

AZ-104: Microsoft Azure Administrator Trainer Preparation Guide 23 February 2024

Purpose

This document is for Microsoft Certified Trainers preparing to teach the AZ-104 Microsoft Azure Administrator course. This course is designed for students who are planning to take the associated certification exam, or students who are performing Azure administrator tasks in their day-to-day job.

Azure Administrator Role Definition

Both the certification exam and the courseware are based on the Azure Administrator role.

- The Azure Administrator implements, manages, and monitors identity, governance, storage, compute, and virtual networks in a cloud environment.
- The Azure Administrator will provision, size, monitor, and adjust resources as appropriate.

Remember there are other roles, such as DevOps and Solutions Architect.

Audience

This course is for Azure Administrators. Azure Administrators manage cloud services that span storage, networking, and compute cloud capabilities, with a deep understanding of each service across the full IT lifecycle. They take end-user requests for new cloud applications and make recommendations on services to use for optimal performance and scale, as well as provision, size, monitor and adjust as appropriate. This role requires communicating and coordinating with vendors. Azure Administrators use the Azure Portal and as they become more proficient, they use PowerShell and the Command Line Interface.

Prerequisites

Successful Azure Administrators start this role with experience on operating systems, virtualization, cloud infrastructure, storage structures, and networking. This knowledge includes:

- Understanding of on-premises virtualization technologies, including: VMs, virtual networking, and virtual hard disks.

- Understanding of network configuration, including TCP/IP, Domain Name System (DNS), virtual private networks (VPNs), firewalls, and encryption technologies.
- Understanding of Microsoft Entra ID concepts, including users, groups, role-based access control.
- Understanding of resilience and disaster recovery concepts, including backup and restore operations.

✓ There is a [AZ-104: Prerequisites for Azure administrators - Learn | Microsoft Docs](#) learning path.

Certification Exam

Certification exams measure your ability to accomplish certain technical tasks for a job role. The study areas are based on the Job Task Analysis that was conducted for the role in January 2022.

Each study area has a percentage indicating the relative weight of the area on the exam. The higher the percentage, the more questions you are likely to see in that area.

| Study Area | Percentage |
|---|------------|
| Manage Azure identities and governance | 20-25% |
| Implement and manage storage | 15-20% |
| Deploy and manage Azure compute resources | 20-25% |
| Configure and manage virtual networking | 15-20% |
| Monitor and backup resources | 10-15% |

Candidates should have a minimum of six months of hands-on experience administering Azure. Candidates should have a strong understanding of core Azure services, Azure workloads, security, and governance. Candidates for this exam should have experience in using PowerShell, the Command Line Interface, Azure Portal, and ARM templates.

- ✓ For more information, on the skills measured in the exam, please visit the [AZ-104 Microsoft Azure Administrator certification page](#).
- ✓ The [Exam Readiness Zone | Microsoft Learn](#) has videos that will help you identify the key knowledge and skills measured on the exam and how to allocate your study time. Each video segment corresponds to a major topic area on the exam. These videos have example questions and answers with explanations.
- ✓ An [AZ-104 Practice Assessment](#) is available. Practice Assessments are informal and voluntary tests taken as preparation for one of Microsoft's certification exams. These assessments are hosted on Microsoft Learn and contain example questions to help you prepare for the exam.

There is a [Frequently asked questions | Microsoft Learn](#) page if you want to learn more about these assessments.

Preparing to Teach

In the next sections we will cover the main course components and how they can be used in class. There is a lot of flexibility in how you use this content to create the best learning experience for your students.

Required Materials to prepare for and teach this course

You need the following materials to prepare for and teach this course:

| Resource | Description |
|---|--|
| Microsoft PowerPoint files | Download the AZ-104T00A-ENU-PowerPoint from the MCT Download Center . |
| Change Log | Download the AZ-104T00A-ENU-ChangeLog from the MCT Download Center . |
| Lab environment provided by your lab hosting provider | Contact your lab hosting provider for instructions on using their lab environment. |
| Lab instructions | The lab instructions are provided in the lab environment and in the AZ-104-MicrosoftAzureAdministrator GitHub repository. |
| Student training content | See the following section for a detailed breakdown of each Learning Path covered in the course. |
| Microsoft Learn for Educators program | For educational institutions that deliver this course, additional assets are available through the Learning Download Center (LDC) for Educators. |
| Course demonstrations | The demonstration instructions are provided in the AZ-104-MicrosoftAzureAdministrator GitHub repository (scroll down). |

Content

The content for your course is organized into 11 PowerPoint decks.

✓ This is a suggested order. Always ensure you are covering the content most applicable to your audience.

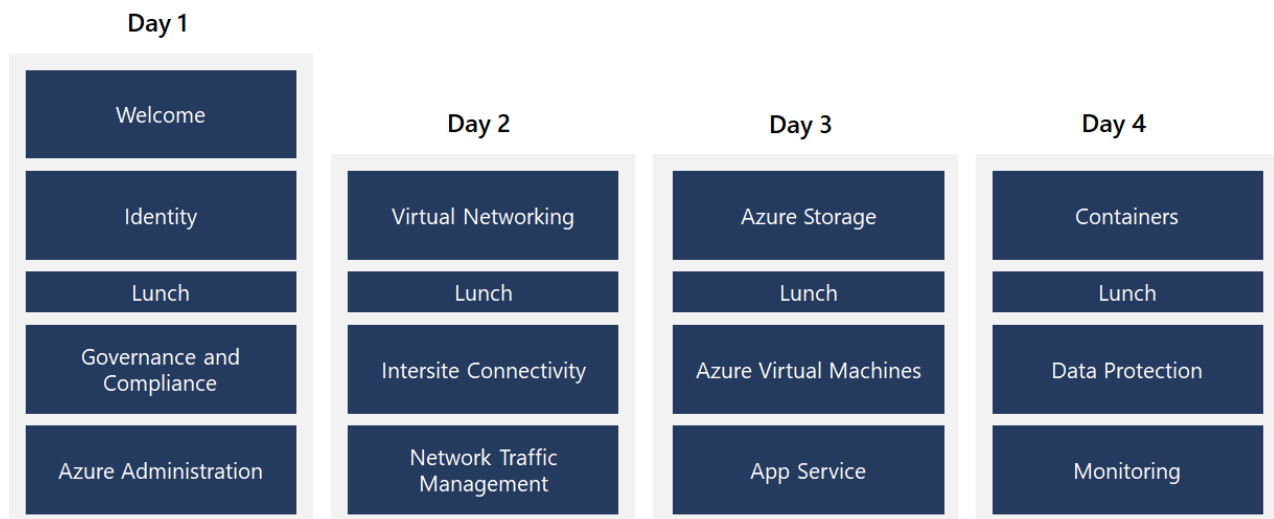
01 – Administer Identity

02 – Administer Governance and Compliance

- 03 – Administer Azure Resources
- 04 – Administer Virtual Networking
- 05 – Administer Intersite Connectivity
- 06 – Administer Network Traffic Management
- 07 – Administer Azure Storage
- 08 – Administer Virtual Machines
- 09 – Administer PaaS Compute Solutions
- 10 – Administer Data Protection
- 11 – Administer Monitoring

Timing

The PowerPoint Introduction deck has a slide with a proposed schedule. You should adjust this schedule to your classroom situation.



For planning purposes, the following more detailed timing information is provided. Your experience will be different depending on the size of your class and your student's interests. The timing table breaks out instructor-led and student hands-on activities. Always try to have a good mix of both activities.

- Instructor-led activities can include lectures, whiteboards, diagrams, daily reviews, demonstrations, and discussions.
- Student hands-on activities can include the hosted lab environment, self-directed tutorials, sandboxes, and interactive videos.

| Day | Estimated Time | Classroom activity |
|-----|------------------------|-------------------------|
| 1 | Instructor-led: 1 hour | 0 - Course introduction |

| Day | Estimated Time | Classroom activity |
|-------|--|---|
| 1 | Instructor-led: 1 hour Student hands-on: 30 mins | 1 - Identity |
| 1 | Instructor-led: 1 hour Student hands-on: 50 mins | 2 – Governance and compliance |
| 1 | Instructor-led: 1 hour Student hands-on: 50 mins | 3 – Azure Administration |
| 2 | Instructor-led: 1 hour Student hands-on: 50 mins | 4 – Virtual networking |
| 2 | Instructor-led: 1 hour Student hands-on: 50 mins | 5 – Intersite connectivity |
| 2 | Instructor-led: 1 hour Student hands-on: 50 mins | 6 – Network traffic management |
| 3 | Instructor-led: 1.5 hours Student hands-on: 50 mins | 7 – Azure storage |
| 3 | Instructor-led: 1 hour Student hands-on: 50 mins | 8 – Azure virtual machines |
| 3 - 4 | Instructor-led: 1.5 hours Student hands-on: 60 mins | 9 – App Service Plans, App Service, Azure Container Instances, and Azure Container Apps |
| 4 | Instructor-led: 1 hour Student hands-on: 50 mins | 10 – Data protection |
| 4 | Instructor-led: 1 hour Student hands-on: 40 mins | 11 – Monitoring |

Labs

To complete the labs in this course, students should use the lab environment provided by an Authorized Lab Host (ALH). This environment includes all necessary software and services required to complete the lab exercises, which may include virtual machines, cloud subscriptions, and other software as required. As a trainer, you should familiarize yourself with the lab environment provided by your ALH before teaching the course.

At the time the courses were released, the lab instruction had been thoroughly tested and the lab steps were 100% accurate. However, given the nature of Microsoft's cloud products and the fact that Microsoft releases UI updates on a regular basis, it's possible that at some point in time, the UI for a given feature may change so that it no longer matches the lab instruction.

If students encounter lab steps that don't accurately reflect the UI, they'll have to work through the UI to determine what needs to be done. Typically, UI changes are quite subtle, so hopefully you don't find yourself in a situation where a feature was completely overhauled.

However, if you do run into major UI changes, challenge your students to work through it, and only offer help if they need it. Product UI changes will be part of their life in today's cloud world. As IT/Pros, they must learn how to work through such situations.

One thing we do ask of you is that if you run into situations such as this where lab instructions no longer match the corresponding UI, please document the issue in the course's GitHub repository. This will help the World-Wide Learning team update the lab instructions to keep them as up to date as possible. For information on how to submit an issue, please see [GitHub User Guide for MCTs](#).

- ✓ The Summary and Resources slide shows if Learn **sandboxes are available**. These sandboxes can be used to supplement the GitHub labs.
- ✓ **Interactive lab simulations** have also been created for these labs. A link to the interactive lab simulations is provided at the top of the instructions.

PowerPoint Slides

Each module has a PowerPoint deck. Each course topic has a PowerPoint slide. Module overview and lesson overview slides are included so you can introduce the content to your students.

- ✓ The Overview slide includes (in the Notes) the certification topics that are covered.

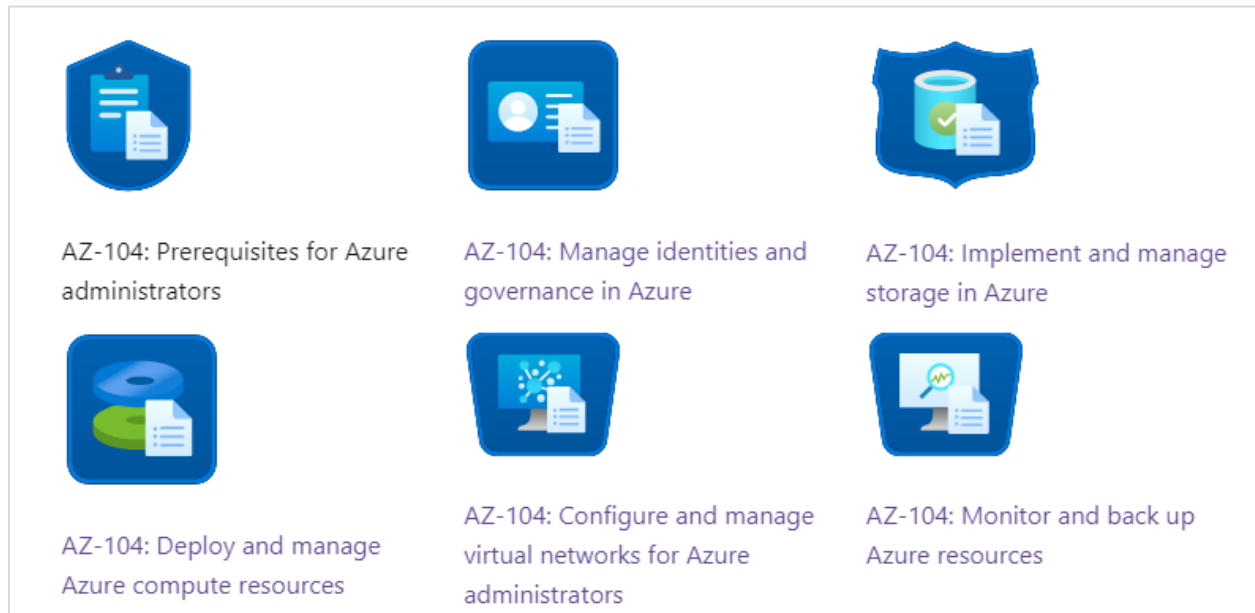
Microsoft Educator Materials

This course supports the [Microsoft Learn for Educators Program](#). The Download Center includes several files to support this program. You do not need to download these files, but you may find the files helpful in teaching the course.

- **AZ-104T00-ENU-AssessmentGuide**. Provides instructions on how to use Microsoft Forms for multiple choice questions. The forms have already been populated with questions and you can change what is provided. Also, five open-ended questions for each module are included. You can use these as review questions in the classroom.
 - **AZ-104T00A-ENU-EducatorTeachingGuide**. Summarizes the course and prepares educators to teach the Microsoft curriculum to their students.
- ✓ This program provides a [Get tips and tricks for teaching AZ-104 Microsoft Azure Administrator - Learn | Microsoft Docs](#) module.

Microsoft Learn content

Student content is available on [Microsoft Learn](#). For self-paced users there are six AZ-104 Learning Paths.



All the modules in the course are listed on the [Course AZ-104T00--A: Microsoft Azure Administrator - Learn | Microsoft Docs](#) page. Students can bookmark the page and follow along. There is a checkbox to hide modules that have been completed.

- [AZ-104 Prerequisites for Azure administrators \(Learn\)](#)
- [AZ-104: Manage identities and governance in Azure - Learn | Microsoft Docs](#)
- [AZ-104: Implement and manage storage in Azure - Learn | Microsoft Docs](#)
- [AZ-104: Configure and manage virtual networks for Azure administrators - Learn | Microsoft Docs](#)
- [AZ-104: Deploy and manage Azure compute resources - Learn | Microsoft Docs](#)
- [AZ-104: Monitor and back up Azure resources - Learn | Microsoft Docs](#)

✓ Students do not need to create a Learn profile to use the content. But if they create a profile Learn will track their progress and they will receive badges for completing the content.

Portal, Cloud Shell, PowerShell, and the CLI

The lab instructions are written to use the Cloud Shell. The Cloud Shell automatically connects to Azure and provides access to PowerShell and the CLI.

If you would rather have students use PowerShell or the CLI locally, you can use these links.

- [Install Azure PowerShell on Windows with PowerShellGet](#)
- [Install Azure CLI on Windows](#)

- ✓ Module 03, Azure Administration, has an excellent overview of common Azure Administrator tools including Azure portal, Azure PowerShell, Cloud Shell, Azure CLI, and ARM templates. There are demonstrations that you can use to ensure your students are ready for the labs.

Demonstrations

This course has numerous demonstrations. Take the time to work through each one and decide which to use. Some of the demonstrations are simple and walk-through the Azure portal; others require scripting skills.

Consider having the students do the demonstrations themselves, or walk through as a group. You might also consider using the demonstration instead of the slides. Lastly, consider the overlap with the formal labs and make the best use of your time.

- ✓ The demonstration instructions are provided in the [AZ-104-MicrosoftAzureAdministrator](#) GitHub repository (scroll down on the page). Demonstrations have a reference to a QuickStart or Tutorial with more detailed steps.

Group Discussions

Included throughout the content are questions designed to help students reflect on what they have learned or emphasize some important points. When you see a Note, you have a chance to interact with your students and engage them in discussion. For example,

Note: Has your organization implemented users and groups?

Knowledge Check and Assessment Questions

Review questions are provided at the end of each Learn module to check the student's knowledge. You can use these review questions in several ways:

- Have the students' pre-test before the course starts and then at the completion of the course. Determine what they have learned.
- As a group, go through the questions before moving on to another section.

- Sprinkle the questions into the content as you cover the related material.
- ✓ Note these questions are not at the level of the certification exam. You may wish to supplement with questions of your own choosing.

Microsoft Forms Quiz templates

Additionally, this course provides an interactive way to use Microsoft Forms for the knowledge check questions. Microsoft Forms is free and easy to use. If you aren't familiar with the product, short support videos are available. Review question quizzes have already been created for you, simply:

1. Select each of the following URLs, and then **Duplicate it**. This will create a personal copy of the quiz, which you can edit. For example, you could add a company logo to the top.
 2. **Share** the quizzes with the **anyone with the link can respond** option. This means signing in to complete the quiz is not required.
 3. Provide the shared URLs to your students and use the **Responses** tab to review the answers.
 - [AZ-104: Administer Identity \(Module 01\)](#)
 - [AZ-104: Administer Governance and Compliance \(Module 02\)](#)
 - [AZ-104: Administer Azure Resources \(Module 03\)](#)
 - [AZ-104: Administer Virtual Networking \(Module 04\)](#)
 - [AZ-104: Administer Intersite Connectivity \(Module 05\)](#)
 - [AZ-104: Administer Network Traffic \(Module 06\)](#)
 - [AZ-104: Administer Azure Storage \(Module 07\)](#)
 - [AZ-104: Administer Azure Virtual Machines \(Module 08\)](#)
 - [AZ-104: Administer PaaS Compute \(Module 09\)](#)
 - [AZ-104: Administer Data Protection \(Module 10\)](#)
 - [AZ-104: Administer Monitoring \(Module 11\)](#)
- ✓ As a best practice it is recommended you create a new quiz and delete the old quiz each class. This will keep the response URLs from being circulated and responses continuing to come in after class.
- ✓ The educator materials, AZ-104T00-ENU-AssessmentGuide, also includes open-ended discussion questions.

Whiteboards and discussion questions

Each PowerPoint deck has at least one hidden Whiteboard and Discussion slide. If there is only one slide it is positioned at the beginning of the presentation. The Storage Module has several whiteboard slides and those are sprinkled through the presentation. You can:

- Use the whiteboard diagram to introduce the module and spark discussion on topics that will be presented.
- Use the whiteboard diagram at the end of the module to review the concepts presented.
- Use discussion questions to provide a more interactive classroom. Suggested answers are shown under the slide in the Notes area.
- Use the whiteboard diagram directly or recreate the image during the class. There are several whiteboard tools you can use like [Microsoft Whiteboard](#). There are several diagram tools that might be helpful like the [Online Azure Diagram Tool](#).

Remember, whiteboarding typically takes longer, so carefully manage your time.

Microsoft Learn - Additional Study Resources

At the end of each module is a slide with other applicable Microsoft Learn modules. These modules can be used as additional study opportunities.

References

There are a lot of resources to help you and the student learn about Azure. We recommend you bookmark these pages. The list is included in the Welcome section of the student materials.

- [Azure Documentation](#) . Stay informed on the latest products, tools, and features. Get information on pricing, partners, support, and solutions.
- [Azure forums](#) . The Azure forums are very active. You can search the threads for a specific area of interest. You can also browse categories like Azure Storage, Pricing and Billing, Azure Virtual Machines, and Azure Migrate.
- [Microsoft Learning Community Blog](#) . Get the latest information about the certification tests and exam study groups.
- [Microsoft Azure Blog](#) . Keep current on what's happening in Azure, including what's now in preview, generally available, news & updates, and more.

Feedback

Anyone can provide feedback on the Learn content. All feedback is tracked, and changes are quickly incorporated.

Next unit: Create Virtual Machine Scale Sets

Continue >

Need help?

- For issues related to this module, post on Microsoft Q&A and use the [#azure training](#) tag.
- For issues related to Certifications and Exams, post on [Certifications Support Forums](#) or visit our [Cert Help](#).

You can also connect with others and create support tickets for instructor content.

- [MCT Lounge](#). Your one stop for all things MCT. Stay up to date with the latest MCT news, learn about upcoming events, find job opportunities, or connect with other MCTs around the world. You can also ask questions and discuss a variety of topics including courseware and certification with Microsoft and other MCTs.
- [MOC Courseware Support](#). If there are problems with a course or you need to log a support ticket, please use the MCT Support Forum. Issues logged on to this forum are tracked and ensure the content developer is notified.

In this course we have provided a framework for you to work with. Take time to prepare and think about the value that only an instructor can bring to training. We hope to partner with you to provide an exceptional student experience and we welcome your feedback.

Appendix A – General Outline

The following table provides a snapshot of the content included in the instructor led courses, detailed timing, and a link to the aligned segments of the Online Training on Microsoft Learn:

| PowerPoint and description | Learn module | Aligned Online Training on Microsoft Learn |
|--|--|---|
| PowerPoint: Introduction 30 minutes | <ul style="list-style-type: none"> N/A | Slides only |
| PowerPoint 1: Administer Identity 2 – 3 hours | <ul style="list-style-type: none"> Configure Entra ID identities Configure User and Group Accounts | AZ-104: Manage identities and governance in Azure - Learn Microsoft Docs (Learning Path) |
| PowerPoint 2: Administer Governance and Compliance 2 – 3 hours | <ul style="list-style-type: none"> Configure Subscriptions Configure Azure Policy Configure Role Based Access Control | AZ-104: Manage identities and governance in Azure - Learn Microsoft Docs (Learning Path) |
| PowerPoint 3: Administer Azure Resources 2 – 3 hours | <ul style="list-style-type: none"> Configure Azure Resources with Tools Configure Resources with ARM Templates | AZ-104: Prerequisites for Azure administrators - Learn Microsoft Docs (Learning Path) |
| PowerPoint 4: Administer Virtual Networking 2 – 3 hours | <ul style="list-style-type: none"> Configure Virtual Networks Configure Network Groups Configure Network Watcher | AZ-104: Configure and manage virtual networks for Azure administrators - Learn Microsoft Docs (Learning Path) |
| PowerPoint 5: Administer Intersite Connectivity 2 – 3 hours | <ul style="list-style-type: none"> Configure VNet Peering Configure Network Routing and Endpoints | AZ-104: Configure and manage virtual networks for Azure administrators - Learn Microsoft Docs (Learning Path) |

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| PowerPoint 6: Administer Network Traffic 2 – 3 hours | <ul style="list-style-type: none"> • Configure Azure Load Balancer • Configure Azure Application Gateway | AZ-104: Configure and manage virtual networks for Azure administrators - Learn Microsoft Docs (Learning Path) |
| PowerPoint 7: Administer Azure Storage 3 - 4 hours | <ul style="list-style-type: none"> • Configure Storage Accounts • Configure Blob Storage • Configure Storage Security • Configure Azure Files and File Sync | AZ-104: Implement and manage storage in Azure - Learn Microsoft Docs (Learning Path) |
| PowerPoint 8: Administer Azure Virtual Machines 3 - 4 hours | <ul style="list-style-type: none"> • Configure Virtual Machines • Configure Virtual Machine Availability | AZ-104: Deploy and manage Azure compute resources - Learn Microsoft Docs (Learning Path) |
| PowerPoint 9: Administer PaaS Compute Options 3 - 4 hours | <ul style="list-style-type: none"> • Configure Azure App Service Plans • Configure Azure App Service • Configure Azure Container Instances | AZ-104: Deploy and manage Azure compute resources - Learn Microsoft Docs (Learning Path) |
| PowerPoint 10: Administer Data Protection 2 – 3 hours | <ul style="list-style-type: none"> • Configure File and Folder Backups • Configure Virtual Machine Backups | AZ-104: Monitor and back up Azure resources - Learn Microsoft Docs (Learning Path) |
| PowerPoint 11: Administer Monitoring 2 – 3 hours | <ul style="list-style-type: none"> • Configure Azure Monitor • Improve incident response with alerting on Azure • Configure Log Analytics | AZ-104: Monitor and back up Azure resources - Learn Microsoft Docs (Learning Path) |

Appendix B – Detailed Outline

This outline provides detailed information about the content included in the instructor-led course modules and the aligned segments of the Online Training on Microsoft Learn. The Learn modules are considered reference material. There may not be a corresponding PowerPoint slide for each topic.

| PowerPoint and description | Learn module | Key topics | In class demos and labs on GitHub | Aligned Online Training on Microsoft Learn |
|---|--|---|--|---|
| PowerPoint: Introduction Provides a high-level introduction to the course. | N/A | <ul style="list-style-type: none"> • Introductions • Exam • Course Outline • Learn Content | N/A | N/A |
| PowerPoint 1: Administer Identity Introduces you to Entra ID, and Users and Groups. | Configure Entra ID Identities | <ul style="list-style-type: none"> • Introduction • Describe Entra ID Benefits and Features • Describe Entra ID Concepts • Compare AD DS to Entra ID • Select Azure Entra ID Editions • Implement Entra ID Device Identities • Implement Self Service Password Reset • Knowledge Check • Summary and Resources | 01 - Manage Microsoft Entra ID Identities Demos in the GitHub repository. | Configure Microsoft Entra ID - Learn Microsoft Docs Configure user and group accounts - Learn Microsoft Docs |
| | Configure User and Group Accounts | <ul style="list-style-type: none"> • Introduction • Create User Accounts • Manage User Accounts • Create Bulk Accounts • Create Group Accounts • Assign Licenses to Users and Groups • Create Administrative Units • Demonstration - Users and Groups • Knowledge Check | | |

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|---|--|---|--|---|
| | | <ul style="list-style-type: none"> • Summary and Resources • | | |
| PowerPoint 2: Administer Governance and Compliance You'll learn about subscriptions, Azure Policy, and role-based access control. | Configure Subscriptions | <ul style="list-style-type: none"> • Introduction • Identify Regions • Implement Azure Subscriptions • Obtain a Subscription • Create Resource Groups • Determine Resource Limits • Create an Azure Resource Hierarchy • Apply Resource Tagging • Manage Costs • Knowledge Check • Summary and Resources | 02a - Manage Subscriptions and RBAC 02b - Manage Governance via Azure Policy Demos in the GitHub repository. | Configure subscriptions - Learn Microsoft Docs Configure Azure policy - Learn Microsoft Docs Configure role-based access control - Learn Microsoft Docs |
| | Configure Azure Policy | <ul style="list-style-type: none"> • Introduction • Implement Azure Policy • Create Azure Policies • Create Policy Definitions • Create Initiative Definitions • Scope the Initiative Definition • Determine Compliance • Demonstration -Azure Policy • Knowledge Check • Summary and Resources | | |
| | Configure Role Based Access Control | <ul style="list-style-type: none"> • Introduction • Compare Azure RBAC Roles to Azure AD Roles • Create a Role Definition • Create a Role Assignment • Apply RBAC Authentication • Determine Azure RBAC Roles | | |

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| | | <ul style="list-style-type: none"> • Demonstration - Azure RBAC • Knowledge check • Summary and Resources | | |
| PowerPoint 3: Administer Azure Resources You'll learn about Azure Administrator tools, Azure Resource Manager, and Azure Resources Manager templates. | Configure Azure Resources with Tools | <ul style="list-style-type: none"> • Introduction • Use the Azure Portal • Demonstration Azure Portal • Use Azure Cloud Shell • Demonstration Cloud Shell • Use Azure PowerShell • Demonstration - Working with PowerShell (optional) • Use Azure CLI • Demonstration Working with Azure CLI (optional) • Knowledge Check • Summary and Resources | 03a - Manage Azure resources by Using the Azure Portal 03b - Manage Azure resources by Using ARM Templates 03c - Manage Azure resources by Using Azure PowerShell 03d - Manage Azure resources by Using Azure CLI Demos in the GitHub repository. | Configure Azure resources with tools - Learn Microsoft Docs Use Azure Resource Manager - Learn Microsoft Docs Configure resources with Azure Resource Manager templates - Learn Microsoft Docs |
| | Configure Resources with ARM templates | <ul style="list-style-type: none"> • Introduction • Review ARM Template Advantages • Explore the ARM Template Schema • Explore the ARM Template Parameters • Consider Azure Bicep Templates • Demonstration - QuickStart Templates | | |

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| | | <ul style="list-style-type: none"> • Demonstration - Run Templates with PowerShell (optional) • Knowledge Check • Summary and Resources | | |
| PowerPoint 4: Administer Virtual Networking You'll learn about virtual networks, network security groups, Azure Firewall, and Azure DNS. | Configure Virtual Networks | <ul style="list-style-type: none"> • Introduction • Plan Virtual Networks • Create Subnets • Create Virtual Networks • Plan IP Addressing • Create Public IP Addresses • Associate Public IP Addresses • Associate Private IP Addresses • Demonstration - Create Virtual Networks • Knowledge Check • Summary and Resources | 04 - Implement Virtual Networking Demos in the GitHub repository. | Configure virtual networks - Learn Microsoft Docs Configure network security groups - Learn Microsoft Docs Configure Azure Firewall - Learn Microsoft Docs Configure Azure DNS - Learn Microsoft Docs |
| | Configure Network Security Groups Configure Azure DNS | <ul style="list-style-type: none"> • Introduction • Implement Network Security Groups • Determine NSG Rules • Determine NSG Effective Rules • Create NSG Rules • Implement Application Security Groups (ASGs) • Demonstration - NSGs • Knowledge Check • Summary and Resources <ul style="list-style-type: none"> • Introduction • Identify Domains and Custom Domains • Verify Custom Domain Names (optional) • Create Azure DNS Zones • Delegate DNS Domains • Add DNS Record Sets | | |

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|--|--|--|--|---|
| | | <ul style="list-style-type: none"> • Plan for Private DNS Zones • Determine Private Zone Scenarios • Demonstration - DNS Name Resolution • Knowledge check • Summary and Resources | | |
| PowerPoint 5: Administer Intersite Connectivity You'll learn about VNet peering, VPN Gateways, ExpressRoute, and Virtual WANs. | Configure VNet Peering | <ul style="list-style-type: none"> • Introduction • Determine VNet Peering Uses • Determine Gateway Transit and Connectivity Needs • Create VNet Peering • Determine Service Chaining Uses • Demonstration - VNet Peering • Knowledge Check • Summary and Resources | 05 - Implement Intersite Connectivity Demos in the GitHub repository. | Configure virtual network peering - Learn Microsoft Docs Configure VPN Gateway - Learn Microsoft Docs Configure ExpressRoute and Virtual WAN - Learn Microsoft Docs |
| | Configure Network Routing and Endpoints | <ul style="list-style-type: none"> • Introduction • Review System Routes • Identify User Defined Routes • Examine a Routing Example • Demonstration - Custom Routing Tables • Determine Service Endpoint Uses and Services • Identify Private Link Uses • Knowledge check • Summary and Resources | | |
| PowerPoint 6: Administer Network Traffic You'll learn about network routing and endpoints, Azure Load Balancer, and | Configure Azure Load Balancer | <ul style="list-style-type: none"> • Introduction • Choose a Load Balancer Solution • Implement a Public Load Balancer • Implement an Internal Load Balancer • Determine Load Balancer SKUs • Create Backend Pools | 06 - Implement Traffic Management Demos in the GitHub repository. | Configure network routing and endpoints - Learn Microsoft Docs Configure Azure Load Balancer - Learn Microsoft Docs |

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| <p>Azure Application Gateway.</p> | <p>Configure Azure Application Gateway</p> <p>Configure Network Watcher</p> | <ul style="list-style-type: none"> • Create Load Balancer Rules • Configure Session Persistence • Create Health Probes • Knowledge check • Summary and resources <ul style="list-style-type: none"> • Introduction • Implement Application Gateway • Determine Application Gateway Routing • Setup Application Gateway Components • Knowledge Check • Summary and Resources <ul style="list-style-type: none"> • Introduction • Describe Network Watcher Features • Review IP Flow Verify Diagnostics • Review Next Hop Diagnostics • Visualize the Network Topology • Knowledge Check • Summary and-Resources | | <p>Configure Azure Application Gateway - Learn Microsoft Docs</p> |
| <p>PowerPoint 7: Administer Azure Storage</p> <p>You'll learn about storage accounts, blob storage, storage security, Azure Files and File Sync, and storage tools.</p> | <p>Configure Storage Accounts</p> | <ul style="list-style-type: none"> • Introduction • Implement Azure Storage • Explore Azure Storage Services • Determine Storage Account Kinds • Determine Replication Strategies • Access Storage • Secure Storage Endpoints • Demonstration Secure Storage Endpoints • Knowledge Check • Summary and Resources | <p>07 - Manage Azure storage</p> <p>Demos in the GitHub repository.</p> | <p>Configure storage accounts - Learn Microsoft Docs</p> <p>Configure blob storage - Learn Microsoft Docs</p> <p>Configure storage security - Learn Microsoft Docs</p> |

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| | <p>Configure Blob Storage</p> <ul style="list-style-type: none"> • Introduction • Implement Blob Storage • Create Blob Containers • Create Blob Access Tiers • Add Blob Lifecycle Management Rules • Determine Blob Object Replication • Demonstration - Blob Storage • Knowledge Check • Summary and Resources | | <p>Configure Azure files and Azure File Sync - Learn Microsoft Docs</p> <p>Configure storage with tools - Learn Microsoft Docs</p> |
| | <p>Configure Storage Security</p> <ul style="list-style-type: none"> • Introduction • Review Storage-Security Strategies • Create Shared Access Signatures • Identify URI and SAS Parameters • Demonstration - SAS in the Portal • Determine Storage Service Encryption • Create Customer Managed Keys • Apply Storage Security Best Practices • Knowledge Check • Summary and Resources | | |
| | <p>Configure Azure Files and File Sync</p> <ul style="list-style-type: none"> • Introduction • Compare Files to Blobs • Manage File Shares • Create File Share Snapshots • Demonstration - File Shares • Implement File Sync • Identify File Sync Components • Setup File Sync • Configure Storage with Tools • Knowledge Check | | |

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| | Configure Azure Container Instances | <ul style="list-style-type: none"> • Introduction • Compare Containers to Virtual Machines • Explore Azure Container Instances Benefits • Implement Container Groups • Implement Azure Container Apps • Understand the Docker Platform • Demonstration - Deploy Azure Container Instances • Demonstration – Deploy ACA • Knowledge Check • Summary and Resources | | |
| PowerPoint 10: Administer Data Protection You'll learn about file and folder backups, and virtual machine backups. | Configure File and Folder Backups | <ul style="list-style-type: none"> • Introduction • Describe Azure Backup Benefits • Implement Azure Backup Center • Setup Recovery Service Vault Backup Options • Demonstration – Backup Azure File Shares • Configure On-Premises File and Folder Backups • Manage the Azure Recovery Services Agent • Demonstration – Backup Files and Folders • Knowledge Check • Summary and Resources <ul style="list-style-type: none"> • Introduction | 10 - Implement Data Protection Demos in the GitHub repository. | Configure file and folder backups - Learn Microsoft Docs Configure virtual machine backups - Learn Microsoft Docs 60 mins |

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|--|--|--|--|--|
| | | <ul style="list-style-type: none"> • Create a Workspace • Visualize Log Analytics Data • Structure Log Analytics Queries • Demonstration – Log Analytics • Knowledge Check • Summary and Resources | | |
|--|--|--|--|--|

Appendix C – Tips for teaching AZ-104

Are you looking to improve when teaching AZ-104? Maybe you don't teach the course very often or you haven't taught the course before? If so, this document offers some tips from our top trainers to help you deliver the best course possible.

We created this document because we recently conducted a survey of the AZ-104 Metrics that Matters responses. Overall, the comments were very positive and the NSAT rating high. However, there are always opportunities for improvement.

So, here are three specific areas we would like to highlight: **course timing**, **hands-on labs**, and **classroom interactivity**.

Course timing

Typical Comments:



Course timing is too tight, days ran too long, pace is too fast, course should be five days instead of four days, and not enough time to absorb the material.

Discussion:

AZ-104 provides a lot of content for you to select from based on your audience and teaching style. **It is not intended** that you cover every slide, demo, lab, discussion, and review question.

You must select the combination of course elements that fit best within the allotted classroom time. Consider your audience, consider your ability to tell the story, and consider the depth of coverage.

Here is how two different instructors presented the material. Notice they do not follow the prescribed course sequence and have selected content based on their teaching style.

| Persona | Course timing approach |
|---|--|
|  Instructor 1 | I use the PPT slides during a course as a guideline and hide slides that I will whiteboard or demo. I use a lot of demonstrations and often include simple portal walk-throughs I've created myself. And I do a lot of whiteboarding to cover concepts and flowcharts. I survey the class and spend more time on product areas where the students are most interested. |
|  Instructor 2 | I start each lesson with a description of an Administrator task and then show the steps in the portal. For example, adding users and groups. As I go through the demo, I describe the content covered in the slides. For example, the types of users and groups. After the demo I quickly skimmed the slides, making sure everything was covered and there weren't any questions. I use the Summary slide to point students to other study materials available on Learn. |

Summary:

To improve in this area, we ask that you fit the course to your audience and teaching style. Plan your time and set the students' expectations of what will be covered and how it will be covered. You do not have to cover everything that is provided. It is better to cover a few things well than a lot of things incompletely.

Hands-on Labs





Typical Comments:

Labs are too complicated, labs are too lengthy, labs should be more real world, labs should follow the lecture, and lab steps do not match the Azure portal.

Discussion:

AZ-104 provides GitHub labs for each module. These labs assume a level of familiarity with the Azure portal and scripting. This is not always the case, which means you need to consider your audience and their ability to complete various labs.

Here is how some of our top trainers approach the lab time.

| Persona | Lab approach |
|---|---|
|  Instructor 1 | Some students come to class without meeting the prerequisites. They may have little or no experience with Azure. I know these students will need more time to complete a lab, so I account for that. I provide extra time by skipping labs 01, 05, 10, 11. I ensure these areas are covered instead by demonstrations. And I do all the labs directly after the module to reinforce the learning. |
|  Instructor 2 | I start with the Module 03 (Administration) labs and cover the administrator tools. This helps with the labs and gets students into hands-on activities early in the class. If my class isn't familiar with Azure, I offer Learn sandbox alternatives during the lab time. I also refer them to the AZ-900 Azure Fundamentals GitHub labs. I make sure they have plenty to do during lab time, even if it isn't the formal suggested lab. |
|  Instructor 3 | If students are unfamiliar with the Azure portal and need extra help, I do more demonstrations and fewer GitHub labs. For the hands-on activities I lead the class and go through the steps together with them. This takes more time, so I am careful which demonstrations and labs I select. |
|  Instructor 4 | I allocate a time box for the labs based on my student's level of experience. The time shown on the lab is just an estimate. By timeboxing the labs, I ensure we don't fall behind. I direct students to finish any incomplete labs at home after class. If I think the class will benefit from pre-work, I will assign them some Quick Starts to read. This ensures they are better prepared for the next lab. |

Summary:

To improve in this area, we ask that you use your best judgment when selecting which labs to do with your students. Alternative labs have been added to the GitHub pages where we think they are appropriate. You can suggest students go through those shorter and less complicated labs.



Classroom interactivity

Typical comments: *Need more balance between lecture and hands-on, more discussion and question/answer, and lecture was too long.*

Discussion:

Our goal in Microsoft Learning is to ensure there is at least a 50/50 mix of lecture/interactive elements. For AZ-104 we provide a lot of opportunities to engage the students. For example, demonstrations, labs, and review questions.

Here are some suggestions from our top trainers on how they incorporate interactivity in their classes.

| Persona | Class interactivity approach |
|--|---|
|  Instructor 1 | <ul style="list-style-type: none">• Frequently stop and ask open-ended questions.• Use Mentimeter or Forms to display multiple-choice questions and review the student responses.• Let one of your advanced students share their screen and “drive” during the demonstration. Coach the student through the steps.• Have someone monitor the chat and let you know if there is a question. |
|  Instructor 2 | <ul style="list-style-type: none">• Use a poll (or other signal) to determine if students are interested in or using a product or feature.• Ask students if they are planning to take the exam. Work that information into your presentation.• Ensure students can annotate your whiteboard. Have students participate by placing resources or linking items. |

Summary:

To improve interaction, we ask that you plan to limit the amount of lecture to less than half the class time. Supplement your lecture with demos, questions, and discussion. Try to engage the students in as many ways as possible. This interactivity will take longer, so be sure to account for that.

Happy learning!
Azure Administrator Courseware Development Team