The Complete AZ-900 Handbook

Straightforward strategies to pass the exam

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Dedicated to

*My late father, **Thomas Taulli**, who bought me my first computer when I was 12 years old and always encouraged me to learn*

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Tom Taulli is an author, developer, and entrepreneur. He is the founder of startups like ExamWeb, BizEquity, and Hypermart.net, which was sold to InfoSpace.

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Preface

Cloud computing is critical for many businesses. The AZ-900 exam provides an effective way to become a part of this thriving field, and this book shows what you need to know to pass it. There are 11 chapters that cover all the key topics covered on the exam.

Besides chapters, the book includes a full-length practice exam to reflect the real testing experience, and a glossary to help readers quickly review essential terms. Whether new to IT or looking to advance in project management or business analysis, readers will find this guide an accessible path to mastering Azure fundamentals and passing the AZ-900 certification.

Chapter 1: Introduction to the AZ-900 Certification - shows why this exam is valuable for your career in cloud computing. It then covers details about the AZ-900 exam. They include the number and types of questions, scoring, and how to register. The chapter also covers other related Microsoft Certifications. The end of the chapter provides a demo for how to set up an Azure account and navigate the Azure portal.

Chapter 2: The Foundations of Cloud Computing - explains the different cloud deployment models, including public, private, and hybrid clouds, and looks into cloud service types such as IaaS, PaaS, and SaaS. You will learn about concepts like serverless computing, pricing models, and the differences between capital and operating expenses. The chapter also covers the shared responsibility model and explains the core benefits of cloud computing. They include scalability, high availability, and security.

Chapter 3: Architectural Components and Services of Azure - describes how Azure's data centers operate. There is an explanation of geographies, regions, and sovereign regions. There is also a discussion of availability zones for high resilience. The chapter then discusses how resources are organized within Azure with subscriptions, resource groups, management groups, licenses, and tenants.

Chapter 4: Compute Services - explains virtual machines. Topics include the setup, pricing, and connectivity. The chapter then goes on to cover supporting features like Virtual Machine Scale Sets, availability sets, and proximity placement groups. You will also learn about Azure Virtual Desktop for delivering virtual desktops, Azure App Services for running web applications, and serverless options like Azure Functions. Finally, container services are covered. They are Azure Container Instances, Azure Kubernetes Service, and Azure Container Apps.

Chapter 5: Networking - begins by looking at core networking concepts like IP addresses, protocols, and routing. The chapter then covers Azure's networking services, such as virtual networks, network security groups, peering, Azure DNS for domain management, Azure VPN Gateway for secure connectivity, and ExpressRoute for private connections to Microsoft's network.

Chapter 6: Storage - looks at the basics of Azure storage accounts, redundancy options to ensure data availability, and different storage tiers for performance and cost optimization. Next, there is coverage of specific storage solutions such as blob storage for unstructured data, using AzCopy for data transfer, Azure Files for file shares, and Azure Migrate to help transition workloads to the cloud. You will see how to select and implement the right storage options for their solutions.

Chapter 7: Identity, Access, and Security - describes Microsoft Entra ID, such as authentication and authorization. You will learn about Conditional Access policies, multifactor authentication, and passwordless solutions to enhance security. The chapter also details role-based access control for managing permissions, and explains security frameworks like Zero Trust and defense-in-depth, alongside tools like Microsoft Defender for Cloud.

Chapter 8: Cost Management for Azure - provides an overview of cloud cost management. You will learn about key Azure tools such as the total cost of ownership calculator to assess migration costs, Azure Cost Management tools for ongoing tracking and optimization, and the use of resource tags to improve cost analysis and accountability across services.

Chapter 9: Governance and Compliance in Azure - introduces the Azure Policy for enforcing organizational standards, resource locks for preventing accidental changes, and Microsoft Purview for data governance and compliance management. You will learn about how to maintain control, meet regulatory requirements, and implement best practices for governance across their cloud resources.

Chapter 10: Deployment and Monitoring of Azure Resources - starts with Azure Advisor, which provides for best practice recommendations. This is followed up with Azure Service Health for tracking service issues and maintenance, and Azure Monitor for collecting, analyzing, and acting on telemetry data.

Chapter 11: Strategies for the Exam - provides practical advice and tips for passing the AZ-900 exam. It offers strategies for managing time, understanding and focusing on exam objectives, and narrowing down multiple-choice options effectively. The chapter concludes with a high-level review of the main topics covered in the book.

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Introduction to the AZ-900 Certification

Introduction

In this chapter, we will get an overview of the Azure Fundamentals exam. We will look at the details, such as the topics, number of questions, types of questions, scoring, and registration. We will also highlight the benefits of the certification. The cloud is a fast-growing industry, and those who have the skills in this important category can command lucrative salaries.

This chapter looks at other Microsoft certifications. Besides those for the cloud, there are also offerings for AI and data engineering. Finally, this chapter will give an overview of the Azure platform. This will include how to setup an account and use the portal.

Among the many IT certifications, the Azure Fundamentals exam is one of the most popular. It is a great way to get a good understanding of the fundamentals of cloud computing and Azure.

Structure

This chapter covers the following topics:

- Azure Fundamentals exam
- Taking the AZ-900 exam
- Benefits of the certification

- Exam topics
- Exam details
- Types of questions
- Other Microsoft Certifications
- The story of Azure
- Setting up an account
- The Azure portal

Objectives

By the end of this chapter, you will have a good understanding of what is covered in the exam and the benefits of getting the certification. You will also get hands-on experience with Azure.

Taking the AZ-900 exam

The Microsoft website says[1] that the Azure Fundamentals exam tests your *foundational knowledge of cloud concepts, core Azure services, plus Azure management and governance features and tools.*

This may sound complicated and even daunting, but the exam is at the beginner level, and you do not need to understand how to use Azure services for the same. The material is mostly at a high level. For the most part, it is about understanding general principles of cloud computing, as well as the capabilities and use cases for various Azure services.

The code for the Azure Fundamentals exam is AZ-900. The *AZ* is for Azure, and 900 indicates that the exam is the starting point for the certification path for Microsoft. There are several other 900-level exams, like Azure AI Fundamentals (AI-900), Azure Data Fundamentals (DP-900), and Microsoft 365 Certified: Fundamentals (MS-900).

The AZ-900 exam is for a wide audience. It is a good choice for those in IT roles or for someone who wants to transition to a role that involves cloud computing. However, the exam can also be taken by those with non-technical backgrounds. After all, cloud computing is a critical technology that impacts all departments. This means the AZ-900 exam could be a good fit for someone in sales, especially someone who sells technology products. The exam could be helpful for someone who is a project manager. For example, this could be for someone who is leading a cloud migration. Some of these people may ultimately want to make a career change and take on a role as a cloud expert.

Even executives and senior managers can benefit from the exam. The knowledge gained from it can go a long way in helping to evaluate cloud technologies and successfully implement them.

1 https://learn.microsoft.com/en-us/credentials/certifications/azure-fundamentals/?practice-assessment-type=certification

Benefits of the certification

Getting the AZ-900 certification can boost your career. It can be a way to set yourself apart and get the attention of employers. They will see the certification as a sign of your knowledge as well as your commitment to improving your skills. Let us take a look at other reasons for getting the certification.

Credibility

There are many certifications available, but the AZ-900 stands out as one of the most popular in the IT world. Of course, the backing of Microsoft is a big help. This brings much credibility. However, the certification has also been around since 2018. During this time, Microsoft has made changes to make the exam better and more relevant.

Growth of the cloud

Even though cloud computing has been around since the late 1990s, technology continues to grow rapidly. Then again, it has been shown to be beneficial for businesses. Cloud computing costs are generally lower than those of on-premises environments. The technology also allows for centralizing data, which provides better analytics and AI applications. Then there is the convenience of being accessible from a browser. This also means that there is no need to install updates.

The cloud computing market is massive. For 2024, the market was about $805 billion and is expected to double by 2028.[2] This represents a **compound annual growth rate** (**CAGR**) of 19.4%.

There are many factors that have powered the growth of the market:

- **Innovative technologies**: Mobile, AI, big data, and edge computing are just some of them. They all generally rely on cloud computing platforms.
- **Hybrid cloud services**: Hybrid cloud is a mix of cloud computing and on-premises systems. This is important for highly regulated industries that have strict security requirements. However, by leveraging the cloud for less critical workloads, this allows for lower costs. You will know more details in *Chapter 2, The Foundations of Cloud Computing*.
- **Digital transformation**: To remain critical, businesses need to modernize their IT systems. Often, this is about migrating to cloud-based approaches.
- **Remote work**: When the COVID-19 pandemic hit, companies had to scramble. They needed to invest in cloud-based technologies to allow for remote working.
- **Security:** Over the years, there have been innovations in cybersecurity solutions. These have provided much more protection for cloud computing platforms.

2 https://www.idc.com/getdoc.jsp?containerId=prUS52460024

Growth of Azure

Behind AWS, Azure is ranked second in the cloud computing market. The market share is estimated at about 25%.[3] By comparison, AWS is about 31% and Google is at 10% to 11%.

Going forward, Microsoft has major ambitions to invest in its platform, trying to become number one. To this end, the company announced in fiscal year 2025 that it would spend $80 billion on AI and data centers.[4] This is compared to $55.7 billion the previous year.

According to a 2024 report, Gartner concluded:[5]

- Microsoft is a Leader in this Magic Quadrant. Microsoft Azure maintains a comprehensive array of **infrastructure as a service** (**IaaS**) and **platform as a service** (**PaaS**) that meet all enterprise IT use cases. Azure provides robust hybrid cloud capabilities, allowing enterprises to integrate their on-premises, Windows-based environments with the cloud. Microsoft's vast network of partners worldwide makes Azure a logical choice for many customers in regional markets.
- Microsoft competes aggressively in every area of cloud computing and integrates Azure with its other leading cloud platforms to promote a *better together* story in the market. Microsoft is also a strategic partner with other market leaders, such as SAP, VMware, Oracle, NVIDIA, and OpenAI, to offer joint solutions.

The report also notes that AI has been critical for the success of Azure. A major part of this has been due to its strategic partnership with OpenAI, which is the developer of cutting-edge generative AI systems and applications like ChatGPT.

Compensation

Expertise in cloud computing and Azure can make a big difference for your salary, depending on your role, background, and location.

First, these are the average salaries in the U.S., based on a person's role:

- **Cloud engineer**: They design and manage cloud-based systems. For those with mid-level skills, the average salary is $136,794, and $156,482 for those with senior-level skills.[6]
- **Cloud architect**: This role is focused on designing cloud systems. They can expect a salary that ranges from $123,000 to $184,000.[7]

3 https://www.statista.com/statistics/967365/worldwide-cloud-infrastructure-services-market-share-vendor/
4 https://www.wsj.com/livecoverage/stock-market-today-dow-sp500-nasdaq-live-01-03-2025/card/microsoft-to-spend-80-billion-on-ai-data-centers-this-fiscal-year-2lismn1QUr3mj7cp3G78
5 https://azure.microsoft.com/en-us/blog/microsoft-named-a-leader-in-2024-gartner-magic-quadrant-for-strategic-cloud-platform-services/
6 https://motionrecruitment.com/it-salary/cloud-computing
7 https://www.cloudinstitute.io/cloud-computing/cloud-computing-salary-guide-2024

- **Cloud security engineer**: They will set up and manage the security, compliance, and privacy for cloud systems. They can earn a salary of about $136,485.[8]
- **Cloud database administrator**: They will implement, secure, and manage cloud-based databases. They can earn about $180,000.[9]

Next, these are the salaries based on the level of experience:

- **Entry-level (0 to two years)**: The salaries typically range between $65,000 and $90,000.[10]
- **Mid-level (three to five years)**: The salaries are around $90,000 and $120,000.[11]
- **Senior-level (more than 5 years)**: The salaries can range from $115,000 to $160,000, or more.[12]

The long-term trends for cloud professionals look bright. Research from the U.S Bureau of Labor Statistics shows that IT jobs, which include cloud professionals, are forecast to grow by 11% from 2019 to 2029.[13]

Exam topics

Microsoft has a helpful study guide located at **https://learn.microsoft.com/en-us/credentials/certifications/resources/study-guides/az-900**. In it, there is a breakdown of the topics, and each one has a range of percentages for the number of questions.

Cloud concepts

This section covers the general concepts of cloud computing. In fact, there is little about Azure services. Anywhere from 25% to 30% of the questions on the exam are for this section. There are also three main topics covered:

- **Cloud computing**: This looks at the definition of cloud computing, along with the different types of models. These include public, private, and hybrid clouds. You will need to understand how each of these works, but also the use cases. Then there will be coverage of the consumption and pricing models, as well as understanding serverless.
- **Benefits of cloud computing**: The exam focuses on high availability, scalability, reliability, predictability, security, governance, and manageability.
- **Cloud service types**: There are three of them. They include IaaS, PaaS, and **software as a service** (**SaaS**). These are how cloud computing services are delivered. This is also based on the shared responsibility model, which shows the division of responsibility between the cloud provider and the customer.

8 https://www.datacamp.com/blog/cloud-engineer-salary
9 https://www.simplilearn.com/cloud-computing-salary-article
10 https://veriipro.com/blog/the-rise-of-cloud-engineering-salary-trends-to-watch-in-2024/
11 https://veriipro.com/blog/the-rise-of-cloud-engineering-salary-trends-to-watch-in-2024/
12 https://veriipro.com/blog/the-rise-of-cloud-engineering-salary-trends-to-watch-in-2024
13 https://veriipro.com/blog/the-rise-of-cloud-engineering-salary-trends-to-watch-in-2024/

Azure architecture and services

Now, in this section, we will look at Azure services, which account for 35% to 40% of the questions on the exam. There are four main topic areas:

- **Core architectural components of Azure**: The exam will cover how Azure resources are set up geographically, such as regions, region pairs, and sovereign regions. This will include understanding availability zones, which allow for more resilience. You will also need to know how Azure resources are organized with resource groups, subscriptions, and management groups.
- **Azure computing and networking services**: This will look at how you can manage computing resources with containers, **virtual machines** (**VMs**), and functions. In fact, a big part of this will be about VMs. You will also need to understand networking tools like Azure Virtual Networks, Azure subnets, Azure DNS, and Azure VPN Gateway.
- **Azure storage services**: You will need to know about the different storage options, tiers, redundancy options, and account types. You will also need to understand tools to help manage files: AzCopy, Azure Storage Explorer, and Azure File Sync. Then there are the migration systems, which include Azure Migrate and Azure Data Box.
- **Azure identity, access, and security**: For this, you will need to know about Microsoft Entra ID, which is the identity service for Azure. This will mean understanding things like **single sign-on** (**SSO**), **multifactor authentication** (**MFA**), passwordless, **role-based access control** (**RBAC**), and conditional access. You will also need to know about zero-trust security, which is where you assume that a system will be breached.

Azure management and governance

The final section, which represents 30% to 35% of the questions on the exam, will also cover four topics:

- **Cost management:** While cloud computing is often cost-effective, there still needs to be monitoring. If not, there can easily be cost overruns and unexpected expenses. For the exam, you will need to know about what factors impact the costs for Azure. You will also need to know about the tools that can help manage costs, such as the **total cost of ownership** (**TCO**) calculator and tags.
- **Azure tools for governance and compliance**: These include Microsoft Purview in Azure and Azure Policy. You will also need to know about resource locks.
- **Managing and deploying Azure resources:** There are different ways to use Azure, including the Azure portal and Cloud Shell. The exam will also cover the tools, like Azure Arc and **Azure Resource Manager** (**ARM**), that provide for provisioning infrastructure, managing multi-cloud and on-premises environments.

- **Monitoring tools in Azure**: For the exam, you will need to know about Azure Advisor, Azure Service Health, and Azure Monitor.

Of course, some of the topics will change or be updated. However, this does not happen frequently. As much as possible, Microsoft wants stability with the exam.

Exam details

The instructions and details of the exam are as follows:

- You have 45 minutes to answer the questions on the AZ-900 exam. However, the total time allocated is 65 minutes. The only difference is that there is extra time for reading the instructions.
- Agreeing with the Microsoft Certification Exam Candidate Agreement, completing the test, and providing any feedback. There are anywhere between 35 and 50 questions.
- Microsoft allows you to take unscheduled breaks during the exam. In fact, there is one that is automatic, which is for five minutes. For any others, you will need to get permission.
- The score of the exam is based on points, not percentages. This is from 1 to 1000, and you need a minimum of 700 to pass the exam. For example, some questions are worth more than one point, depending on the difficulty.
- A handful of questions on the exam will not be factored into your score. The reason is that they are for experimental purposes. That is, they will be evaluated as potential candidates for future exams.
- You will receive your score within minutes of finishing the exam. This will include some feedback.
- In the U.S., the exam costs $99. You can schedule your test with Pearson VUE, located at **https://learn.microsoft.com/en-us/credentials/certifications/azure-fundamentals/?practice-assessment-type=certification**, and you get to choose between taking it online with a proctor or using a local test center.
- If you do not pass on your first try, you can retake it after 24 hours. For any after this, you will need to abide by the retake policy at **https://learn.microsoft.com/en-us/credentials/support/retake-policy**.
- Microsoft provides accommodations for those with disabilities, such as for visual impairments, mobility problems, or neurodiversity. For this, you will usually need to provide documentation, such as a letter from a doctor. The approval of accommodation can take up to ten days.

After you pass your exam, the certification will last, i.e., unless there is a major change to the exam, but it is highly unlikely to lose its credibility.