

# Module 11

Using Microsoft Azure-based  
management, monitoring, and  
automation

# Module Overview

- Using Azure-based monitoring and management solutions
- Implementing Automation
- Implementing Automation runbooks
- Implementing Automation-based management

# Lesson 1: Using Azure-based monitoring and management solutions

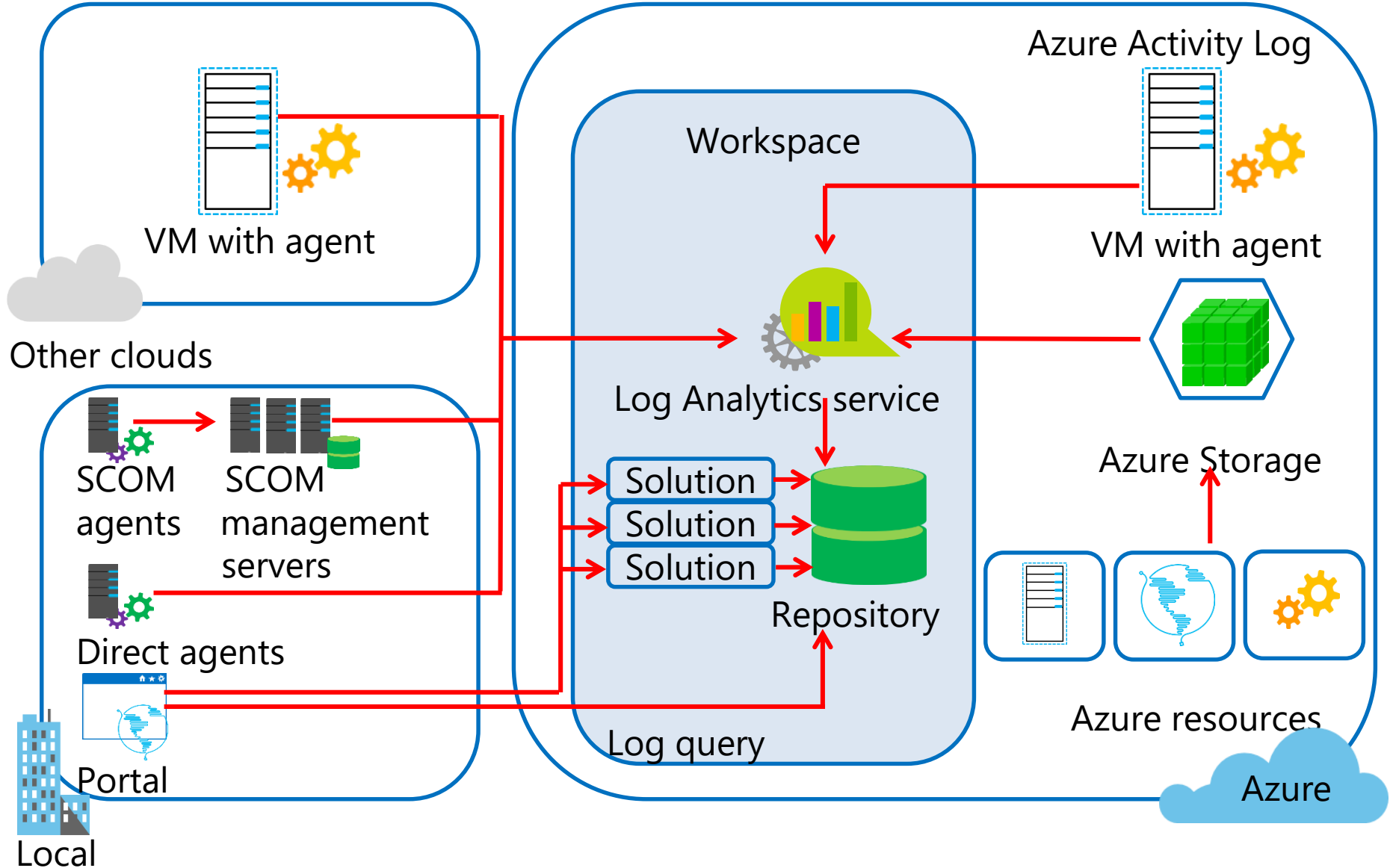
- Demonstration: Preparing the lab environment
- Introducing Log Analytics
- Log Analytics as a component of Azure
- Implementing Log Analytics solutions
- Demonstration: Implementing Log Analytics solutions
- Monitoring and managing security with Security Center
- Monitoring cloud and on-premises resources with Monitor
- Implementing Azure governance with Azure Resource Manager

# Demonstration: Preparing the lab environment

In this demonstration, you will learn how to prepare the lab environment

**Note:** To prepare the lab environment for this module, you must complete this task

# Introducing Log Analytics



# Log Analytics as a component of Azure

## Compute

**Virtual Machines**

Virtual Machine  
Scale Sets

Cloud Services

Containers

Container  
Registry

Container  
Service

## Networking

Virtual Network

Azure DNS

Application  
Gateway

Traffic Manager

ExpressRoute

Load Balancer

## Data & Storage

Disk Storage

Blob Storage

File Storage

Queue Storage

Table Storage

StorSimple

## Web & Mobile

Web Apps

Mobile Apps

Logic Apps

Content  
Delivery  
Network

## Other services

Azure AD

Azure AD DS

Azure B2C

MFA

**Automation**

**Backup**

**Site Recovery**

**Log Analytics**

**Azure Monitor**

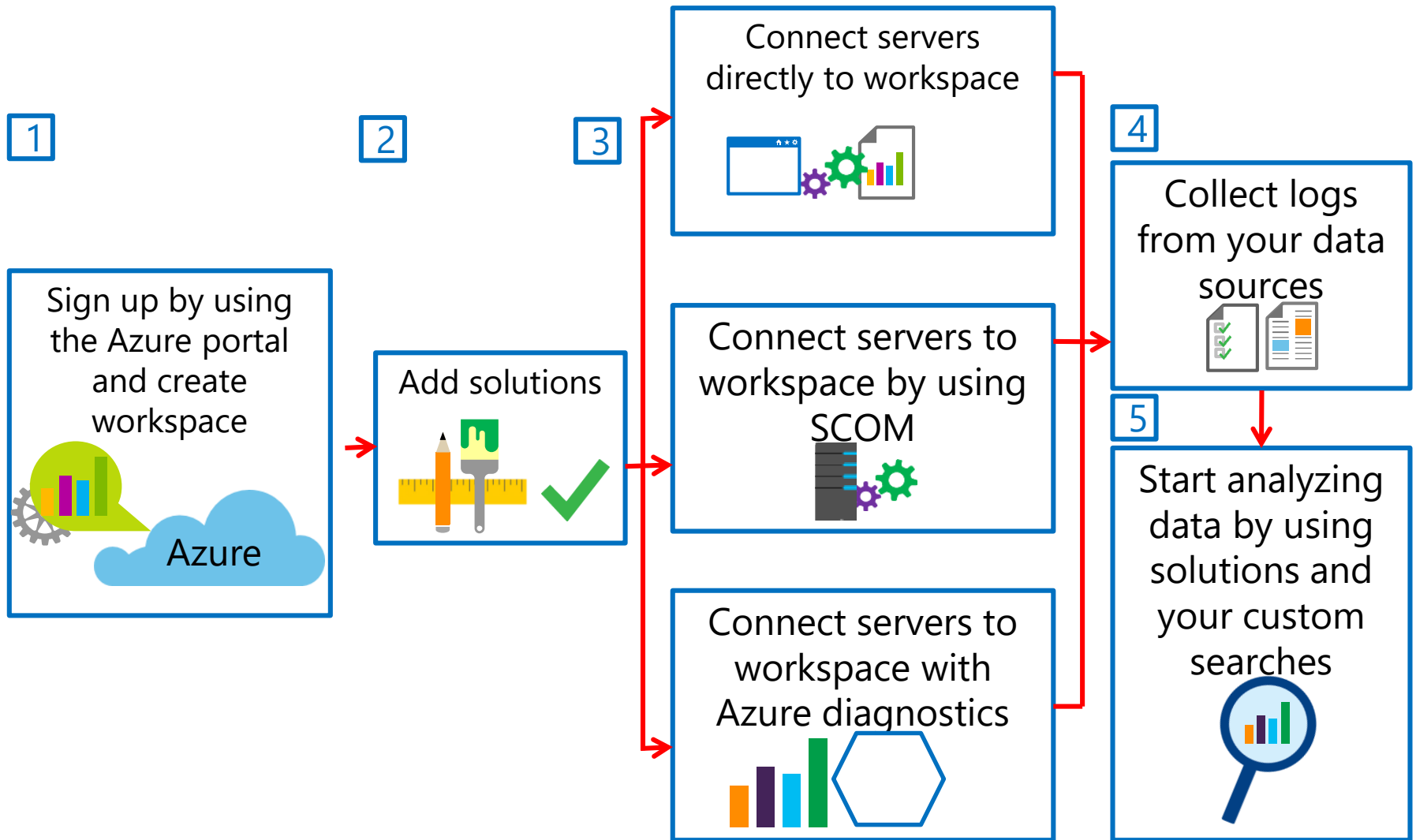
**Azure Advisor**

Key Vault

Network Watcher

**Azure Security  
Center**

# Implementing Log Analytics solutions



# Demonstration: Implementing Log Analytics solutions

In this demonstration, you will see how to:

- Create an Operations Management Suite workspace
- Install the Log Analytics VM extension on an Azure VM
- Add solutions to Log Analytics
- Perform searches of collected data
- Configure log collection

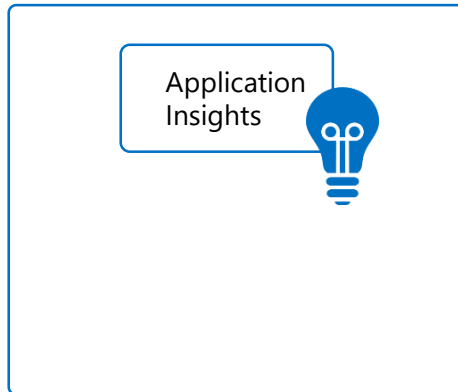


# Monitoring and managing security with Security Center

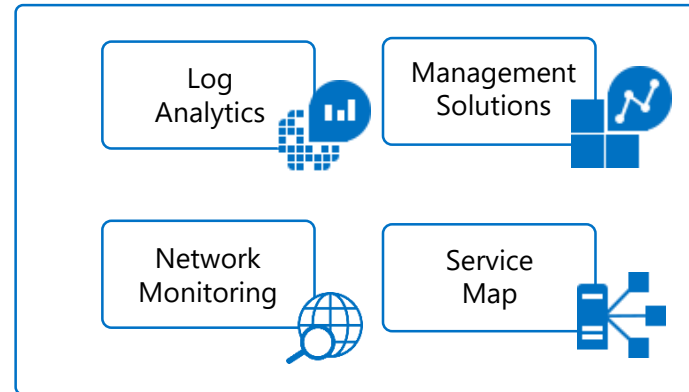
- Configure security policy:
  - Enable Data Collection
  - Choose security policy recommendations
  - Set email notifications
  - Select pricing tier:
    - Free
    - Standard
- Implement remediation actions
- Evaluate security status:
  - Events dashboard
  - Search dashboard
  - Identity & Access dashboard
  - Threat intelligence dashboard

# Monitoring cloud and on-premises resources with Monitor

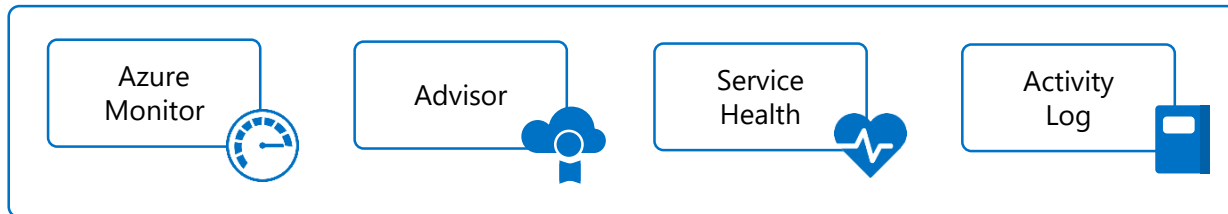
## Deep application monitoring



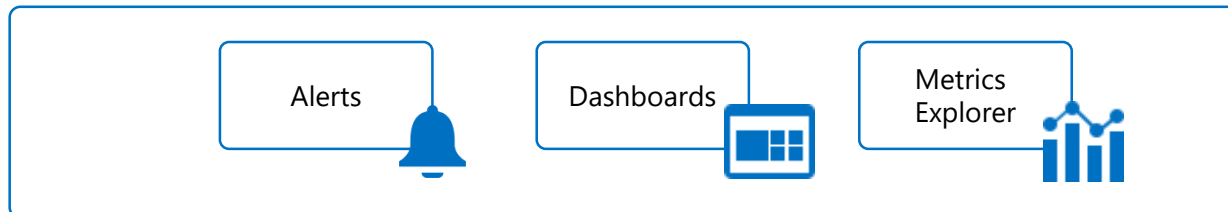
## Deep infrastructure monitoring



## Core monitoring



## Shared capabilities



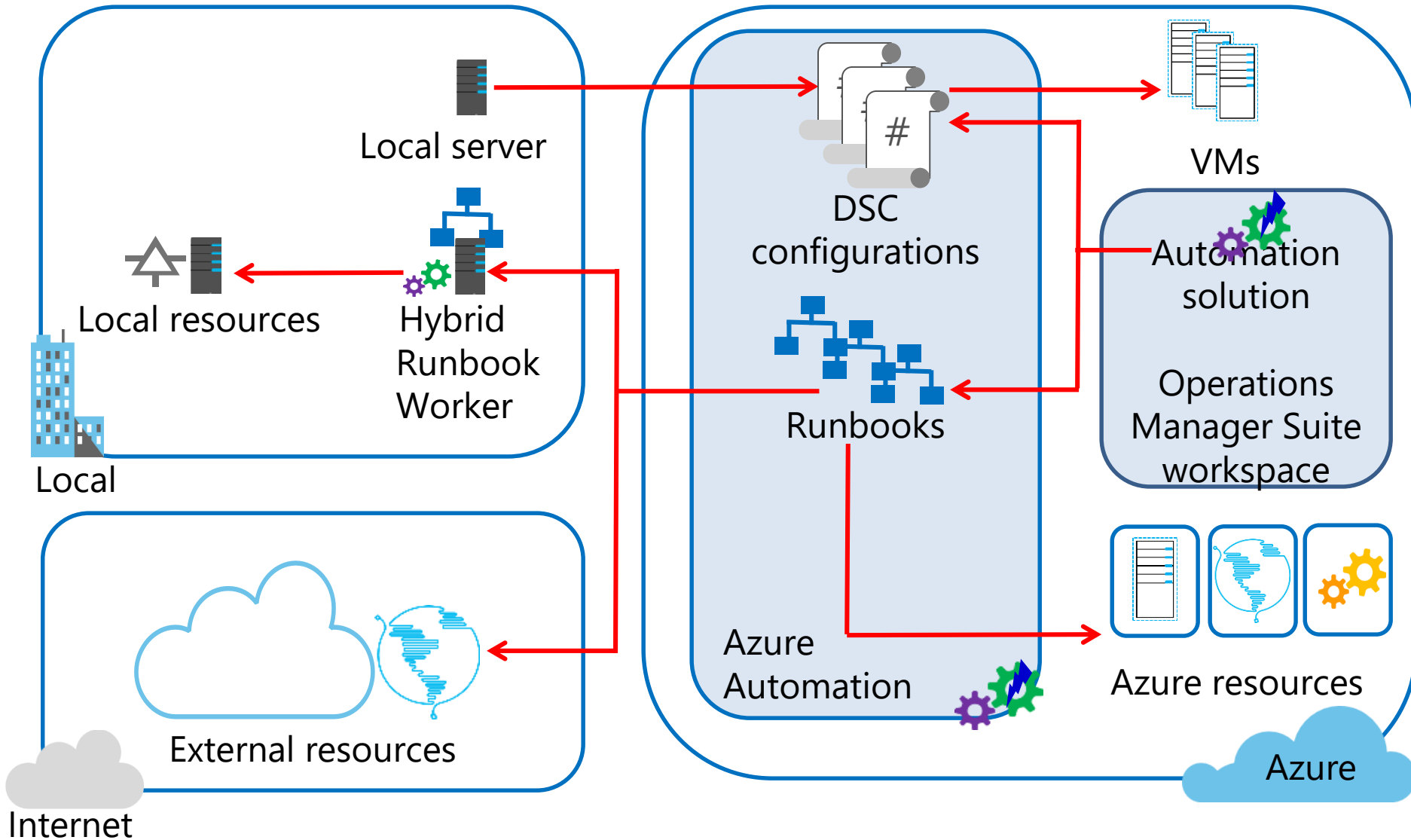
# Implementing Azure governance with Azure Resource Manager

- To implement Role-Based Access Control:
  - Select a built-in role or create a custom one
  - Specify an Azure AD user, group, service principal, or MSI
  - Designate a scope of delegation
- To implement a policy:
  - Use a built-in policy definition or create a custom one
  - Assign the policy assignment to a scope
  - View compliance status
- To implement a lock:
  - Select a ReadOnly or CanNotDelete lock
  - Assign the lock to a scope

## Lesson 2: Implementing Automation

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

# Introducing Automation



# Automation as a component of Azure

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**Automation**

Backup

Site Recovery

Log Analytics

Azure Monitor

Azure Advisor

Key Vault

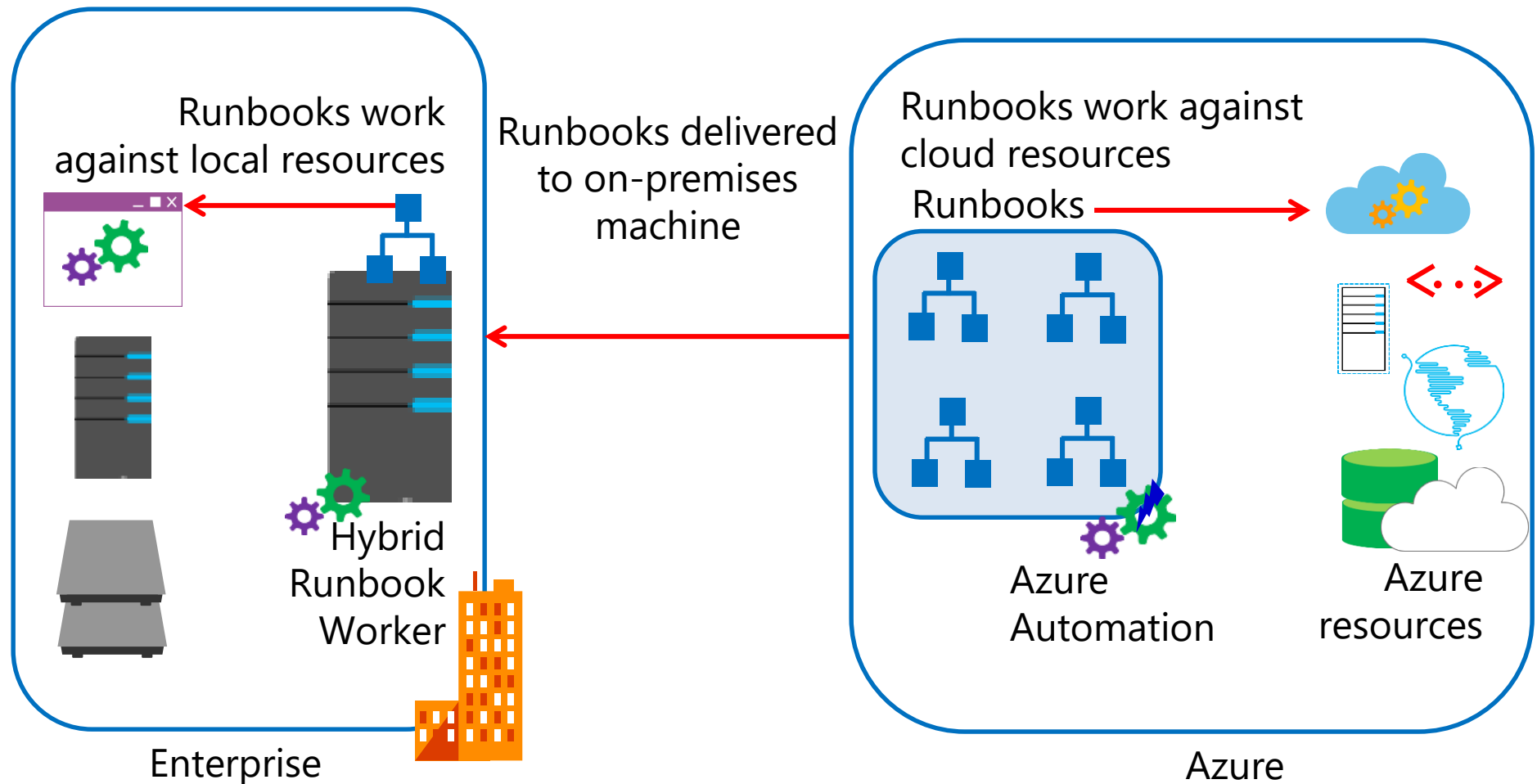
Network Watcher

Azure Security  
Center

# Creating Automation accounts and assets

- Create an Automation account by using:
  - Automation & Control from the Azure Marketplace
  - Automation service from the Azure Marketplace
  - Log Analytics management solutions
- Azure Automation shared resources are grouped into the following categories:
  - Modules
  - Schedules
  - Certificates
  - Connections
  - Variables
  - Credentials

# Using Automation runbooks on-premises





# Demonstration: Creating an Automation account and assets

In this demonstration, you will see how to:

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

# Lesson 3: Implementing Automation runbooks

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

# Introduction to 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
- Converting runbook types:
  - No support for converting between graphical and textual
  - Support for converting between graphical workflows and runbooks during import

# Graphical authoring of Automation runbooks

The screenshot displays the 'Edit Graphical Runbook' interface. On the left, a sidebar contains a 'Library' section with a search bar and a list of categories: CMOLETS, RUNBOOKS, ASSETS, and RUNBOOK CONTROL. The main workspace shows a workflow diagram with steps: 'Get Subscription id' (highlighted with a red box), 'Get Azure Connected', 'Add ResourceGroup', 'Search ResourceGroup', 'Get VMs in VMs', 'Get VMs in Servers', 'Merge VMs', 'Start Resource', 'Start VMs', and 'Start VMs in Servers'. The right sidebar shows the properties for the selected step, including Name, Label, Comment, Checkpoint runbook, Parameters, and Retry behavior.

**Library**

**Edit Graphical Runbook**  
Automation/Cloud VM

Save Publish Revert to previous Input and output Test pane Feedback

Search library items...

- CMOLETS
- RUNBOOKS
- ASSETS
- RUNBOOK CONTROL

**Workflow Diagram:**

```
graph TD; A[Get Subscription id] --> B[Get Azure Connected]; B --> C[Add ResourceGroup]; C --> D[Search ResourceGroup]; D --> E[Get VMs in VMs]; D --> F[Get VMs in Servers]; E --> G[Merge VMs]; F --> G; G --> H[Start Resource]; G --> I[Start VMs]; H --> J[Start VMs in Servers]; I --> J;
```

**Properties Panel:**

- Name: Get-Automation/Variable
- Label: Get Subscription Id
- Comment: Get the Azure subscription id from the Automation variable asset whose name is passed in a runbook input parameter.
- Checkpoint runbook: Yes No
- Parameters: 1 of 1 configured
- Retry behavior: Configure retry behavior

# 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

# Textual authoring of 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  
    }  
  }  
}
```

# Textual authoring of 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 {

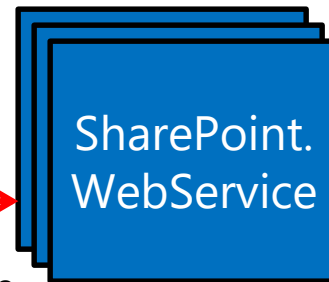
Node WebService {

```
#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)

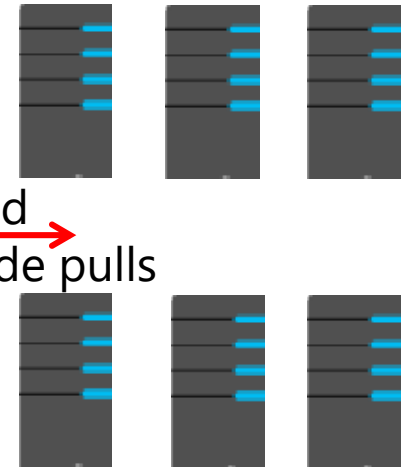
Compiled,  
put on pull  
server  
via  
compilation  
jobs



One or more  
per configuration

Nodes

Applied  
via node pulls



One or more  
per node configuration



# Demonstration: Graphical authoring of Automation runbooks

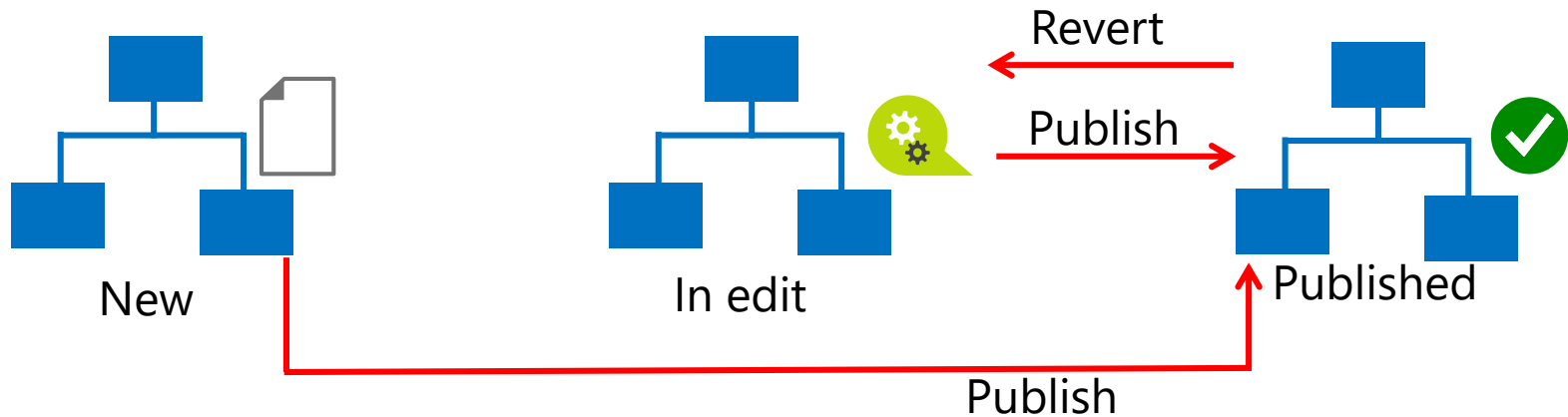
In this demonstration, you will see how to:

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

# Lesson 4: Implementing Automation-based management

- Automation runbook lifecycle
- Testing, publishing, and executing Automation runbooks
- Monitoring and troubleshooting Automation jobs
- Protecting the 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
- Published runbooks:
  - Can be scheduled
  - Can be called via a 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 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

## Logon Information

Virtual machine: **20533E-MIA-CL1**

User name: **Student**

Password: **Pa55w.rd**

Estimated Time: 40 minutes



# Lab Scenario

Adatum Corporation wishes to minimize administrative overhead as much as possible, especially for tasks that involve management of VMs. For this reason, as part of Adatum's evaluation of Microsoft Azure, you have been asked to configure an Automation account and use its features to automate the most common VM management tasks.

# Lab Review

- What should you consider when testing the execution of an Automation runbook?
- Why did you have to create an 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.