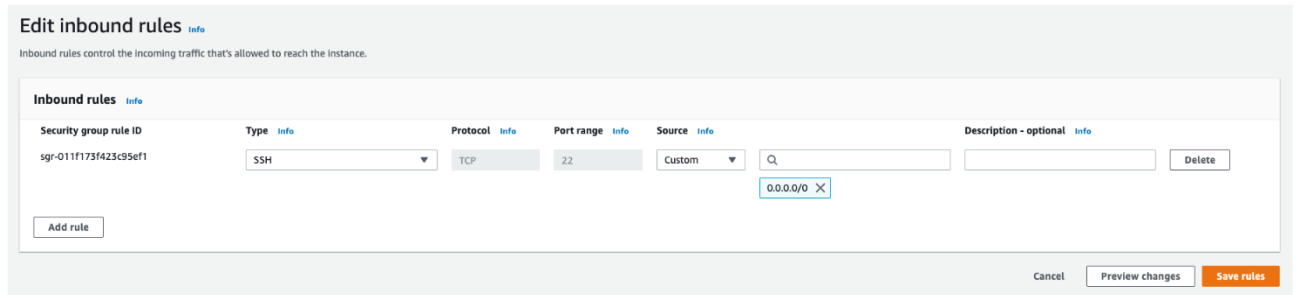


Figure 12: Edit inbound rules

## Workplace navigator not loading

### Problem

When BAW (Authoring and runtime) is deployed and not able to access workplace desktop.

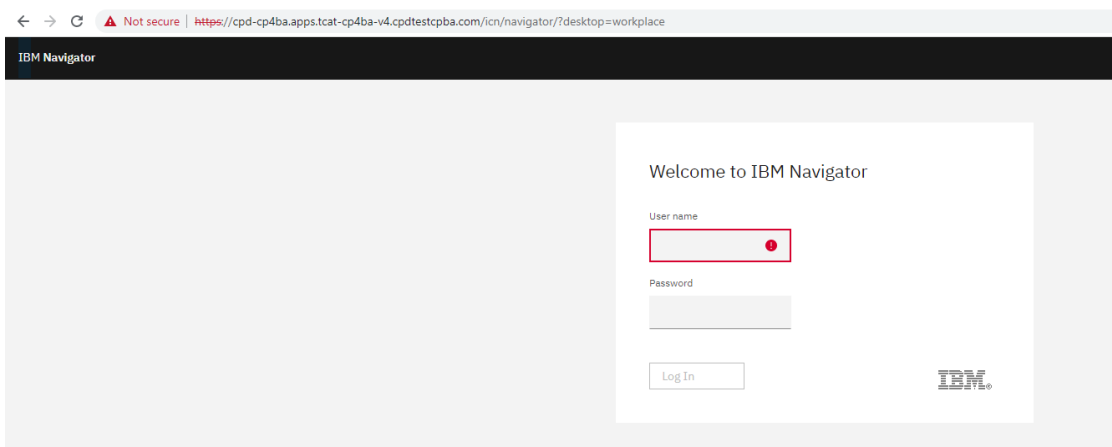


Figure 13: Workplace desktop error

### Solution

1. Go to **desktop=admin**.
2. In the **Desktops** pane, select the **Workplace** desktop and click on **[Edit]**.
3. Go to **General** tab, under **Authentication** -> **connection** change to **APPENG0**.
4. Go to **Layout** tab, Select **Workplace** checkbox under **Display features - Feature**.

## Not able to login through Cloud Pak console with the correct credentials

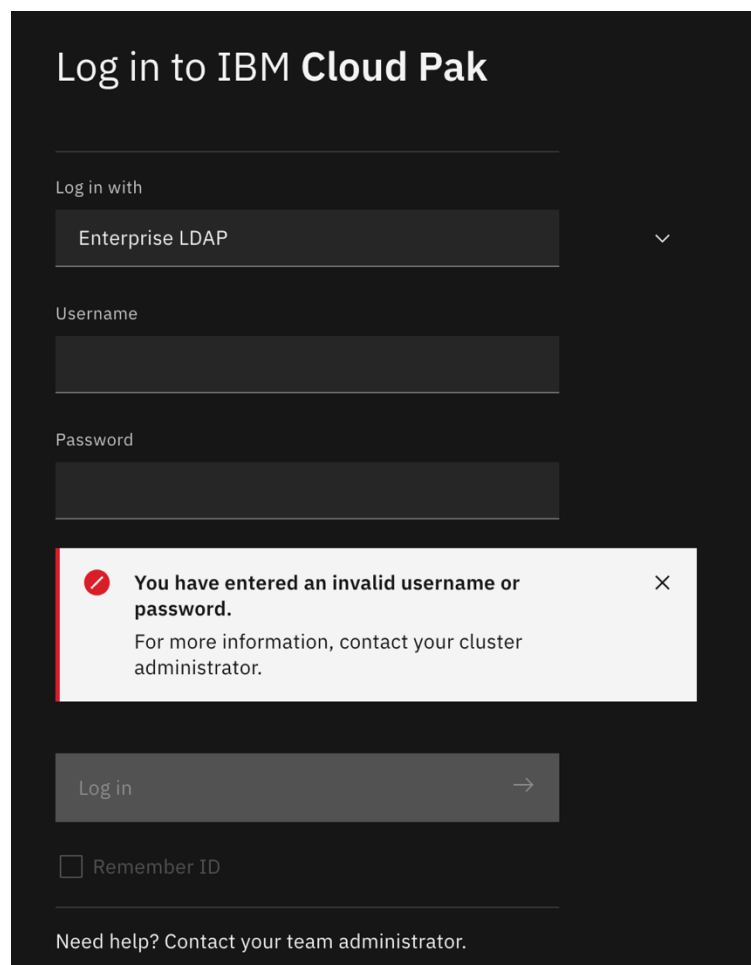


Figure 14: Log in to IBM Cloud Pak

## Problem 1

When trying to login in the Cloud Pak console, you are not able to login with the username and password.

### Solution

1. Verify your credentials are correct in the property files.
2. Verify there is no duplicate parameters in your property files. If you have duplicate keys in your property files and with different values, this will lead to default values in your secret.
3. If you have entered the credentials incorrectly, update the corresponding secret that contains the invalid credentials directly in the OpenShift Web Console or oc cli. Also, update the property files and secret templates with the correct credentials.
4. If your credentials are correct and you are still unable to login, please see Problem 2 to further investigate.

## Problem 2

When trying to login in the Cloud Pak console, you are not able to login with the correct username and password. You need to check the logs in the cp4a-operator. If you see this error in the logs:

```
TASK [FNCM : Retrieve IAM Access Token] *****
task path: /opt/ansible/roles/FNCM/tasks/common/fncm-iam-zen-token.yaml:
Thursday 14 September 2023 15:16:40 +0000 (0:00:00.055) 0:09:04.980 ****
fatal: [localhost]: FAILED! => {"changed": false, "connection": "close",
"content": "Failed to get access token, invalid token request parameters
server_error", "content_length": "73", "content_type": "text/html; charset=utf-
8", "date": "Thu, 14 Sep 2023 15:16:44 GMT", "elapsed": 4, "etag": "W/\\"49-
EUYKaebZk7GIwG+08q7LDPDsL6o\\"", "msg": "Status code was 400 and not [200]: HTTP
Error 400: Bad Request", "redirected": false, "status": 400,
"strict_transport_security": "max-age=15552000; includeSubDomains", "url":
"https://platform-identity-provider.cp4ba.svc:4300/v1/auth/identitytoken",
"x_content_type_options": "nosniff", "x_dns_prefetch_control": "off",
"x_download_options": "noopen", "x_frame_options": "SAMEORIGIN",
"x_xss_protection": "1; mode=block"}
```

## Solution

1. Go to **OCP console**.
2. Click on **Workloads > Secrets**, search for “platform-auth-ldaps-ca-cert”.
3. Select **platform-auth-ldaps-ca-cert** secret and go to **Actions > Edit Secret**
4. Check if the secret is the same as your LDAP SSL certificate
5. If not please replace the secret with the correct certificate.
6. Click on **Workloads > Pods**, search for “platform”
7. Restart all the pods that starts with “platform” by deleting the pods. The pods will be recreated after you delete them.

## Additional resources

### AWS resources

- [Getting Started Resource Center](#)
- [AWS General Reference](#)

- [AWS Glossary](#)

## AWS services

- [Amazon EC2](#)
- [Amazon Route 53](#)
- [Amazon S3](#)
- [Amazon VPC](#)
- [AWS CloudFormation](#)

## IBM Cloud Pak for Business Automation documentation

- [IBM Cloud Pak for Business Automation](#)
- [Red Hat OpenShift Container Platform](#)

## Document revisions

Date	Change	In sections
September 2023	First Marketplace Release	
June 2024	Update to use CP4BA 23.0.2 and include more CP4BA Capabilities.	
December 2024	Update to use CP4BA 24.0.0 and added SSL certificate parameters	
January 2026	Update to IBM Fusion Data Foundation	
March 2026	Update Github link	