

Module 11

Implementing Azure-based
management and automation

Module Overview

- Implementing OMS
- Implementing Azure Automation
- Implementing Automation runbooks
- Managing Azure Automation

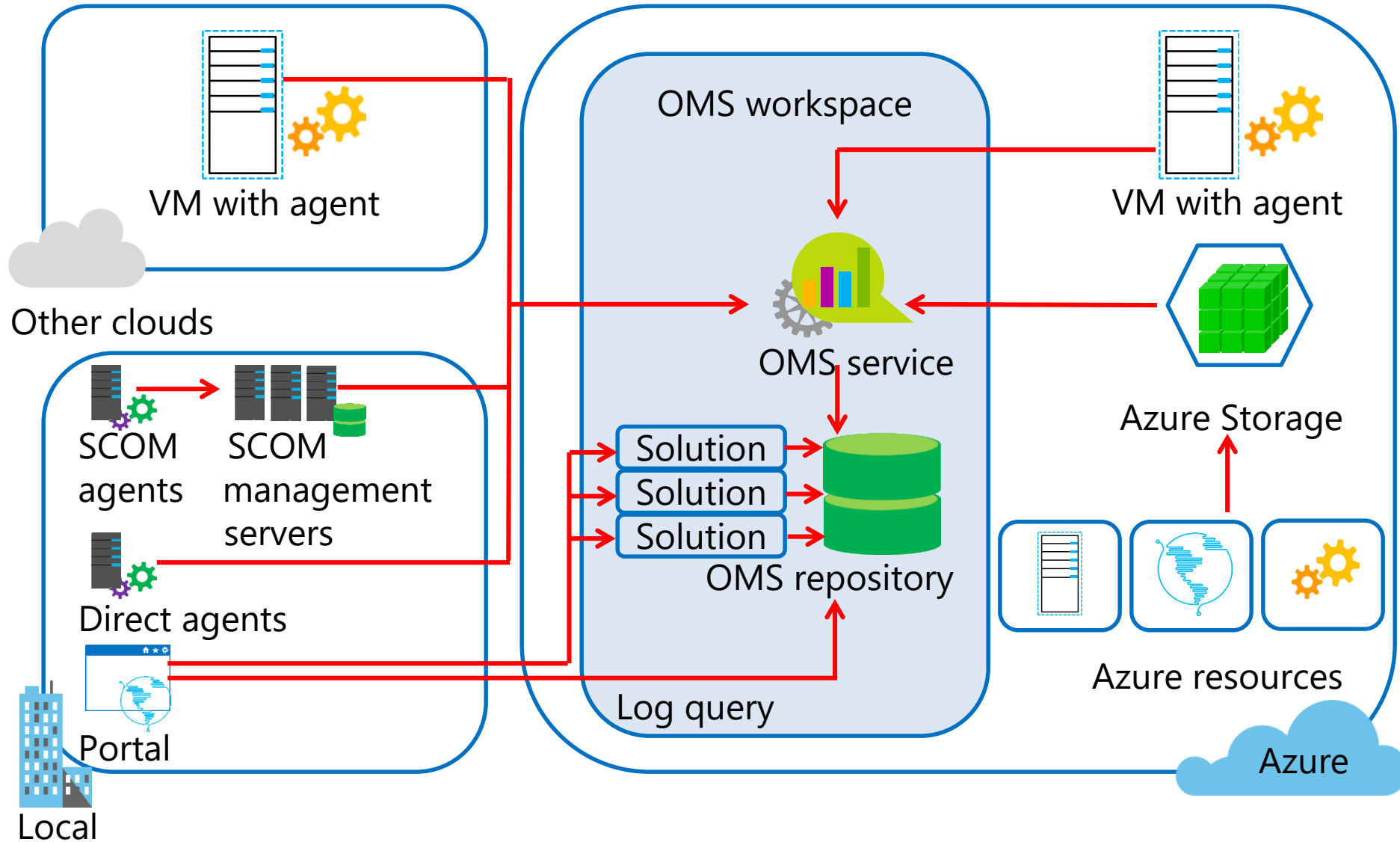
Lesson 1: Implementing OMS

- Demonstration: Preparing the Azure environment for the lab and demonstrations in this module
- Introducing OMS
- OMS as a component of Azure
- Introduction to implementing OMS solutions
- Demonstration: Implementing OMS solutions

Demonstration: Preparing the Azure environment for the lab and demonstrations in this module

In this demonstration, you will see how to prepare the Azure environment for the lab and demos in this module

Introducing OMS



OMS as a component of Azure

Compute

Service Fabric

Container
Service

Azure Virtual
Machines

Azure Cloud
Services

Networking

Virtual Network

Azure DNS

Application Gateway

Traffic Manager

ExpressRoute

Load Balancer

Data & Storage

Storage

DocumentDB

Azure SQL
Database

StorSimple

Web & Mobile

Web Apps

Mobile Apps

Notification
Hub

Other services

Service Bus

Azure AD

Azure AD DS

MFA

Automation

Scheduler

Azure Backup

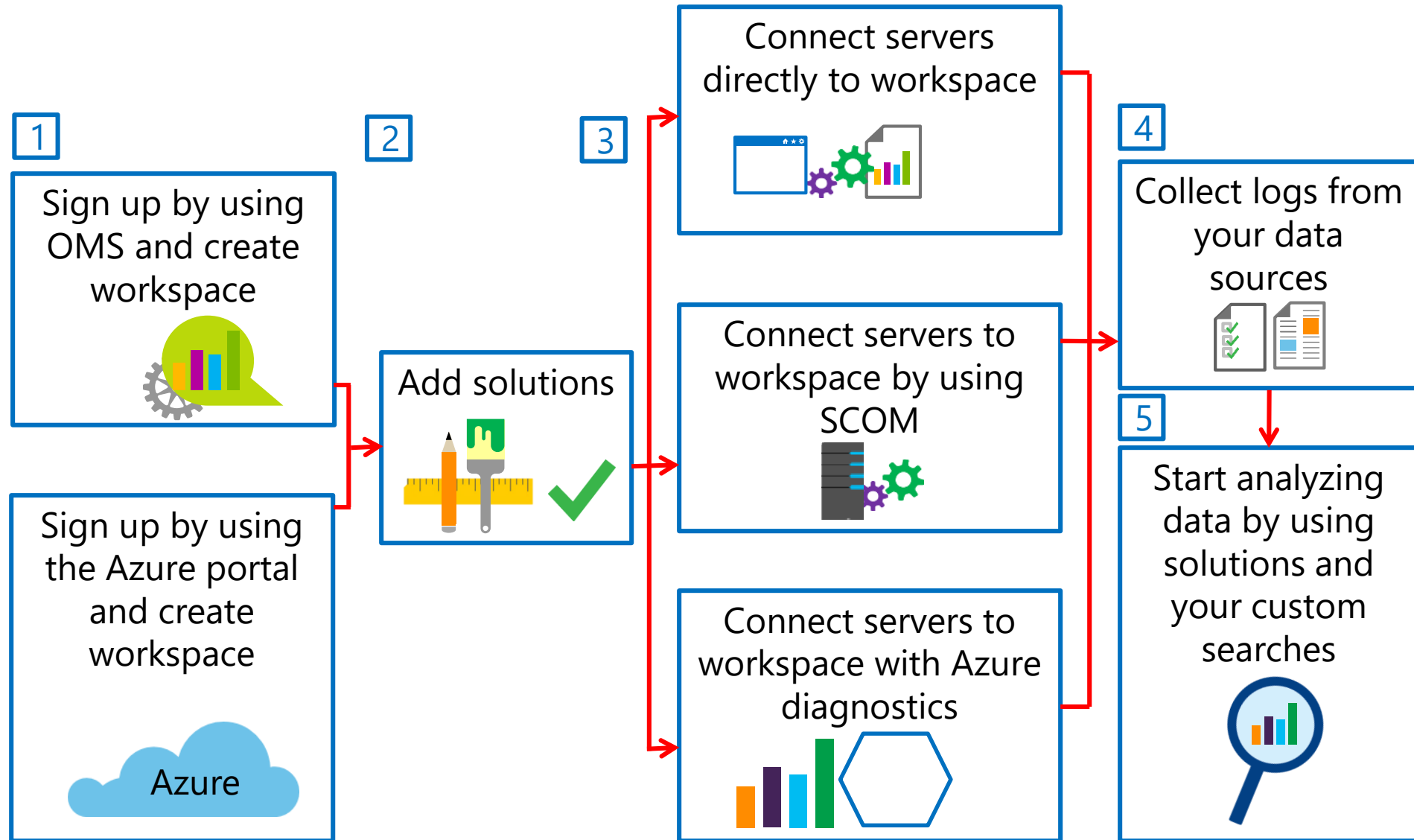
Site Recovery

OMS

Key Vault

Azure Security
Center

Introduction to implementing OMS solutions



Demonstration: Implementing OMS solutions

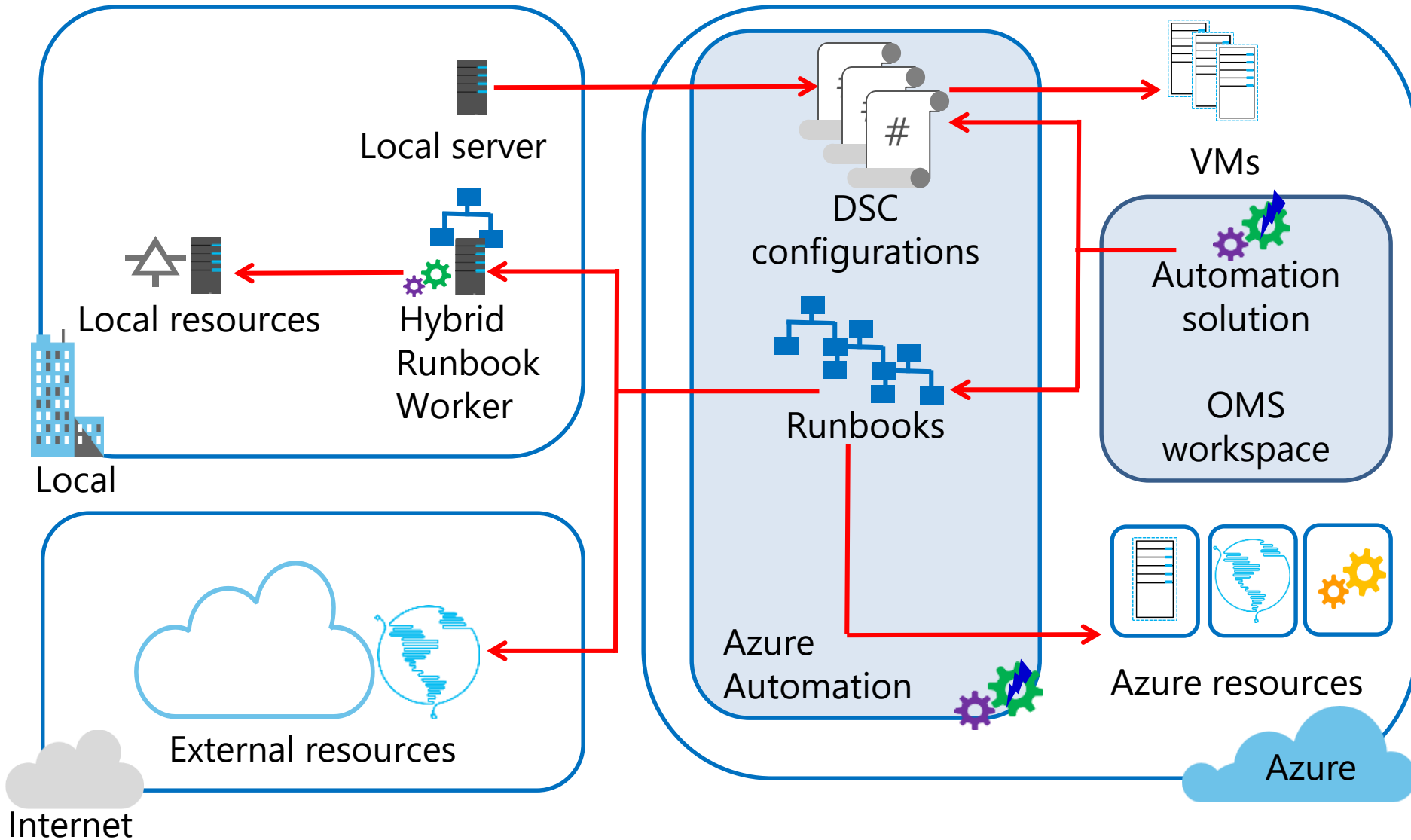
In this demonstration, you will see how to:

- Create an Operational Insights workspace
- Install the Microsoft Monitoring Agent on an Azure VM
- Add solutions to OMS
- Perform searches of collected data
- Configure log collection

Lesson 2: Implementing Azure Automation

- Introducing Azure Automation
- Azure Automation as a component of Azure
- Creating Azure Automation accounts and assets
- Using Automation runbooks on-premises
- Demonstration: Creating an Azure Automation account and assets

Introducing Azure Automation



Azure Automation as a component of Azure

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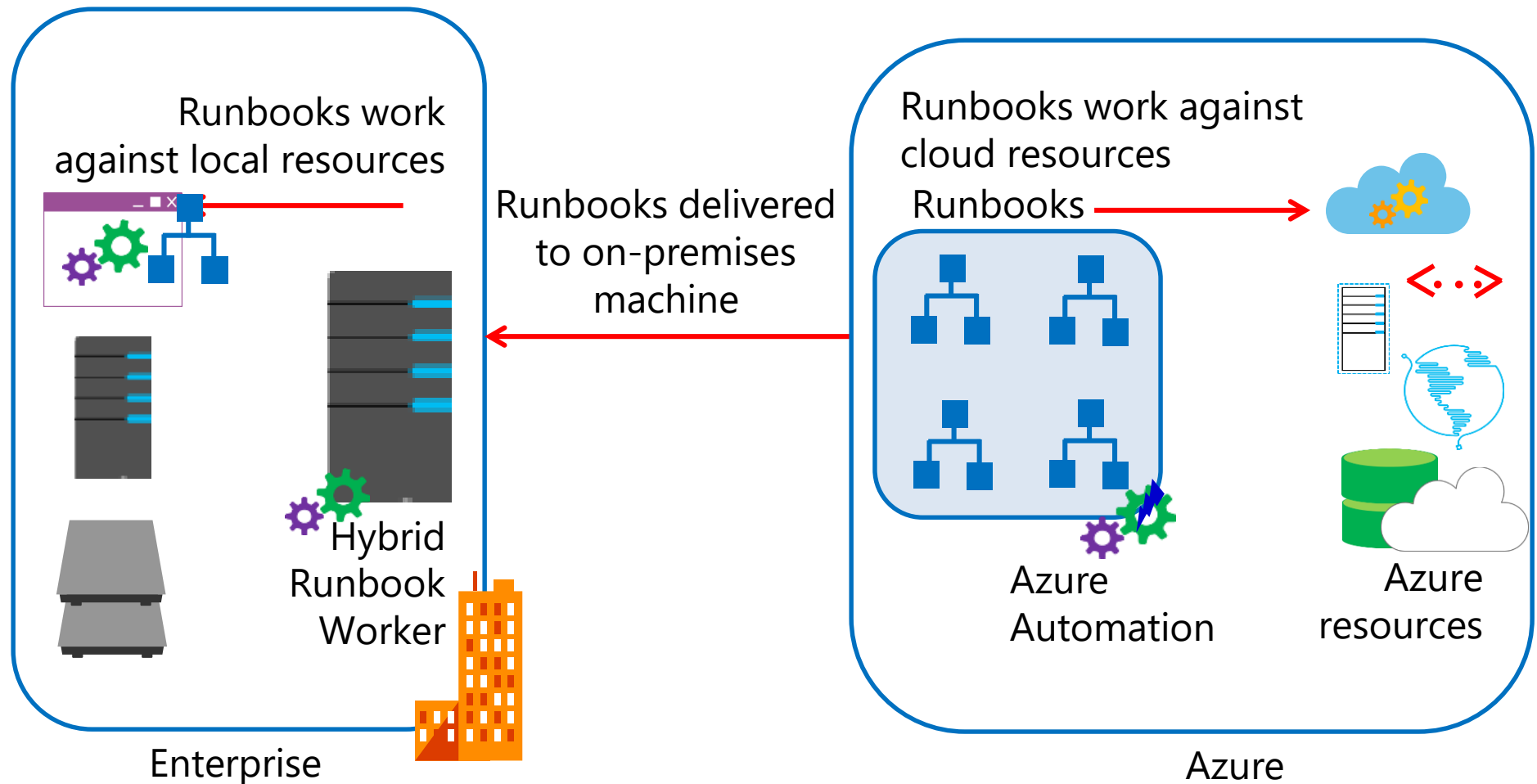
Azure Security
Center

Creating Azure Automation accounts and assets

Azure Automation assets are grouped into the following categories:

- Modules
- Schedules
- Certificates
- Connections
- Variables
- Credentials

Using Automation runbooks on-premises



Demonstration: Creating an Azure Automation account and assets

In this demonstration, you will see how to:

- Create an Azure Automation account
- Create an Azure Automation Variable asset
- Create an Azure Automation Schedule asset

Lesson 3: Implementing Automation runbooks

- Introduction to Azure Automation runbooks
- Graphical authoring of Automation runbooks
- Overview of PowerShell workflows
- Authoring Azure PowerShell workflow runbooks
- Authoring Azure PowerShell runbooks
- Implementing Automation DSC
- Demonstration: Graphical authoring of Automation runbooks

Introduction to Azure Automation runbooks

- Graphical runbooks:
 - Based on PowerShell workflows or PowerShell scripts
 - Edited by using the graphical editor in the Azure portal
- Textual runbooks:
 - Based on PowerShell workflows or PowerShell scripts
 - Edited by using the textual editor in the Azure portal or imported from workflows and scripts created on-premises
- No support for conversion between the two types

Graphical authoring of Automation runbooks

The screenshot displays the 'Edit Graphical Runbook' interface. On the left is the 'Library' panel with a search bar and categories: CMOLETS, RUNBOOKS, ASSETS, and RUNBOOK CONTROL. The central 'Canvas' panel shows a flowchart with steps: 'Get Subscription id' (highlighted), 'Get Azure Connected', 'Add ResourceGroup', 'Search ResourceGroup', 'Get VMs in VMs', 'Get VMs in Servers', 'Merge VMs', 'Start Resource', 'Start VMs in Servers', 'Start VMs in Servers', and 'Start VMs in Servers'. On the right is the 'Configuration' panel with fields for Name, Label, Comment, Checkpoint runbook, Parameters, and Retry behavior. Red boxes highlight the 'Library', 'Canvas', and 'Configuration' sections.

Library

Canvas

Configuration

Overview of PowerShell workflows

Workflows support:

- Long-running activities
- Repeatable activities
- Frequently executed activities
- Running activities in parallel across one or more machines
- Interruptible activities that you can stop and restart

Authoring Azure PowerShell workflow runbooks

Workflow syntax/keywords:

- Parallel
- Foreach -parallel
- Sequence
- InlineScript
- Checkpoint-workflow
- Suspend-workflow

```
workflow test {  
  InlineScript { Code }  
  parallel {  
    Command A  
    Command B  
    sequence {  
      Command C  
      Command D  
    }  
  }  
}
```

Authoring Azure PowerShell runbooks

To create Automation PowerShell scripts:

- Write code in textual editor
- Add PowerShell cmdlets from integration modules imported into the Automation account
- Reference Automation assets
- Add runbooks

Implementing Automation DSC

Configurations
Configuration SharePoint {

Node WebService {

```
#Install the IIS Role
WindowsFeature IIS {
  Ensure = "Present"
  Name - "Web-Server"
}
#Install ASP.NET 4.5
WindowsFeature ASP {
  Ensure = "Present"
  Name - "Web-Asp-Net45"
}
}
```

One or more per
Automation account

Node configurations
(.mof configuration
documents)

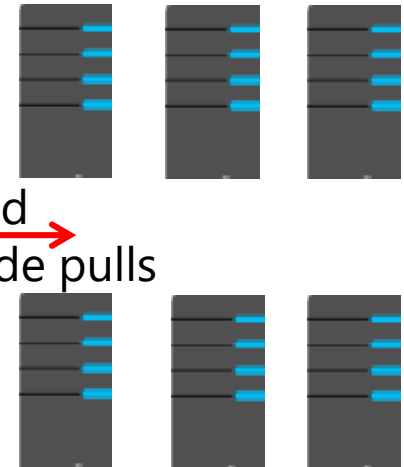
Compiled,
put on pull
server
via
compilation
jobs



One or more
per configuration

Nodes

Applied
via node pulls



One or more
per node configuration

Demonstration: Graphical authoring of Automation runbooks

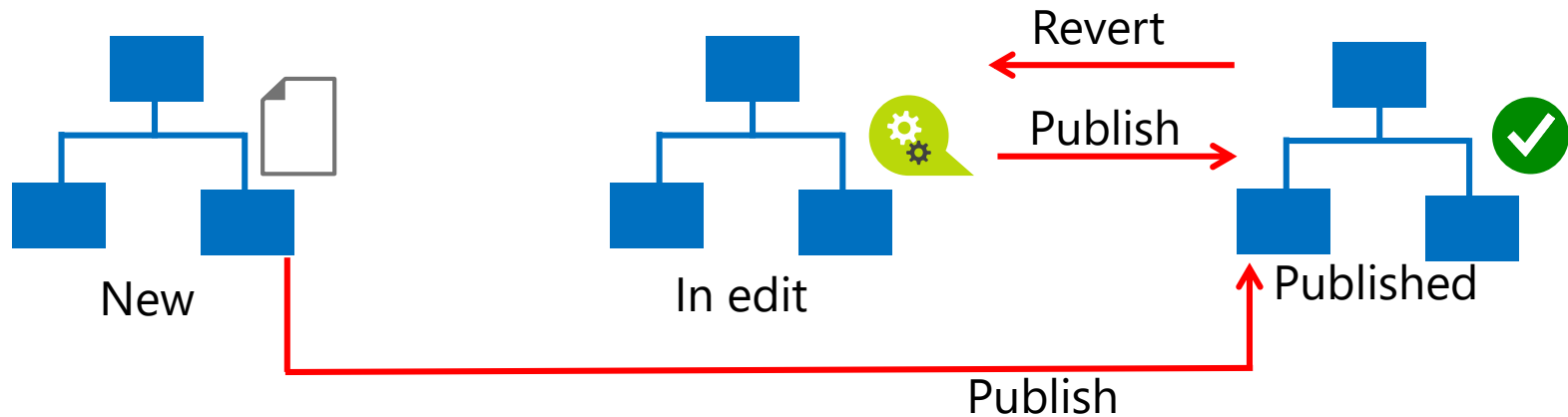
In this demonstration, you will see how to:

- Create a graphical Automation runbook
- Configure authentication in a graphical Automation runbook
- Add an activity to start an Azure VM

Lesson 4: Managing Azure Automation

- Automation runbook lifecycle
- Testing, publishing, and executing Automation runbooks
- Monitoring and troubleshooting Automation jobs
- Protecting the Azure Automation environment
- Demonstration: Testing, publishing, executing, and monitoring execution of an Automation runbook

Automation runbook lifecycle



Possible actions in the New status:

- Test
- Publish

Possible actions in the In edit status:

- Test
- Publish (overwrite published runbook)

Possible actions in the Published status:

- Start via Webhook
- Start on schedule

Testing, publishing, and executing Automation runbooks

- Testing validates a new or newly modified runbook operation before publishing
 - Not equivalent to the PowerShell **WhatIf** switch
 - Consider running in a dedicated test environment
- Publishing designates runbook as production-ready
 - Can be scheduled
 - Can be called via Webhook

Monitoring and troubleshooting Automation jobs

Possible job states:

- Completed
- Failed
- Failed, waiting for resources
- Queued
- Starting
- Running
- Running, waiting for resources
- Stopped
- Stopping
- Suspended
- Suspending
- Resuming

Protecting the Azure Automation environment

- Built-in geo-replication of Automation accounts
- 90-day log retention period
- Custom backup options for:
 - Runbooks
 - Assets
 - DSC configurations

Demonstration: Testing, publishing, executing, and monitoring execution of an Automation runbook

In this demonstration, you will see how to:

- Test a runbook
- Publish a runbook
- Execute a runbook and monitor the corresponding job

Lab: Implementing Automation

- Exercise 1: Configuring Automation accounts
- Exercise 2: Creating runbooks

Estimated Time: 40 minutes

Lab Scenario

A. Datum Corporation wishes to minimize administrative overhead as much as possible, especially for tasks such as deploying and deprovisioning VMs. For this reason, as part of A. Datum's evaluation of Microsoft Azure, you have been asked to test the new Azure Automation features and, as part of your tests, to deploy Azure VMs by using runbook automation.

Lab Review

- What should you consider when testing the execution of an Automation runbook?
- Why did you have to create an Azure Automation Run As account in the lab?

Module Review and Takeaways

- Review Question

Course Evaluation

- Your evaluation of this course will help Microsoft understand the quality of your learning experience.
- Please work with your training provider to access the course evaluation form.
- Microsoft will keep your answers to this survey private and confidential and will use your responses to improve your future learning experience. Your open and honest feedback is valuable and appreciated.