# IBM Automation Platform

## Intelligent Client Onboarding Scenario – Tech Jam Infrastructure

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IBM

# IBM Automation platform – Tech Jam Infrastructure

**Use cases**

| | | | |
|---|---|---|---|
| Customer experience | App and infrastructure stability | Hybrid cloud integration | Site deployment automation |
| Business operations | Platform operations | Real-time analytics | 4G/5G telco cloud platform |
| Workforce management | Optimize AIOps | Transactional integrity | NFV lifecycle management |

**IBM Cloud Paks**

**IBM Cloud Pak for Business Automation**
- Workflow and decisions
- Content services
- Operational intelligence

**IBM Cloud Pak for Watson AIOps**
- Application impact avoidance
- Hybrid application management
- Observability INSTANA

**IBM Cloud Pak for Integration**
- Application integration
- API management
- Messaging and events

**IBM Cloud Pak for Network Automation**
- Intent-driven orchestration
- Closed-loop operations
- Network optimization

**Automation foundation**

- Robotic Process Automation
- Process and task mining
- Natural language interactions
- Machine learning
- Event detection
- Operational models

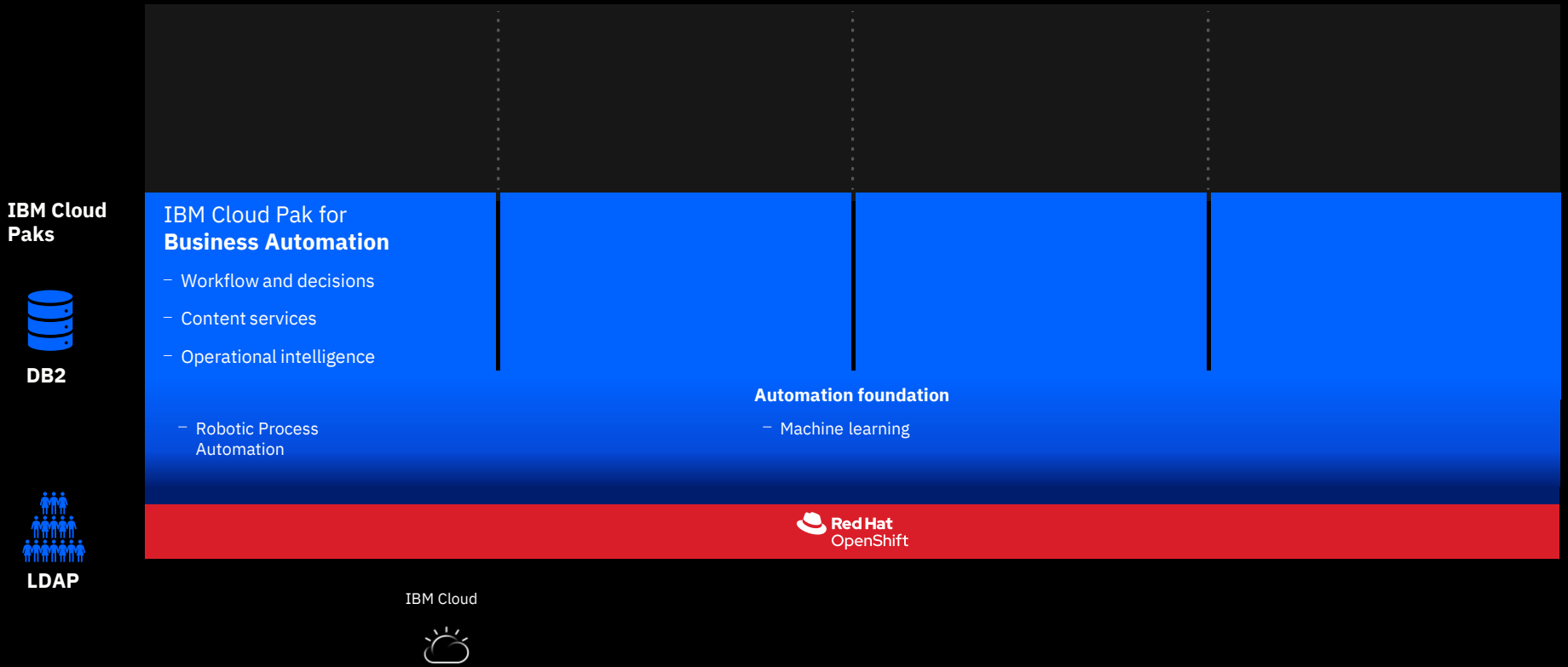
DB2

LDAP

Red Hat OpenShift

IBM Cloud | AWS | Microsoft Azure | Google Cloud | VMware | Private | IBM **Z** IBM **LinuxOne** IBM **Power** Systems | End points

# IBM Automation platform – Tech Jam Infrastructure



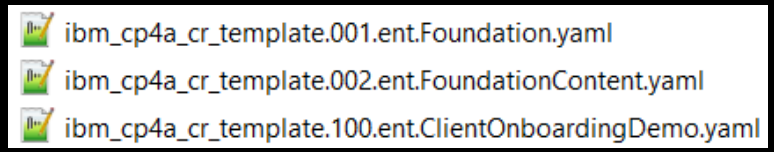
# Tech Jam Infrastructure – Deployment Steps

0. Select the CP4BA template for deployment
1. Create your IBM Cloud Account (or use existing)
2. Create new RedHat OpenShift Cluster
3. Create new VM for LDAP & install IBM SDS & import ldif file with users and groups
4. Deploy IBM DB2 Containers & create needed databases
5. Install IBM Cloud Pak for Business Automation Operator & deploy IBM Cloud Pak for Business Automation (Enterprise)
6. Deploy Machine Learning Service for ADS
7. Optional: Create new VM for RPA & install IBM RPA
8. Optional: Scale up the deployment

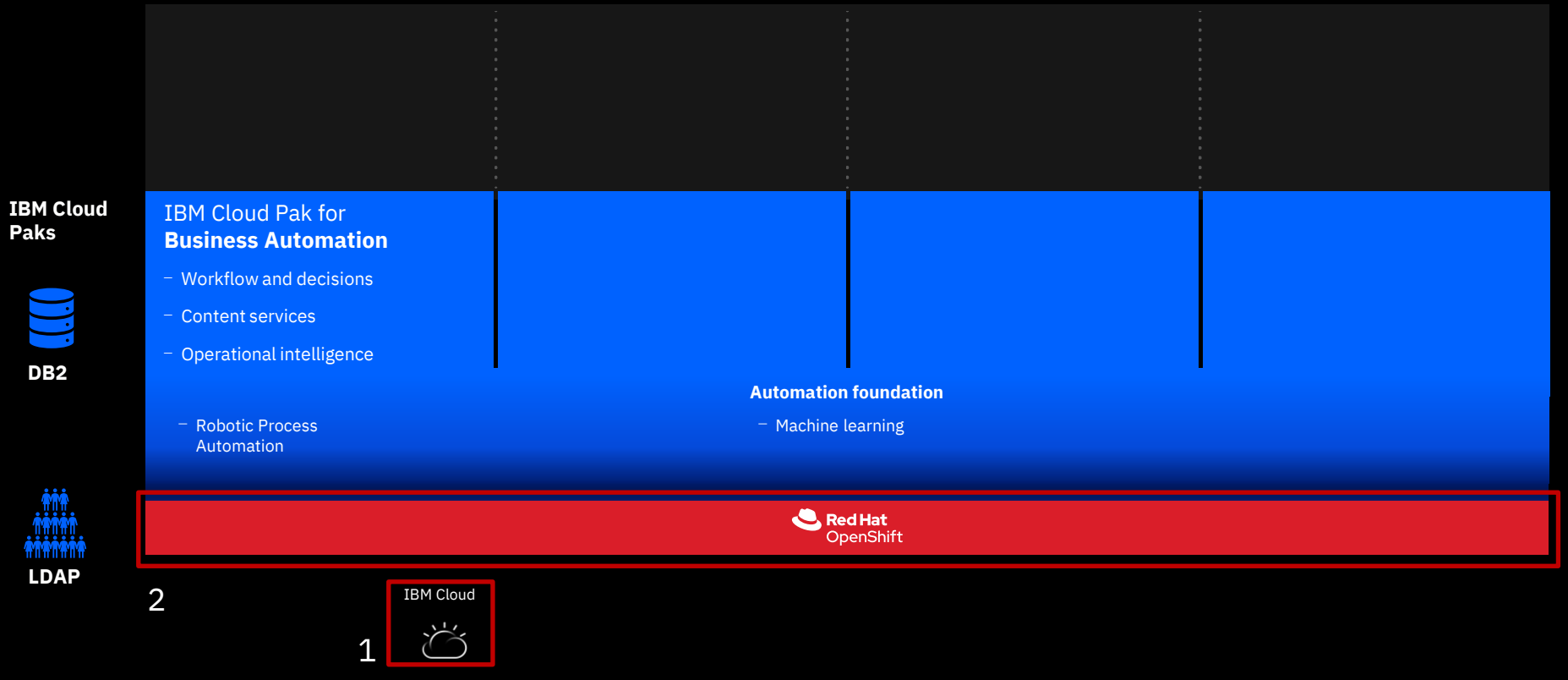
# Tech Jam Infrastructure – Deployment Step 0

1. Select the CP4BA template for deployment

   - Three templates available, more to be added:
     - Template for the Client Onboarding Demo (ibm_cp4a_cr_template.100.ent.ClientOnboardingDemo.yaml)
       - Contains all CP4BA patterns needed by the Client Onboarding Demo (more details later)
     - Foundation only (ibm_cp4a_cr_template.001.ent.Foundation.yaml)
       - Foundation components only: IAF, RR, UMS, BAN
     - Foundation, Content (ibm_cp4a_cr_template.002.ent.FoundationContent.yaml)
       - Foundation + Content components: CPE, GraphQL, CSS, CMIS
   - Each template was tested on ROKS and custom installed OCP
   - LDAP needed by all templates
   - DB2 needed by all templates (but with different license & resource requirements)
   - For each template OCP Cluster Sizing information is provided in doc
   - Creating your own custom CP4BA template is possible as well



# Tech Jam Infrastructure – Deployment Steps 1 & 2

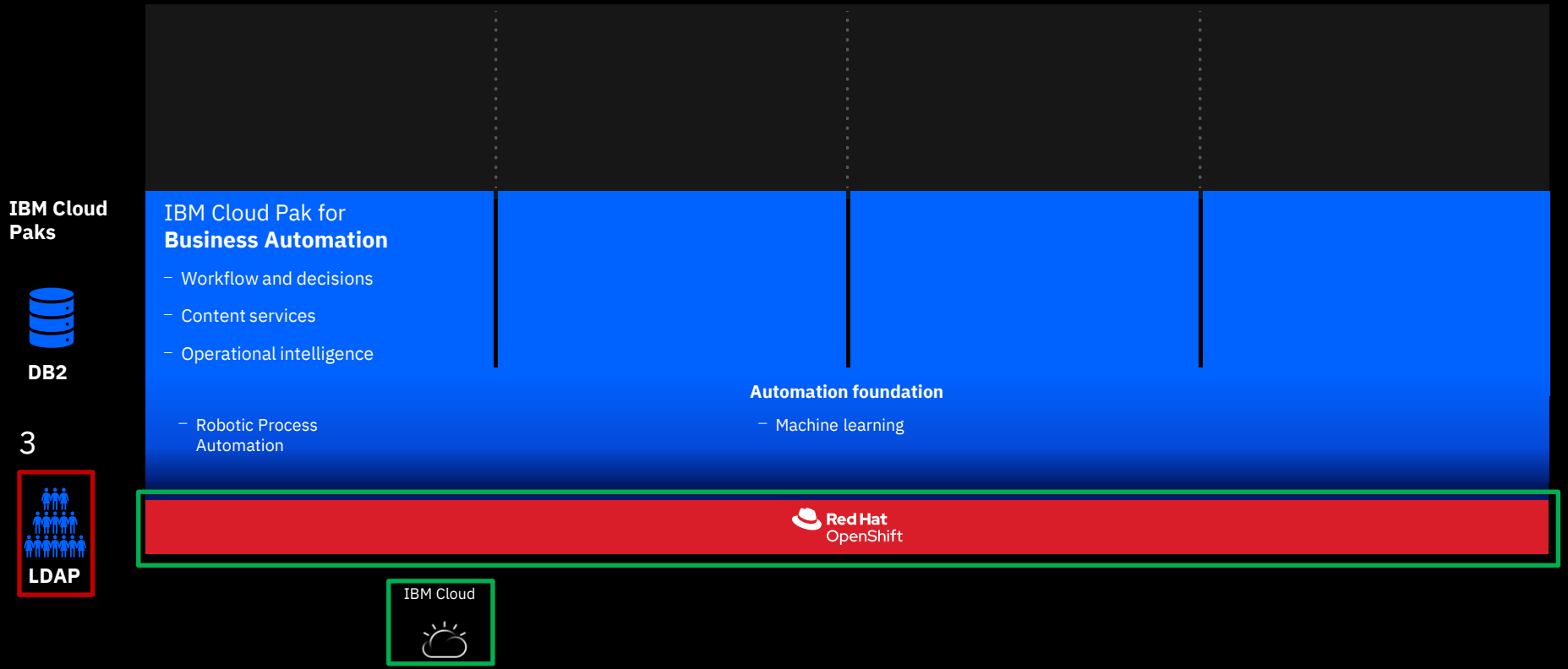


# Tech Jam Infrastructure – Deployment Steps 1 & 2

1. Create your IBM Cloud Account (or use existing)
   - Secure funding for the infrastructure (you'll need ~$1k as a minimum – small cluster for ~one week, e.g. for a Customer Demo)
   - Check your entitlement on https://myibm.ibm.com/products-services/containerlibrary
     - Under View library check that you are entitled for CP4BA (IBMers will see *all*)
     - Copy your entitlement key
   - Access https://cloud.ibm.com with your IBM ID
     - IBMers can use their w3 ID
   - Assign your entitlement key for discount on the OCP cluster (CP4BA license includes a license for OCP)
     - With the entitlement key you will also pull the container images

2. Create new RedHat OpenShift Cluster
   - Access https://cloud.ibm.com with your IBM ID
   - Create new OpenShift Cluster
     - Select OCP version, e.g. 4.6.28 and select to apply your Cloud Pak entitlement
     - Classic infrastructure, select geography, single-zone, and select the zone / datacenter where the cluster should be created
     - Specify the worker pool details (e.g. c3c.32x64 Virtual – shared, four nodes per zone, no disk encryption)
     - Name your cluster, check the estimated costs and create your OCP cluster
     - Dependent on the availability of HW resources in the selected datacenter it can take between a few hours and multiple days until your cluster is created
     - For DB2 a second worker pool with one additional worker node with >120 GB of memory is recommended

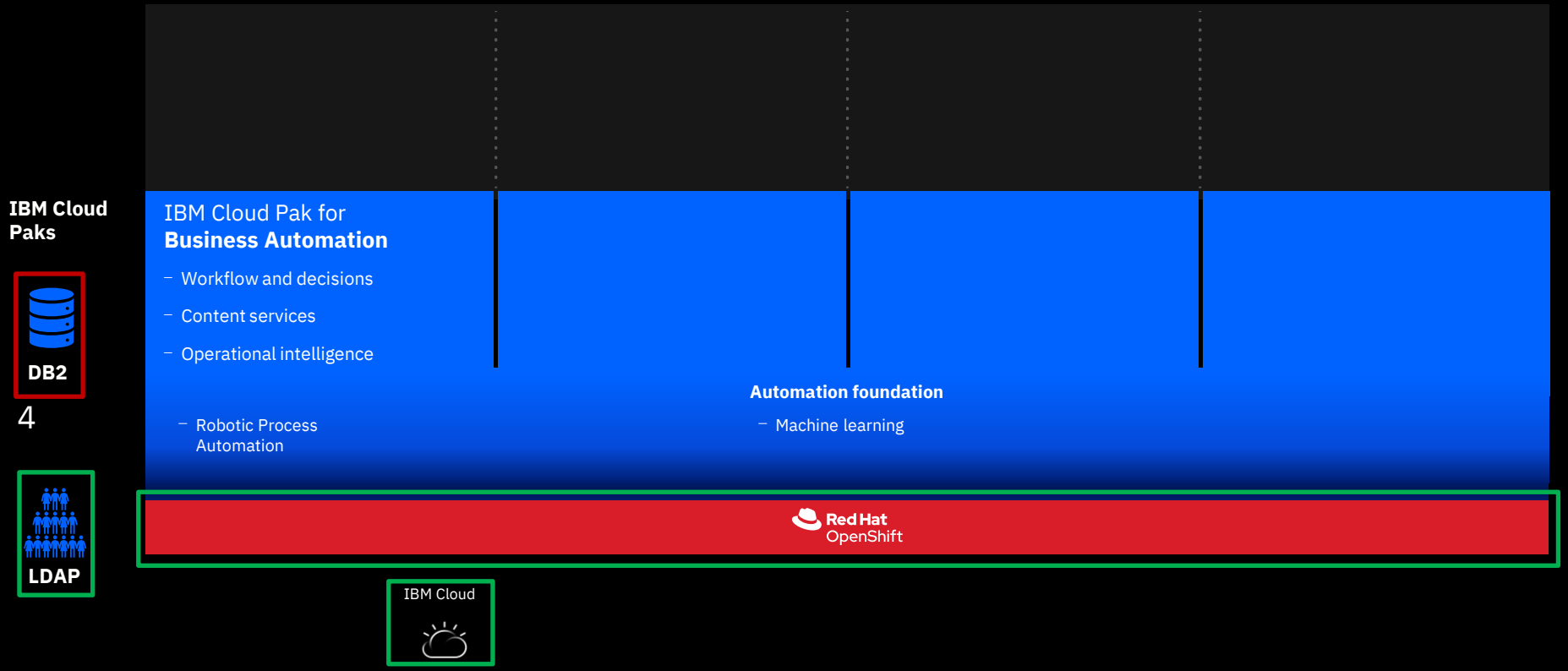
# Tech Jam Infrastructure – Deployment Step 3



# Tech Jam Infrastructure – Deployment Step 3

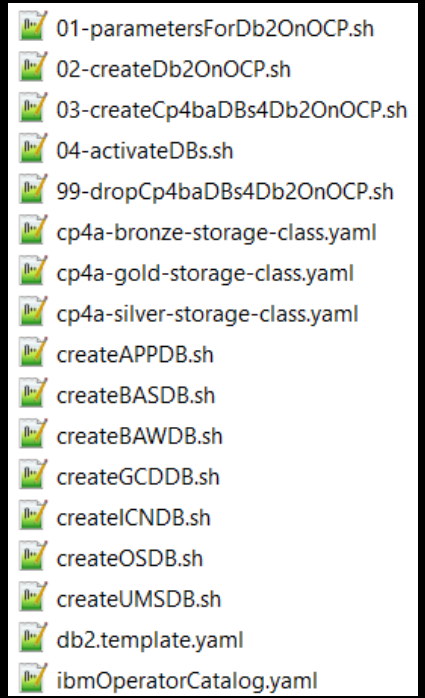
3. Create new VM for LDAP & install IBM SDS & import ldif file with users and groups
   - Access https://cloud.ibm.com with your IBM ID
   - Navigate to Classic Infrastructure, click Order, then click Virtual Server for Classic tile.
   - Select the configurations, e.g.
     - Public instance
     - Quantity: 1
     - Billing type
     - Host name (host name plus domain name should less than 64 characters)
     - Data Center, better to use the same one with your OCP cluster
     - Select a profile, e.g., B1.8x16 (8 CPU cores, 16GB memory, SAN)
     - Select Image, like Red Hat 7.x Minimal
     - Storage
     - Network interface (1Gbps or 100Mbps)
     - Private/Public security group
     - VLAN: better to use the same VLAN with your OCP cluster
   - The price will be calculated automatically on the right side of the page. Click Create
   - Wait for couple of minutes, the VM will be running. Click it and navigate to Passwords tab, you can find the login credentials there
   - Install SDS and import prepared ldif file

# Tech Jam Infrastructure – Deployment Step 4

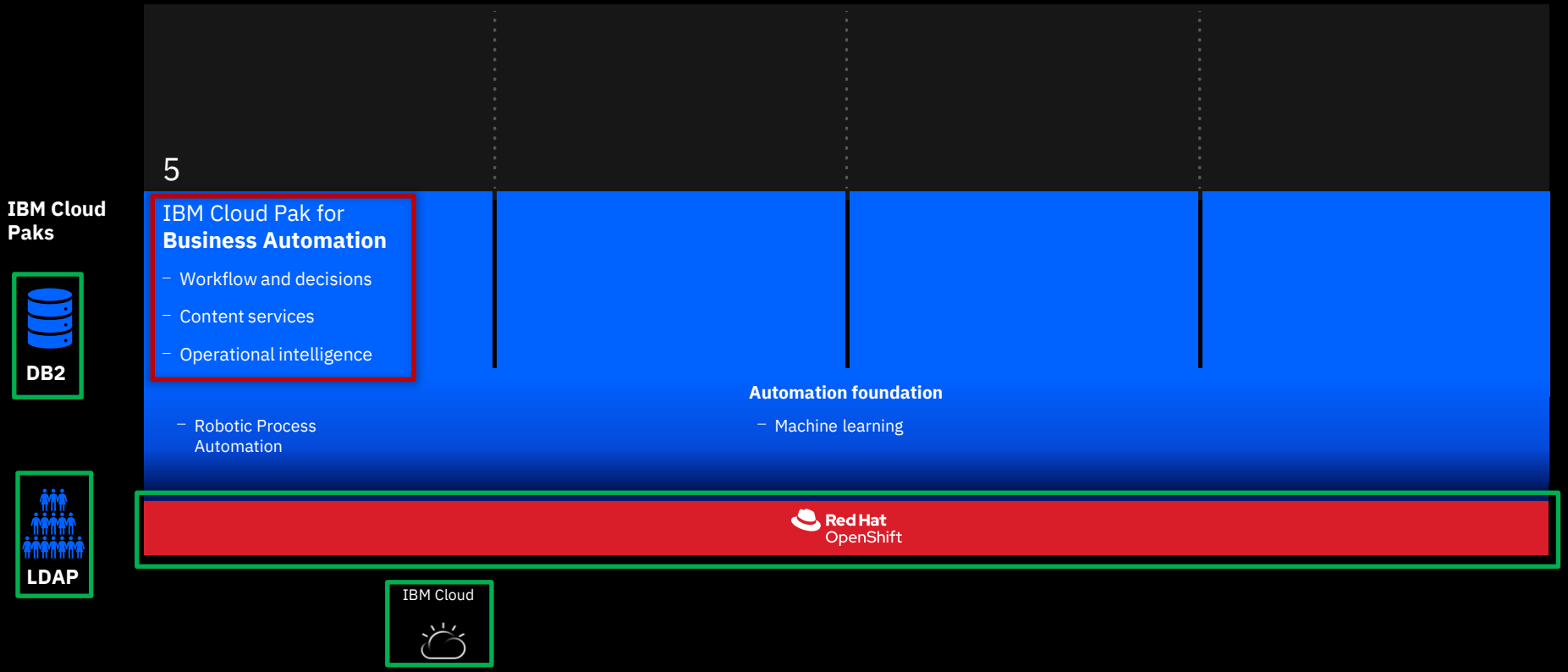


# Tech Jam Infrastructure – Deployment Step 4

4. Deploy IBM DB2 Containers & create needed databases
   - Scripts and templates for DB2 Operator & Instance deployment on OCP are published: https://github.ibm.com/Automation-Elite/cp4ba-rapid-deployment-scripts
     - Update properties file first to prepare DB2 Operator & Instance deployment
       - Only 27 properties, usually, you only need to update **TEN** properties:
         - BEFORE deployment
           - cp4baTemplateToUse ,db2OnOcpProjectName, db2Cpu, db2AdminUserPassword, db2StandardLicenseKey, db2Memory
         - WHILE deployment (after Operator, before Instance)
           - db2InstanceVersion
         - AFTER deployment
           - db2HostName
           - db2HostIp
           - db2PortNumber
     - Run script to deploy DB2 Operator & Instance (semi-automated, needs entitlement key)
     - Update properties file with Host Name / IP and Port of created DB2 Instance
     - Run script to create all needed databases – creates 12 databases for CP4BA when you selected the Client Onboarding template, a smaller number of databases for other templates
   - Optionally create another VM for DB2 and install DB2 on-premises & create the needed databases

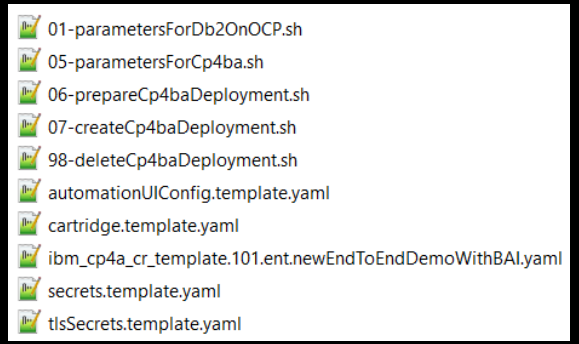


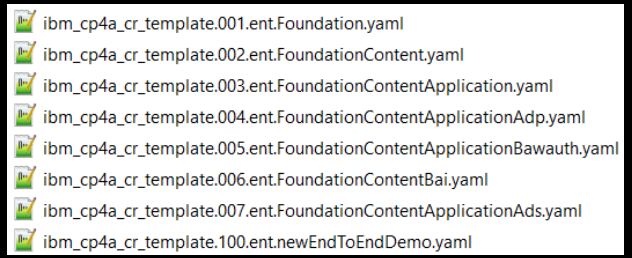
# Tech Jam Infrastructure – Deployment Step 5



# Tech Jam Infrastructure – Deployment Step 5

5. Install IBM Cloud Pak for Business Automation Operator & deploy IBM Cloud Pak for Business Automation (Enterprise)
   - Run script cp4a-clusteradmin-setup.sh (from cert-kubernetes) to prepare cluster and deploy CP4BA operator (needs entitlement key)
   - Use **Scripts for Rapid CP4BA Enterprise Deployment**
     - Update properties file (e.g. specify your project name, admin username/password, LDAP details, …)
       - Only 35 properties, usually you only need to update **SEVEN** properties before deployment:
         - cp4baProjectName
         - cp4baOcpHostname
         - cp4baTlsSecretName
         - cp4baAdminPassword
         - cp4baUmsAdminPassword
         - ldapAdminPassword
         - ldapServer
       - Properties for DB2 from Deployment Step 4 are re-used
     - Run script to deploy Cloud Pak for Business Automation (needs entitlement key)



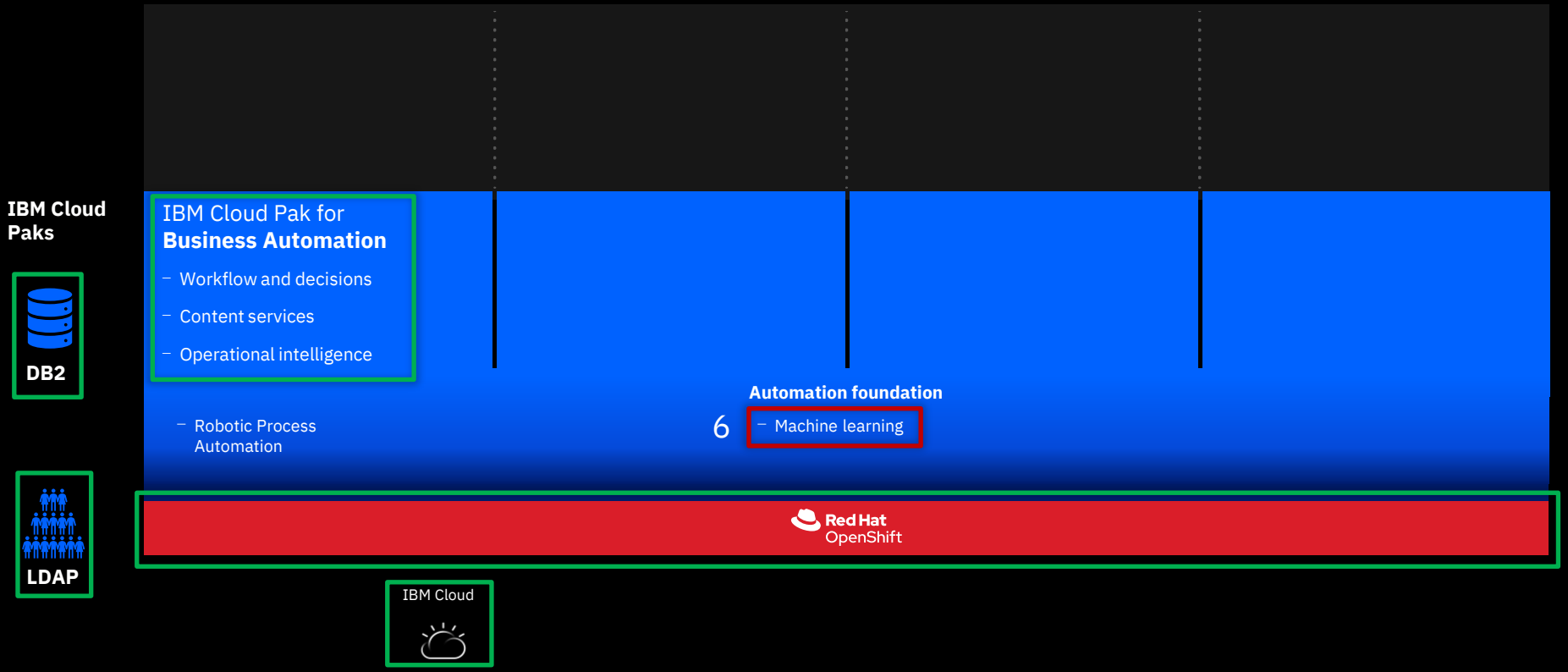
# Tech Jam Infrastructure – Deployment Step 5

5. IBM Cloud Pak for Business Automation (Enterprise) cont.
   - Using Template `ibm_cp4a_cr_template.100.ent.ClientOnboardingDemo.yaml` installs the following CP4BA patterns (as used while the Tech Jam):
     - foundation
       - IAF (IBM Automation Foundation) components needed, for example IBM Event Streams
       - RR (Resource Registry)
       - UMS (User Management Service)
       - BAS (Business Automation Studio, including AE playback_server)
       - AE (Application Engine, data persistence enabled)
       - BAN (Business Automation Navigator)
       - BAI (Business Automation Insights)
     - content
       - CPE (Content Platform Engine)
       - GraphQL (Content Services GraphQL)
       - CSS (Content Search Services)
       - CMIS (Content Management Interoperability Services)
     - application
       - Application Designer

# Tech Jam Infrastructure – Deployment Step 5

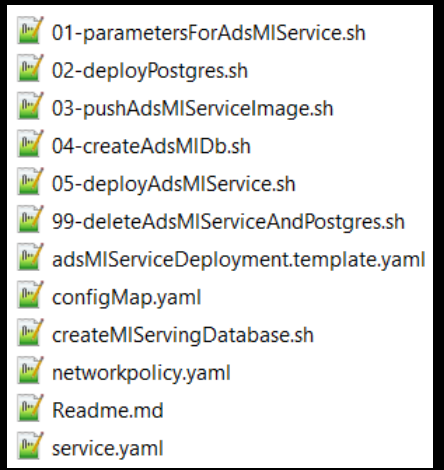
5. Install IBM Cloud Pak for Business Automation Operator & deploy IBM Cloud Pak for Business Automation (Enterprise) cont.
    - Using Template `ibm_cp4a_cr_template.100.ent.ClientOnboardingDemo.yaml` installs the following CP4BA patterns (as used while the Tech Jam) cont.:
        - decisions_ads
            - ADS (Automation Decision Services)
                - Decision Designer
                - Decision Runtime
        - workflow
            - Workflow Authoring
                - Workflow Authoring Server (JMS included)
                - PFS (Process Federation Server)
                - Elasticsearch
            - BAML (Business Automation Machine Learning Server)
                - ITP (Intelligent Task Prioritization)
                - WFI (Workforce Insights)

# Tech Jam Infrastructure – Deployment Step 6

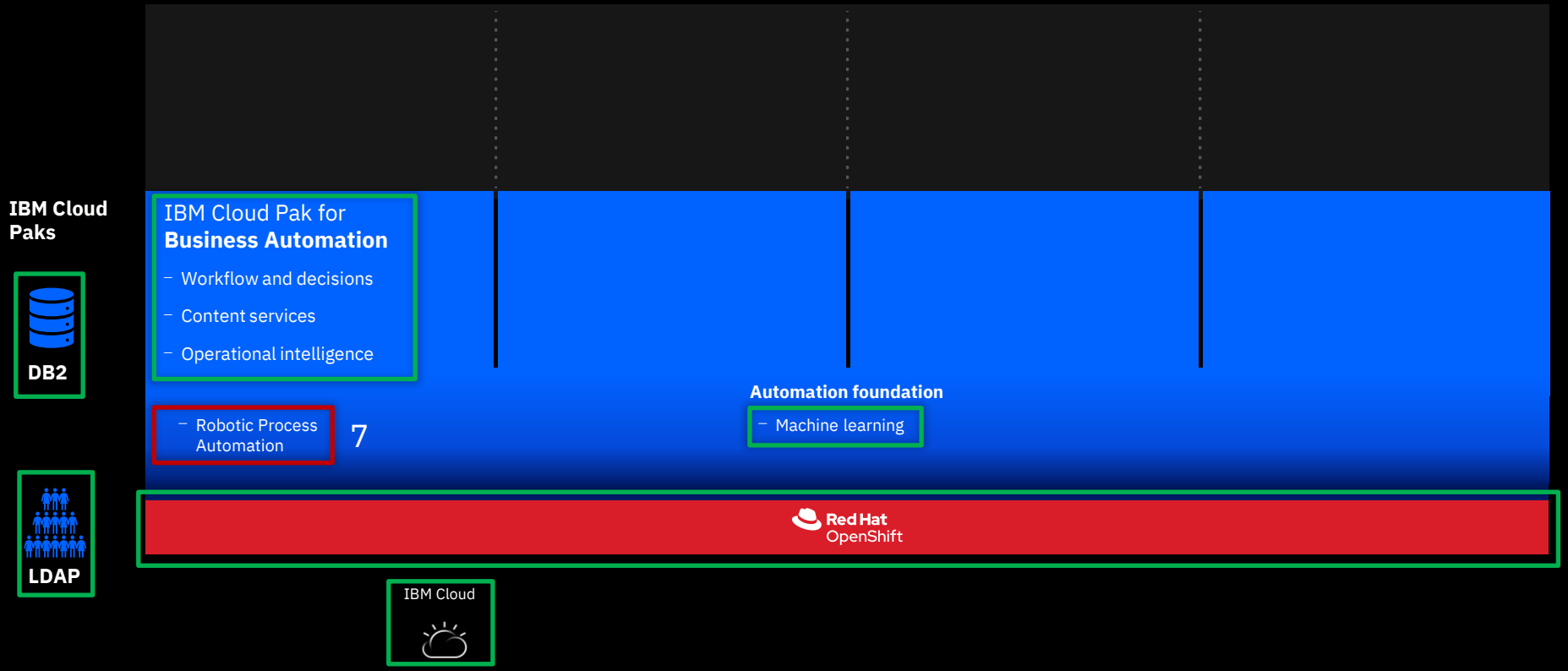


# Tech Jam Infrastructure – Deployment Step 6

6. Deploy Machine Learning Service for ADS
    - Update properties file
        - Only 7 properties, usually you only need to update THREE properties before deployment:
            - adsMlServiceProjectName
            - adsMlServiceImageArchive
            - pgAdminPassword
    - Run script to deploy Postgres Instance (Postgress is needed to be able to scale up the ADS ML Service)
    - Build the ADS Machine Learning Service image, push it to your OCP
        - Go to github project https://github.com/IBM/open-prediction-service-hub/tree/main/ops-implementations/ads-ml-service
        - Follow the document to build the docker image
        - Run script to push the docker image to OCP internal registry
    - Run script to create Postgres database
    - Run script to create the ADS ML service



# Tech Jam Infrastructure – Deployment Step 7



# Tech Jam Infrastructure – Deployment Step 7

8. Optional: Create new VM for RPA & install IBM RPA Studio
    - Follow the same procedure to request a new VM with Windows Server 2012 (or 2016) installed
    - Option A: Install IBM RPA SaaS client.
        - If you have existing IBM RPA SaaS account, you can just install SaaS client

    - Option B: Install IBM RPA Server and Client on the same VM
        - Install Microsoft .NET framework 4.7.2.
        - Install Microsoft SQL Server
        - Install Microsift IIS
        - Create four databases: Address, KnowledgeBase, Wordnet and Automation
        - Create a self-signed certificate in IIS.
        - Launch the installer to install the server. Installer will create an admin user.
        - Start IBM RPA Server. Create users.
        - Launch the installer to install the client. Log in with the user just created.

# Tech Jam Infrastructure – Deployment Step 8

8. Optional: Scale up the deployment
    - In case High-Availability of the deployment is needed and you initially deployed the environment with replicaSize=1, scale up of the various components is needed
    - RedHat OpenShift Cluster: You might need to add additional worker nodes by increasing the default (c3c.32x64) worker pool
    - LDAP: No scale up needed for Demo & Lab purposes
    - DB2: No scale up needed for Demo & Lab purposes
    - CP4BA: Scale up by using the scripts
        - Update properties file (parameters cp4baReplicaCount and cp4baBaiJobParallelism)
        - Run script to only re-generate CR YAML (needs entitlement key)
        - In case for some pods a higher replica size is needed, change that in the generated CR YAML manually
        - Apply update of CP4BA deployment (with --overwrite=true parameter)
    - ADS ML Service: Scale up deployment through OCP Web Console
    - RPA: No scale up needed for Demo & Lab purposes