

Credentials FAQ & Help

Find help and technical support for training and credentials within the topics below.

Earn a certification

OVERVIEW

[Certification process overview](#)

[Register and schedule an exam](#)

[Prepare for an exam](#)

[Practice assessments](#)

[Exam duration and question types](#)

[Exam scoring and score reports](#)

Earn an Applied Skills credential

OVERVIEW

[Applied Skills process overview](#)

[Prepare for an Applied Skills assessment lab](#)

[Assessment duration and lab experiences](#)

[Assessment lab scoring and score reports](#)

[Applied Skills frequently asked questions](#)

Online proctored exams

OVERVIEW

[Introduction](#)

[About online exams with Pearson VUE](#)

[Frequently asked questions \(FAQs\) about online proctored exams](#)

Renew a certification

HOW-TO GUIDE

[Certification renewal process overview](#)

[Frequently asked questions \(FAQs\) about renewals](#)

Exam and assessment accommodations

HOW-TO GUIDE

[Request exam accommodations](#)

[Available accommodations and documentation requirements](#)

[Frequently asked questions \(FAQs\) about exam accommodations](#)

[Request Applied Skills accommodations](#)

Manage credentials in the Learn profile

HOW-TO GUIDE

[View, use, and share certificates and achievements](#)

[View and share your transcript](#)

[Sharing and validation of credentials](#)

Retirement information

REFERENCE

[Credentials retirement](#)

[Exam and Applied Skills retirement](#)

[Course retirement](#)

Program information

REFERENCE

[Beta certification exams](#)

[Exam and lab assessment development](#)

[Microsoft Certified Trainer](#)

[Volume licensing](#)

Certification for students

HOW-TO GUIDE

[Student discounts](#)

[Student Training and Certification](#)

[College credit for certification exams](#)

Policies and agreements

REFERENCE

[Credential expiration policies](#)

[Item challenge process](#)

[Exam security policy](#)

[Exam and assessment lab retake policies](#)

[Reschedule and cancellation policies](#)

[Microsoft Credentials Program Agreement](#)

[Microsoft Applied Skills Program Agreement](#)

[Microsoft Certification Renewal Assessment Agreement](#)

Training and credentials news and Training Services Partners

WHAT'S NEW

[Social media and Blog](#)

[Training and credentials in media](#)

[Find a Training Services Partner](#)

[Value of Training Services Partners](#)

Credentials help and Troubleshooting guides

HOW-TO GUIDE

[Credentials support](#)

[Frequently asked questions](#)

[Microsoft Official Courseware \(MOC\) support](#)

[Vouchers and redeeming discounts](#)

Certification process overview

Article • 09/19/2023

Why get certified?

Earning a Microsoft Certification is globally recognized evidence of real world skills. A Microsoft Certification showcases your commitment to keeping pace with rapidly changing technology and positions you for increased skills, efficiency, and earning potential in your professional roles.

- Thirty-five percent of technical professionals say getting certified led to increased income and twenty-six percent reported promotions¹. IT professionals who achieve a relevant, role-based technical certification perform an average of twenty-six percent better than their uncertified colleagues².
- Team leaders who support and encourage their teams to get certified can expect a higher performing workforce. Workers are more likely to stay with a company that invests in their skills through certifications³.
- Getting a Microsoft Certification is also a great way to break into the tech industry. A Microsoft Certification conveys expertise, especially helpful for someone new to the industry.

Getting started with Microsoft Certification

A great place to begin is the [certifications overview](#), where you can explore certifications by role or level. If you already know which certification you want to take, you can filter and search from the [browse certifications](#) page.

Click the name of any certification to see the certification details page which lists the exams you must pass to earn it. Some certifications only require one exam, while others require more. On the details page, you'll also find information about what skills are measured, how to prepare, and links to registration. Each exam also has its own details page covering exam-specifics.

Prepare for your certification exam(s)

For role-based, specialty, and fundamentals certifications, start by reviewing the study guide on the exam details page. For MOS certifications, start by reviewing the skills list on the exam details page. If you already have the skills, [schedule the exam](#). If you'd like more preparation, check out the certification or exam detail pages for options like:

- Exam prep videos
- Free online training on Training Services Partner
- Instructor-led training
- Practice Assessments
- Additional preparation materials from Training Services Partner Press and training delivered by Training Services Partners
- Exam sandbox

To learn more about these and other ways to get prepared, visit: [Prepare for an exam](#).

Register for a Microsoft Certification exam

When you're ready, register from any exam details page. During the scheduling process, you'll choose to take the exam in a local test center or online. Local test centers provide a secure, exam-ready testing environment while online proctored exams offer flexible scheduling and the convenience of taking an exam from your home or office. Microsoft partners with multiple exam providers to deliver certification exams for different types of candidates. To learn more about these providers, how to register, and the benefits of online exams versus test centers, visit: [Register and schedule an exam](#).

Tip

We're committed to ensuring that every person who's interested in taking Microsoft certifications can do so in a way that is fair and accurately reflects their skills and abilities. Visit [Request accommodations](#) to learn more about requesting accommodations.

Getting your exam results and certifications

For most exams, you'll be informed of your results within minutes. But it can take up to 24 hours for results to appear in your Learn profile's Certifications tab. For more information about exam results and how to access them, visit [Exam scoring and score reports](#).

Please note: if you've taken a [beta exam](#) or [scheduled your exam via Certiport](#), the exam provider for students and educators, timing of exam results may vary.

Share your success with badges

If you've passed all the exams to earn a certification, congratulations! Employers and colleagues will recognize your achievement when you share your badge on professional networks or embed it in your email signature or resume. It's your time to shine. You can [view, download, and share](#) your accomplishments as badges or certificates, or share a record of your success on your Microsoft transcript. For more information on transcripts, visit [View and share transcripts](#).

Renewing your certification

Keep in mind that role-based and specialty certifications expire after one year. You can take free online renewal assessments six months before they expire to extend your certification for a year. For more information, visit: [Renew your certification](#).

¹*IDC white paper, sponsored by Microsoft, “[Benefits of Role-Based Certifications](#),” June 2020.*

²*Pearson VUE, “[2018 Value of IT Certification](#),” 2018.*

³*LinkedIn, “[2020 Global Talent Trends Report](#),” 2020.*

Request exam accommodations

Article • 09/19/2023

We've designed certification exam accommodations to support candidates while maintaining our high standards.

Important

Request accommodations before you schedule an exam.

It can take up to 20 days to process and schedule an accommodation request (online or in person). Be sure to plan ahead so we can ensure a positive exam experience.

What types of accommodations are considered?

We often approve accommodations for:

- extra time for learning disabilities, ADHD, PTSD, or test anxiety
- use of assistive technology
- a personal care assistant, reader, and/or scribe to be present during the exam
- limited ability to rearrange your home test environment to meet [security standards](#)

To see a detailed description of all accommodations and documentation requirements, visit: [Available exam accommodations and documentation requirements](#).

How to request exam accommodations

Be sure to request and confirm accommodations before scheduling your exam.

To request accommodations through Pearson VUE:

1. Review the list of [available exam accommodations and documentation requirements](#).
 2. Visit [Pearson VUE's Reasonable Adjustments Request System](#).
- If you're a first-time user, click *New User Registration* and follow the steps to create your account.
 - You will receive an activation email (click once on the link in the email).
 - Log into the system and click the "*Start a new request here*" button.

- Provide the information requested at each step.
 - Upload any supporting documents, if required.
 - Click the “*Submit*” button.
3. You will receive an email confirming your request.
4. It may take up to **10 business days** for disability experts to review your request.
You will receive an email when the review is complete informing you of the decision.
5. If your request is approved, **the email will include instructions for scheduling your exam with accommodations.**

If you have any questions about the process, please contact the [Pearson VUE accommodations team](#) to learn more.

If you've contacted Pearson VUE but need additional assistance with accommodations, please contact the [Microsoft Exam Accommodations Support team](#).

Explore the exam sandbox

Not sure what to expect on the exam? **If you use assistive devices or keyboard shortcuts**, the exam sandbox will help you understand how assistive devices can be used in the exam interface, as well as how the keyboard can be used to navigate through the exam. Go directly to the [English exam sandbox ↗](#), or learn more about the exam sandbox, and find links to localized language sandbox experiences, by visiting: [Prepare for an exam](#).

Question types

To learn more about the different types of questions you may be asked, visit: [Exam duration and exam experience](#).

Appeal an exam accommodation decision

You can always appeal if your accommodation is denied. To appeal a denial:

1. Click the “*Request an Appeal*” button on the bottom of Step 6 on your request in the [Pearson VUE request system ↗](#). This will place an appeal form in the “*My Forms*” section of the page.
2. Download and complete the appeal form and upload it into the “*My Documents*” section of Step 6.
3. Upload additional documents by selecting the “*Upload Additional Documents*” button in Step 6. If you provided documentation with your original request, the

decision letter will contain details on what information was missing. If you didn't provide [documentation](#) with the original request, consider doing so as part of your appeal.

4. Click the "*Submit*" button at the bottom of the page. Your appeal will be carefully reviewed by disability experts.

If you have any questions about the process, please contact the [Pearson VUE accommodations team](#) to learn more.

Available exam accommodations and associated documentation requirements

Article • 01/04/2024

Available accommodations

All accommodations listed below must be requested before scheduling your exam unless otherwise noted. Only requests for extra time and to have another adult present in the testing area require documentation to verify your need for that accommodation to ensure no unfair advantage is provided and to maintain the integrity of the assessment experience. It's a bit inconvenient, but we're committed to a fair and valid exam experience.

[+] Expand table

Accommodation	Verification Documentation required for test center	Verification Documentation required for online proctoring	Why do you need to request this accommodation in advance?
Extra time	Yes	Yes	Adding extra time requires a reconfiguration of the exam. Note: Microsoft has added 5 minutes to exam time for unscheduled breaks. You do not need to request an accommodation for this time to be added. Visit Unscheduled breaks on exams .
Reader and Reader/Recorder	Yes	Yes	Extra time will be provided. For test center deliveries, you'll test in a separate room. For online deliveries, the proctors need to know that another adult will be in the room.
Personal Care Assistant (PCA)	No	Yes	For test center deliveries, you'll test in a separate room. For online deliveries, the proctors need to know

Accommodation	Verification Documentation required for test center	Verification Documentation required for online proctoring	Why do you need to request this accommodation in advance?
			that another adult may enter the room.
Ability to read aloud	No	No	In test centers, this is a distraction to others, so you'll be given a separate room. For online deliveries, the proctors need to know you'll be reading aloud.
Moving during the exam, including fidgeting	No	N/A. No advance notice is required. For online deliveries, you may move around within your work area if your face stays in view of the camera and all prohibited items remain out of arm's reach. If you need to leave your work area or the view of the camera, initiate a break.	In test centers, this may be a distraction to others, so you'll test in a separate room.
Noise cancelling headphones with Bluetooth	No	No	Proctors will inspect the headphones to ensure Bluetooth has been disabled.
Screen Reader Software (i.e., Dragon Speak (STT), JAWS, or NVDA)	No	No	<p>The exam must be configured to allow this software to run. At test centers, you'll be provided with a separate room. For online deliveries, the proctor must be aware that audio will occur during the exam. NOTE the availability of the screen reading software varies by modality:</p> <ul style="list-style-type: none"> - Test Centers: JAWS may be available depending on the test center location. - Online Exams: JAWS,

Accommodation	Verification Documentation required for test center	Verification Documentation required for online proctoring	Why do you need to request this accommodation in advance?
			NVDA, ZoomText Reader, and Windows Narrator
Sign Language Interpreter	No	No	For test center deliveries, you'll test in a separate room if the sign language interpreter is needed during the exam. If they are only needed for the check-in and exit process, you may test in the primary testing area. For online deliveries, the proctors need to know that another adult may be in the room with you.
ZoomText (Screen Mag Only)	No	No	The exam must be configured to allow this software to run.
Wheelchair Accessible Test Center	No	N/A. No advance notice is required.	Not all test centers are wheelchair accessible.
Adjustable Workstation	No	N/A. No advance notice is required.	Not all test centers have adjustable workstations.
Sit/Stand	No	N/A. No advance notice is required.	Not all test centers have a sit/stand desk, and this requires a separate room.
Additional lighting	No	N/A. No advance notice is required.	At test centers, you may require a separate room.
Chewing gum	No	N/A. No advance notice is required.	In test centers, this is a distraction to others, so you'll test in a separate room.
Other	Yes	Yes	Anything not expected under typical exam conditions requires an accommodation so the proctor is aware something will be different, so others

Accommodation	Verification Documentation required for test center	Verification Documentation required for online proctoring	Why do you need to request this accommodation in advance?
			are not distracted, and to ensure any changes to the exam configuration are available during delivery.

Ways to verify your accommodation needs

For accommodations that require verification (extra time and having another adult in the testing area), please provide one (1) of the following forms of information when requesting accommodations. A formal diagnosis is not required to verify your need.

- **Proof of past accommodations, such as:**
 - Previous testing or training accommodations
 - Workplace accommodations related to the request
- **School/education related accommodation records, such as:**
 - Records showing participation in special education services (e.g., an Individualized Education Program (IEP), Section 504 plan, etc.)
 - Note from an educator or school administrator on school letterhead describing accommodations provided to you in school or that establishes your needs.
- **Proof of other accommodations, such as:**
 - Accommodations provided by government or public entities (e.g., access to public transportation for a physical disability)
 - Accommodations provided at a conference, convention, or similar event.
- **Letter from your manager, supervisor, teacher, or similar who can confirm your need for the accommodation.**
 - [This form](#) is optional and intended to assist with this type of request.
- **Professional evaluations, such as:**
 - Letter or written recommendation from your health professional (e.g., physician, therapist, mental health counselor, psychologist, naturopath, etc.) The optional [WWL Healthcare Provider Form](#) can be used as a template for your health care professional.
 - Results of psycho-educational or other professional evaluations
 - Evidence of treatment, such as a prescription.
- **Other documentation.**

- If you have something not listed here that demonstrates your need for the requested accommodation, please provide it. It doesn't have to be a formal diagnosis or documentation. Our disability experts will let you know if they need additional information to reach a decision.
- **If you don't have any of the above**, please contact the [Microsoft Exam Accommodations Support team](#) for additional support verifying your need.

Available Assistive Technologies

- Dragon Professional Individual version 15 on Windows 10
- Fusion 2022 and 2023
- JAWS 2022 and 2023
- ZoomText Magnifier 2022 and 2023
- ZoomText Magnifier/Reader 2022 and 2023
- NVDA 2021, 2022, and 2023
- Windows Magnifier on Windows 10
- Windows Narrator on Windows 10
- Mac Zoom on MacOS 12 (Monterey), MacOS 13 (Ventura), MacOS 14 (Sonoma)

Allowed Items

For testing centers, some types of equipment, such as hearing aids and inhalers don't require pre-approval. It may be necessary for test center staff to inspect these items before you bring them into the testing room. For a full list, review [Microsoft's Allowed Items List ↗](#).

You don't need to request an accommodation for pets, service animals, or comfort animals to be present during online exams. However, **only service animals are permitted in test centers; comfort animals are not**. No advance notice is required.

You don't need to request an accommodation to have a beverage during an online proctored exam if it's in a transparent spill-proof container. However, beverages aren't allowed in most test centers (to avoid spills, damage, and distraction). Be sure to ask in advance.

You don't need to request an accommodation for most medical supplies unless they require a connection to a cell phone or other monitoring device. If they do, you will need to submit a request if a cell phone must be within view.

If you have any questions about the process, please contact the [Pearson VUE accommodations team](#) to learn more. If you've contacted Pearson VUE but need

additional assistance with accommodations, please contact the [Microsoft Exam Accommodations Support team](#).

English as a second language

If the exam is not available in your native language, use the [English as a Second Language form](#) to request additional time to read and answer the questions. If the exam is available in your native language, you may take the exam in a different language; however, you will not be given extra exam time to do so.

As part of the request process, you will need to attach a letter from an instructor or employer or complete [this form](#) that verifies English is your second language.

Frequently asked questions about exam accommodations

Article • 09/19/2023

If I have an accommodation for training that I took to prepare for the exam, do I need a separate one for the certification exam itself?

Yes. The exam experience is separate from the training experience, and different accommodations may be more appropriate in an exam setting. Microsoft is committed to ensuring a fair and valid evaluation of your skills during our exam. To do so, we may need to grant different accommodations that make more sense for an exam situation.

If I was previously provided an accommodation, do I have to go through the same process for my next exam?

Once we have your accommodation on file, approvals are valid indefinitely for permanent disabilities. You will not need to repeat the process unless you want to change your specific accommodations. If you have a temporary disability, you'll need to resubmit your request after one year.

If you received an accommodation from Pearson VUE prior to July 1, 2022, you will have to create a profile in the [request system](#) ↗ to ensure that Microsoft's policies are applied to your request.

Why do I need to provide documentation to obtain an accommodation?

Certain accommodations require documentation to ensure fair and consistent delivery. Because some accommodations could provide an unfair advantage to those who don't need them, we strive to create an equitable experience for all by verifying need.

We've expanded the list of documentation options that can be used to support your accommodation request and removed documentation requirements where no unfair advantage could be gained by providing the accommodation. You no longer need to provide medical documentation to receive an accommodation. Learn more about the types of acceptable documentation by visiting: [Types of documentation accepted](#).

I would rather not disclose my condition to get the accommodation. Is that possible?

We do not request information about your condition. We simply need to know the accommodations you want.

For those accommodations that require documentation, medical documentation is no longer required. We have expanded the documentation options to include **any**

document that demonstrates your need, including those showing you received the accommodation in the past. We don't need to know what your condition is; we just need to know that a similar accommodation has been granted. The more we know about your specific needs, the more we can ensure you have what you need during the exam. Microsoft and our exam delivery providers are committed to privacy and data security and won't share information provided as part of the accommodations process.

Note: Many accommodations don't require documentation.

What are some behaviors that cause proctors to interrupt or revoke/cancel the exam?

Regardless of where you take your exam, you'll be monitored via video; in an online experience, this happens through a web camera. You must stay in view of the camera at all times. **Without an accommodation**, you will **not** be able to read the questions aloud. You may move your lips, mumble, fidget, move around, and look away from the monitor.

If any of these behaviors, however, appear suspicious, the proctor will warn you to stop the questionable behavior and may ask you to do another room scan if you're taking the exam online. If the behavior continues, the exam will be revoked.

One key difference between test center and online deliveries is that proctors have more control over what is brought into the testing area. With online deliveries, if unauthorized individuals enter your exam room, your exam will be cancelled or revoked. **Note:** If no other childcare options are available, children under the age of 13 may be present without requiring an accommodation.

If you need a reader/scribe or personal care attendant, that person may be present during your exam by requesting an accommodation.

If you still have questions about specific behaviors that might cause the proctor to interrupt or stop your exam, please contact the [Microsoft Exam Accommodations Support team](#) to learn more.

What if I have challenges with the check-in process for online exams?

You'll need to take and upload pictures from your phone and use your webcam to visually scan the exam area within a 15-minute window. Your desk and walls will need to be cleared of any prohibited items. Please request an accommodation prior to registering for the exam if you feel unable to accomplish these tasks within the allotted time or cannot rearrange your testing area to meet the "[clean](#)" room requirements.

I have an approved accommodation, but I need to reschedule. What do I do?

Use the same process you used to schedule the original appointment; contact the scheduling agent as noted in your original approval letter. They will work with you to reschedule the exam.

I am having trouble completing the request process and cannot proceed. Who can help?

If you encounter issues that you cannot resolve at any point during the process, please contact the [Microsoft Exam Accommodations](#) for additional assistance.

Register and schedule an exam

Article • 07/08/2024

How to register and schedule an exam

- Begin with the [certification overview](#) or [browse all certifications](#) page to find the exam you'd like to take, then click on the certification name.
- On the certification detail pages, scroll to "*Schedule exam*" and click on the exam provider button.
- Effective January 16, 2023, you can have a maximum of two Microsoft Certification exams scheduled at a time, either on the same day or on separate days through Pearson VUE. After you take (or cancel) one of these exams, you can register for another. Please note, there are no changes to exam scheduling through Certiport.
- You can schedule certification exams no more than 90 days in advance. For any additional questions on this policy, visit [Pearson VUE customer service for test-takers](#).

How to choose an exam delivery provider

- In the "*Schedule exam*" section, you may see multiple exam provider options. If you're taking a certification on your own or as part of a training program, select "*Schedule with Pearson VUE*".
- If you're a student, member of an academic institution, or taking a Microsoft Office Specialist (MOS) exam, select "*Schedule with Certiport*".

Exam accommodations

- We're committed to ensuring that every person who's interested in taking Microsoft Certifications can do so in a way that's fair and accurately reflects their skills and abilities.
- If you have a disability and want to request accommodations during the exam, visit [Request accommodations](#). Be sure to make accommodations requests **before** scheduling so the exam provider has time to review your request and make sure the testing environment supports your needs.

Online exam and test center options

In most cases, you can choose to take your exam online or at one of our local test centers.

 **Note**

If you don't see an online option, it's not available from your exam provider.

- **Test centers** are a great choice if you prefer a quiet, pre-configured environment without the worry of testing your computer and downloading software to meet Microsoft's security standards.
- **Online proctored exams** give you the freedom to take the exam almost anywhere, but you'll be responsible for making sure your computer and exam area meet security standards.

Run a system pre-check

- If you decide to take your exam online, you'll run a [system pre-check](#) to see if the computer you'll be using meets the requirements before registering.
- For detailed instructions on how to perform the system pre-check, visit: [About online exams with Pearson VUE](#). (Certiport doesn't offer online proctored exams at this time.)

Step-by-step exam registration instructions

1. From any certifications or exam details page, click the button to schedule an exam with the appropriate exam delivery provider.

 **Note**

Most exams show only Pearson VUE as the exam provider. The Certiport option will appear only if you're taking a Microsoft Office exam or taking your exam as part of an academic process.

 This exam is offered in the following languages:

English, Chinese (Simplified), Japanese, Korean, French, German, Portuguese (Brazil), Italian, Chinese (Traditional), Spanish

Schedule through Pearson Vue

[Schedule exam >](#)

United States



\$165 USD*

Price based on the country or region in which the exam is proctored.

- ⓘ We strongly recommend you add a personal account to your Learn Profile to ensure you can continue to access your learning progress regardless of your employment or academic status

2. When you click the schedule button, you may be prompted to sign into/create your Learn Profile. We recommend you login with your personal Microsoft account (MSA).
3. If you don't have a legal name on your Learn Profile, you will be redirected to add one. Please ensure your legal name matches your Legal ID. Otherwise, you won't be able to take the exam.
4. You will be prompted to fill out some information such as address, phone number, and contact email before you are redirected to Pearson Vue. This information is only collected since Pearson Vue requires it and Microsoft never stores this information.

Schedule through Pearson Vue

Please enter your address so that Pearson Vue, the exam delivery provider, can validate your identity.

Address 1 *	Address 2	City *
<input type="text" value="Enter address"/>	<input type="text" value="Enter address"/>	<input type="text" value="Enter city"/>
State *	Country/Region *	Postal code *
<input type="text" value="Enter state"/>	<input style="width: 100px;" type="text" value="United States"/> ▼	<input type="text" value="Enter postal code"/>

Please enter your phone number and contact email so that Pearson Vue, the exam delivery provider, can contact you, if you encounter any issues while taking your exam.

Country/Region code *	Phone number *	Contact email *
<input type="text" value="United States (+1)"/> ▼	<input type="text" value="Enter phone number"/>	<input type="text" value="Enter contact email"/>

Any discounts will be applied at Pearson Vue during payment.

If you have a voucher code, enter the code on Pearson Vue during payment.

Please proceed to the PEARSON VUE portal to advance with your exam registration.

Microsoft will NOT store the address and phone number information you provided. We will now transfer you to Pearson Vue to complete your exam registration. [Microsoft Privacy Statement](#)

5. Click "Submit" to go to Pearson Vue. You can complete the rest of your scheduling on Pearson Vue.

ⓘ Note

From your Learn profile, you can reschedule your appointment, cancel it, or begin a scheduled online exam—all in one place.

Prepare for an exam

Article • 02/16/2024

Review the study guides for technical exams

Study guides are available for each role-based, specialty, and fundamentals exam. They will help you understand what to expect on the exam and include a summary of the topics the exam covers, with links to additional resources. They also include study resources where you can find self-study options and classroom training, as well as links to documentation, community sites, and exam prep videos. The information and materials in the study guides will help you focus your studies as you prepare for the exam.

Skills review for Microsoft Office exams

On every Microsoft Office Specialist (MOS) exam details page, you'll find a "Skills measured" section that includes a downloadable exam skills outline. This document summarizes the topics that the exam covers.

The screenshot shows a web page for an official practice test for Microsoft Azure Fundamentals. At the top, there's a yellow bar with the text 'Azure Fundamentals'. Below it, a message says 'Official practice test for Microsoft Azure Fundamentals' and 'All objectives of the exam are covered in depth so you'll be ready for any question on the exam.' A 'Save' button is visible. In the center, a red-bordered box contains the heading 'Skills measured' and a bulleted list of topics: 'The English language version of this exam was updated on May 5, 2022. Please download the exam skills outline below to see what changed.', 'Describe cloud concepts (25–30%)', 'Describe Azure architecture and services (35–40%)', and 'Describe Azure management and governance (30–35%)'. Below this is a 'Download exam skills outline' button. At the bottom of the page, there's a 'Two ways to prepare' section with tabs for 'Online Exam' (which is selected), 'Interactive Exam', and 'Print'.

Watch exam prep videos

Exam prep videos are available for some Microsoft Certification exams and are listed on the exam details page and in the exam readiness zone. They provide tips, tricks, and strategies for preparing for an exam by describing key 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 on-demand videos, led by Microsoft Certified Trainers (MCTs), will highlight objectives that many test takers find difficult and include example questions and answers with explanations. You can browse all available videos in the [exam readiness zone](#).

Self-paced training on Microsoft Learn

A list of free online learning paths is available on each certification and exam details page to help you prepare. You can also [browse all learning paths and modules](#) based on product (for example, Azure, Microsoft 365, Windows), based on role (such as developer or data engineer), or based on learning level (beginner, intermediate, and advanced).

Microsoft Learn online modules and tutorials are bite-sized, interactive skill builders you complete at your own pace and are available in multiple languages.

Instructor-led training

Find relevant instructor-led courses to prepare for your exam on the exam detail pages, or [browse all instructor-led courses](#). If you're looking for in-depth, structured training, instructor-led training offers dedicated, personal attention from technical subject matter experts.

Online or in-person classes and workshops delivered by Microsoft Certified trainers are centered around up-to-date ILT course material on Microsoft Learn to help you prepare for certification.

Learn from a Microsoft Certified Trainer

Our worldwide [training partner network](#) offers trainer-delivered courses for your team leveraging Microsoft Certified Trainers (MCT). MCTs are best-in-class trainers who deliver Microsoft Official courseware through in-person and hybrid training deliveries. To ensure the best ILT deliveries connect with a training partner today and request an MCT instructor.

Take a Practice Assessment

Practice Assessments on Microsoft Learn: Some exams have free Practice Assessments, available in multiple languages, that are delivered through Microsoft Learn to help you prepare for your exam.

Practice Assessments help you practice skills, assess your knowledge, and identify the areas where you need additional preparation to accelerate your chances of succeeding on certification exams. These Practice Assessments are intended to provide an overview of the style, wording, and difficulty of the questions that you are likely to experience on this exam. These questions are **not** the same as what you will see on the exam nor is this

document illustrative of the length of the exam or its complexity. For example, you may see additional question types, multiple case studies, and labs. These questions are **examples** only to provide insight into what to expect on the exam and help you determine if additional preparation is required.

Practice Assessments are available in multiple languages, allowing you to take the assessment in your preferred language as available.

Some of the questions on some practice assessments are generated by artificial intelligence. These questions are reviewed by SMEs before they are added to the Practice Assessment question pool.

Note that the exams may not be available in the same languages as the Practice Assessment.

If available, a link will be provided on the certification details page. Visit the [Practice Assessments page](#) to explore the comprehensive list of available Practice Assessments.

If you have any questions about Practice Assessments, [review the FAQs](#).

We would like your feedback on the Practice Assessment experience; if you take a Practice Assessment, please complete the [Practice Assessment Survey](#).

Practice Tests offered by MeasureUp: Some exams have practice tests that are offered through [MeasureUp](#) to help you prepare for your exam. If available, a link will be provided on the certification details page.

Microsoft Press resources

Get more help from study guides, videos, and practice exams from the experts at [Microsoft Press](#).

Explore the exam sandbox

You can demo the exam experience by visiting our “exam sandbox.” Here you can experience the look and feel of the exam before taking it. You’ll be able to interact with different question types (e.g., build list, drag and drop, etc.) in the same user interface you’ll use during the exam. Through the sandbox you can also learn which actions are required to answer each question type, where information about the exam is located (e.g., time remaining, questions remaining, etc.), how to mark questions for review, and how to leave comments. You’ll also have access to the exam instructions, question type

help, and the non-disclosure agreement, so you can experience the exam from start to finish.

The exam sandbox is available in the following languages:

- [Arabic ↗](#)
- [Chinese \(Simplified\) ↗](#)
- [Chinese \(Traditional\) ↗](#)
- [English ↗](#)
- [French ↗](#)
- [German ↗](#)
- [Indonesian ↗](#)
- [Italian ↗](#)
- [Japanese ↗](#)
- [Korean ↗](#)
- [Portuguese \(Brazil\) ↗](#)
- [Russian ↗](#)
- [Spanish ↗](#)

Request an accommodation

If you use assistive devices, read aloud, fidget, or require extra time, you may need an accommodation. Accommodations **must be** requested before you register for the exam. [Learn more about requesting accommodations.](#)

Practice Assessments for Microsoft Certifications

Article • 09/03/2024

Overview

Are you preparing for a Microsoft Certification exam? We're excited to announce Practice Assessments on Microsoft Learn, our newest free exam preparation resource that allows you to assess your knowledge and fill knowledge gaps so that you are better prepared for your certification exam.

These assessments provide you with an overview of the style, wording, and difficulty of the questions you're likely to experience on the exam. Through these assessments, you're able to assess your readiness, determine where additional preparation is needed, and fill knowledge gaps bringing you one step closer to the likelihood of passing your exam.

These questions are not the same as what you will see on the exam nor is this document illustrative of the length of the exam or its complexity. For example, you may see additional question types, multiple case studies, and labs. These questions are examples only to provide insight into what to expect on the exam and help you determine if additional preparation is required. Taking a Practice Assessment is not a replacement for training taken or experience using Microsoft products.

ⓘ Note

Practice Assessments will be available in local languages soon.

Availability

Below is a list of all the Practice Assessments available.

[+] Expand table

S/N	Practice Assessment
1	AI-102: Designing and Implementing a Microsoft Azure AI Solution
2	AI-900: Microsoft Azure AI Fundamentals

S/N	Practice Assessment
3	AZ-104: Microsoft Azure Administrator
4	AZ-140: Configuring and Operating Microsoft Azure Virtual Desktop
5	AZ-204: Developing Solutions for Microsoft Azure
6	AZ-305: Designing Microsoft Azure Infrastructure Solutions
7	AZ-400: Designing and Implementing Microsoft DevOps Solutions
8	AZ-500: Microsoft Azure Security Technologies
9	AZ-700: Designing and Implementing Microsoft Azure Networking Solutions
10	AZ-800: Administering Windows Server Hybrid Core Infrastructure
11	AZ-801: Configuring Windows Server Hybrid Advanced Services
12	AZ-900: Microsoft Azure Fundamentals
13	DP-100: Designing and Implementing a Data Science Solution on Azure
14	DP-203: Data Engineering on Microsoft Azure
15	DP-300: Administering Microsoft Azure SQL Solutions
16	DP-420: Azure Cosmos DB Developer Specialty
18	DP-600: Implementing Analytics Solutions Using Microsoft Fabric
18	DP-900: Microsoft Azure Data Fundamentals
19	MB-210: Microsoft Dynamics 365 Sales Functional Consultant
20	MB-230: Microsoft Dynamics 365 Customer Service Functional Consultant
21	MB-240: Microsoft Dynamics 365 Field Service Functional Consultant
22	MB-310: Microsoft Dynamics 365 Finance Functional Consultant
23	MB-330: Microsoft Dynamics 365 Supply Chain Management Functional Consultant Associate
24	MB-500: Dynamics 365: Finance and Operations Apps Developer Associate
25	MB-800: Microsoft Dynamics 365 Business Central Functional Consultant Associate
26	MB-910: Microsoft Dynamics 365 Fundamentals (CRM)
27	MB-920: Microsoft Dynamics 365 Fundamentals (ERP)
28	MD-102: Endpoint Administrator

S/N	Practice Assessment
29	MS-102: Microsoft 365 Administrator
30	MS-700: Managing Microsoft Teams
31	MS-721: Collaboration Communications Systems Engineer
32	MS-900: Microsoft 365 Fundamentals
33	PL-200: Microsoft Power Platform Functional Consultant
34	PL-300: Microsoft Power BI Data Analyst
35	PL-400: Microsoft Power Platform Developer
36	PL-500: Microsoft Power Automate RPA Developer
37	PL-600: Microsoft Power Platform Solution Architect
38	PL-900: Microsoft Power Platform Fundamentals
39	SC-100: Microsoft Cybersecurity Architect
40	SC-200: Microsoft Security Operations Analyst
41	SC-300: Microsoft Identity and Access Administrator
42	SC-400: Administering Information Protection and Compliance in Microsoft 365
43	SC-900: Microsoft Security, Compliance, and Identity Fundamentals

Note: We will be launching Practice Assessments for others exams soon.

Benefits

Set yourself up for success and boost your exam performance.

[] [Expand table](#)

Be fully prepared	Free	Close alignment with exam content	Ease of access
Assess your knowledge and prepare for your certification exam. Receive a score report that provides the answer, rationale, and links to additional	Practice Assessments are available at no cost and can be attempted as many times as desired.	Created by the same team that develops our certification exams, Practice Assessments are updated in step with certifications to	Access Practice Assessments on Microsoft Learn. Simply sign in to your Microsoft Learn profile or create an account

Be fully prepared	Free	Close alignment with exam content	Ease of access
information for every question.		keep them relevant and up to date.	before taking a Practice Assessment.

User Flow

1. Go to the Certification/Exam details page to access the free Practice Assessment.

Schedule exam

Exam AZ-900: Microsoft Azure Fundamentals

Languages: English, Japanese, Chinese (Simplified), Korean, Spanish, German, French, Indonesian (Indonesia), Arabic (Saudi Arabia), Chinese (Traditional), Italian, Portuguese (Brazil), Russian
Retirement date: none

This exam measures your ability to describe the following: cloud concepts; Azure architecture and services; and Azure management and governance.

\$99 USD*
Price based on the country or region in which the exam is proctored.

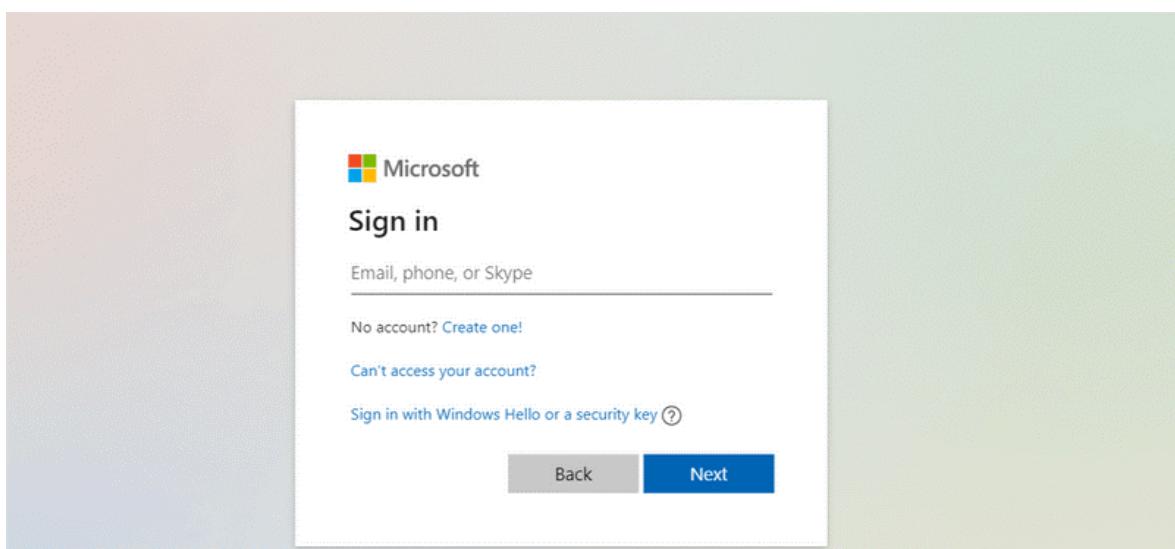
Schedule with Pearson VUE >
For students or instructors
Schedule with Certiport >

Take a free practice assessment
Test your skills with practice questions to help you prepare for the exam. [Learn more about practice assessments.](#)

Previous practice attempts ▾

[Add](#)

2. If prompted, sign in using your Microsoft Account or create one.



3. Start answering the practice questions.

Practice Assessment for Exam AZ-900: Microsoft Azure Fundamentals

Question 1 of 50

Select the answer that correctly completes the sentence.

[Answer choice] is the logical container used to combine and organize Azure resources.

- a resource group
- Azure Resource Manager (ARM)
- a management group
- an Azure region

[Next >](#)

[Check Your Answer](#)

4. Check for the correct answer and view rationale with links to additional learning resources.

Practice Assessment for Exam AZ-900: Microsoft Azure Fundamentals

Question 1 of 50

Select the answer that correctly completes the sentence.

[Answer choice] is the logical container used to combine and organize Azure resources.

- a resource group
✓ This answer is correct.
- Azure Resource Manager (ARM)
- a management group
This answer is incorrect.
- an Azure region

Resources are combined into resource groups, which act as a logical container into which Azure resources like web apps, databases, and storage accounts, are deployed and managed.

[Azure resources and Azure Resource Manager - Training | Microsoft Learn](#)

[Next >](#)

[Check Your Answer](#)

5. View your score report with a breakdown of your performance.

Practice Assessment Results: January 28, 2023



Practice Assessment for Exam AZ-900: Microsoft Azure Fundamentals

It took you 23 minutes to complete this assessment.

Overall Results

To be better prepared for the exam, aim to achieve a score of 80% or higher in multiple attempts.

Score: 82%



[Show My Answers](#)

Performance by assessment section

To further strengthen your skills in the following areas, refer to the Customized Learning Material section below.

Describe Cloud Concepts



Describe Azure Architecture and Services



Describe Azure Management and Governance



Ready to take the exam?

[Schedule exam](#)

Take another practice assessment.

Customized learning material to improve your skills

Because you scored lower in "Describe Cloud Concepts":

- Discuss Azure fundamental concepts • 24 mins
- Introduction to Azure fundamentals • 43 mins

[Save your customized collection](#)

6. Once you have completed an assessment, view results from previous attempts on the Certification/Exam details page.

[Take a free practice assessment](#)
Test your skills with practice questions to help you prepare for the exam. [Learn more about practice assessments.](#)

[Previous practice attempts ^](#)

To be better prepared for the exam, aim to achieve a score of 80% or higher in multiple attempts.

January 28, 2023

Passed 82%



[View results](#)

[⊕ Add](#)

Frequently Asked Questions

If you have any questions about Practice Assessments, [review the FAQs](#).

Any feedback?

We would like your feedback on the Practice Assessment experience; if you take a Practice Assessment, please complete the [Practice Assessment Survey ↗](#)

Practice Assessments are authored with assistance from AI. [Learn more](#).

Exam duration and exam experience

Article • 05/01/2024

Exam duration

The number of questions on a certification exam is subject to change as we make updates to ensure it aligns with current changes in the technology and job role. Most Microsoft Certification exams typically contain between 40-60 questions; however, the number can vary depending on the exam.

Exam time varies based on the type of exam you take.

[+] Expand table

Exam type	Exam duration*	Seat duration*
Fundamentals exams	45 minutes	65 minutes
Associate and expert role-based exams without labs**	100 minutes	120 minutes
Associate and expert role-based exams that may contain labs**	120 minutes	140 minutes
Microsoft Office Specialist (MOS) exams	50 minutes	60 minutes

*Exam duration refers to the amount of time that you have to complete the exam. Seat time refers to the amount of time that you should allocate for the exam. It includes the time needed to review the instructions, read and accept the [Microsoft Certification Exam Candidate Agreement](#), complete the exam questions, and provide comments after completing it (if you choose to do so).

**Because labs can be removed at any time due to Azure outages, bandwidth issues, etc., Microsoft does not provide a list of exams with labs. When you register for the exam, you will be provided with the exam time. When you launch the exam, carefully review the overview pages that provide information about what to expect on the exam, including if labs are available.

Unscheduled breaks on exams

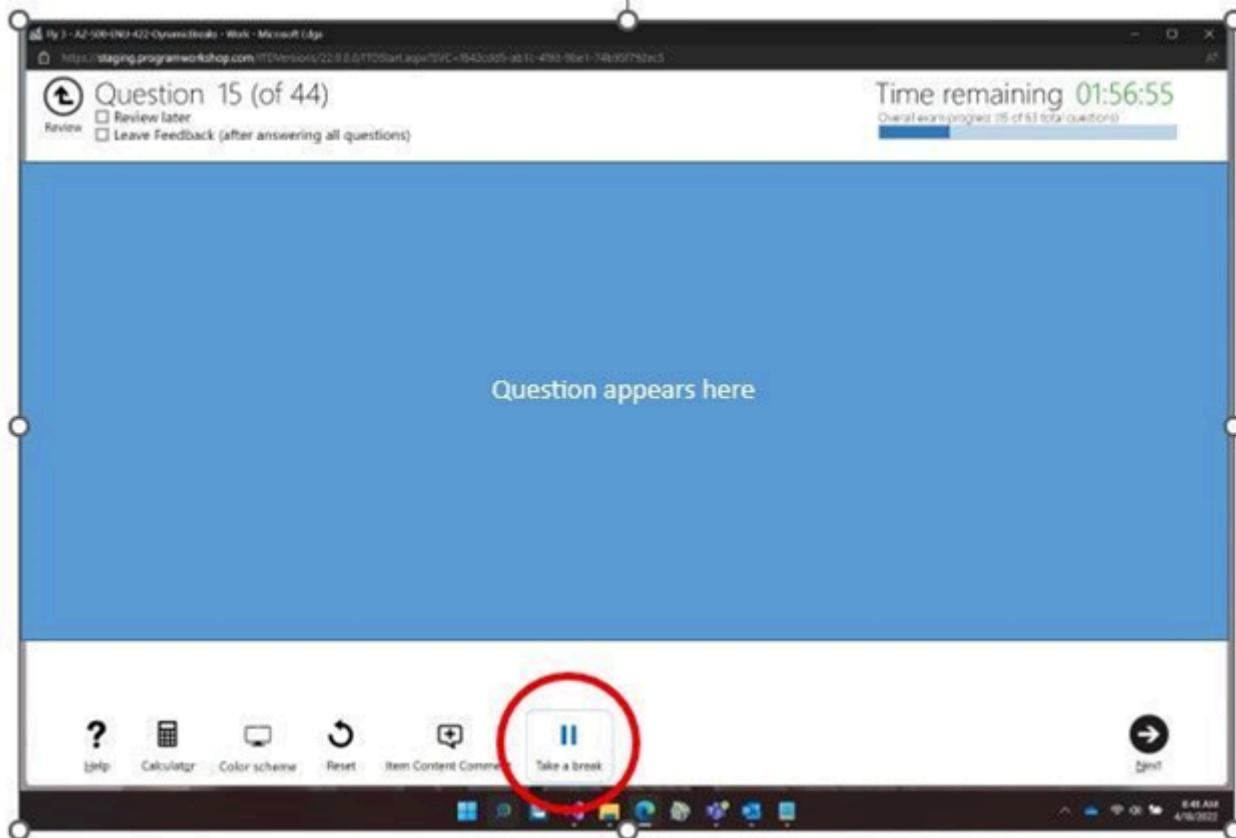
You may take unscheduled breaks during all exams, except Microsoft Office Specialist (MOS) exams, without requesting them in advance through the accommodation request

process.

Some details:

- Five (5) minutes have been built into the exam time that can be used for break time. We have removed questions from the exam to accommodate this.
- While only 5 minutes have been added to the exam time, you can take as much time as you want during the break, and you can take multiple breaks; however, the **exam clock will continue** while you are on break. If the exam time ends while you are on break, your exam will be scored based on what you were able to complete before the exam ended. If you are unable to finish the exam because you were on a break or took a break, no adjustments will be made. You are responsible for managing your own time.
- Once a break is launched, **you will not be able to return to the questions that you viewed before the break** even if they are unanswered or marked for review.
- You can take a break at any point during the exam **except** in the middle of a lab or within our problem-solution question sets (where you are presented a problem and asked if the solution provided would solve the problem); breaks can be taken before or after these types of questions but not during them.
- You can take breaks during case studies, but you will not be able to return to any question seen before the break.
- You may leave the view of the camera while you are on break (e.g., to use the restroom, check on your child, etc.). You must make sure to initiate a break through the exam UI or your exam will be revoked.
- **IMPORTANT NOTE:** You **cannot** access any unauthorized materials during your break. If the proctor sees you doing so, your exam will be revoked. To learn more about unauthorized materials during exams, review the [OnVUE guide](#).

To start a break, select the “Take a break” icon at the bottom of the exam window.



After selecting the "Take a break" icon, you will be informed of the number of questions you have seen, how many of them are unanswered, and how many are marked for review. Please answer and/or review those questions before starting your break. **You will not be able to return to these questions after your break.** Once you are ready to proceed to your break, select "Start Break." If you decide not to take a break, select "Return to Exam."

Are you sure you want to take a break?

You have seen 12 questions. You have not answered 8 of these questions. You have marked 0 items for review.

You will not be able to return to these questions once you start a break. You should consider answering and reviewing these questions before taking your break.

You can take as much time as you want during your break, but the exam timer **will continue** running while you are on break.

You will be able to leave comments for all items after you have submitted your exam for scoring.

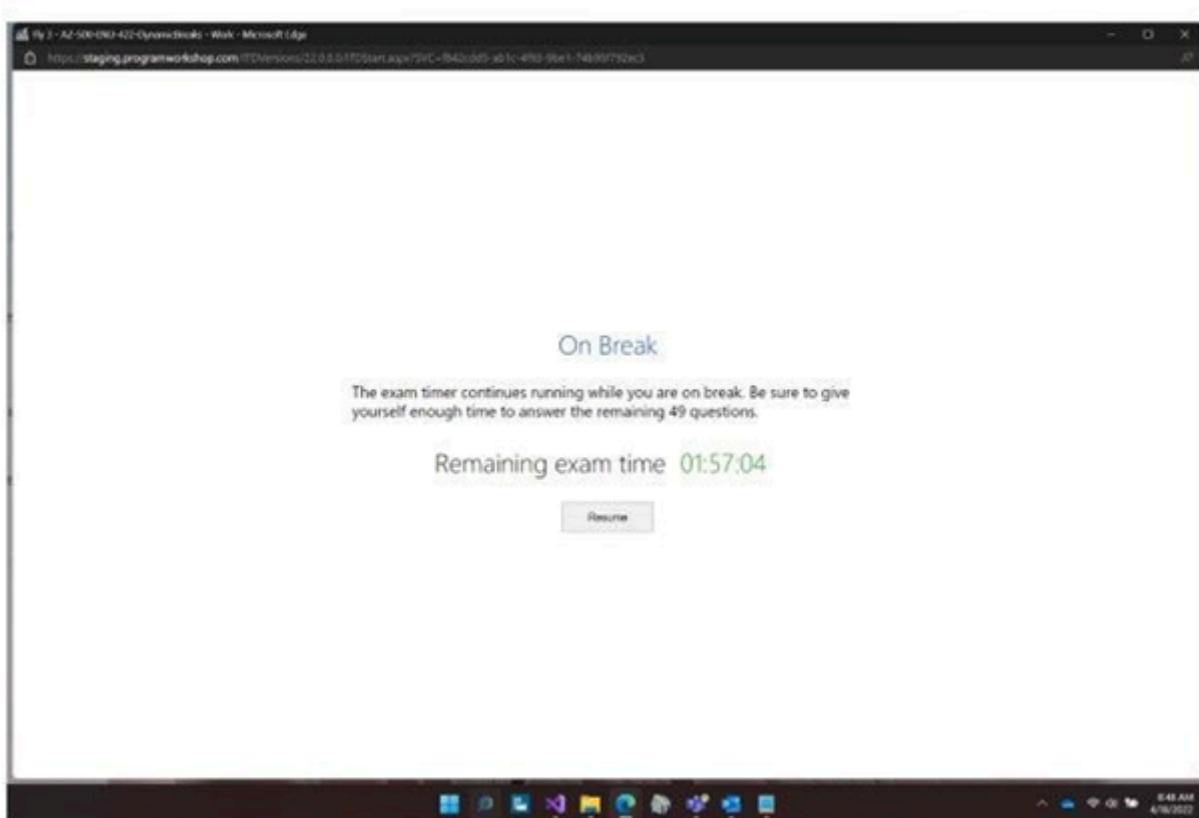
To view a question, select the row in the table.

Question	Unanswered	For Review
3 You have an Azure subscription that...	X	
4 You have an Azure subscription. You...	X	
5 You have an Azure Active Directory...	X	
6 You have an Azure virtual machine in...	X	
7 You plan to deploy Azure container ...		
8 You have a network security group (...)		
9 You have an Azure subscription name...		

You have 49 questions remaining on the exam. What would you like to do?

[Return to Exam](#) [Start Break](#)

Once you have started your break, you will be reminded that the exam timer continues running and informed how many questions are remaining on the exam. You will also see the exam clock.



Accessing Microsoft Learn during your certification exam

You can access [Microsoft Learn](#) as you complete your exam. However, this resource is intended to be used for those questions that describe problems where you may need to look something up on Microsoft Learn. It is not something you should be leveraging to answer every question. If you do, you won't be able to complete the exam in the time allotted, and that is by design.

Here's what you need to know about this resource:

- You will have access to everything in the learn.microsoft.com domain except Q&A, Practice Assessments, and your profile.
- Extra time has not been added.
- The exam timer will continue as you explore Microsoft Learn content.
- This resource is only available on role-based exams, not fundamentals or Microsoft Office Specialist (MOS) exams.
- This resource will be available in the same languages in which the exam is available.

To use this resource during your exam, you will select the Microsoft Learn button available on the exam question screen. This will open Microsoft Learn in a split screen to the right of the exam question. You can then navigate through the website as you normally would and expand it to full screen if you prefer. Below are a series of screenshots showing the experience.

To open Microsoft Learn, select the icon on the question screen. In this example, it's below the question.

The screenshot shows a Microsoft Exam interface. At the top left, there is a circular icon with a person symbol, followed by the text "Question 1 (of 10)". Below this are two buttons: "Review" and "Leave Feedback (after answering all questions)". At the top right, the text "Time remaining 07:52:01" is displayed above a progress bar. The main content area contains a sample question about favorite sounds, with four multiple-choice options (A: Bell, B: Bird, C: River, D: Whistle) each preceded by a radio button. At the bottom of the screen, there is a toolbar with various icons: Help, Calculator, Color Scheme, Reset Answer, Take a Break, Microsoft Learn (which is circled in orange), and Previous/Next buttons.

After selecting the icon, Microsoft Learn will open in a split screen to the home page.

The screenshot shows a Microsoft Learn page with several tabs open. The main tab displays a sample question about favorite sounds with four options: Bell, Bird, River, and Whistle. Below the question are navigation buttons: Help, Calculator, Color Scheme, Reset Answer, Take a Break, Microsoft Learn, Previous, and Next. A secondary tab titled 'Microsoft Learn' is visible at the top, and a third tab titled 'Microsoft Certific' is highlighted with a red circle. The Microsoft Learn page features a search bar and sections for 'Learn by doing', 'Find technical documentation', 'Showcase your skills', 'Ask questions and get help', 'Try code samples', and 'See new ways to innovate'.

You can launch multiple tabs of the Microsoft Learn website and navigate to different portions of the site, except the Q&A section and to your personal profile (you won't be able to login). These tabs can also be individually closed.

This screenshot shows the Microsoft Learn interface with multiple tabs. The main window displays a sample question about favorite sounds with options A, B, C, and D. Below the question are navigation buttons: Help, Calculator, Color Scheme, Reset Answer, Take a Break, Microsoft Learn, Previous, and Next. A secondary tab titled 'Microsoft Learn' is visible at the top, and a third tab titled 'Microsoft Certific' is highlighted with a red circle. The Microsoft Learn page features a search bar and sections for 'Browse certifications by role' and 'Certifications'.

You can adjust how much of the screen shows the question and how much shows Microsoft Learn with a splitter between each window.

Question 1 (of 10)

Review Review later
 Leave Feedback (after answering all questions)

Time remaining 07:50:42

This question type is known as a multiple choice, select one. This question type contains multiple answer choices and has one correct answer.

There are several varieties of this question type. The number of answer choices may vary, and questions may appear as part of a series or set.

In this question type, you respond to the question by selecting the radio or option button next to your answer.

Here is a sample question:

What is your favorite sound?

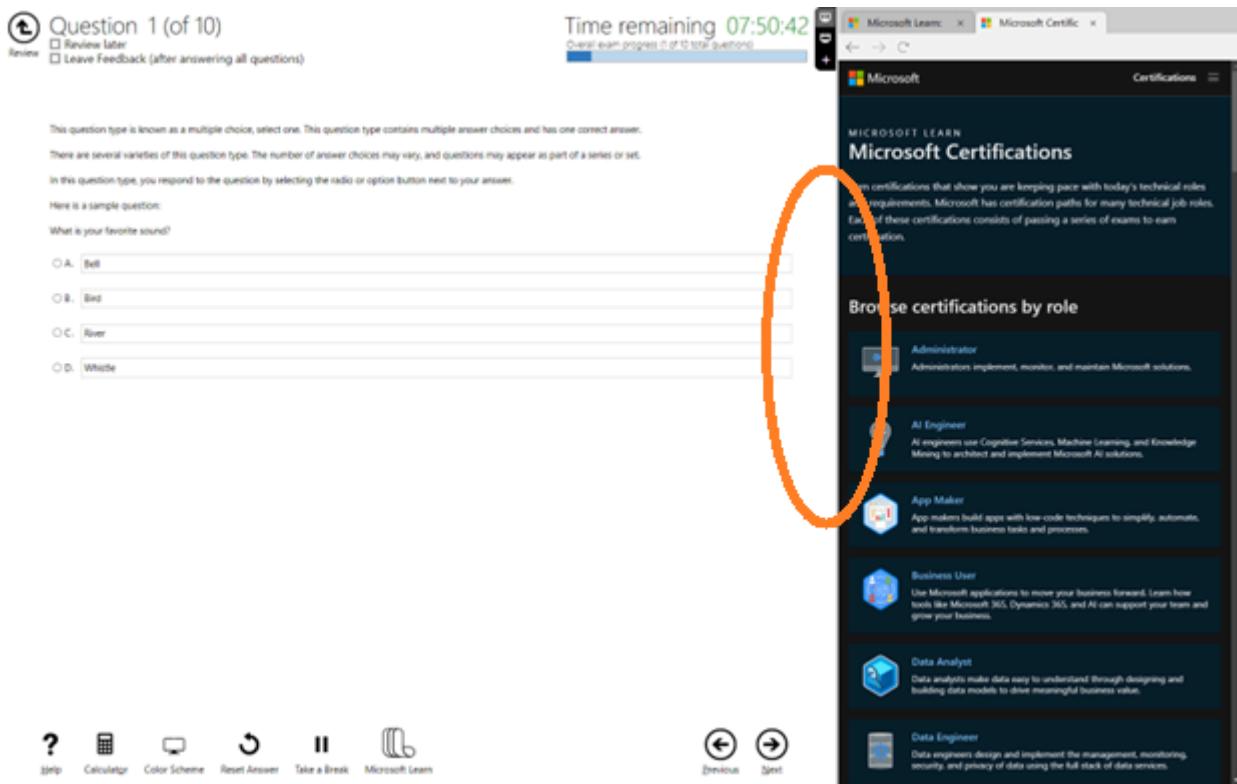
A. Bell
 B. Bird
 C. River
 D. Whistle

Browse certifications by role

- Administrator**
Administrators implement, monitor, and maintain Microsoft solutions.
- AI Engineer**
AI engineers use Cognitive Services, Machine Learning, and Knowledge Mining to architect and implement Microsoft AI solutions.
- App Maker**
App makers build apps with low-code techniques to simplify, automate, and transform business tools and processes.
- Business User**
Use Microsoft applications to move your business forward. Learn how tools like Microsoft 365, Dynamics 365, and AI can support your team and grow your business.
- Data Analyst**
Data analysts make data easy to understand through designing and building data models to drive meaningful business value.
- Data Engineer**
Data engineers design and implement the management, monitoring, security, and privacy of data using the full stack of data services.

Help Calculator Color Scheme Reset Answer Take a Break Microsoft Learn

Previous Next



You can open Microsoft Learn into full screen. Full screen mode includes the test timer and question count information in the header.

Question 1 (of 10)

Time remaining 07:52:21

Microsoft Learn. Spark possibility.

Build skills that open doors. See all you can do with documentation, hands-on training, and certifications to help you get the most from Microsoft products.

Search Microsoft Learn Search

Learn by doing

Gain the skills you can apply to everyday situations through hands-on training personalized to your needs, at your own pace or with our global network of learning partners.

Take training

Find technical documentation

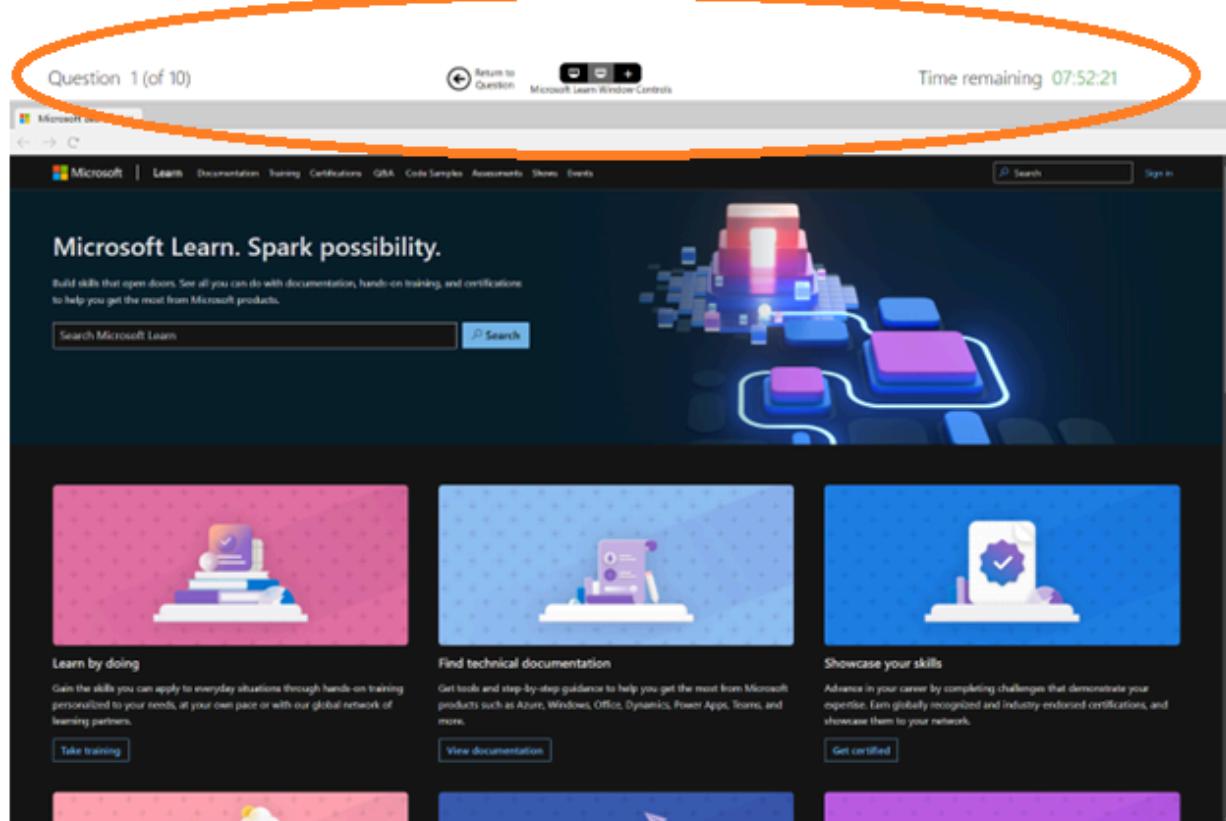
Get tools and step-by-step guidance to help you get the most from Microsoft products such as Azure, Windows, Office, Dynamics, Power Apps, Teams, and more.

View documentation

Showcase your skills

Advance in your career by completing challenges that demonstrate your expertise. Earn globally recognized and industry endorsed certifications, and showcase them to your network.

Get certified



Web Browsing is restricted to the Microsoft Learn domain. While the Microsoft Learn site includes links to other webpages, such as GitHub, attempts to navigate to other web domains will prompt a message in the test window indicating the site is blocked.

The left screenshot shows a Microsoft Learn practice exam interface. At the top, there's a navigation bar with 'Review', 'Question 1 of 10', 'Time remaining 07:51:19', and 'Access Denied: You may not visit this link.' A large orange circle highlights the 'Access Denied' message. Below it, the question type is described as multiple choice, and there are four options: A. Bell, B. Bird, C. River, and D. Whistle. The right screenshot shows the Microsoft Learn homepage with sections like 'Microsoft Learn. Spark possibility.', 'Learn by doing', 'Find technical documentation', 'Showcase your skills', 'Ask questions and get help', 'Try code samples', and 'See new ways to innovate'.

To see a full demonstration of the feature set, visit [Microsoft Open Book Video ↗](#).

Take a Practice Assessment

Practice Assessments on Learn: Some exams have free Practice Assessments, available in multiple languages (exams may not be available in the same language), that are delivered through Learn to help you prepare for your exam.

These Practice Assessments are intended to provide an overview of the style, wording, and difficulty of the questions that you are likely to experience on this exam. These questions are **not** the same as what you will see on the exam nor is this document illustrative of the length of the exam or its complexity (e.g., you may see additional question types, multiple case studies, and possibly labs). These questions are **examples** only to provide insight into what to expect on the exam and help you determine if additional preparation is required.

If available, a link will be provided on the exam details page.

NOTE that practice tests for Microsoft Office Specialist (MOS) exams are [managed by Certiport ↗](#).

Question types on exams

To protect exam security and the value of our certifications, we don't identify specific exam formats or question types before the exam. However, you can demo the role-based and fundamentals exam experience by visiting our "[exam sandbox](#)." We created this experience to provide you with an opportunity to experience the exam before you take it. You will have an opportunity to interact with the different question types that you may see during the exam in the exam user interface. In addition, this experience includes the same introductory screens, instructions, help information, and [Microsoft Certification Exam Candidate Agreement](#) that you will see on your exam. As a result, using this sandbox should better prepare you for the exam experience and increase your familiarity with the user interface, how to navigate between pages, what action to take to answer each of the different question types, where information about the exam is located (time remaining, questions remaining, etc.), how to mark questions for review, and how to leave comments.

If you use assistive devices, this is an opportunity to understand how those assistive devices can be used in the exam interface, how the keyboard can be used to navigate through the exam, and so on. Additionally, you will be provided with the opportunity to leave feedback on the accessibility and usability of the sandbox exam with your assistive device during the item comment section. These comments will be monitored for future improvements to the experience.

Note that if you use assistive devices, you will need to request an accommodation to be able to use them during the exam. [Learn more about requesting accommodations](#) before you register for your exam.

Keep in mind that while this experience is designed to familiarize you with the exam experience and how to navigate through it, the secure browser that will be launched during a real exam is not enabled in the sandbox. When enabled during the exam, it will block all third-party applications, including assistive devices without prior approval; this is why you must request an accommodation if you would like to use one during your exam.

Here are some samples of questions you might see on an exam:

Active screen (0:44)

Question 8 (of 9)

Time remaining 01:17:27

You are the global administrator for your organization's Office 365 tenant. You employ a new helpdesk operator named User1. You need to delegate administrator rights to User1 to reset passwords. User1 must not be able to reset passwords for other administrators.

Which administrator role should you assign? To answer, select the appropriate option in the Answer Area.

Answer Area

Assign role

Choose the admin role that you want to assign to this user and save changes Learn more about administrator roles

No
 Yes

Help Calculator Color scheme Reset Previous Next

Build list (0:45)

Question 6 (of 9)

Time remaining 01:36:41

You are an administrator at Woodgrove Bank. You need to implement a new policy to prevent employees from sending credit card numbers through email to external users. Employees who attempt to send the credit card numbers this way should receive the message "Internal audit policy failure."

You need to enforce the new policy.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Choose the U.S. Personally Identifiable Information (PII) Data template.
Add an action to reject the message and include an explanation.
Create a new rule that applies to senders located outside the organization. Add a condition to detect the message for sensitive information: "Credit Card Numbers".
Choose the PCI Data Security Standard (PCI DSS) 15.0.3.0 template.
Create a new DLP policy from a template.

Answer Area

Help Calculator Color scheme Reset Previous Next

Case studies (1:13)

Case Study

Time remaining 01:56:24

This exam includes at least one case study. **Case studies are not timed separately.** You can use as much exam time as you would like to complete each case. However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear, allowing you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study:
To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. If the case study has an **All Information** tab, note that the information displayed is identical to the information displayed on the subsequent tabs. When you are ready to answer a question, click the **Question** button to return to the question.

Help Calculator Color scheme Reset Next

Drag and drop (0:37)

Question 5 (of 9) Time remaining 01:38:36

You have a Microsoft SharePoint 2013 Service Pack 1 (SP1) server farm. You need to recommend which tools should be used to recover deleted SharePoint site groups, deleted document libraries, and deleted SharePoint Designer 2010 workflows. The solution must use the minimum amount of administrative effort.

Which tool should you recommend for each type of content? To answer, drag the correct recovery task to the correct recovery tool. Each tool may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

Tool

- Microsoft SQL Server backups
- Recycle Bin
- Windows Server Backups

Recovery Task

- Document libraries
- SharePoint Site groups
- SharePoint Designer workflows

Resources

Help Calculator Color scheme Reset Previous Next

Hot area (0:17)

Question 7 (of 9) Time remaining 01:52:31

You need to block spam email from senders whose email messages did not originate from the server they have explicitly designated in their DNS domain. Which option should you select? To answer, select the appropriate option in the answer area.

Answer Area

Mark as Spam: Specify whether to include these properties as spam.

Empty messages:

- Off
- JavaScript or VBScript in HTML:
- Frame or iFrame tags in HTML:
- Object tags in HTML:
- Embed tags in HTML:
- Form tags in HTML:

Help Calculator Color scheme Reset Previous Next

Multiple choice (0:37)

Question 1 (of 9) Time remaining 01:46:04

You need to prevent the password for a company administrator named Admin1 from expiring. Which PowerShell command should you use?

- A. Get-MsolRole -RoleName "Company Administrator" | Set-MsolRole -PasswordNeverExpires \$true
- B. Get-MsolRole -RoleName "Company Administrator" | Set-MsolPasswordPolicy
- C. Get-MsolUser Admin1 | Set-MsolUser -StrongPasswordRequired \$true
- D. Get-MsolUser Admin1 | Set-MsolUser -PasswordNeverExpires \$true

Help Calculator Color scheme Reset Previous Next

Labs (2:58)

Introducing performance-based testing

Prove your skills with hands-on labs

Starting with Azure, each job role certification will have performance-based labs

Map to what you do everyday



Demonstrate your skills using the technology

At least one exam in each certification will have labs



Mark review (0:33)

The screenshot shows a browser window for a Microsoft Azure certification exam. The title bar says "Question 9 (of 9)" and "Time remaining 01:41:49". Below the title, there are two checkboxes: "Review later" and "Comment later". The main content area has tabs "Question" and "Key Words", with "Question" selected. A text box contains the following requirements: "You need to choose all the rows from the addresses table according to the following requirements." followed by a bulleted list: "Choose the first three fields from this list: A, B, C, D, E, F, G, H, I.", "Fields F and G must be equal.", and "Order the results by the last field in the table.". To the right of the text box is a large red video player icon. Below the text box, it says "What should your SQL statement look like? To answer, type the correct code in the answer area." At the bottom of the screen, there is a toolbar with icons for Help, Calculator, Color scheme, Reset, Previous, and Next. A status bar at the bottom indicates "Use the Check Syntax button to verify your work. Any syntax or spelling errors will be reported by line and character position. You may check syntax as many times as needed." and shows the time "01:41:49".



Review screen (1:36)

The screenshot shows a browser window for a Microsoft Azure certification exam. The title bar says "Question 3 (of 9)" and "Time remaining 01:26:43". Below the title, there are two checkboxes: "Review later" and "Comment later". The main content area contains the following text: "You are designing a Windows desktop application for your company by using Microsoft .NET Framework 4 and Microsoft SQL Server 2008. The middle tier of the application uses several **DataAdapter** objects that query a SQL Server database. The user interface (UI) tier of the application uses controls that are bound to typed **DataSet** objects. The database schema frequently changes. You need to ensure that changes in the database schema do not impact the UI tier." To the right of the text is a large red video player icon. Below the text, it says "What should you do? More than one answer choice may achieve the goal. Select". There are four radio button options: "A. Encapsulate the **DataAdapter** objects in a custom Data Transfer Object (DTO) class.", "B. Replace the **DataSet** objects with Language Integrated Query (LINQ) objects.", "C. Encapsulate the **DataSet** objects in a custom Data Transfer Object (DTO) class.", and "D. Replace the **DataAdapter** objects with **DataReader** objects.". At the bottom of the screen, there is a toolbar with icons for Help, Calculator, Color scheme, Reset, Previous, and Next. A status bar at the bottom indicates "Use the Check Syntax button to verify your work. Any syntax or spelling errors will be reported by line and character position. You may check syntax as many times as needed." and shows the time "01:26:43".



Navigation and timer (1:01)

Question 3 (of 9) Time remaining 01:26:43

Review later Comment later

You are designing a Windows desktop application for your company by using Microsoft .NET Framework 4 and Microsoft SQL Server 2008. The middle tier of the application uses several **DataAdapter** objects that query a SQL Server database. The user interface (UI) tier of the application uses controls that are bound to typed **DataSet** objects.

The database schema frequently changes.

You need to ensure that changes in the database schema do not impact the UI tier.

What should you do? More than one answer choice may achieve the goal. Select:

A. Encapsulate the **DataAdapter** objects in a custom Data Transfer Object (DTO) class.

B. Replace the **DataSet** objects with Language Integrated Query (LINQ) objects.

C. Encapsulate the **DataSet** objects in a custom Data Transfer Object (DTO) class.

D. Replace the **DataAdapter** objects with **DataReader** objects.

NOTE that Microsoft Office Specialist (MOS) exams are “Live-in-the-Application” and are very similar to the lab question type displayed above. You will be expected to perform tasks in the Office App that is the basis of the certification.

Exam scoring and score reports

Article • 09/24/2024

Scores needed to pass exams

- **Technical exams:** All technical exam scores are reported on a scale of 1 to 1,000. A passing score is 700 or greater. As this is a [scaled score](#), it may not equal 70% of the points. A passing score is based on the knowledge and skills needed to demonstrate competence as well as the difficulty of the questions.
- **Microsoft Office exams:** All Microsoft Office exam scores are reported on a scale of 1 to 1,000. The actual score you need to pass depends on the specific exam you're taking.

How exams are scored

- When answering most multi-part questions, you'll receive one point for each correctly answered component. You can earn all, some, or none of the points possible for that question. If a question is worth more than one point, it will be noted in the question. Usually, you'll receive one point for each correctly answered component.
- There's no penalty for guessing. If you choose an incorrect answer, you simply won't earn the point for that question or part. No points are deducted for incorrect answers.
- Some questions on the exam may not be included in your score. These questions are used to gather data to update and improve the quality of each exam. However, as soon as we have the necessary data to evaluate their quality, questions that meet our psychometric standards will be scored. You won't know which questions are unscored, so you should answer every question as if it will be included in your score.

Microsoft continues to introduce new and innovative question types that may require different approaches to scoring. Alternate approaches to scoring will be noted in the question text.

When to expect your score

- For most exams, you'll have results within minutes of finish the exam. You'll also get a report with your exam score and feedback on your performance. Exams with

labs take about 30 minutes to score, so you'll have to wait a bit longer. Your score will be available in your Learn profile within 24 hours.

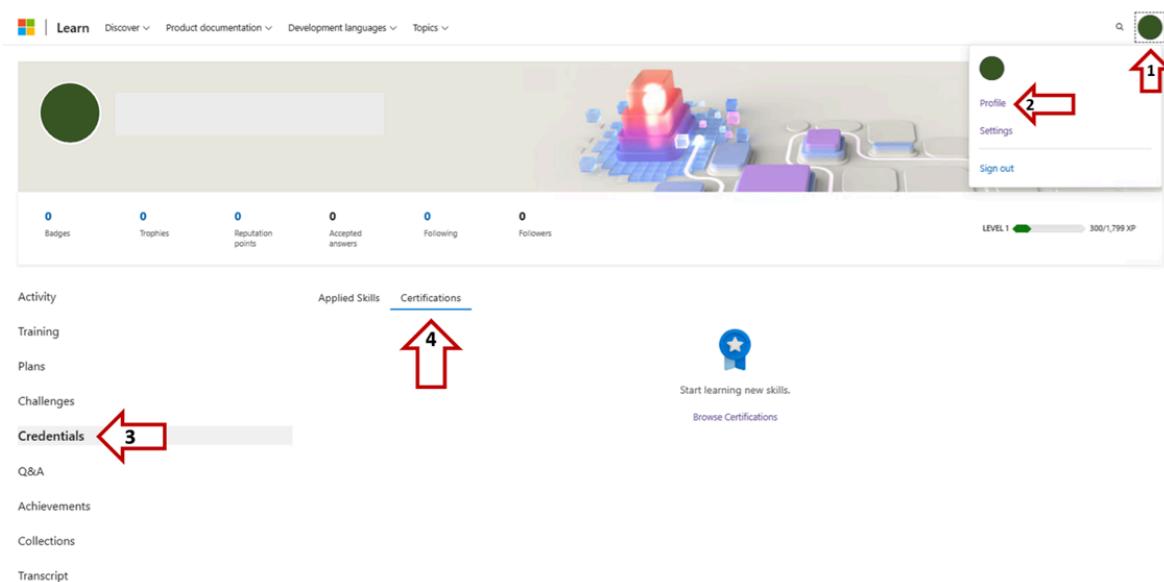
- If you took a beta exam, you won't receive results until the exam completes the beta process and goes live. To learn more visit: [Beta exams](#).
- For exams taken with Certiport, the exam provider for students and educators, you'll be presented with a screen showing your final score and pass/fail status as soon as you finish the exam. Your results will also be available in your Learn profile or in your [Certiport dashboard](#) within 24 hours. To learn more about accessing your Certiport transcript, visit: [Certiport's FAQs](#).

How to access your score report

Score reports are available online for exams taken with Pearson VUE and Certiport.

To access your Pearson VUE score report:

1. Sign into [Learn](#) using the same personal Microsoft account (MSA) you used to schedule your exam.
2. Select the Profile (Step 1 and 2) and then choose Credentials (Step 3) inside the profile menu. Click Certifications (Step 4)



3. Scroll to the section titled "Past exams" and locate the exam. Select "View details on provider site" to be taken to the exam provider's dashboard.

Past exams

E X A M

Exam AZ-900: Microsoft Azure Fundamentals

February 10, 2021 • In person • Provided by Pearson VUE

→ View details on provider site ⓘ Share ⓘ

E X A M

Exam AZ-900: Microsoft Azure Fundamentals

Passed

4. Look for the exam for which you wish to view the score report, and then select the 'View' button.

Privacy and Cookies This website stores cookies on your computer which help us make the website work better for you. [Learn more](#) [Close this message](#)

Microsoft

View Score Reports

Date	Exam Code	Exam Name	Status	Score Report
05/26/2020	PL-900	Microsoft Power Platform Fundamentals	Pass	View
11/22/2019	AZ-900	Microsoft Azure Fundamentals	Pass	View

[Return to Pearson VUE Home](#)

Alternatively, you can also follow the steps provided below to view your score reports directly from the Pearson VUE website:

1. Follow the steps on how to schedule an exam by selecting a certification on this page [Browse Credentials | Microsoft Learn](#)
2. Before being redirected to Pearson Vue, you'll need to provide details such as your address, phone number, and contact email.

Schedule through Pearson Vue | Microsoft Learn

<https://learn.microsoft.com/en-us/credentials/certifications/schedule-through-pearson-vue?examUid=exam.MS-900&examUrl=https%3A%2F%2Flearn.microsoft.com%2Fcertifications>

Tools CS Commercial Docs AI Tools Tech Router Static Copy CFNS Mi... RSC Flash - Security... My Action Tracker ... Check if your Micro... M365_Core_Convo_... Candidate Manager...

.earn Discover Product documentation Development languages Topics

Transfer to Pearson Vue

Please enter your address so that Pearson Vue, the exam delivery provider, can validate your identity.

Address 1 *	Address 2	City *
Enter address	Enter address	Enter city

State *	Country/Region *	Postal code *
Alabama	United States	Enter postal code

Please enter your phone number and contact email so that Pearson Vue, the exam delivery provider, can contact you, if you encounter any issues while taking your exam.

Country/Region code *	Phone number *	Contact email *
United States (+1)	Enter phone number	Enter contact email

Any discounts will be applied at Pearson Vue during payment.
 If you have a voucher code, enter the code on Pearson Vue during payment.

Please proceed to the Pearson Vue portal to advance with your exam registration.

Microsoft will not store the address and phone number information you provided. We will now transfer you to Pearson Vue to complete your exam registration. [Microsoft Privacy Statement](#)

Cancel **Submit**

- Once done, you will be redirected to the Pearson VUE Dashboard. Click on the Pearson Vue Home Icon and then "View Score Report"

Select exam options

How do you want to take your exam?

- In person at a test center
- OnVUE Online with OnVUE
- I have a Private Access Code

Dashboard

View an upcoming test center appointment
You do not have any appointments scheduled.

My account

- > Preferences
- > Exam history
- > View score reports**
- > My receipts

Understand an exam score report

The score report provides:

- A numeric score for overall exam performance
- Pass/fail status
- A bar chart showing performance on each skill area assessed
- Detail on how to interpret your results

The bar chart shows your performance for each skill area. Shorter bars indicate weakness, longer bars show strength. The chart can't be used to calculate the number of questions answered correctly in a section or on the exam as a whole.

What to do if you fail an exam

If you fail a certification exam, don't worry. You can retake it 24 hours after the first attempt. For subsequent retakes, the amount of time varies. For full details, visit: [Exam retake policy](#).

To prepare for a retake, review the strengths or weaknesses revealed on your score report. Practice the skills where your exam performance was weak as well as the skills in the content areas with the highest percentage of questions. You can also review exam preparation resources on the exam details page and the [prepare for an exam](#) page.

Note: Microsoft does not share which questions were answered incorrectly.

When you're ready to retake the exam, schedule an appointment and pay (if applicable) for the exam according to the [exam retake policy](#).

Why Microsoft reports scaled scores

Scaled scores are standard practice across the certification and licensure industry because they help candidates gauge improvement between retakes. The passing score is based on subject matter experts' review of the question difficulty in relation to an expected skill. For easier sets of questions, more points are required to pass. For more difficult sets of questions, fewer points are required to pass. (This is why providing a simple percent correct won't help you gauge success.)

Frequently asked questions about exam scoring and score reports

I received the same score each time I took the same exam. Is something wrong?

No, receiving the same score on multiple attempts does not indicate an error. It's not uncommon for candidates to earn similar or identical scores on multiple attempts. This consistent result demonstrates the reliability of the exam in evaluating skills. If this

happens, consider other ways to learn and practice. Learn more about [how to prepare for an exam](#).

I scored zero in one of the sections. How is this possible?

Some skill areas (those with less critical or infrequently performed skills) have fewer questions than others. Therefore, if you had trouble with a skill area presenting just a few questions, you may score zero.

I experienced significant delays between some of the questions. Was my response recorded? Was it scored correctly?

You may experience delays of up to a minute between questions. The exam delivery provider's software is designed to accommodate this. Your answers are recorded, and the exam was scored correctly.

Does the score report show a numerical score for each section?

No, the report only shows a numerical score to reflect overall performance. We provide section level information in a bar chart to show your strengths and weaknesses more clearly.

The bars on the score chart show that I scored more than 70 percent. Why didn't I pass?

Because each section of the exam (bar on the chart) contains a different number of questions, you cannot combine the results across these sections to determine your overall result. In other words, there is no one-to-one relationship between the length of the bars and your pass/fail status.

Online proctored exams

Article • 09/19/2023

Why take an online proctored exam?

Online proctored exams are a convenient way to earn certifications from your home or office rather than a test center. You'll save travel time and the stress of finding the test center on exam day. Microsoft partners with Pearson VUE to deliver certification exams through online proctoring.

Visit: [About online exams with Pearson VUE](#).

Before registering for an online proctored exam

Online proctored exams are convenient, but there are some technical requirements. It's a good idea to review the process thoroughly before scheduling.

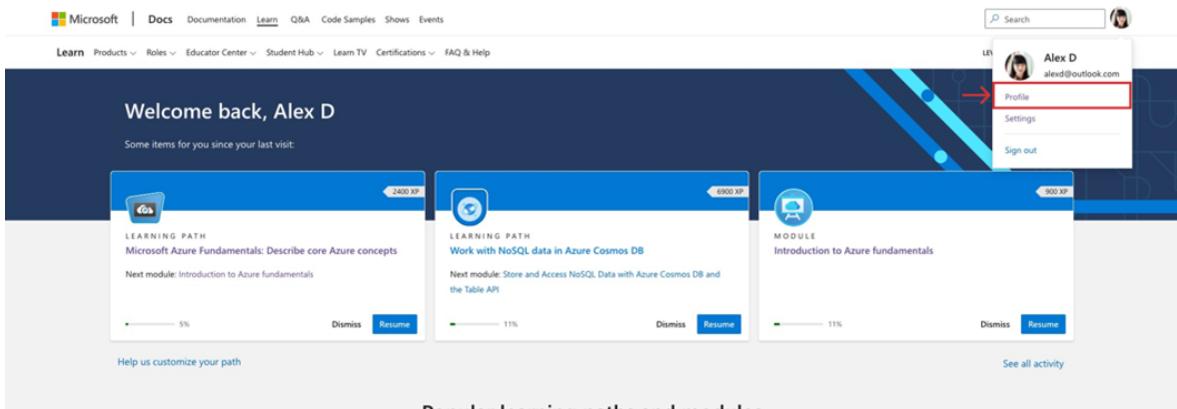
- Complete the system test on the computer you'll be using to take the exam. If your system doesn't pass the [system test](#), it will likely fail during the exam. We recommend taking the exam at a test center instead.
- Take a clear photo of your identification documents. This step is required for validating your identity at the time of testing. If the photo isn't clear, the proctor won't allow you to take the test. There are no exceptions to this rule.
- [Review the testing protocol ↗](#) to know what to expect during the exam. Understand the video and audio monitoring requirements. If you have concerns about the online testing protocol, we recommend that you schedule your exam at a test center.
- We're committed to ensuring everyone who's interested in taking Microsoft Certifications can do so in a way that's fair and accurately reflects their skills. If you use assistive technologies, you must [request an accommodation](#) to use them during the exam.

To register for an online proctored exam, visit: [Register and schedule an exam](#).

How to start an online proctored exam

We recommend logging in 15 minutes early to start the check-in process.

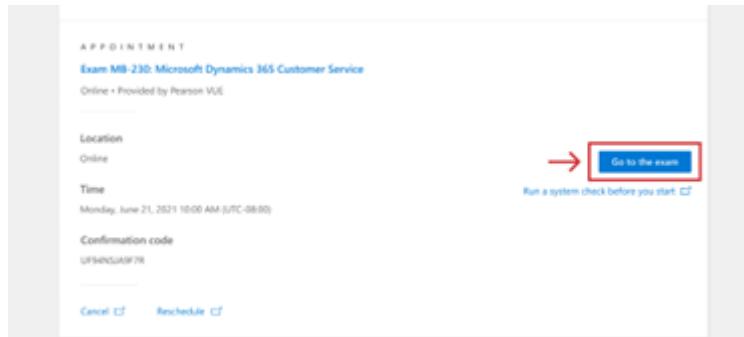
1. Sign into Microsoft Learn with the personal Microsoft account (MSA) associated with your Microsoft certification profile.
2. Click on your photo avatar and select “Profile.”



3. Select “Certifications” in the profile navigation menu.

The screenshot shows the Microsoft Learn profile page for "Alex D". On the left, there is a sidebar with various sections: "Badges" (6), "Trophy" (1), "Reputation" (1), "Answers accepted" (0), "Following" (0), and "Followers" (0). Below this, there are links for "Activity" (Training, Certifications, Q&A, Achievements, Collections, Transcript) and "Certifications". A red box highlights the "Certifications" link, and a red arrow points to it from the top-left. On the right, there are two certification cards: "Microsoft Certified: Azure Fundamentals" (earned November 22, 2019) and "Microsoft Certified: Power Platform Fundamentals" (earned May 26, 2020). Each card includes a "View certification details" link.

4. Your appointments will be listed at the top of the screen. Find the exam appointment you wish to start and select the “Go to the exam” button on the



appointment screen.

- Follow the on-screen instructions and download and install the secure browser. For more details, visit: [About online exams with Pearson VUE](#).

About online exams with Pearson VUE

Article • 09/19/2023

Introduction to online proctored exams with Pearson VUE

Microsoft partners with Pearson VUE to deliver online exams to your home or office. A proctor will monitor your exam via webcam and microphone to maintain the integrity of exam results. Learn more about the online proctoring experience by visiting the [Pearson VUE site](#).

Participating countries/regions and supported languages

Online exams are available in most, *but not all*, countries/regions. Many exams are localized into various languages; however, greeter support, proctor support, and proctoring software will be communicated in English (there may be limited Japanese availability) even if your exam is in another language.

Before you register for an online exam

1. If you need special equipment, extra time, or other accommodations during an exam, please request these accommodations before scheduling so we can provide the best experience. Learn how to request an accommodation at [Request accommodations](#).
2. Make sure your computer meets the minimum system requirements by reviewing Pearson VUE's [detailed information on what's required](#). For network administrators who need advanced networking requirements, review the [OnVue Technical Requirements for the Candidate](#).
3. Complete the required [system test](#) on the same computer and in the same location you'll be taking the exam to make sure your computer, internet connection, and location are compatible with the OnVUE software requirements.
4. Review the [technical tips](#) and [testing environment requirements](#) below.
5. Confirm your ID is compliant with Pearson VUE's [ID Policy](#) and that the name on your Microsoft Certification profile matches **exactly** the name on the government

issued ID you'll present when you take the exam. To learn more about how to check the name on your certification profile, visit: [Manage your certification profile](#).

6. Update your Learn profile to include your mobile number and country code. If you lose connection during the exam, Pearson VUE will use this number to contact you. For instructions on how to update your profile, visit: [Manage your certification profile](#).
7. Read the [Candidate Agreement](#). You must *Agree* to the Candidate Agreement during registration. You will be reminded of the exam rules and must agree to follow them before you can launch the exam.
8. Explore the [exam sandbox](#) to learn more about the exam UI and the different types of questions you may encounter. In addition, review the videos on the [Pearson VUE site](#) so that you know how to prepare for your online proctored exam and what to expect during the exam.

Technical tips

Software and permissions

- Make sure the user account you're using to log into your computer has local administrative permissions. For help on enabling administrative permissions, see documentation for [Windows](#) and [Mac](#).
- Test on a personal computer rather than a work computer, if possible, as work computers often contain software that prevents OnVUE software from launching.
- You may need to configure your internet security and antivirus software to make an exception for the OnVUE Secure Browser executable file.
- Some antivirus software can cause performance issues. Consider disabling antivirus scanning while taking your exam.
- Make sure your security software won't block the execution of JavaScript, Adobe Air applications, or Adobe Flash Player extensions.

Network

- Online proctored exams can be disrupted by proxy servers, network packet inspection/filtering, or strict network security configurations.
- If possible, use a hard-wired internet connection.

Testing environment requirements

Our policies, practices, and procedures may seem strict, but they maintain the integrity of our online proctored exams. That's what makes your certification so valuable.

Office or home setting

Your office or home must meet the following requirements:

- Your office, conference room, or space must be walled, have a closed door, and be free from disruptions.
- No one else can be in or enter the room during your exam.

Communicating with the greeter and proctor

- **Phone:** during the check-in process, the greeter will ask for your phone number in case they need to call. After you've completed check-in, place your phone out of reach but close enough to be heard in case the proctor calls you.
- **Chat window:** Most communication with the greeter and proctor will be in the chat window.
- **Microphone:** During the check-in process and, if necessary, while taking your exam, you can communicate with the greeter and proctor via microphone.
- **Language:** Please note that your greeter and proctor may not know your preferred language even if your exam is available in that language.

Identity verification

You must present a current government-issued ID. Refer to the Pearson VUE [Before test day](#) page and click "View ID requirements" for acceptable examples.

- Use your mobile phone to capture the required headshot and ID.
- The name on the government issued ID you present must **exactly** match the name on your Microsoft Certification profile. [See Manage your certification profile](#).
- If you're in the process of updating or renewing your identification, please note that legal name-change forms, including ID renewal forms, are not accepted for online proctored exams.

Exam area scan

- Prior to the exam, unplug any additional monitors and turn them away from you. Turn off any other computers in the area as well.
- The work area should be clear of all materials. Please keep the following items out of arm's reach:

- Books
- Notepads
- Post-it notes
- Typed notes/papers
- Writing instruments such as pens, markers, whiteboards, or pencils.
- Use a mobile phone to capture the required exam area photos. If no phone is available, a webcam can be used.
- Mobile phone photos must be uploaded to launch your exam; a greeter will review them along with your headshot and ID. The greeter will look for security risks and notify you of issues prior to launching the exam.

No personal belongings

- During the exam, you may not access or use hand-held computers or other electronic devices, pagers, watches, wallets, purses, hats (or other head coverings), bags, coats, books, notes, or any other materials not specifically approved.
- In the event of a support issue, the proctor may contact you on your mobile phone at the number provided during check-in. Please make sure the mobile phone number in your profile includes the country code. It's okay to keep your cell phone nearby but out of arm's reach.

Clothing

For security and exam integrity, you may be asked to:

- Turn out pockets so the greeter can see they're empty
- Roll up long sleeves to show there is no writing on your arms.
- Lift a tie to show there's nothing hidden underneath.
- Pull back long hair back to show there is nothing attached to your ear (such as a Bluetooth earpiece).

No eating, smoking, or chewing gum

- Eating, smoking, and chewing gum are prohibited during the exam unless you have [an approved accommodation](#). An accommodation request is not required to have a beverage present but it must be in a transparent, spill-proof container.

No exam assistance

- You may not receive assistance or coaching from others while taking the exam or allow anyone to view your computer screen during the exam.

- The proctor cannot answer questions related to exam content.

Facial Comparison Policy

- By registering for an online proctored exam, you understand and agree that Pearson VUE may use facial comparison technology to verify your identity by comparing your face to your identification. Facial images captured during the testing process also help improve the application. If you don't want facial comparison technology to be used, please schedule your exam at a test center.

Recording during the exam

- When taking the exam, you'll be recorded, and the proctor will monitor you by video and audio. Monitoring includes your face, voice, and the room where you are seated during the exam. If you don't wish to be recorded, please notify the proctor immediately and reschedule your exam at a test center.

Candidate conduct requirements

- To maintain the integrity of our exams, we must enforce the following:
 - You may not copy or record questions or answers from the exam.
 - You may not share or discuss the questions or answers in the exam with others.
- If a proctor feels the [Candidate Rules Agreement](#) has been broken by a candidate, a candidate is suspected of cheating or tampering with the exam software, or if someone other than a child under 13 is in the exam room, they will terminate the exam and report the infraction to Microsoft, along with audio and/or video evidence. The exam may be invalidated, and Microsoft may decertify and even ban the candidate from the Microsoft Certification Program.

Register for an online exam

For detailed instructions on how to register, visit: [Register and schedule an exam](#).

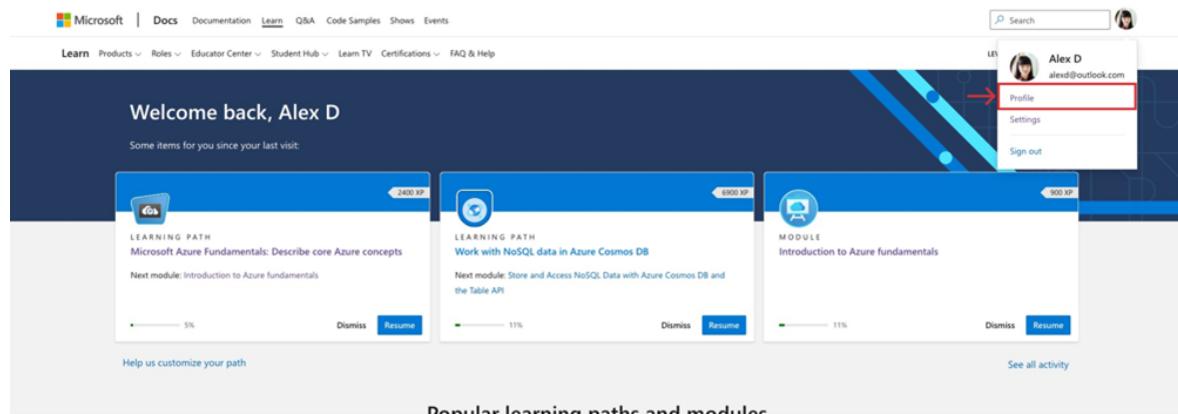
Launching the exam and the check-in process

- The launch and check-in process takes approximately 15 minutes but may take longer depending on your personal computer configuration.
- Before launching your exam, review the OnVUE [FAQs](#) for troubleshooting tips and [Pearson VUE's guide to online testing](#).

- On exam day, run the [system test](#) again on the equipment and internet connection you'll use during the exam.
- Log onto your computer as an administrator to determine if any background processes are running and stop them. For help on enabling administrative permissions, see documentation for [Windows](#) and [Mac](#).
- Turn off browser pop-up blockers.
- Place your mobile phone away from you but within arm's reach in case the proctor needs to contact you.
- Ensure your Microsoft Certification profile is updated to include your mobile number, including country code, in case Pearson VUE needs to contact you during the exam.

To begin your testing session and connect with a greeter:

- You can check in from 30 minutes before and up to 15 minutes after your appointment time.
- Sign in to your Learn profile with the Microsoft account (MSA) associated with your Microsoft Certification profile. Click on your Learn profile avatar and select *Profile* from the drop-down menu.



- Choose *Certifications* from the menu inside your Learn profile. (If you can't access your Microsoft Learn profile, try again using an Incognito or InPrivate browser.) If you're still having trouble, open a case with [certification support](#), and a forum

moderator will assist.

The screenshot shows the Microsoft Learn profile page for user Alex D. (alex.d@outlook.com). At the top, there's a circular profile picture of a young woman, her name 'Alex D.', and her email address. Below the profile, there are statistics: 150 Badges, 20 Trophies, 15 Reputation, 7 Answers, 22 Following, and 24 Followers. A progress bar indicates 'LEVEL 10' with '17900/49599 XP'. On the left sidebar, there are links for Activity, Training, Certifications (which is highlighted with a red box and has a red arrow pointing to it), Q&A, Achievements, Collections, and Transcript. In the main content area, there's a section titled 'Upcoming exam appointments' with a red arrow pointing to it. It lists an appointment for 'MS-100: Microsoft 365 Identity and Services' which is 'Coming up soon'. The appointment details include: Location (10800 105th Ave S.E., Seattle, WA, 98005), Time (Tuesday, June 15, 2021 10:00 AM (UTC-08:00)), and Confirmation code (XP9SGF374594). At the bottom of this section are 'Cancel' and 'Reschedule' buttons.

- Your appointments will appear at the top of the *Certifications* page.
- Select the “*Go to the exam*” link at the bottom of your exam appointment to be

The screenshot shows the Pearson VUE online exam interface. It displays a purchased exam named 'Exam MB-230: Microsoft Dynamics 365 Customer Service'. The exam details are: Online - Provided by Pearson VUE. The location is 'Online'. The time is 'Monday, June 21, 2021 10:00 AM (UTC-08:00)'. The confirmation code is 'UHMGUJAF7E'. At the bottom right, there is a large blue button with a white arrow pointing right labeled 'Go to the exam'. To its left, there is a smaller link 'Run a system check before you start'.

taken to Pearson VUE.

- Select the exam name under “*Purchased Online Exams*”.
- Select “*Begin exam*” on your dashboard, proceed through the self-check-in process, and wait for your proctor. (Note: you must select “*Begin exam*”, to launch the exam process.)
- Once self-check-in is complete, a greeter verifies your identity, reviews your room scan, and places you in the proctor queue. If the greeter has questions about your ID or room scan, they'll work with you to resolve them before you begin. If they do not have any questions, you'll be placed into the proctor queue
 - Please note: if you haven't heard from a proctor within 30 minutes, we may have lost connection. If this happens, use Pearson OnVUE Support live chat for assistance. (Keep in mind that mobile devices must be out of arm's reach during the testing session.)
- Your proctor won't contact you during the exam unless there's an issue.
 - If there is a technical issue during the exam, the proctor will attempt to contact you via chat. If that doesn't work, they'll contact you by phone.
- If there is an issue after the exam contact [Microsoft certification support](#).

Access your score report

Visit: [Exam scoring and score reports](#)

Remove proctor software

When your exam ends, you should remove all executable and ancillary files, including the **Pearson VUE Secure Browser**. To remove the Pearson VUE Secure Browser, please follow the standard application [uninstall process for Windows](#) or [uninstall process for Mac](#).

Frequently asked questions (FAQs) about online proctored exams

Article • 09/19/2023

How do I request exam accommodations?

Visit: [Request accommodations](#).

Can I reschedule or cancel my exam?

Visit: [Exam reschedule and cancellation policy](#).

Can you share the latest exam scheduling policy?

You can have a maximum of two Microsoft Certification exams scheduled at a time, either on the same day or on separate days through Pearson VUE. After you take (or cancel) one of these exams, you can register for another. Please note, there are no changes to exam scheduling through Certiport. Learn more about [registering and scheduling an exam](#).

What type of identification is required during the check-in process?

Visit: [About online exams with Pearson VUE](#).

How do I change my legal name on my Microsoft Certification profile?

Visit: [Manage your certification profile](#).

Where can I find a list of exam policies?

Visit: [Policies and agreement](#).

After my exam has launched and I am assigned a proctor, how long do I have to complete the exam?

Visit: [Exam duration and exam experience](#).

What happens after I launch the online proctored exam?

You can expect to submit a photo of your ID and do a room scan. Once complete, you will be assigned a proctor. For more information, visit: [About online exams with Pearson VUE](#).

Can I take a break during an online proctored exam?

Yes. We've added 5 minutes to our exams to allow for unscheduled breaks that don't need to be requested in advance. Visit: [Unscheduled breaks on exams](#). If you need more than 5 minutes for breaks, request additional time through [our accommodation process](#).

If I'm taking multiple exams for a certification, do I need to choose a single exam delivery method for all exams?

No, you may mix and match delivery methods (online proctored or in person at a testing center).

Are online exams more difficult than exams taken at test centers?

No, the exams are of equal difficulty no matter which method you choose. Consider which option makes you feel most comfortable during the exam.

May I take notes during my online proctored exam?

Yes, you can take notes during your online exam by using the whiteboard feature. You can access the whiteboard during your exam by selecting the eraser icon at the top of the screen. (You may not use an external whiteboard or pen and paper.) If you'd like to learn more or practice using it, visit: [Whiteboard // OnVUE // Pearson VUE](#).

Are online proctored exams as secure as a test center?

We're committed to protecting the integrity of our exams, regardless of delivery method. When you take an online exam, you'll first install a secure browser that enforces rigorous safeguards throughout the process. In addition, a proctor monitors you throughout the exam via webcam and microphone.

What happens to candidates caught cheating?

We review video of the exam process in cases where we suspect cheating. We're pretty good at detecting cheating, so we don't recommend it—we decertify cheaters, remove their certifications, and ban them from taking future exams.

Are online proctored exams available in multiple languages?

Yes, although proctors may not speak those languages. So, while the exam content may be available in various languages, proctoring and support is generally only available in English or Japanese (availability limited). To read more about language support during online exams, visit: [About online exams with Pearson VUE](#).

If I have technical issues before, during, or after the online proctored exam, who do I contact?

If you run into problems before or after the exam, [contact certification support](#). For questions during your Pearson VUE exam, use Pearson OnVUE Support live chat to contact Pearson VUE's customer service team. (Do not use your mobile phone during an exam.)

What if my phone rings during the exam? Can I answer it?

If your phone rings during the exam, limit your interaction to identifying the caller. If a proctor is contacting you, the number will display as 617-379-0635, and/or caller ID may identify the number as Pearson VUE. If this number or contact appears, please answer the call.

Any mobile phone use other than engaging with a proctor is strictly prohibited and will result in your exam being revoked. If your phone rings and the call is not from Pearson VUE, don't answer it.

If you need to silence your phone after the exam has begun, first alert a proctor, then wait for their acknowledgement to ensure they understand you're accessing your phone only to silence notifications. Once you've silenced your phone, move it out of arm's reach.

Pearson VUE will not text you during your exam. If you receive a text notification, ignore the notification, and continue testing. If an alarm sounds on your phone, first alert a proctor, then wait for their acknowledgement to ensure they understand you're accessing your phone only to silence the alarm. Once you've done so, move your phone out of arm's reach.

Microsoft Applied Skills process overview

Article • 10/25/2023

Why earn a Microsoft Applied Skills credential?

Earning a Microsoft Applied Skills credential demonstrates your proficiency in a specific, scenario-based skill so you can make a bigger impact on every project, at your organization, and in your career.

Getting started with Microsoft Applied Skills credentials

A great place to begin is the [credentials overview](#) all of Microsoft credentials. If you already know which credential you want to earn, you can filter and search from the page. To find a complete list of Microsoft's Applied Skills credentials, visit [Browse Credentials](#).

You can learn more about any Microsoft Applied Skills credential by visiting its details page that describes the skills that will be taught as part of the learning path and measured as part of the assessment lab. On the details page, you'll also find information about how to prepare for and how to launch the assessment lab.

Prepare for your Microsoft Applied Skills credential

Start by reviewing the credential details page to understand the skills measured by the assessment lab. If you'd like more preparation, the detail pages will include information about free learning resources on Microsoft Learn as well as the availability of instructor-led training.

Getting your results and credentials

For most Applied Skills credentials, you'll be informed of your results within minutes, but it can take up to 24 hours for results to appear in your Learn profile's Credentials tab.

For more information about Applied Skills results and how to access them, visit [Applied Skills scoring and score reports](#).

Celebrate your success

If you've earned a Microsoft Applied Skills credential, congratulations! Employers and colleagues will recognize your achievement when you share it on professional networks or embed it in your email signature or resume. These credentials and skills are verified by Microsoft, thereby offering a signal of trust that organizations can rely on, giving them full confidence in the authenticity and accuracy of your skills.

It's your time to shine. Learn more about how you can [view, use and share certificates and achievements](#).

Applied Skills assessment lab accommodations

Article • 12/27/2023

We've designed Applied Skills assessment labs to support candidates while maintaining our high standards.

What types of accommodations are available?

Screen reader availability

For those who need screen readers, you will have access to NVDA during the lab. When you launch the lab, you will need to log into the virtual machine. The password is on the Resources tab.

Once you are logged into the VM, you will be able to launch the NVDA screen reader. Instructions are provided after selecting the arrow next to NVDA Setup and Access (Screen Reader).

The screenshot shows a web-based assessment interface. At the top, it displays the title "Secure storage for Azure Files and Blob Storage - UAT" and a progress bar indicating "1 Hr 59 Min Remaining". Below the title, there are tabs for "Instructions" (which is selected), "Resources", and "Help". A magnifying glass icon and a zoom slider set at 100% are also present. A vertical scroll bar is visible on the right side of the main content area. The main content area contains a section titled "► NVDA Setup & Access (Screen Reader)" with a descriptive paragraph and a link to the "Applied Skills Candidate Agreement".

Welcome to the Secure storage for Azure Files and Azure Blob Storage Assessment Lab.

By taking any action during this lab, you are agreeing to the [Applied Skills Candidate Agreement](#).

Expand the NVDA Setup and Access (Screen Reader) by selecting the arrow. Instructions will appear. Locate the NVDA icon on the desktop. Open NVDA.

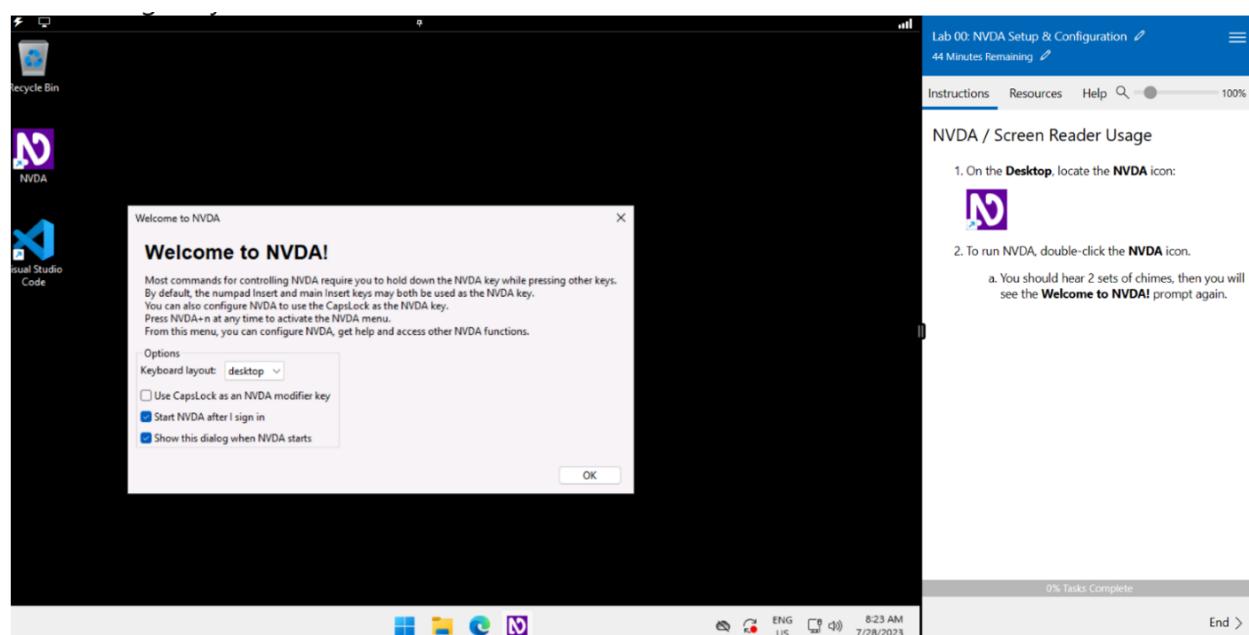
The screenshot shows a web-based training interface with a green header bar. The header contains the text "Secure storage for Azure Files and Blob Storage - UAT" and "1 Hr 55 Min Remaining". Below the header is a navigation bar with links for "Instructions", "Resources", "Help", a search icon, and a zoom slider set to 100%. The main content area is titled "▼ NVDA Setup & Access (Screen Reader)".

1. On the Desktop, locate the NVDA icon:

2. To run NVDA, double-click the NVDA icon.

- a. You should hear a chime, then you will see the Welcome to NVDA! prompt again.**

After doing so, you'll hear a chime and NVDA instructions.



Extra time

For those who need additional time, you will be prompted to extend lab time in 15-minute increments, up to one hour, approximately 10 minutes before the lab time expires. If you need extra time, select **Yes**. This will give you a total of three hours to complete the assessment lab.

You do not have to request this additional time prior to starting the lab.

Prepare for Microsoft Applied Skills assessment lab

Article • 04/01/2024

Self-paced training on Microsoft Learn

A list of free online learning paths is available on each credential details page to help you prepare. You can also [browse all learning paths and modules](#) based on product (for example, Azure, Microsoft 365, Windows), based on role (such as developer or data engineer), or based on learning level (beginner, intermediate, and advanced).

Microsoft Learn online modules and tutorials are bite-sized, interactive skill builders you complete at your own pace and are available in multiple languages.

Instructor-led training

Find relevant instructor-led courses to prepare for your assessment lab on the credentials detail pages or [browse all instructor-led training](#). If you are looking for in-depth, structured training, instructor-led training offers dedicated, personal attention from technical subject matter experts.

Online or in-person classes and workshops delivered by Microsoft Certified trainers are centered around up to date ILT course material on Microsoft Learn to help you prepare.

Learn from a Microsoft Certified Trainer

Our worldwide [training partner network](#) offers trainer-delivered courses for your team leveraging Microsoft Certified Trainers (MCT). MCTs are best-in-class trainers who deliver Microsoft Official courseware through in-person and hybrid training deliveries. To ensure the best ILT deliveries connect with a training partner today and request an MCT instructor.

Assessment lab duration and lab experience

Article • 01/24/2024

Most Microsoft Applied Skills assessment labs for a given scenario typically contain 12-16 tasks; however, the number can vary depending on the skill domain being assessed. The number of tasks that need to be completed in an assessment lab is subject to change as we make updates to the lab to ensure it continues to evaluate the relevant skills needed to complete the scenario.

You will have 2 hours to complete the lab with the ability to request an additional hour if needed as you progress through the lab.

What to expect on the lab

The Applied Skills assessment lab gives you the opportunity to demonstrate your skills by completing tasks in the associated technology, such as Azure, Microsoft 365, or Power Platform. You will perform tasks in a virtual environment. The virtual machine is remotely connected to a live environment where you perform tasks on real software and applications.

In the lab, you will be asked to perform several tasks. The guidelines and requirements for completing these tasks can be found in a series of email messages that are accessed through the lab environment. You will complete these tasks using tools, such as the Azure Portal, the Microsoft 365 Admin Center, Azure CloudShell, etc. Unless the email states otherwise, you can complete the task using any method or tool.

It will take a few minutes to load the lab. You may do other activities while it loads. You will have 2 hours to complete the lab tasks. You will NOT be able to save your work and come back later, so plan to complete all the tasks in a single session. The actions you take while completing the assessment lab will be recorded for quality control purposes.

To learn more about the assessment lab experience, watch this [tutorial](#).

Getting started

After the lab launches, start by reviewing the **Instructions**, located in a pane on the right side of the lab environment. These instructions provide important information for accessing and completing the lab. **Step 1** details the lab scenario.

Step 2 provides information on how to access the email messages. To access them, select the “Open Emails” button on the **Instructions** pane. This will open an interface in the lab environment that simulates an Outlook inbox. Read all the emails before beginning to understand the full scope of what’s required in the lab.

Your username and password are provided in **Step 3** of the **Instructions**. To log into the associated technology (e.g., Azure, Microsoft 365 admin console, etc.), simply select the username, and it will automatically complete the username field. Do the same for your password after entering your username.

In the **Troubleshooting** section of the **Instructions** pane, you will find key tips for navigating the lab environment.

Submitting your work

After you have completed **all** the tasks in the lab, select the “Submit Assessment” button to submit your work for scoring. You will be asked to confirm that you really want to leave the lab. Selecting “Yes” will end the lab section, and your work will be scored. It will take a few minutes to evaluate your work after you submit it for scoring.

After you leave a lab, you will not be able to return to it because scoring starts (in the background) as soon as you exit a lab.

Additional resources

Documentation

- [Deploy and configure Azure Monitor - Applied Skills](#)
Deploy and configure Azure Monitor.
- [Microsoft Applied Skills Assessment – Candidate Agreement](#)
Microsoft Applied Skills Assessment

Assessment lab scoring and score reports

Article • 12/31/2023

Score needed to pass assessment labs

The score needed to pass an assessment lab will vary depending on the difficulty of the lab in relation to the skills of the target audience. Because labs include a mix of easy (those tasks that someone in the target audience who has the prerequisite skills and experiences should be able to perform) and more difficult tasks (those tasks that someone in the target audience are less likely to perform correctly), the passing score will vary from lab to lab. As we update the labs, the number of easy and difficult tasks may change over time; this, too, will affect the passing score.

How assessment labs are scored?

Labs are scored based on how many tasks are performed correctly. In most cases, each task is worth one point. If you complete it correctly, you will earn the point; if you don't you will not earn the point. The number of points earned based on your task level performance are summed together and compared to the number of points required to pass. If you earned at least that number of points, you will pass the assessment lab.

The tasks are scored based on the result, not how you performed the task. You can accomplish the tasks in any way that you would like (for example, through the UI or using PowerShell commands) unless explicitly stated in the email. Complete the task as you normally would; the scoring script evaluates the result based on the key characteristics to determine if it was performed correctly. For example, if the task was to add a user, the scoring script ensures that you added that user regardless of if you used the UI or PowerShell commands to accomplish that task.

When to expect your score?

For most assessment labs, you should have results within minutes of finishing the lab, including your pass/fail status and feedback on your performance at the subskill level. This information will be available in your Learn profile. If a result doesn't appear in your profile within 24 hours, please contact [Support](#).

How to access your score report?

Score reports, including those passed and failed, are available on the Applied Skills credential details page where you completed your assessment.

Understand an assessment lab score report

The score report provides:

- Pass/fail status
- A chart showing performance on each skill area assessed
- Recommended options for additional learning

The chart shows your performance for each skill area. Shorter bars indicate weakness, longer bars show strength. The chart is not intended to indicate the number of tasks performed correctly, either within a specific section or across the assessment.

What to do if you fail an assessment lab?

If you fail an assessment lab, don't worry. You can retake it. To learn more, visit: [Applied Skills retake policy](#).

To prepare for a retake, review the strengths or weaknesses revealed on your score report. Practice the skills where your performance was weak. You can also review lab assessment preparation resources on the Applied Skills credential details page and the [Prepare for Applied Skills assessment lab](#) page.

When you're ready to retake the assessment lab and comply with the retake policy, visit the credential details page and launch the lab.

Why can't you tell me which tasks I passed and which I failed?

Microsoft does not share which tasks were performed incorrectly on the assessment lab because the assessment lab is not intended to be a formative experience. It is a summative experience, focused on the demonstration of the skills measured by the assessment lab. To that end, you will receive information about how well you performed on a group of similar tasks but not about a specific task. Use this information to guide your preparation for your next attempt.

Applied Skills frequently asked questions

FAQ

Are Applied Skills credentials replacing role-based Certifications?

No. Applied Skills credentials are not replacing Certifications. We are expanding our credentialing portfolio to better meet the needs of our learners and customers by allowing people to validate very specific skills sets with this new offering.

Certifications are role based and evaluate a wider range of skills needed to be successful in critical roles that organizations need to be successful in today's rapidly changing technical environment.

Applied Skills credentials are scenario based and evaluate a narrower skill set that is specific to a critical business problem or challenge that organizations are facing.

How do I choose between a Certification and an Applied Skill credential?

If you are looking to demonstrate that you have the range of skills needed to be successful in a given job role, a Certification is the right way to go. If you want to validate your skills on a specific business problem or scenario that your organization is facing, an Applied Skills credential will make more sense.

Here are some key differentiators between Certifications and Applied Skills:

- **Breadth of skills** validated: Certifications typically validate 4-6 skill sets while Applied Skills validate one specific skill set.
- **Focus:** Certifications are job role based while Applied Skills are product-based.
- **Purpose:** Certifications are intended to validate skills needed for the technical aspects of job roles that leverage Microsoft solutions and technologies while Applied Skills are intended to validate specific scenarios that may be hindering an organization's digital transformation goals.

Will attaining an Applied Skills credential help me pass a Certification exam?

Many of the Applied Skills credentials can be used to help you prepare for Certification exams. Because Applied Skills are awarded based on performance within a lab, that experience may set you up for success on a Certification. All role-based Certification exams require experience, so earning an Applied Skills credential is one way to get some of the experience that is needed to pass the exam. However, not all skills assessed on a Certification exam will have an associated Applied Skills assessment lab, so you should not rely on Applied Skills alone. Visit how to [prepare for a Certification exam](#).

I already have a role-based Certification. Should I pursue an Applied Skills credential?

If you want to demonstrate that you have skill sets that were not assessed by the Certification, are Certification “adjacent,” or our needed for a specific project that you would like to do or are working on, then an Applied Skill credential would be a great way to show your employer and peers that you have those skills as well as the skills validated by your Certification.

I'm just getting started on my Microsoft credentialing journey. What should I pursue first? An Applied Skills credential, a fundamentals Certification, or a role-based Certification?

It depends on your technical expertise and why you want to earn a Microsoft credential.

If you are exploring technology or just beginning your learning journey in technology, starting with a fundamentals certification makes the most sense because it focuses on ensuring that you have the foundational knowledge you need to get started in technology.

If you have some experience and want to explore the different ways Microsoft technologies and solutions are used to solve critical business problems, an Applied Skills credential is a great way to get started validating real world skills focused on specific projects or scenarios.

If you have some experience and are pursuing a job that leverages Microsoft solutions, a role-based certification is the logical solution to validate role-based skills. Note that some Applied Skills credentials are related to our certifications and may provide another way to prepare for a certification exam.

Check out the [Choose your Microsoft Credential](#) guide to help you decide.

If you have other questions about Applied Skills credentials, visit [Assessment lab frequently asked questions](#).

Frequently asked questions (FAQs) about renewal

Article • 07/08/2024

Do all Microsoft Certifications have the option to renew?

Microsoft associate, specialty, and expert certifications that have been available for more than six months have a renewal option. For details, visit our [certification renewal blog](#).

Is there a cost to renew Microsoft Certifications?

No. Certification renewal is free to anyone with a valid Microsoft associate, specialty, and expert certification.

Do I need to renew my Microsoft fundamentals certification?

No. Renewal does not apply to fundamentals certifications as they do not expire.

Why do role-based certifications expire after one year?

Certifications expire after one year to ensure that tech professionals keep skills up-to-date with evolving technology.

Can I renew my certification by passing a beta exam or by retaking an exam before my certification expires?

No. You must pass the renewal assessment for your certification on Microsoft Learn before your certification expires; no alternative paths are available to renew your certification. There are no exceptions to this policy.

My expert-level certification requires achieving an associate-level certification as a prerequisite. If the associate-level certification expires, will my expert-level certification automatically expire, too?

No. Your expert-level certification will not automatically expire if your associate-level prerequisite certification expires. Each certification must be renewed separately by passing the associated renewal assessment.

My certification expired. What happens now?

If your certification expires, you must earn the certification again by passing the required exam(s). For more information, visit our [Certification expiration policy](#).

Renewal process questions

Are there different ways to renew my certification?

No. The only way to renew a Microsoft Certification is by passing the free, online renewal assessment on Microsoft Learn.

Can I renew my certification more than six months before it expires?

No. The renewal assessment on Microsoft Learn is only available once you're eligible six months before your certification expires (expiration dates and times are in UTC).

We recommend taking the renewal assessment well before expiration to allow time for any unforeseen events, such as medical emergencies, technical issues, or multiple retakes.

Where do I go to check what certifications are available for renewal?

Sign into your Learn profile, select the photo avatar, and choose Profile from the dropdown menu. Choose Certifications inside the profile menu and look for the blue Renew button as you scroll through your certifications.

Note: If we have an email on the Learn Profile and you agreed to our communication terms you'll receive email notifications as your certifications become eligible for renewal.

Questions about renewal assessment

How many times can I retake the assessment?

There is no limit to renewal assessment retakes. Just be sure to pass before your certification expires. If you don't pass, you can try again immediately. After the second try, you'll need to wait at least 24 hours between future attempts.

Once I pass the renewal assessment, how long does it take to update my certification to show the new expiration date?

Once you pass the renewal assessment, the expiration date for your certification will be immediately updated on your Microsoft Learn profile.

NOTE: After June 2023, Certification badges on Credly will no longer be updated with new expiration dates.

Are the renewal assessments aligned to the regular exam update cadence?

Yes. Updates to the assessments are aligned with certification exam updates.

Which languages are assessments available in?

Renewal assessments on Microsoft Learn will be available in the same language(s) as their corresponding certification exams.

I have heard renewal assessment is shorter. How do I prepare for the renewal assessment?

The renewal assessment is shorter because it focuses only on relevant updates. Renewal assessments take about 45 minutes to complete. Prepare by using the learning modules on the certification's renewal page on Microsoft Learn.

Certification Retirement and the Impact on Renewable Certification

Why does Microsoft occasionally retire certifications? Several factors influence retirement decisions.

- **Relevancy:** Technology and associated job roles are evolving more quickly than ever before. To keep the certification program relevant, exams and certifications are regularly reviewed to ensure they reflect the latest skills technologies. A certification will be retired when it is deemed to have lost relevancy.
- **Product Alignment:** Product groups may decide to depreciate a product. With that, all learning content and related certifications must be taken out of the market in a timely manner.
- **Instructional Design:** Sometimes, content teams evolve the strategy for earning a certification. For example, multiple exams could be merged down to one, which may result in certifications being retired.

Is the renewal program changing? No. This update is only focused on deploying a smoother process for *retiring certifications*. The certification renewal program continues to focus on providing renewal assessments to all learners who have a role-based certification. The assessments are free to take, and there are no limits to attempts. To keep the certification active, the learner must pass the renewal assessment before the certification expires. This window opens 6 months before expiry.

What was the change that was made? This update enables Microsoft to provide a more user-friendly way of retiring a certification. For instance, because of this work, the system will suppress any renewal reminders for retiring certs, as these reminders would be potentially confusing. In addition, in the case of a retiring certification, the window to renew may be shortened for some users, based on their certification anniversary date.

This update ensures Microsoft is always communicating accurate dates for renewal activity on Learn.

How will I know if I have a certification that is retiring? Alerts will be visible on Learn, just as they are today. With this update to the system, the “renew by” messaging will take into consideration retirement dates. For instance, if a certification retirement date *precedes the expiration date for a certification*, the learner will be instructed to renew *before certification retirement*.

Several legacy certifications have already retired before this capability was enabled.

How are those being handled? It is true that several renewable certifications have retired, meaning learners can no longer earn the certifications. However, until now, there has been no mechanism to disable renewal assessment portion. With this update, there will be a bulk retirement of all renewal assessments related to the previously retired certifications. Learners who possess any of the retired certifications will receive a direct email from Microsoft along with guidance on how long the renewal assessment will be available.

View and share your transcript

Article • 09/19/2023

Access transcripts in Learn

You can view, share, and print your transcript from your Learn profile:

- Sign into your Learn profile
 - Click on the photo avatar and select *Profile* from the dropdown menu
 - In the profile menu, select *Transcript*. Your transcript displays all successfully completed certifications and modules.
4. Select “*Share link*” to generate an online link to your transcript you can share with potential employers. Save, share, or email a copy of your transcript, from the *Print* link. (Choose “*Save to PDF*” or print from the *Printer* drop-down menu. You can then attach the downloaded PDF to an email, print, or save it for your records.)

Missing certificates

If the certification you are working toward requires two or more exams, you won’t receive the certificate until you pass all required exams.

For help finding or downloading an earned certificate, visit: [Certification support](#).

Educational transcripts

Transcripts for learning institutions must be shared via Credly. Please visit: [College credit for certification exams](#) to learn more.

Sharing Microsoft Credentials

Article • 07/01/2024

About digital certificates and achievements

Sharing your Microsoft Credentials through your Microsoft Learn profile is proof that you've met the requirements for earning that credential. More than that, they're a symbol of that you have demonstrated business critical skills as well as your commitment to keeping pace with technology. Share your credential on your LinkedIn profile and career-related social media posts or by adding a personalized link in your email signature.

Digital certificates can be downloaded and printed for your records (or framed on your wall so they're visible in your next video call... and your mom might like a copy, too!)

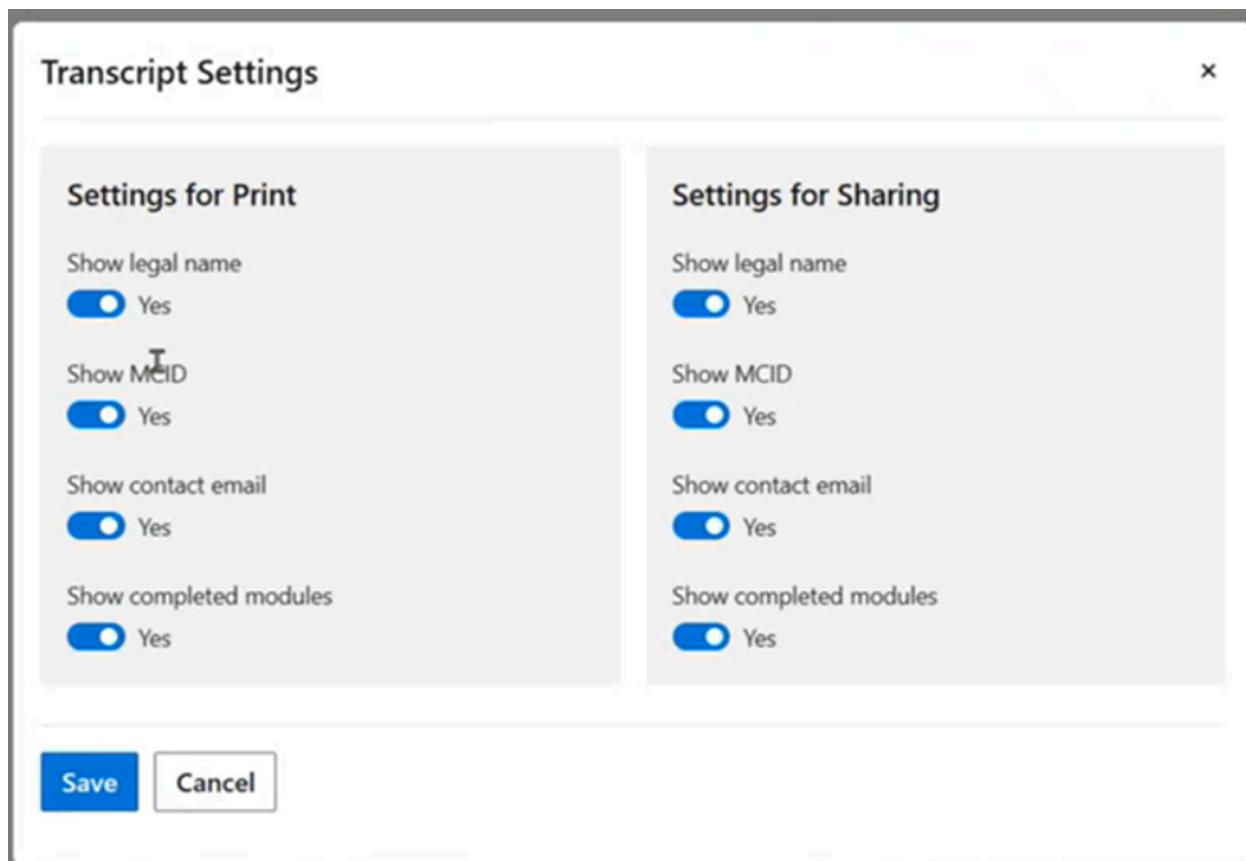
Access transcripts in the Learn profile

You can view, share, and print your transcript from your Learn profile:

- Sign into your Learn profile.
- At the bottom of the left-hand menu, select **Transcript**. Your transcript displays all earned credentials and qualifications.

Sharing transcripts and settings

Transcript settings allow you to choose what information you want to share. While in your Learn profile, in the **Transcripts** section, there is an option at the top of the page to set privacy settings for both Print and Sharing options.



After you save your sharing preferences, you have two ways to share:

- Select **Share** link in the top right hand of the page to generate an online link to your transcript that you can then share.
- Select **Print** and choose **Save to PDF** or print from the Printer dropdown menu. You can then attach the downloaded PDF to an email, print, or save it for your records.

Sharing and Privacy Setting

Profile settings are accessible in the top drop-down next to the profile icon.

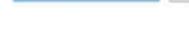
- Before sharing, ensure that the profile Privacy Setting is **not** set to Private Mode.
- Operating in Private Mode will ensure your name, achievements and Q&A contributions are hidden. It will also prevent anyone from viewing your profile even if you want to share.

Privacy Settings

When private mode is on, your display name, Learn achievements, and Q&A contributions are hidden on your public profile. In addition, shared achievements and shared credentials will not be viewable.



Private Mode



Cancel

For other profile management tips, see [profile settings](#).

Sharing Applied Skills credentials

Within the [Learn profile](#), you can share validated details of your Microsoft credentials:

- At the top of the page, click on your profile icon and from the dropdown menu select **Profile**.
- Within your Learn profile, select **Credentials** in the left-hand column. You can select from applied skills or certifications in the center section.
- Select **Applied Skills**. Your earned credentials will be displayed in a list.
- For the Applied Skills credential you want to share, select **View credential details** below the description. The **Your credentials details** screen will display.
- Select the **Share** link for a set of sharing options.

Sharing Certification credentials

Within the [Learn profile](#), you can share validated details of your Microsoft credentials:

- At the top of the page, click on your profile icon and from the dropdown menu select **Profile**.
- Within your Learn profile, select **Credentials** in the left-hand column. You can then select the **Applied Skills** or **Certifications** tab.
- Select **Certifications**. Your earned Certification will be displayed on a list.
- For the certification you want to share, select **View certification details** below the description. The **Your certification details** screen will display.
- Select the **Share** link for a set of sharing options.

Credential sharing frequently asked questions

How do I know that my credential is verified?

Once you have completed the requirements to earn a Microsoft Credential, it will be added to your Learn profile under **Credentials** and the credential type, that is, Applied Skills or Certifications. Verified credentials will have an **Online Verifiable** tag.

Does my Learn profile need to be public to share my Microsoft credentials?

You can share your credentials with your Learn profile in either public or private view. However, to ensure your shared credentials can be verified, your Learn profile must be in [public view](#).

What if I don't want my Microsoft credentials to be made public?

You're in control of how and when your credentials are shared. Adjust the privacy settings in your Learn profile at any time to make your profile and credentials public or private.

Can I share a credential after it has been retired?

If you earned a credential that has been [retired](#), you can still view and share it through your Microsoft Learn profile. The credential will still be available on your Microsoft Learn transcript as well.

Why can't I share exams that I have passed?

An exam is not a credential. You can only share credentials through Learn.

Although you can't share exams in the same way that you can share certifications, the exams you passed will be viewable on your Microsoft Learn transcript. You can share your transcript.

How do I receive college credit for a Microsoft Certification?

For information regarding earning college credit for Microsoft Certifications, please visit [College credit for certification exams](#).

Who can I talk to if I'm having trouble with viewing or sharing my Microsoft credential?

Visit [Credentials support](#).

Social media and Blog

Article • 11/28/2023

Stay connected

Want to be the first to hear about new learning paths and credentials? Stay connected with us through social media, our blog and tech community. You'll be on the inside track for the latest thinking, planning and announcements.

- [X ↗](#)
- [LinkedIn ↗](#)
- [Blog ↗](#)
- [Microsoft Tech Community ↗](#)

Training and credentials in media

Article • 10/25/2023

Building technical skills are valuable to both individuals and organizations. This page includes white papers, data sheets, and reports that detail how training and certification positively impacts individuals and organizations.

White papers

[Role-based tech training and certifications – the secret to business success. Here's why ↗](#)

Training Services Partner

[Business value of digital transformation and the contribution of a growth mindset ↗](#)

IDC, sponsored by Training Services Partner

[Benefits of role-based certifications ↗](#)

IDC, sponsored by Training Services Partner

[Leveraging Training Services Partners for innovation and impact ↗](#)

IDC, sponsored by Training Services Partner

[Understanding Training Services Partner Azure certifications ↗](#)

Training Services Partner (article updated annually)

Data sheets

[10 reasons to earn a Microsoft Certification ↗](#)

Microsoft

[10 things to look for in a certification program for IT employees ↗](#)

Microsoft

[Top reasons to get IT training from a Microsoft Learning Partner ↗](#)

Microsoft

Third party reports

[Nigel Frank Microsoft Azure Salary Survey ↗](#)

Nigel Frank

[Nigel Frank Microsoft Dynamics Salary Survey ↗](#)

Nigel Frank

[Pearson VUE's Value of IT Certification ↗](#)

Pearson VUE

[Global Knowledge 2020 IT Skills and Salary Report ↗](#)

Global Knowledge

Credential retirement

Article • 08/05/2024

Why credentials get retired

Technology changes faster every year. To keep our credentialing program relevant, we continually review our Applied Skills scenarios and Certifications to ensure they reflect the latest skills and Microsoft technologies and retire those that are no longer relevant. Our goal is to empower candidates to be on the leading edge of tech by allowing them to validate relevant, real-world skills needed to solve critical business problems and perform job roles that are needed for organizations to achieve their digital transformation goals.

Certifications scheduled to retire

Certifications scheduled to be retired in the next 12 months are listed here. (This information is subject to change.)

[Expand table](#)

Certification	Retirement date
Microsoft Certified: Dynamics 365 Sales Functional Consultant Associate	November 30, 2024
Microsoft Certified: Dynamics 365 Customer Insights (Journeys) Functional Consultant Associate	November 30, 2024
Microsoft Certified: Dynamics 365 Customer Insights (Data) Specialty	November 30, 2024

Applied skills credentials scheduled to retire

Applied skills credentials scheduled to be retired in the next 12 months are listed here. (This information is subject to change.)

None at this time.

Recently retired Certifications

These Certifications have been retired within the last year. When a Certification has been retired for more than one year, it will be removed from this page. Once a Certification has been retired, it will no longer be available in the Certification offerings. If you earned or renewed a Certification before it was retired, it will remain on your transcript in the Active Certifications section until it expires. Once the Certification expires, it will move to the Historical Certifications section of your transcript.

Role-based

 Expand table

Certification	Retirement date
Microsoft Certified: Dynamics 365 Finance Functional Consultant Associate	February 29, 2024
Microsoft 365 Certified: Teams Application Developer Associate	December 31, 2023
Microsoft 365 Certified: Messaging Administrator Associate	December 31, 2023
Microsoft Certified: Azure Enterprise Data Analyst Associate	April 30, 2024
Microsoft Office Specialist: Access 2013	June 30, 2024
Microsoft Office Specialist: Excel 2013	June 30, 2024
Microsoft Office Specialist: OneNote 2013	June 30, 2024
Microsoft Office Specialist: Outlook 2013	June 30, 2024
Microsoft Office Specialist: PowerPoint 2013	June 30, 2024
Microsoft Office Specialist: Word 2013	June 30, 2024
Microsoft Office Specialist: Excel 2013 Expert	June 30, 2024
Microsoft Office Specialist: Word 2013 Expert	June 30, 2024
Microsoft Office Specialist 2013 Master	June 30, 2024
Microsoft Certified: Power Platform App Maker Associate	June 30, 2024

Recently retired Applied Skills credentials

These Applied Skills have been retired within the last year. When an Applied Skill has been retired for more than one year, it will be removed from this page. Once an Applied Skill has been retired, it will no longer be available in the Applied Skills offerings. Once the Applied Skill expires, it will move to the Historical credentials section of your transcript.

[] Expand table

Applied Skills name	Retirement date
Deploy containers by using Azure Kubernetes Service	June 17, 2024

Exam and assessment lab retirement

Article • 10/25/2023

Why exams and assessment labs get retired

Technology changes faster every year. To keep our credentialing program relevant, we continually review our Applied Skills scenarios and Certifications to ensure they reflect the latest skills and Microsoft technologies and retire those that are no longer relevant. Our goal is to empower candidates to be on the leading edge of tech by allowing them to validate real-world relevant skills needed to solve critical business problems and perform job roles that are needed for organizations to achieve their digital transformation goals.

Exams scheduled to retire

Exams scheduled to be retired in the next 12 months are listed here by date. (This information is subject to change.)

Exam number	Exam name	Retirement date
AZ-220	Microsoft Azure IoT Developer	July 31, 2023
AZ-600	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	July 31, 2023
AZ-720	Troubleshooting Microsoft Azure Connectivity	July 31, 2023
MD-100	Windows Client	New date coming soon
MD-101	Managing Modern Desktops	New date coming soon
MS-100	Microsoft 365 Identity and Services	DNew date coming soon
MS-101	Microsoft 365 Mobility and Security	New date coming soon
MS-220	Troubleshooting Microsoft Exchange Online	July 31, 2023
MS-740	Troubleshooting Microsoft Teams	July 31, 2023
MS-600	Building Applications and Solutions with Microsoft 365 Core Services	December 31, 2023 (for PAC holders only)

Applied skills assessment labs scheduled to retire

Applied skills assessment labs scheduled to be retired in the next 12 months are listed here. (This information is subject to change.)

None at this time.

Recently retired exams

These exams have been retired within the last year. For reference purposes, we will continue to provide a link to these exam detail pages for 12 months. These exams can no longer be taken, but if a retired exam is one of the requirements for a Certification that has not been retired, it can be used to fulfill the Certification requirements for up to one year after it retires.

Role-based

Exam number	Exam name	Retirement date
MB-320	Microsoft Dynamics 365 Supply Chain Management, Manufacturing	June 30, 2023
MB-340	Microsoft Dynamics 365 Commerce Functional Consultant	June 30, 2023
MS-500	Microsoft 365 Security Administration	June 30, 2023
MS-600	Building Applications and Solutions with Microsoft 365 Core Services	April 2, 2023 (for most audiences)
MS-720	Microsoft Teams Voice Engineer	June 30, 2023

Recently retired assessment labs

These assessment labs have been retired within the last year. For reference purposes, we will continue to provide a link to the associated credential detail pages for 12 months. These assessment labs can no longer be taken.

None at this time.

Exams retired more than 12 months ago

Role-based

Exam number	Exam name	Retirement date
AI-100	Designing and Implementing an Azure AI Solution	June 30, 2021
AZ-100	Microsoft Azure Infrastructure and Deployment	May 1, 2019
AZ-101	Microsoft Azure Integration and Security	May 1, 2019
AZ-102	Microsoft Azure Administrator Certification Transition	June 30, 2019
AZ-103	Microsoft Azure Administrator	August 31, 2020
AZ-200	Microsoft Azure Developer Core Solutions	January 3, 2019
AZ-201	Microsoft Azure Developer Advanced Solutions	January 3, 2019
AZ-202	Microsoft Azure Developer Certification Transition	March 31, 2019
AZ-203	Developing Solutions for Microsoft Azure	August 31, 2020
AZ-300	Microsoft Azure Architect Technologies	September 30, 2020
AZ-301	Microsoft Azure Architect Design	September 30, 2020
AZ-302	Microsoft Azure Solutions Architect Certification Transition	June 30, 2019
AZ-303	Microsoft Azure Architect Technologies	March 31, 2022
AZ-304	Microsoft Azure Architect Design	March 31, 2022
DA-100	Analyzing Data with Microsoft Power BI	March 31, 2022
DP-200	Implementing an Azure Data Solution	August 31, 2021
DP-201	Designing an Azure Data Solution	August 31, 2021
MB-200	Microsoft Power Platform + Dynamics 365 Core	December 31, 2020
MB-400	Microsoft Power Apps + Dynamics 365 Developer	December 31, 2020
MB-600	Microsoft Dynamics 365 + Power Platform Solution Architect	June 30, 2021
MB-900	Microsoft Dynamics 365 Fundamentals	December 31, 2019
MB-901	Microsoft Dynamics 365 Fundamentals	June 30, 2021
MS-200	Planning and Configuring a Messaging Platform	August 31, 2020

Exam number	Exam name	Retirement date
MS-201	Implementing a Hybrid and Secure Messaging Platform	August 31, 2020
MS-202	Microsoft 365 Messaging Administrator Certification Transition	September 30, 2019
MS-300	Deploying Microsoft 365 Teamwork	August 31, 2020
MS-301	Deploying SharePoint Server Hybrid	August 31, 2020
MS-302	Microsoft 365 Teamwork Administrator Certification Transition	September 30, 2019

MTA

Exam number	Exam name	Retirement date
98-349	Windows Operating System Fundamentals	June 30, 2022
98-361	Software Development Fundamentals	June 30, 2022
98-364	Database Fundamentals	June 30, 2022
98-365	Windows Server Administration Fundamentals	June 30, 2022
98-366	Networking Fundamentals	June 30, 2022
98-367	Security Fundamentals	June 30, 2022
98-368	Mobility and Devices Fundamentals	June 30, 2022
98-375	HTML5 Application Development Fundamentals	June 30, 2022
98-381	Introduction to Programming Using Python	June 30, 2022
98-382	Introduction to Programming Using JavaScript	June 30, 2022
98-383	Introduction to Programming Using HTML and CSS	June 30, 2022
98-388	Introduction to Programming Using Java	June 30, 2022

ITPro/Developer

Exam number	Exam name	Retirement date
70-086	Implementing and Supporting Microsoft Systems Management Server 2.0	2008

Exam number	Exam name	Retirement date
70-089	Designing, Implementing, and Managing Microsoft Systems Management Server 2003	October 31, 2010
70-123	Planning, Implementing, and Maintaining a Software Asset Management (SAM) Program	October 31, 2010
70-158	Microsoft Forefront Identity & Access Management, Configuring	July 31, 2015
70-162	TS: Forefront Protection for EndPoint and Server, Configuring	July 31, 2012
70-169	TS: Windows Small Business Server 7, Configuring	July 31, 2013
70-177	TS: Microsoft Project Server 2010, Configuring	July 31, 2015
70-178	TS: Managing Projects with Microsoft Project 2010	July 31, 2015
70-181	TS: Windows Embedded Compact 7	July 31, 2013
70-210	Installing, Configuring, and Administering Microsoft Windows 2000 Professional	2008
70-214	Implementing and Administering Security in a Microsoft Windows 2000 Network	2008
70-215	Installing, Configuring, and Administering Microsoft Windows 2000 Server	2008
70-216	Implementing and Administering a Microsoft Windows 2000 Network Infrastructure	2008
70-217	Implementing and Administering a Microsoft Windows 2000 Directory Services Infrastructure	2008
70-218	Managing a Microsoft Windows 2000 Network Environment	2008
70-219	Designing a Microsoft Windows 2000 Directory Services Infrastructure	2008
70-220	Designing Security for a Microsoft Windows 2000 Network	2008
70-221	Designing a Microsoft Windows 2000 Network Infrastructure	2008
70-222	Migrating from Microsoft Windows NT 4.0 to Microsoft Windows 2000	2008
70-223	Installing, Configuring, and Administering Microsoft Clustering Services by Using Microsoft Windows 2000 Advanced Server	2008
70-224	Installing, Configuring, and Administering Microsoft Exchange 2000	2008

Exam number	Exam name	Retirement date
	Server	
70-225	Designing and Deploying a Messaging Infrastructure with Microsoft Exchange 2000 Server	2008
70-226	Designing Highly Available Web Solutions with Microsoft Windows 2000 Server Technologies	2008
70-227	Installing, Configuring, and Administering Microsoft Internet Security and Acceleration (ISA) Server 2000, Enterprise Edition	2008
70-228	Installing, Configuring, and Administering Microsoft SQL Server 2000 Enterprise Edition	March 31, 2009
70-229	Designing and Implementing Databases with Microsoft SQL Server 2000 Enterprise Edition	March 31, 2009
70-230	Designing and Implementing Solutions with Microsoft BizTalk Server 2000, Enterprise Edition	2008
70-232	Implementing and Maintaining Highly Available Web Solutions with Microsoft Windows 2000 Server Technologies and Microsoft Application Center 2000	2008
70-234	Designing and Implementing Solutions with Microsoft Commerce Server 2000	2008
70-235	TS: Developing Business Process and Integration Solutions by Using Microsoft BizTalk Server 2006	June 30, 2011
70-236	TS: Exchange Server 2007, Configuring	September 30, 2012
70-237	Pro: Designing Messaging Solutions with Microsoft Exchange Server 2007	September 30, 2012
70-238	Pro: Deploying Messaging Solutions with Microsoft Exchange Server 2007	September 30, 2012
70-241	TS: Developing Business Process and Integration Solutions by Using Microsoft BizTalk Server 2006 R2	June 30, 2011
70-243	Administering and Deploying System Center 2012 Configuration Manager	July 31, 2017
70-244	Supporting and Maintaining a Microsoft Windows NT Server 4.0 Network	2008
70-246	Monitoring and Operating a Private Cloud with System Center	December 31,

Exam number	Exam name	Retirement date
	2012	2017
70-247	Configuring and Deploying a Private Cloud	December 31, 2017
70-262	Microsoft Office Live Communications Server 2005 – Implementing, Managing, and Troubleshooting	October 31, 2010
70-270	Installing, Configuring, and Administering Microsoft Windows XP Professional	July 31, 2013
70-271	Supporting Users and Troubleshooting a Microsoft Windows XP Operating System	June 30, 2011
70-272	Supporting Users and Troubleshooting Desktop Applications on a Microsoft Windows XP Operating System	June 30, 2011
70-281	Planning, Deploying, and Managing an Enterprise Project Management Solution	October 31, 2010
70-282	Planning, Deploying, and Managing a Network Solution for the Small and Medium-Sized Business	September 30, 2011
70-284	Implementing and Managing Microsoft Exchange Server 2003	March 31, 2011
70-285	Designing a Microsoft Exchange Server 2003 Organization	March 31, 2011
70-290	Managing and Maintaining a Microsoft Windows Server 2003 Environment	July 31, 2013
70-291	Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure	July 31, 2013
70-292	Managing and Maintaining a Windows Server 2003 Environment for an MCSA Certified on Windows 2000	2008
70-293	Planning and Maintaining a Microsoft Windows Server 2003 Network Infrastructure	July 31, 2013
70-294	Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure	July 31, 2013
70-296	Planning, Implementing, and Maintaining a Windows Server 2003 Environment for an MCSE Certified on Windows 2003	2008
70-297	Designing a Microsoft Windows Server 2003 Active Directory and Network Infrastructure	July 31, 2013

Exam number	Exam name	Retirement date
70-298	Designing Security for a Microsoft Windows Server 2003 Network	July 31, 2013
70-299	Implementing and Administering Security in a Microsoft Windows Server 2003 Network	July 31, 2013
70-300	Analyzing Requirements and Defining Microsoft .NET Solution Architectures	March 31, 2009
70-301	Managing, Organizing, and Delivering IT Projects by Using Microsoft Solutions Framework 3.0	March 31, 2009
70-305	Developing and Implementing Web Applications with Microsoft Visual Basic .NET and Microsoft Visual Studio .NET	March 31, 2009
70-306	Developing and Implementing Windows-Based Applications with Microsoft Visual Basic .NET and Microsoft Visual Studio .NET	March 31, 2009
70-310	Developing XML Web Services and Server Components with Microsoft Visual Basic .NET and the Microsoft .NET Framework	March 31, 2009
70-315	Developing and Implementing Web Applications with Microsoft Visual C# .NET and Microsoft Visual Studio .NET	March 31, 2009
70-316	Developing and Implementing Windows-Based Applications with Microsoft Visual C# .NET and Microsoft Visual Studio .NET	March 31, 2009
70-320	Developing XML Web Services and Server Components with Microsoft Visual C# and the Microsoft .NET Framework	March 31, 2009
70-321	Deploying Office 365	April 1, 2014
70-330	Implementing Security for Applications with Microsoft Visual Basic .NET	March 31, 2009
70-331	Core Solutions of Microsoft SharePoint Server 2013	March 31, 2019
70-332	Advanced Solutions of Microsoft SharePoint Server 2013	March 31, 2019
70-333	Deploying Enterprise Voice with Skype for Business 2015	January 31, 2021
70-334	Core Solutions of Microsoft Skype for Business 2015	January 31, 2021
70-336	Core Solutions of Microsoft Lync Server 2013	March 30, 2016

Exam number	Exam name	Retirement date
70-337	Enterprise Voice & Online Services with Microsoft Lync Server 2013	March 30, 2016
70-339	Managing Microsoft SharePoint Server 2016	January 31, 2021
70-340	Implementing Security for Applications with Microsoft Visual C# .NET	March 31, 2009
70-341	Core Solutions of Microsoft Exchange Server 2013	March 31, 2019
70-342	Advanced Solutions of Microsoft Exchange Server 2013	March 31, 2019
70-345	Designing and Deploying Microsoft Exchange Server 2016	January 31, 2021
70-346	Managing Office 365 Identities and Requirements	April 30, 2019
70-347	Enabling Office 365 Services	April 30, 2019
70-348	Managing Projects and Portfolios with Microsoft PPM	December 31, 2019
70-350	Implementing Microsoft Internet Security and Acceleration (ISA) Server 2004	October 31, 2010
70-351	TS: Microsoft Internet Security and Acceleration Server 2006, Configuring	March 31, 2011
70-354	Universal Windows Platform – App Architecture and UX/UI	September 30, 2017
70-355	Universal Windows Platform – App Data, Services, and Coding Patterns	September 30, 2017
70-357	Developing Mobile Apps	January 31, 2021
70-383	Recertification for MCSE: SharePoint	March 31, 2017
70-384	Recertification for MCSE: Communication	March 31, 2017
70-385	Recertification for MCSE: Messaging	March 31, 2017

Exam number	Exam name	Retirement date
70-398	Planning for and Managing Devices in the Enterprise	July 31, 2018
70-400	TS: Microsoft System Center Operations Manager 2007, Configuring	July 31, 2013
70-401	TS: Microsoft System Center Configuration Manager 2007, Configuring	July 31, 2013
70-403	TS: System Center Virtual Machine Manager 2008, Configuring	September 30, 2011
70-410	Installing and Configuring Windows Server 2012	January 31, 2021
70-411	Administering Windows Server 2012	January 31, 2021
70-412	Configuring Advanced Windows Server 2012 Services	January 31, 2021
70-413	Designing and Implementing a Server Infrastructure	January 31, 2021
70-414	Implementing an Advanced Server Infrastructure	January 31, 2021
70-415	Implementing a Desktop Infrastructure	January 31, 2016
70-416	Implementing Desktop Application Environments	January 31, 2016
70-417	Upgrading Your Skills to MCSA Windows Server 2012	January 31, 2021
70-431	TS: Microsoft SQL Server 2005 – Implementation and Maintenance	June 30, 2011
70-432	Microsoft SQL Server 2008, Implementation and Maintenance	July 31, 2016
70-433	TS: Microsoft SQL Server 2008, Database Development	July 31, 2015
70-441	PRO: Designing Database Solutions by Using Microsoft SQL Server 2005	June 30, 2011
70-442	PRO: Designing and Optimizing Data Access by Using Microsoft SQL Server 2005	June 30, 2011
70-443	PRO: Designing a Database Server Infrastructure by Using Microsoft SQL Server 2005	June 30, 2011

Exam number	Exam name	Retirement date
70-444	PRO: Optimizing and Maintaining a Database Administration Solution by Using Microsoft SQL Server 2005	June 30, 2011
70-444	TS: Bing Maps Platform, Application Development	December 31, 2011
70-445	TS: Microsoft SQL Server 2005, Business Intelligence – Development and Maintenance	June 30, 2011
70-446	PRO: Designing a Business Intelligence Solution by Using Microsoft SQL Server 2005	June 30, 2011
70-447	UPGRADE: MCDBA Skills to MCITP Database Administrator by Using Microsoft SQL Server 2005	June 30, 2011
70-448	Microsoft SQL Server 2008, Business Intelligence Development and Maintenance	July 31, 2016
70-450	PRO: Designing, Optimizing, and Maintaining a Database Administrative Solution Using Microsoft SQL Server 2008	July 31, 2015
70-451	PRO: Designing Database Solutions and Data Access Using Microsoft SQL Server 2008	July 31, 2015
70-452	PRO: Microsoft SQL Server 2008, Designing a Business Intelligence Solution	July 31, 2013
70-453	Upgrade: Transition Your MCITP SQL Server 2005 DBA to MCITP SQL Server 2008	July 31, 2012
70-454	Upgrade: Transition Your MCITP SQL Server 2005 DBD to MCITP SQL Server 2008 DBD	July 31, 2012
70-455	Upgrade: Transition Your MCITP SQL Server 2005 BI Developer to MCITP SQL Server 2008 BI Developer	July 31, 2012
70-457	Transition Your MCTS on SQL Server 2008 to MCSA: SQL Server 2012, Part 1	July 31, 2016
70-458	Transition Your MCTS on SQL Server 2008 to MCSA: SQL Server 2012, Part 2	July 31, 2016
70-459	Transition Your MCITP: Database Administrator 2008 or MCITP: Database Developer 2008 to MCSE: Data Platform	January 31, 2016
70-460	Transition Your MCITP: Business Intelligence Developer 2008 to MCSE: Business Intelligence	January 31, 2016

Exam number	Exam name	Retirement date
70-461	Querying Microsoft SQL Server 2012/2014	January 31, 2021
70-462	Administering Microsoft SQL Server 2012/2014 Databases	January 31, 2021
70-463	Implementing a Data Warehouse with Microsoft SQL Server 2012/2014	January 31, 2021
70-464	Developing Microsoft SQL Server Databases	January 31, 2021
70-465	Designing Database Solutions for Microsoft SQL Server	January 31, 2021
70-466	Implementing Data Models and Reports with Microsoft SQL Server	January 31, 2021
70-467	Designing Business Intelligence Solutions with Microsoft SQL Server	January 31, 2021
70-469	Recertification for MCSE: Data Platform	March 31, 2017
70-470	Recertification for MCSE: Business Intelligence	March 31, 2017
70-473	Designing and Implementing Cloud Data Platform Solutions	June 30, 2019
70-475	Designing and Implementing Big Data Analytics Solutions	June 30, 2019
70-480	Programming in HTML5 with JavaScript and CSS3	January 31, 2021
70-481	Essentials of Developing Windows Store Apps Using HTML5 and JavaScript	September 30, 2016
70-482	Advanced Windows Store App Development Using HTML5 and JavaScript	September 30, 2016
70-483	Programming in C#	January 31, 2021
70-484	Essentials of Developing Windows Store Apps Using C#	September 30, 2016
70-485	Advanced Windows Store App Development Using C#	September 30, 2016

Exam number	Exam name	Retirement date
70-486	Developing ASP.NET MVC Web Applications	January 31, 2021
70-487	Developing Microsoft Azure and Web Services	January 31, 2021
70-488	Developing SharePoint Server 2013 Core Solutions	July 31, 2018
70-489	Developing SharePoint Server 2013 Advanced Solutions	July 31, 2018
70-490	Recertification for MCSD: Windows Store Apps Using HTML5	March 31, 2017
70-491	Recertification for MCSD: Windows Store Apps Using C#	March 31, 2017
70-492	Upgrade Your MCPD: Web Developer 4 to MCSD: Web Applications	September 30, 2016
70-494	Recertification for MCSD: Web Applications	March 31, 2017
70-496	Administering Visual Studio Team Foundation Server	December 31, 2018
70-497	Software Testing with Visual Studio	December 31, 2018
70-498	Delivering Continuous Value with Visual Studio	December 31, 2018
70-499	Recertification for MCSD: Application Lifecycle Management	March 31, 2017
70-500	TS: Microsoft Windows Mobile 5.0, Implementing and Managing	March 31, 2011
70-501	TS: Windows Server 2003 Hosted Environments, Configuration and Management	October 31, 2010
70-502	TS: Microsoft .NET Framework 3.5 - Windows Presentation Foundation	July 31, 2013
70-503	TS: Microsoft .NET Framework 3.5 - Windows Communication Foundation	July 31, 2013
70-504	TS: Microsoft .NET Framework 3.5 – Workflow	July 31, 2013

Exam number	Exam name	Retirement date
70-505	TS: Microsoft .NET Framework 3.5, Windows Forms Application Development	July 31, 2013
70-506	TS: Silverlight 4, Development	July 31, 2014
70-510	TS: Visual Studio 2005 Team Foundation Server	March 31, 2011
70-511	TS: Windows Applications Development with Microsoft .NET Framework 4	July 31, 2016
70-512	TS: Visual Studio Team Foundation Server 2010, Administration	July 31, 2014
70-513	TS: Windows Communication Foundation Development with Microsoft .NET Framework 4	July 31, 2016
70-515	TS: Web Applications Development with Microsoft .NET Framework 4	July 31, 2016
70-516	TS: Accessing Data with Microsoft .NET Framework 4	July 31, 2016
70-517	Recertification for MCSD: SharePoint Applications	March 31, 2017
70-521	Upgrade: Transition your MCPD .NET Framework 3.5 Windows Developer Skills to MCPD .NET Framework 4 Windows Applications Developer	July 31, 2014
70-523	Upgrade: Transition your MCPD .NET Framework 3.5 Web Developer Skills to MCPD .NET Framework 4 Web Developer	July 31, 2014
70-526	TS: Microsoft .NET Framework 2.0 – Windows-Based Client Development	June 30, 2011
70-528	TS: Microsoft .NET Framework 2.0 – Web-Based Client Development	June 30, 2011
70-529	TS: Microsoft .NET Framework 2.0 – Distributed Application Development	June 30, 2011
70-532	Developing Microsoft Azure Solutions	December 31, 2018
70-533	Implementing Microsoft Azure Infrastructure Solutions	December 31, 2018
70-534	Architecting Microsoft Azure Solutions	December 31, 2017

Exam number	Exam name	Retirement date
70-535	Architecting Microsoft Azure Solutions	December 31, 2018
70-536	TS: Microsoft .NET Framework – Application Development Foundation	July 31, 2013
70-537	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	January 31, 2021
70-540	TS: Microsoft Windows Mobile 5.0 – Application Development	March 31, 2011
70-541	TS: Microsoft Windows SharePoint Services 3.0 – Application Development	June 30, 2011
70-542	TS: Microsoft Office SharePoint Server 2007 - Application Development	January 31, 2013
70-543	TS: Visual Studio 2005 Tools for Office	March 31, 2011
70-545	TS: Microsoft Visio 2007, Application Development	January 31, 2013
70-547	PRO: Designing and Developing Web-Based Applications by Using the Microsoft .NET Framework	June 30, 2011
70-548	PRO: Designing and Developing Windows-Based Applications by Using the Microsoft .NET Framework	June 30, 2011
70-549	PRO: Designing and Developing Enterprise Applications by Using the Microsoft .NET Framework	June 30, 2011
70-551	UPGRADE: MCAD Skills to MCPD Web Developer by Using the Microsoft .NET Framework	June 30, 2011
70-552	UPGRADE: MCAD Skills to MCPD Windows Developer by Using the Microsoft .NET Framework	June 30, 2011
70-553	UPGRADE: MCSD Microsoft .NET Skills to MCPD Enterprise Application Developer by Using the Microsoft .NET Framework: Part 1	June 30, 2011
70-554	UPGRADE: MCSD Microsoft .NET Skills to MCPD Enterprise Application Developer by Using the Microsoft .NET Framework: Part 1	June 30, 2011
70-555	TS: Microsoft Office Groove 2007, Configuring	June 30, 2011

Exam number	Exam name	Retirement date
70-556	TS: Microsoft Office PerformancePoint Server 2007, Applications	June 30, 2011
70-557	TS: Microsoft Forefront Client and Server, Configuring	June 30, 2011
70-558	UPGRADE: MCAD Skills to MCTS Windows Applications by Using the Microsoft .NET Framework	June 30, 2011
70-559	UPGRADE: MCAD Skills to MCTS Web Applications by Using the Microsoft .NET Framework	June 30, 2011
70-561	TS: Microsoft .NET Framework 3.5, ADO.NET Application Development	July 31, 2013
70-562	TS: Microsoft .NET Framework 3.5, ASP.NET Application Development	July 31, 2013
70-563	Pro: Designing and Developing Windows Applications Using the Microsoft .NET Framework 3.5	July 31, 2013
70-564	PRO: Designing and Developing ASP.NET Applications Using the Microsoft .NET Framework 3.5	July 31, 2013
70-565	PRO: Designing and Developing Enterprise Applications Using the Microsoft .NET Framework 3.5	July 31, 2013
70-566	UPGRADE: Transition your MCPD Windows Developer Skills to MCPD Windows Developer 3.5	July 31, 2012
70-567	UPGRADE: Transition your MCPD Web Developer Skills to MCPD ASP.NET Developer 3.5	July 31, 2012
70-568	UPGRADE: Transition your MCPD Enterprise Application Developer Skills to MCPD Enterprise Application Developer 3.5, Part 1	July 31, 2012
70-569	UPGRADE: Transition your MCPD Enterprise Application Developer Skills to MCPD Enterprise Application Developer 3.5, Part 2	July 31, 2012
70-571	TS: Microsoft Windows Embedded CE 6.0 Application Development	July 31, 2013
70-573	TS: Microsoft SharePoint 2010, Application Development	July 31, 2016
70-576	PRO: Designing and Developing Microsoft SharePoint 2010 Applications	July 31, 2016
70-577	TS: Microsoft Windows Embedded Standard 2009, Development	July 31, 2013
70-579	TS: Windows Mobile 6.5, Configuring	December 31, 2011

Exam number	Exam name	Retirement date
70-580	TS: Windows Mobile 6.5, Application Development	December 31, 2011
70-582	TS: Windows Embedded Standard 7 for Developers	July 31, 2014
70-583	PRO: Designing and Developing Microsoft Azure Applications	July 31, 2014
70-595	TS: Developing Business Process and Integration Solutions by Using Microsoft BizTalk Server 2010	July 31, 2015
70-599	Pro: Designing and Developing Windows Phone Applications	September 30, 2014
70-620	TS: Configuring Microsoft Windows Vista Client	July 31, 2013
70-621	PRO: Upgrading Your MCDST Certification to MCITP Enterprise Support	March 31, 2011
70-622	Pro: Microsoft Desktop Support – ENTERPRISE	July 31, 2013
70-623	Pro: Microsoft Desktop Support – CONSUMER	July 31, 2013
70-624	TS: Deploying and Maintaining Windows Vista Client and 2007 Microsoft Office System Desktops	October 31, 2010
70-625	Connected Home Integrator	July 31, 2012
70-626	Consumer Sales Specialist	June 30, 2011
70-631	TS: Microsoft Windows SharePoint Services 3.0, Configuring	March 31, 2011
70-632	TS: Managing Projects with Microsoft Office Project 2007, Managing Projects	January 31, 2013
70-633	TS: Microsoft Office Project Server 2007, Managing Projects	January 31, 2013
70-634	Pro: Microsoft Office Project Server 2007, Managing Projects and Programs	January 31, 2013
70-635	TS: Microsoft Deployment Toolkit 2008, Desktop Deployment	July 31, 2013
70-639	TS: Microsoft Office Project Server 2007, Configuring	January 31, 2013
70-640	TS: Windows Server 2008 Active Directory, Configuring	July 31, 2017
70-642	TS: Windows Server 2008 Network Infrastructure, Configuring	July 31, 2017

Exam number	Exam name	Retirement date
70-643	TS: Windows Server 2008 Applications Infrastructure, Configuring	July 31, 2015
70-646	Pro: Windows Server 2008, Server Administrator	July 31, 2017
70-647	Pro: Windows Server 2008, Enterprise Administrator	July 31, 2015
70-648	Upgrading your MCSA on Windows Server 2003 to Windows Server 2008, Technology Specialist	July 31, 2013
70-649	TS: Upgrading Your MCSE on Windows Server 2003 to Windows Server 2008, Technology Specialist	July 31, 2015
70-652	TS: Windows Server Virtualization, Configuring	September 30, 2011
70-653	Windows Small Business Server 2008, Configuring	July 31, 2012
70-654	TS: Windows Essential Business Server 2008, Configuring	June 30, 2011
70-655	TS: Windows Vista and Server Operating Systems, Pre-Installing for OEMs	June 30, 2011
70-656	TS: Microsoft Desktop Optimization Pack, Configuring	July 31, 2013
70-658	TS: System Center Data Protection Manager 2007, Configuring	July 31, 2013
70-659	TS: Windows Server 2008 R2, Server Virtualization	July 31, 2015
70-660	TS: Windows Internals	July 31, 2013
70-662	TS: Microsoft Exchange Server 2010, Configuring	January 31, 2016
70-663	PRO: Designing and Deploying Messaging Solutions with Microsoft Exchange	January 31, 2016
70-664	TS: Microsoft Lync Server 2010, Configuring	July 31, 2013
70-665	PRO: Microsoft Lync Server 2010, Administrator	July 31, 2013
70-667	TS: Microsoft SharePoint 2010, Configuring	July 31, 2016
70-668	PRO: Microsoft SharePoint 2010 Administrator	July 31, 2016
70-669	TS: Windows Server 2008, R2, Desktop Virtualization	July 31, 2015
70-671	Designing and Providing Microsoft Volume Licensing Solutions to Small and Medium Organizations	January 31, 2015

Exam number	Exam name	Retirement date
70-672	Designing and Providing Microsoft Volume Licensing Solutions to Large Organizations	January 31, 2015
70-673	TS: Designing, Assessing, and Optimizing Software Asset Management (SAM)	March 31, 2017
70-676	FAST Enterprise Search Platform, Developing	January 31, 2013
70-680	Windows 7, Configuring	July 31, 2018
70-681	TS: Windows 7 and Office 2010, Deploying	July 31, 2015
70-682	Pro: Upgrading to Windows 7 MCITP Enterprise Desktop Support Technician	July 31, 2014
70-683	TS: Windows 7, Preinstalling for OEMs	July 31, 2013
70-684	OEM Reseller	July 31, 2014
70-685	Windows 7, Enterprise Desktop Support Technician	July 31, 2018
70-686	Windows 7, Enterprise Desktop Administrator	July 31, 2018
70-687	Configuring Windows 8.1	December 31, 2016
70-688	Supporting Windows 8.1	December 31, 2016
70-689	Upgrading Your Skills to MCSA Windows 8	December 31, 2016
70-690	Windows Server 2008 HPC Environments, Configuring and Managing	July 31, 2013
70-691	Windows Server 2008 HPC Environments, Developing	July 31, 2013
70-692	Upgrading Your Windows XP Skills to MCSA Windows 8	December 31, 2016
70-693	Pro: Windows Server 2008 R2, Virtualization Administrator	July 31, 2015
70-694	Virtualizing Enterprise Desktops and Apps	July 31, 2017
70-695	Deploying Windows Desktops and Enterprise Applications	March 31, 2019
70-696	Administering System Center Configuration Manager and Intune	March 31,

Exam number	Exam name	Retirement date
		2018
70-697	Configuring Windows Devices	April 30, 2019
70-698	Installing and Configuring Windows 10	March 31, 2019
70-699	Windows Server 2003, MCSA Security Specialization Skills Update	July 31, 2013
70-703	Administering Microsoft System Center Configuration Manager and Cloud Services Integration	December 31, 2019
70-705	Designing and Providing Microsoft Licensing Solutions to Large Organizations	January 31, 2021
70-713	Software Asset Management (SAM) - Core	December 31, 2019
70-734	OEM Preinstallation for Windows 10	August 31, 2017
70-735	OEM Manufacturing and Deployment for Windows 10	December 31, 2019
70-740	Installation, Storage, and Compute with Windows Server 2016	January 31, 2021
70-741	Networking with Windows Server 2016	January 31, 2021
70-742	Identity with Windows Server 2016	January 31, 2021
70-743	Upgrading Your Skills to MCSA: Windows Server 2016	January 31, 2021
70-744	Securing Windows Server 2016	January 31, 2021
70-745	Implementing a Software-Defined Datacenter	January 31, 2021
70-761	Querying Data with Transact-SQL	January 31, 2021
70-762	Developing SQL Databases	January 31, 2021
70-764	Administering a SQL Database Infrastructure	January 31,

Exam number	Exam name	Retirement date
		2021
70-765	Provisioning SQL Databases	January 31, 2021
70-767	Implementing a Data Warehouse using SQL	January 31, 2021
70-768	Developing SQL Data Models	January 31, 2021
70-773	Analyzing Big Data with Microsoft R	June 30, 2019
70-774	Perform Cloud Data Science with Azure Machine Learning	June 30, 2019
70-775	Perform Data Engineering on Microsoft Azure HDInsight	June 30, 2019
70-776	Perform Big Data Engineering on Microsoft Cloud Services	June 30, 2019
70-777	Implementing Microsoft Azure Cosmos DB Solutions	January 31, 2021
70-778	Analyzing and Visualizing Data with Power BI	January 31, 2021
70-779	Analyzing and Visualizing Data with Microsoft Excel	January 31, 2021
70-980	Recertification for MCSE: Server Infrastructure	March 31, 2017
70-981	Recertification for MCSE: Private Cloud	March 31, 2017
70-982	Recertification for MCSE: Desktop Infrastructure	October 5, 2015
74-131	Designing a Microsoft Office Enterprise Project Management (EPM) Solution	October 31, 2010
74-132	Deploying a Portal Solution with Microsoft SharePoint Products and Technologies	October 31, 2010
74-133	Customizing Portal Solutions with Microsoft SharePoint Products and Technologies	October 31, 2010
74-134	Pre-Installing Microsoft Products and Technologies	October 31, 2010

Exam number	Exam name	Retirement date
74-135	Developing E-Business Solutions Using Microsoft BizTalk Server 2004	October 31, 2010
74-137	Developing Microsoft Office Solutions Using XML with Office Professional Edition 2003	October 31, 2010
74-138	Planning and Building a Messaging and Collaboration Environment using Microsoft Office System and Microsoft Windows Server 2003	October 31, 2010
74-139	Deploying Business Desktops with Microsoft Windows Server 2003 and Microsoft Office 2003	October 31, 2010
74-322	Microsoft Lync Server 2010—Advanced Design and Deployment	July 31, 2015
74-324	Administering Office 365 for Small Businesses	August 24, 2013
74-325	Administering Office 365 for Small Businesses	January 31, 2015
74-335	Lync Network Readiness Assessment	March 30, 2016
74-338	Lync 2013 Depth Support Engineer	March 30, 2016
74-343	Managing Projects with Microsoft Project 2013	July 31, 2019
74-344	Managing Programs and Projects with Project Server 2013	December 31, 2017
74-353	Windows UX Design	January 31, 2015
74-404	Microsoft Office Communications Server 2007 R2 – U.C. Voice Specialization	May 31, 2012
74-409	Server Virtualization with Windows Server Hyper-V and System Center	July 31, 2018
74-544	TS: Bing Maps Platform, Application Development	December 31, 2011
74-674	Delivering Business Value Planning Services	July 31, 2015
74-675	Microsoft Response Point, Configuring	June 30, 2011
74-676	TS: Fast Enterprise Search Platform, Developing	July 31, 2012

Exam number	Exam name	Retirement date
74-678	Designing and Providing Microsoft Volume Licensing Solutions to Large Organizations	December 31, 2017
74-679	Windows Server 2008 Hosted Environments, Configuring and Managing	July 31, 2013
74-697	OEM Preinstallation	January 31, 2016
74-924	Microsoft Office Communications Server 2007 R2 – U.C. Voice Specialization	October 31, 2010
77-419	Microsoft SharePoint 2013	June 30, 2020
77-891	Office 365	December 31, 2014
78-702	Designing and Managing a Microsoft Business Intelligence Solution	September 30, 2011
88-961	MCM: SharePoint Server 2010: Week 1	August 25, 2013
88-962	MCM: SharePoint Server 2010: Week 2	August 25, 2013
88-963	MCM: SharePoint Server 2010: Week 3	August 25, 2013
88-965	Windows Server 2008 R2: Directory Knowledge Exam	January 1, 2014
88-966	Windows Server 2008 R2: Directory Knowledge Exam	January 1, 2014
88-968	Lync Server 2010 Knowledge Exam	January 1, 2014
88-969	Lync Server 2010 Lab Exam	January 1, 2014
88-971	SQL Server 2008 Microsoft Certified Master: Lab Exam	December 31, 2013
88-972	MCM: SharePoint Server 2010: Lab Exam	August 25, 2013
88-973	MCM: SharePoint Server 2010, Knowledge Upgrade Exam	August 25, 2013

Exam number	Exam name	Retirement date
88-981	Windows Server 2008 R2: Directory Lab Exam	January 1, 2014
98-362	Windows Development Fundamentals	July 31, 2014
98-363	Web Development Fundamentals	July 31, 2015
98-369	Cloud Fundamentals	September 30, 2019
98-372	Microsoft .NET Fundamentals	July 31, 2015
98-373	Mobile Development Fundamentals	July 31, 2014
98-374	Gaming Development Fundamentals	July 31, 2015
98-379	Software Testing Fundamentals	July 31, 2016
98-380	Introduction to Programming Using Block-Based Languages (Touch Develop)	August 7, 2019

Microsoft Dynamics

Exam number	Exam name	Retirement date
MB2-421	CRM 3.0 Installation & Configuration	April 12, 2011
MB2-422	CRM 3.0 Customization	April 12, 2011
MB2-423	CRM 3.0 Applications	April 12, 2011
MB2-498	CRM 3.0 Extending Microsoft Dynamics	April 12, 2011
MB2-631	Microsoft Dynamics CRM 4.0 Customization and Configuration	November 2012
MB2-632	Microsoft Dynamics CRM 4.0 Applications	November 2012
MB2-633	Microsoft Dynamics CRM 4.0 Installation and Configuration	November 2012
MB2-634	CRM 4.0 Extending Microsoft Dynamics	November 2012
MB2-700	Microsoft Dynamics CRM 2013 Applications	December 31, 2016
MB2-701	Extending Microsoft Dynamics CRM 2013	December 31,

Exam number	Exam name	Retirement date
		2016
MB2-702	Microsoft Dynamics CRM 2013 Deployment	December 31, 2016
MB2-703	Microsoft Dynamics CRM 2013 Customization and Configuration	December 31, 2016
MB2-704	Microsoft Dynamics CRM Application	July 31, 2017
MB2-706	Microsoft Dynamics CRM Online Deployment	December 31, 2019
MB2-707	Microsoft Dynamics CRM Customization and Configuration	December 31, 2019
MB2-708	Microsoft Dynamics CRM Installation	December 31, 2019
MB2-709	Microsoft Dynamics Marketing	December 31, 2017
MB2-710	Microsoft Dynamics CRM 2016 Online Deployment	December 31, 2019
MB2-711	Microsoft Dynamics CRM 2016 Installation	December 31, 2019
MB2-712	Microsoft Dynamics CRM 2016 Customization and Configuration	December 31, 2019
MB2-713	Microsoft Dynamics CRM 2016 Sales	December 31, 2019
MB2-714	Microsoft Dynamics CRM 2016 Customer Service	December 31, 2019
MB2-715	Microsoft Dynamics 365 customer engagement Online Deployment	June 30, 2019
MB2-716	Microsoft Dynamics 365 Customization and Configuration	January 31, 2021
MB2-717	Microsoft Dynamics 365 for Sales	June 30, 2019
MB2-718	Microsoft Dynamics 365 for Customer Service	August 31, 2019
MB2-719	Microsoft Dynamics 365 for Marketing	August 31, 2019
MB2-720	Functional Application in Microsoft Dynamics Marketing	July 1, 2015

Exam number	Exam name	Retirement date
MB2-866	Microsoft Dynamics CRM 2011 Customization and Configuration	January 31, 2016
MB2-867	Microsoft Dynamics CRM 2011 Installation and Deployment	January 31, 2016
MB2-868	Microsoft Dynamics CRM 2011 Applications	January 31, 2016
MB2-876	Extending Microsoft Dynamics CRM 2011	January 31, 2016
MB2-877	Microsoft Dynamics 365 for Field Service	June 30, 2019
MB3-408	Microsoft Dynamics GP 9.0 Inventory and Order Processing	January 11, 2011
MB3-409	Microsoft Dynamics GP 9.0 Financials	January 11, 2011
MB3-412	Microsoft Dynamics GP 9.0 Installation and Configuration	January 11, 2011
MB3-413	Microsoft Dynamics GP 9.0 Project Series	January 11, 2011
MB3-430	Microsoft Dynamics GP 9.0 Manufacturing Applications	January 11, 2011
MB3-451	Microsoft Dynamics GP 9.0 Report Writer	January 11, 2011
MB3-461	Microsoft Dynamics GP 9.0 Modifier with VBA	January 11, 2011
MB3-462	Microsoft Dynamics GP 9.0 Integration Manager	January 11, 2011
MB3-465	Microsoft Dynamics GP 9.0 Field Service Implementation	January 11, 2011
MB3-527	GP 10.0 Installation & Configuration	February 28, 2013
MB3-528	GP 10.0 Financials	August 15, 2013
MB3-529	GP 10.0 Inventory & Order Processing	December 31, 2013
MB3-530	GP 10.0 Integration Manager	December 31, 2013
MB3-532	GP 10.0 Project Series	December 31, 2013
MB3-533	GP 10.0 Human Resources with Payroll	December 31, 2013
MB3-637	GP 10.0 Manufacturing Applications	December 31, 2013
MB3-700	Microsoft Dynamics GP 2013 Installation & Configuration	July 31, 2015

Exam number	Exam name	Retirement date
MB3-701	Microsoft Dynamics GP 2013 Financials	July 31, 2015
MB3-859	Microsoft Dynamics GP 2010 Financials	December 31, 2014
MB3-860	Microsoft Dynamics GP 2010 Project Series	December 31, 2014
MB3-861	Microsoft Dynamics GP 2010 Installation and Configuration	December 31, 2014
MB3-862	Microsoft Dynamics GP 2010 Inventory and Order Processing	December 31, 2014
MB4-348	SL 6.5 Financials	March 31, 2011
MB4-349	SL 6.5 Installation & Configuration	March 31, 2011
MB4-534	SL 7.0 Installation & Configuration	December 31, 2013
MB4-535	SL 7.0 Financials	December 31, 2013
MB4-536	SL 7.0 Project Series	December 31, 2013
MB4-640	SL 7.0 Customization Manager	December 31, 2013
MB4-641	SL 7.0 Tools for VB	December 31, 2013
MB4-643	SL 7.0 Inventory & Order Processing	December 31, 2013
MB4-873	Microsoft Dynamics SL 2011 Financials	December 31, 2014
MB4-874	Microsoft Dynamics SL 2011 Installation and Configuration	December 31, 2014
MB5-294	FRx 6.7 Reporting Design	August 5, 2011
MB5-537	Microsoft Dynamics Retail Management System 2.0 Store Operations	December 31, 2014
MB5-538	Microsoft Dynamics Retail Management System 2.0 Headquarters	December 31, 2014

Exam number	Exam name	Retirement date
MB5-554	Small Business Financials 9.0	June 22, 2012
MB5-629	Microsoft Forecaster 7.0	October 1, 2013
MB5-700	Microsoft Dynamics C5 2012 Application Consultant	July 31, 2015
MB5-705	Managing Microsoft Dynamics Implementations	December 31, 2016
MB5-845	Microsoft Dynamics POS 2009	December 31, 2014
MB5-854	C5 2010 Programming	October 1, 2013
MB5-855	C5 2010 Advanced Programming	October 1, 2013
MB5-856	C5 2010 Application Consultant	October 1, 2013
MB5-858	Managing Microsoft Dynamics Implementations	September 20, 2013
MB6-202	Axapta 3.0 Programming	January 12, 2010
MB6-203	Axapta 3.0 Financials	January 12, 2010
MB6-204	Axapta 3.0 Trade and Logistics	January 12, 2010
MB6-205	Axapta 3.0 Production	January 12, 2010
MB6-206	Axapta 3.0 Installation and Configuration	January 12, 2010
MB6-282	Axapta 3.0 HRM	January 12, 2010
MB6-283	Axapta 3.0 Questionnaire	January 12, 2010
MB6-284	Axapta 3.0 Projects	2010
MB6-285	Axapta 3.0 Sales and Marketing	December 31, 2011
MB6-288	Axapta 3.0 Product Builder	January 12, 2010
MB6-291	Axapta 3.0 Shop Floor Control	December 31, 2011
MB6-295	Axapta 3.0 Enterprise Portal Development	January 12, 2010
MB6-502	AX 4.0 Product Builder	September 30, 2011

Exam number	Exam name	Retirement date
MB6-503	AX 4.0 Installation and Configuration	September 30, 2011
MB6-504	AX 4.0 Project Series	September 30, 2011
MB6-506	AX 4.0 Questionnaire	September 30, 2011
MB6-507	AX 4.0 Financials	September 30, 2011
MB6-508	AX 4.0 Development Introduction	September 30, 2011
MB6-509	AX 4.0 Trade and Logistics	September 30, 2011
MB6-510	AX 4.0 Human Resource Management	September 30, 2011
MB6-511	AX 4.0 Production	September 30, 2011
MB6-512	AX 4.0 Enterprise Portal Development	September 30, 2011
MB6-513	AX 4.0 MorphX Solution Development	September 30, 2011
MB6-700	Microsoft Dynamics AX 2012 R2 Project	December 31, 2016
MB6-701	Microsoft Dynamics AX 2012 R3 Retail	March 31, 2017
MB6-702	Microsoft Dynamics AX 2012 R3 Financials	December 31, 2016
MB6-703	Microsoft Dynamics AX 2012 R3 Trade and Logistics	December 31, 2016
MB6-704	Microsoft Dynamics AX 2012 R3 CU8 Development Introduction	December 31, 2016
MB6-705	Microsoft Dynamics AX 2012 R3 CU8 Installation and Configuration	December 31, 2017
MB6-817	AX 2009 Trade & Logistics	January 6, 2014

Exam number	Exam name	Retirement date
MB6-818	AX 2009 Financials	January 6, 2014
MB6-819	AX 2009 Development Introduction	January 6, 2014
MB6-820	AX 2009 Installation & Configuration	January 6, 2014
MB6-821	AX 2009 MorphX Solution Development	January 6, 2014
MB6-822	AX 2009 Production	January 6, 2014
MB6-823	AX 2009 Project Series	January 6, 2014
MB6-824	AX 2009 Human Resource Management	January 6, 2014
MB6-825	AX 2009 Enterprise Portal Development	January 6, 2014
MB6-826	AX 2009 Product Builder	January 6, 2014
MB6-827	AX 2009 Payroll	June 3, 2011
MB6-869	Microsoft Dynamics AX 2012 Development	July 31, 2015
MB6-870	Microsoft Dynamics AX 2012 Trade and Logistics	July 31, 2015
MB6-871	Microsoft Dynamics AX 2012 Financials	July 31, 2015
MB6-872	Microsoft Dynamics AX 2012 Installation and Configuration	July 31, 2015
MB6-884	Microsoft Dynamics AX 2012 Lean Manufacturing	December 31, 2016
MB6-885	Microsoft Dynamics AX 2012 Public Sector	December 31, 2016
MB6-886	Microsoft Dynamics AX 2012 Process Manufacturing Production and Logistics	December 31, 2016
MB6-889	Microsoft Dynamics AX 2012 Service Management	December 31, 2016
MB6-890	Microsoft Dynamics AX Development Introduction	December 31, 2017
MB6-892	Microsoft Dynamics AX Distribution and Trade	December 31, 2017
MB6-893	Microsoft Dynamics AX Financials	December 31, 2017

Exam number	Exam name	Retirement date
MB6-894	Development, Extensions, and Deployment for Microsoft Dynamics 365 Finance	January 31, 2021
MB6-895	Financial Management in Microsoft Dynamics 365 for Finance and Operations	August 31, 2019
MB6-896	Distribution and Trade in Microsoft Dynamics 365 for Finance and Operations	August 31, 2019
MB6-897	Microsoft Dynamics 365 for Retail	January 31, 2021
MB6-898	Microsoft Dynamics 365 for Talent	January 31, 2021
MB7-221	Navision 4.0 C/SIDE Introduction	January 12, 2010
MB7-222	NAV 4.0 C/SIDE Solution Development	January 12, 2010
MB7-223	Navision 4.0 Warehouse Management	January 12, 2010
MB7-224	Navision 4.0 Manufacturing	January 12, 2010
MB7-225	Navision 4.0 Financials	January 12, 2010
MB7-226	Navision 4.0 Installation and Configuration	January 12, 2010
MB7-227	Navision 4.0 Trade and Inventory	January 12, 2010
MB7-231	Navision 4.0 Relationship Management	January 12, 2010
MB7-232	Navision 4.0 Service Management	January 12, 2010
MB7-233	Navision 4.0 Costing	January 12, 2010
MB7-514	Microsoft Dynamics NAV 5.0 C/SIDE Introduction	November 30, 2012
MB7-515	Microsoft Dynamics NAV 5.0 Financials	November 30, 2012
MB7-516	Microsoft Dynamics NAV 5.0 C/SIDE Solution Development	November 30, 2012
MB7-517	Microsoft Dynamics NAV 5.0 Installation and Configuration	November 30, 2012
MB7-700	Microsoft Dynamics NAV 2013 Installation and Configuration	July 31, 2015
MB7-701	Microsoft Dynamics NAV 2013 Core Setup and Finance	July 31, 2015
MB7-702	Microsoft Dynamics NAV 2013 C/Side Development	July 31, 2015

Exam number	Exam name	Retirement date
MB7-838	NAV 2009 Installation & Configuration	June 30, 2014
MB7-839	NAV 2009 Core Setup and Finance	June 30, 2014
MB7-840	NAV 2009 C/SIDE Introduction	June 30, 2014
MB7-841	NAV 2009 C/SIDE Solution Development	June 30, 2014
MB7-842	NAV 2009 Trade & Inventory	June 30, 2014
MB7-843	NAV 2009 Warehouse Management	June 30, 2014
MB7-846	NAV 2009 Relationship Management	June 30, 2014
MB7-848	NAV 2009 Service Management	June 30, 2014
MB7-849	NAV 2009 Manufacturing	June 30, 2014
MB7-849	NAV 2009-Produktion (Danish)	June 30, 2014
MB7-849	NAV 2009-Produktion (German)	June 30, 2014

Applied skills retired more than 12 months ago

None at this time.

Course retirement

Article • 09/19/2023

About course retirement

Technology and associated job roles change faster every year. As Microsoft technology evolves, we revise our training content to keep in line with changes in the technology. To empower you to be on the leading edge and offer you the most relevant training opportunities, we regularly introduce new courses and revise or retire older courses.

Once a course is retired, the course page will be removed from the Microsoft Learn site. However, in many cases the Learning Paths and Modules will remain available on the site for reference. Saving these Learning Paths and Modules to your personal collections will ensure you have access to them until they are finally retired. Any achievements or badges earned will remain on your transcript after retirement.

Retired courses: Instructor-led training

- Courseware retirements on February 29th, 2024

Course number	Version	Title	Language	Retirement date
MB-300T00	A	Microsoft Dynamics 365: Core Finance and Operations	English	2/29/2024

- Courseware retirements on December 29th, 2023

Course number	Version	Title	Language	Retirement date
MS-203T00	A	Microsoft 365 Messaging	English	12/29/2023
MS-600T00	A	Building Applications and Solutions with Microsoft 365 Core Services	English	12/29/2023

- Courseware retirements on September 29th, 2023

Course number	Version	Title	Language	Retirement date
MS-100T00	A	Microsoft 365 Identity and	English	9/29/2023

Course number	Version	Title	Language	Retirement date
Services				
MS-101T00	A	Microsoft 365 Mobility and Security	English	9/29/2023
MD-100T00	A	Windows Client	English	9/29/2023
MD-101T00	A	Managing Modern Desktops	English	9/29/2023

- Courseware retirements on July 31st, 2023

Course number	Version	Title	Language	Retirement date
AZ-220T00	A	Microsoft Azure IoT Developer	English	7/31/2023
AZ-220T00JA	A	Microsoft Azure IoT Developer	Japanese	7/31/2023
AZ-220T00KO	A	Microsoft Azure IoT Developer	Korean	7/31/2023
AZ-220T00ZH	A	Microsoft Azure IoT Developer	Chinese Simplified	7/31/2023
AZ-600T00	A	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	English	7/31/2023
AZ-600T00JA	A	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	Japanese	7/31/2023
AZ-600T00KO	A	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	Korean	7/31/2023
AZ-600T00ZH	A	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack Hub	Chinese Simplified	7/31/2023
AZ-720T00	A	Azure Support Engineer Troubleshooting Azure Connectivity	English	7/31/2023
AZ-720T00JA	A	Azure Support Engineer Troubleshooting Azure Connectivity	Japanese	7/31/2023

Course number	Version	Title	Language	Retirement date
AZ-720T00KO	A	Azure Support Engineer Troubleshooting Azure Connectivity	Korean	7/31/2023
AZ-720T00ZH	A	Support Engineer Troubleshooting Azure Connectivity	Chinese Simplified	7/31/2023
MS-220T00	A	Exchange Support Engineer	English	7/31/2023
MS-740T00	A	Troubleshooting Microsoft Teams	English	7/31/2023

- Courseware retirements on June 30th, 2023

Course number	Version	Title	Language	Retirement date
MS-500T00	A	Microsoft 365 Security Administration	English	6/30/2023
MS-500T00JA	A	Microsoft 365 Security Administration	Japanese	6/30/2023
MS-500T00KO	A	Microsoft 365 Security Administration	Korean	6/30/2023
MS-500T00ZH	A	Microsoft 365 Security Administration	Chinese Simplified	6/30/2023
MS-720T00	A	Microsoft Teams Voice Engineer	English	6/30/2023
MB-320T00	A	Microsoft Dynamics 365 Supply Chain Management, Manufacturing	English	6/30/2023

- Courseware retirements on April 28th, 2023

Course number	Version	Title	Language	Retirement date
DP-090T00	A	Implementing a Machine Learning Solution with Microsoft Azure Databricks	English	04/28/2023
DP-090T00JA	A	Implementing a Machine Learning Solution with Microsoft Azure Databricks	Japanese	4/28/2023

Course number	Version	Title	Language	Retirement date
DP-090T00KO	A	Implementing a Machine Learning Solution with Microsoft Azure Databricks	Korean	4/28/2023
DP-090T00ZH	A	Implementing a Machine Learning Solution with Microsoft Azure Databricks	Chinese Simplified	4/28/2023

- Courseware retirements on January 31st, 2023

Course number	Version	Title	Language	Retirement date
DP-050T00	A	Migrate SQL workloads to Azure	English	1/31/2023
DP-060T00	A	Migrate NoSQL workloads to Azure Cosmos DB	English	1/31/2023
DP-070T00	A	Migrate Open Source Data Workloads to Azure	English	1/31/2023

- Courseware retirements on October 31st, 2022

Course number	Version	Title	Language	Retirement date
WS-013T00	A	Azure Stack HCI	English	10/31/2022

- Courseware retirements on September 30th, 2022

Course number	Version	Title	Language	Retirement date
AZ-900T01AR	A	Microsoft Azure Fundamentals (1 Day)	Arabic	09/30/2022
AZ-900T01BR	A	Microsoft Azure Fundamentals (1 Day)	Portuguese (Brazil)	09/30/2022
AZ-900T01DE	A	Microsoft Azure Fundamentals (1 Day)	German	09/30/2022
AZ-900T01ES	A	Microsoft Azure Fundamentals (1 Day)	Spanish	09/30/2022
AZ-900T01FR	A	Microsoft Azure Fundamentals (1 Day)	French	09/30/2022

Course number	Version	Title	Language	Retirement date
AZ-900T01ID	A	Microsoft Azure Fundamentals (1 Day)	Indonesian	09/30/2022
AZ-900T01IT	A	Microsoft Azure Fundamentals (1 Day)	Italian	09/30/2022
AZ-900T01JA	A	Microsoft Azure Fundamentals (1 Day)	Japanese	09/30/2022
AZ-900T01KO	A	Microsoft Azure Fundamentals (1 Day)	Korean	09/30/2022
AZ-900T01RU	A	Microsoft Azure Fundamentals (1 Day)	Russian	09/30/2022
AZ-900T01TW	A	Microsoft Azure Fundamentals (1 Day)	Chinese Traditional	09/30/2022
AZ-900T01ZH	A	Microsoft Azure Fundamentals (1 Day)	Chinese Simplified	09/30/2022

- Courseware retirements on June 30th, 2022

Course number	Version	Title	Language	Retirement date
40501	A	Microsoft Cloud Workshop: Cloud-native applications	English	06/30/2022
40502	A	Microsoft Cloud Workshop: Big data analytics and visualization	English	06/30/2022
40505	A	Microsoft Cloud Workshop: Internet of Things	English	06/30/2022
40508	A	Microsoft Cloud Workshop: Modern Cloud Apps	English	06/30/2022
40511	A	Microsoft Cloud Workshop: Continuous Delivery in Azure DevOps	English	06/30/2022
40512	A	Microsoft Cloud Workshop: App Modernization	English	06/30/2022
40513	A	Microsoft Cloud Workshop: Building a Resilient IaaS Architecture	English	06/30/2022

Course number	Version	Title	Language	Retirement date
40514	A	Microsoft Cloud Workshop: Migrating Oracle to Azure SQL and PostgreSQL	English	06/30/2022
40515	A	Microsoft Cloud Workshop: Enterprise-Class Networking in Azure	English	06/30/2022
40530	A	Microsoft Cloud Workshop: Analyzing text with Azure Machine Learning and Cognitive Services	English	06/30/2022
40535	A	Microsoft Cloud Workshop: Serverless Architecture	English	06/30/2022
40557	A	Microsoft Cloud Workshop: Azure Cosmos DB real-time advanced analytics	English	06/30/2022
40558	A	Microsoft Cloud Workshop: Line-of-business application migration	English	06/30/2022
40559	A	Microsoft Cloud Workshop: MLOps	English	06/30/2022
40560	A	Microsoft Cloud Workshop: Predictive Maintenance for remote field devices	English	06/30/2022
40562	A	Microsoft Cloud Workshop: Migrating SQL databases to Azure	English	06/30/2022
40564	A	Microsoft Cloud Workshop: Securing Azure IoT solutions	English	06/30/2022
40573	A	Microsoft Cloud Workshop: Hybrid identity	English	06/30/2022
40576	A	Microsoft Cloud Workshop: Azure Synapse Analytics and AI	English	06/30/2022
40577	A	Microsoft Cloud Workshop: Innovate and modernize apps with Data and AI	English	06/30/2022
40578	A	Microsoft Cloud Workshop: Implementing Azure Virtual Desktop in the enterprise	English	06/30/2022

Course number	Version	Title	Language	Retirement date
40584	A	Microsoft Cloud Workshop: Leveraging Azure Digital Twins in a supply chain	English	06/30/2022
40585	A	Microsoft Cloud Workshop: AI-led business process automation	English	06/30/2022
AZ-010T00	A	Azure Administration for AWS SysOps	English	06/30/2022
AZ-010T00JA	A	Azure Administration for AWS SysOps	Japanese	06/30/2022
AZ-010T00ZH	A	Azure Administration for AWS SysOps	Simplified Chinese	06/30/2022
AZ-010T00KO	A	Azure Administration for AWS SysOps	Korean	06/30/2022
AZ-020T00	A	Microsoft Azure solutions for AWS developers	English	06/30/2022
AZ-020T00JA	A	Microsoft Azure solutions for AWS developers	Japanese	06/30/2022
AZ-020T00ZH	A	Microsoft Azure solutions for AWS developers	Simplified Chinese	06/30/2022
AZ-020T00KO	A	Microsoft Azure solutions for AWS developers	Korean	06/30/2022
AZ-030T00	A	Microsoft Azure technologies for AWS architects	English	06/30/2022
AZ-030T00JA	A	Microsoft Azure technologies for AWS architects	Japanese	06/30/2022
AZ-030T00ZH	A	Microsoft Azure technologies for AWS architects	Simplified Chinese	06/30/2022
AZ-030T00KO	A	Microsoft Azure technologies for AWS architects	Korean	06/30/2022
AZ-900T01	A	Microsoft Azure Fundamentals (1 Day)	English	06/30/2022
DA-100T00JA	A	Analyzing Data with Power BI	Japanese	06/30/2022

Course number	Version	Title	Language	Retirement date
DA-100T00ZH	A	Analyzing Data with Power BI	Simplified Chinese	06/30/2022
DA-100T00KO	A	Analyzing Data with Power BI	Korean	06/30/2022
DP-050T00JA	A	Migrate SQL workloads to Azure	Japanese	06/30/2022
DP-050T00ZH	A	Migrate SQL workloads to Azure	Simplified Chinese	06/30/2022
DP-050T00KO	A	Migrate SQL workloads to Azure	Korean	06/30/2022
DP-060T00JA	A	Migrate NoSQL workloads to Azure Cosmos DB	Japanese	06/30/2022
DP-060T00ZH	A	Migrate NoSQL workloads to Azure Cosmos DB	Simplified Chinese	06/30/2022
DP-060T00KO	A	Migrate NoSQL workloads to Azure Cosmos DB	Korean	06/30/2022
DP-070T00JA	A	Migrate Open Source Data Workloads to Azure	Japanese	06/30/2022
DP-070T00ZH	A	Migrate Open Source Data Workloads to Azure	Simplified Chinese	06/30/2022
DP-070T00KO	A	Migrate Open Source Data Workloads to Azure	Korean	06/30/2022

- Courseware retirements on May 31st, 2022

Course number	Version	Title	Language	Retirement date
MB-340T00	A	Microsoft Dynamics 365 Commerce Functional Consultant	English	05/31/2022
WS-050T00JA	A	Migrating Application Workloads to Azure	Japanese	05/31/2022
WS-050T00ZH	A	Migrating Application Workloads to Azure	Simplified Chinese	05/31/2022

Course number	Version	Title	Language	Retirement date
WS-050T00KO	A	Migrating Application Workloads to Azure	Korean	05/31/2022

- Courseware retirements on March 31st, 2022

Course number	Version	Title	Language	Retirement date
AZ-303T00	A	Microsoft Azure Architect Technologies	English	03/31/2022
AZ-303T00JA	A	Microsoft Azure Architect Technologies	Japanese	03/31/2022
AZ-303T00KO	A	Microsoft Azure Architect Technologies	Korean	03/31/2022
AZ-303T00ZH	A	Microsoft Azure Architect Technologies	Chinese Simplified	03/31/2022
AZ-304T00	A	Microsoft Azure Architect Design	English	03/31/2022
AZ-304T00JA	A	Microsoft Azure Architect Design	Japanese	03/31/2022
AZ-304T00KO	A	Microsoft Azure Architect Design	Korean	03/31/2022
AZ-304T00ZH	A	Microsoft Azure Architect Design	Chinese Simplified	03/31/2022
DA-100T00	A	Analyzing Data with Microsoft Power BI	English	03/31/2022
MS-030T00	A	Office 365 Administrator	English	03/31/2022
WS-011T00	A	Windows Server 2019 Administration	English	03/31/2022
WS-012T00	A	Windows Server 2019 Hybrid and Azure IaaS	English	03/31/2022

- Courseware retirements on January 31st, 2022

Course number	Version	Title	Language	Retirement date
MS-040T00	A	Manage SharePoint and OneDrive in Microsoft 365	English	01/31/2022
WS-050T00	A	Migrating Application Workloads to Azure	English	01/31/2022

- Courseware retirements on December 30th, 2021

Course number	Version	Title	Language	Retirement date
DP-200T01KO	A	Implementing an Azure Data Solution	Korean	12/30/2021
DP-200T01ZH	A	Implementing an Azure Data Solution	Chinese Simplified	12/30/2021
DP-200T01JA	A	Implementing an Azure Data Solution	Japanese	12/30/2021
DP-201T01KO	A	Designing an Azure Data Solution	Korean	12/30/2021
DP-201T01ZH	A	Designing an Azure Data Solution	Chinese Simplified	12/30/2021
DP-201T01JA	A	Designing an Azure Data Solution	Japanese	12/30/2021
6420	B	Fundamentals of Windows Server® 2008	English	12/30/2021
10266	A	Programming in C# with Microsoft Visual Studio 2010	English	12/30/2021
10710	A	Configuring, Managing and Troubleshooting Microsoft® Exchange Server 2010	Spanish	12/30/2021
10961	C	Automating Administration With Windows PowerShell	English	12/30/2021
10962	C	Advanced Automated Administration With Windows PowerShell	English	12/30/2021
10964	C	Cloud & Datacenter Monitoring with System Center Operations	English	12/30/2021

Course number	Version	Title	Language	Retirement date	
		Manager			
10965	D	IT Service Management with System Center Service Manager	English	12/30/2021	
10967	A	Fundamentals of a Windows Server® Infrastructure	English	12/30/2021	
10969	B	Active Directory® Services with Windows Server®	English	12/30/2021	
10972	B	Administering the Web Server (IIS) Role of Windows Server	English	12/30/2021	
10975	A	Introduction to Programming	English	12/30/2021	
10982	E	Supporting and Troubleshooting Windows 10	English	12/30/2021	
10984	B	Deploying and Managing Office 365 Hybrid Deployments	English	12/30/2021	
10985	C	Introduction to SQL Databases	English	12/30/2021	
10986	B	Updating Your Skills to SQL Server 2016	English	12/30/2021	
10987	C	Performance Tuning and Optimizing SQL Databases	English	12/30/2021	
10990	C	Analyzing Data with SQL Server Reporting Services	English	12/30/2021	
10994	B	Data Analysis Fundamentals using Excel	English	12/30/2021	
10998	A	Updating Your Skills to SQL Server 2017	English	12/30/2021	
20334	C	Core Solutions of Skype for Business 2015/2019	English	12/30/2021	
20339	A	Planning and Administering SharePoint 2016	English	12/30/2021	
20339	A	Advanced Technologies of SharePoint 2016	English	12/30/2021	
20345	B	Administering Microsoft Exchange	English	12/30/2021	

Course number	Version	Title	Language	Retirement date
Server 2016/2019				
20345	B	Designing and Deploying Microsoft Exchange Server 2016/2019	English	12/30/2021
20410	D	Installing and Configuring Windows Server® 2012	English	12/30/2021
20411	D	Administering Windows Server® 2012	English	12/30/2021
20412	D	Configuring Advanced Windows Server® 2012 Services	English	12/30/2021
20413	C	Designing and Implementing a Server Infrastructure	English	12/30/2021
20414	C	Implementing an Advanced Server Infrastructure	English	12/30/2021
20417	D	Upgrading Your Skills to MCSA Windows Server® 2012	English	12/30/2021
20461	D	Querying Microsoft SQL Server® 2014	English	12/30/2021
20462	D	Administering Microsoft® SQL Server® 2014 Databases	English	12/30/2021
20463	D	Implementing a Data Warehouse with Microsoft® SQL Server® 2014	English	12/30/2021
20464	D	Developing Microsoft SQL Server 2014 Databases	English	12/30/2021
20465	D	Designing Solutions for Microsoft SQL Server 2014	English	12/30/2021
20466	D	Implementing Data Models and Reports with SQL Server 2014	English	12/30/2021
20467	D	Designing Business Intelligence Solutions with Microsoft SQL Server 2014	English	12/30/2021
20480	C	Programming in HTML5 with JavaScript and CSS3	English	12/30/2021
20483	C	Programming in C#	English	12/30/2021

Course number	Version	Title	Language	Retirement date
20486	C	Developing ASP.NET MVC 5 Web Applications	English	12/30/2021
20486	D	Developing ASP.NET Core MVC Web Applications	English	12/30/2021
20487	D	Developing Microsoft Azure and Web Services	English	12/30/2021
20694	B	Virtualizing Enterprise Desktops and Apps	English	12/30/2021
20703	B	Administering System Center Configuration Manager	English	12/30/2021
20740	C	Installation, Storage, and Compute with Windows Server 2016	English	12/30/2021
20741	B	Networking with Windows Server 2016	English	12/30/2021
20742	B	Identity with Windows Server 2016	English	12/30/2021
20743	C	Upgrading Your Skills to MCSA: Windows Server 2016	English	12/30/2021
20744	C	Securing Windows Server 2016	English	12/30/2021
20745	B	Implementing a Software-Defined DataCenter Using System Center Virtual Machine Manager	English	12/30/2021
20761	C	Querying Data with Transact-SQL	English	12/30/2021
20762	C	Developing SQL Databases	English	12/30/2021
20764	C	Administering a SQL Database Infrastructure	English	12/30/2021
20765	C	Provisioning SQL Databases	English	12/30/2021
20767	C	Implementing a SQL Data Warehouse	English	12/30/2021
20768	C	Developing SQL Data Models	English	12/30/2021
20777	A	Implementing Microsoft Azure Cosmos DB Solutions	English	12/30/2021

Course number	Version	Title	Language	Retirement date
20779	B	Analyzing Data with Excel	English	12/30/2021
21410	D	Installing and Configuring Windows Server® 2012	German	12/30/2021
21411	D	Administering Windows Server® 2012	German	12/30/2021
21412	D	Configuring Advanced Windows Server® 2012 Services	German	12/30/2021
21413	B	Designing and Implementing a Server Infrastructure	German	12/30/2021
21414	B	Implementing an Advanced Server Infrastructure	German	12/30/2021
21417	B	Upgrading Your Skills to MCSA Windows Server 2012	German	12/30/2021
21461	A	Querying Microsoft® SQL Server® 2012	German	12/30/2021
21462	A	Administering Microsoft® SQL Server® 2012 Databases	German	12/30/2021
21463	A	Implementing a Data Warehouse with Microsoft® SQL Server® 2012	German	12/30/2021
21740	B	Installation, Storage, and Compute with Windows Server 2016	German	12/30/2021
21741	B	Networking with Windows Server 2016	German	12/30/2021
21742	A	Identity with Windows Server 2016	German	12/30/2021
21743	B	Upgrading Your Skills to MCSA: Windows Server 2016	German	12/30/2021
21744	B	Securing Windows Server 2016	German	12/30/2021
21764	C	Administering a SQL Database Infrastructure	German	12/30/2021
22410	B	Installing and Configuring Windows Server® 2012	French	12/30/2021

Course number	Version	Title	Language	Retirement date
22411	B	Administering Windows Server 2012	French	12/30/2021
22412	B	Configuring Advanced Windows Server 2012 Services	French	12/30/2021
22414	B	Implementing an Advanced Server Infrastructure	French	12/30/2021
22417	B	Upgrading Your Skills to MCSA Windows Server 2012	French	12/30/2021
22461	A	Querying Microsoft® SQL Server® 2012	French	12/30/2021
22462	A	Administering Microsoft® SQL Server® 2012 Databases	French	12/30/2021
22463	A	Implementing a Data Warehouse with Microsoft® SQL Server® 2012	French	12/30/2021
22740	C	Installation, Storage, and Compute with Windows Server 2016 (French)	French	12/30/2021
22741	B	Networking with Windows Server 2016 (French)	French	12/30/2021
22742	B	Identity with Windows Server 2016 (French)	French	12/30/2021
22743	C	Upgrading Your Skills to MCSA: Windows Server 2016 (French)	French	12/30/2021
22744	B	Securing Windows Server 2016	French	12/30/2021
23410	B	Installing and Configuring Windows Server® 2012	Japanese	12/30/2021
23411	B	Administering Windows Server 2012	Japanese	12/30/2021
23412	B	Configuring Advanced Windows Server® 2012 Services	Japanese	12/30/2021
23413	B	Designing and Implementing a Server Infrastructure	Japanese	12/30/2021
23414	B	Implementing an Advanced Server Infrastructure	Japanese	12/30/2021

Course number	Version	Title	Language	Retirement date
23740	B	Installation, Storage, and Compute with Windows Server 2016	Japanese	12/30/2021
23741	A	Networking with Windows Server 2016	Japanese	12/30/2021
23742	A	Identity with Windows Server 2016	Japanese	12/30/2021
23744	B	Securing Windows Server 2016	Japanese	12/30/2021
24410	B	Installing and Configuring Windows Server® 2012	Portuguese (Brazil)	12/30/2021
24411	B	Administering Windows Server 2012	Portuguese (Brazil)	12/30/2021
24412	B	Configuring Advanced Windows Server 2012 Services	Portuguese (Brazil)	12/30/2021
24740	B	Installation, Storage, and Compute with Windows Server 2016	Portuguese (Brazil)	12/30/2021
24741	B	Networking with Windows Server 2016	Portuguese (Brazil)	12/30/2021
24742	B	Identity with Windows Server 2016	Portuguese (Brazil)	12/30/2021
24744	B	Securing Windows Server 2016	Portuguese (Brazil)	12/30/2021
26740	B	Installation, Storage, and Compute with Windows Server 2016	Spanish	12/30/2021
26741	B	Networking with Windows Server 2016	Spanish	12/30/2021
26742	B	Identity with Windows Server 2016	Spanish	12/30/2021
26744	B	Securing Windows Server 2016	Spanish (Spain)	12/30/2021
28480	B	Programming in HTML5 with JavaScript and CSS3	Chinese Simplified	12/30/2021
28740	B	Installation, Storage, and Compute with Windows Server 2016	Chinese Simplified	12/30/2021

Course number	Version	Title	Language	Retirement date
28741	B	Networking with Windows Server 2016	Chinese Simplified	12/30/2021
28742	A	Identity with Windows Server 2016	Chinese Simplified	12/30/2021
28761	A	Querying Data with Transact-SQL	Chinese Simplified	12/30/2021
28764	A	Administering a SQL Database Infrastructure	Chinese Simplified	12/30/2021
28765	B	Provisioning SQL Databases	Chinese Simplified	12/30/2021
29480	B	Programming in HTML5 with JavaScript and CSS3	Chinese Traditional	12/30/2021
29740	B	Installation, Storage, and Compute with Windows Server 2016	Chinese Traditional	12/30/2021
29741	B	Networking with Windows Server 2016	Chinese Traditional	12/30/2021
29742	A	Identity with Windows Server 2016	Chinese Traditional	12/30/2021
29761	A	Querying Data with Transact-SQL	Chinese Traditional	12/30/2021
29764	A	Administering a SQL Database Infrastructure	Chinese Traditional	12/30/2021
29765	B	Provisioning SQL Databases	Chinese Traditional	12/30/2021
40332	A	Partner Applied Workshop: What's New in Windows 10	English	12/30/2021
40410	A	JavaScript, HTML and CSS Web Development	English	12/30/2021
21345-1	A	Administering Microsoft Exchange Server 2016	German	12/30/2021
21697-1	B	Installing and Configuring Windows 10	German	12/30/2021

- Courseware retirements on October 29th, 2021

Course number	Version	Title	Language	Retirement date
10997	D	Office 365 Administration and Troubleshooting	English	10/29/2021

- Courseware retirements on September 30th, 2021

Course number	Version	Title	Language	Retirement date
40510	G	Microsoft Cloud Workshop: SQL Server Hybrid Cloud	English	9/30/2021
40516	G	Microsoft Cloud Workshop: Intelligent Analytics	English	9/30/2021
40561	G	Microsoft Cloud Workshop: Machine Learning	English	9/30/2021
MB-901T00DE	A	Microsoft Dynamics 365 Fundamentals	German	9/30/2021
MB-901T00ES	A	Microsoft Dynamics 365 Fundamentals	Spanish	9/30/2021
MB-901T00FR	A	Microsoft Dynamics 365 Fundamentals	French	9/30/2021
MB-901T00JA	A	Microsoft Dynamics 365 Fundamentals	Japanese	9/30/2021
MB-901T00KO	A	Microsoft Dynamics 365 Fundamentals	Korean	9/30/2021
MB-901T00ZH	A	Microsoft Dynamics 365 Fundamentals	Chinese Simplified	9/30/2021
MS-050T00	A	SharePoint Hybrid Deployment and Migration	English	9/30/2021

- Courseware retirements on August 31st, 2021

Course number	Version	Title	Language	Retirement date
DP-200T01	A	Implementing an Azure Data Solution	English	8/31/2021

Course number	Version	Title	Language	Retirement date
DP-201T01	A	Designing an Azure Data Solution	English	8/31/2021

- Courseware retirements on June 30th, 2021

Course number	Version	Title	Language	Retirement date
AI-100T01	A	Designing and Implementing an Azure AI Solution	English	6/30/2021
MB-600T00	A	Microsoft Dynamics 365 + Power Platform Solution Architect	English	6/30/2021
MB-901T00	A	Microsoft Dynamics 365 Fundamentals	English	6/30/2021
AI-100T01JA	A	Designing and Implementing an Azure AI Solution	Japanese	6/30/2021
AI-100T01KO	A	Designing and Implementing an Azure AI Solution	Korean	6/30/2021
AI-100T01ZH	A	Designing and Implementing an Azure AI Solution	Simplified Chinese	6/30/2021

- Courseware retirements on May 31st, 2021

Course number	Version	Title	Language	Retirement date
40519	A	Microsoft Cloud Workshop: SAP NetWeaver on Azure	English	5/31/2021
40527	A	Microsoft Cloud Workshop: Security baseline on Azure	English	5/31/2021
40529	A	Microsoft Cloud Workshop: High Performance Computing	English	5/31/2021

- Courseware retirements on April 30th, 2021

Course number	Version	Title	Language	Retirement date
20537	B	Configuring and Operating a Hybrid Cloud with Microsoft Azure Stack	English	04/30/2021

- Courseware retirements on March 31st, 2021

Course number	Version	Title	Language	Retirement date
20778	C	Analyzing Data with Power BI	English	03/31/2021
40037	A	Database Administration Fundamentals: MTA Exam 98-364	Japanese	3/31/2021
40038	A	Networking Fundamentals: MTA Exam 98-366	Japanese	3/31/2021
40039	A	Security Fundamentals: MTA Exam 98-367	Japanese	3/31/2021
40040	A	Windows Server Administration Fundamentals: MTA Exam 98-365	Japanese	3/31/2021
40240	A	MTA Mobility & Device Fundamentals 98-368 Windows (Japanese)	Japanese	3/31/2021
40241	A	MTA Cloud Fundamentals 98-369 (Japanese)	Japanese	3/31/2021
40349	B	Windows OS Fundamentals	English	03/31/2021
40361	A	Software Development Fundamentals: Training for MTA Exam 98-361	English	3/31/2021
40362	A	Windows Development Fundamentals: Training for MTA Exam 98-362	English	3/31/2021
40363	A	Web Development Fundamentals: Training for MTA Exam 98-363	English	3/31/2021
40364	A	Database Administration Fundamentals: Training for MTA Exam 98-364	English	3/31/2021
40366	B	Networking Fundamentals	English	03/31/2021
40367	B	Security Fundamentals	English	03/31/2021

Course number	Version	Title	Language	Retirement date
40368	A	Mobility & Devices Fundamentals: MTA Exam 98-368	English	03/31/2021
40369	A	Cloud Fundamentals: MTA Exam 98-369	English	03/31/2021
40372	A	Microsoft .NET Fundamentals: Training for MTA Exam 98-372	English	3/31/2021
40373	A	Mobile Development Fundamentals: Training for MTA Exam 98-373	English	3/31/2021
40374	A	Gaming Development Fundamentals: MTA Exam 98-374	English	3/31/2021
40375	A	HTML5 Application Development Fundamentals: Training for MTA Exam 98-375	English	3/31/2021

- Courseware retirements on December 31st, 2020

Course number	Version	Title	Language	Retirement date
MB-200T00	A	Microsoft Power Platform + Dynamics 365 Core	English	12/31/2020
MB-400T00	A	Microsoft Power Apps + Dynamics 365 Developer	English	12/31/2020

- Courseware retirements on November 30th, 2020

Course number	Version	Title	Language	Retirement date
40528	G	Business continuity and disaster recovery	English	11/30/2020
40503	G	Enterprise-ready cloud	English	11/30/2020
40565	G	Modernizing Data Analytics with SQL Server 2019	English	11/30/2020
40533	G	OSS PaaS and DevOps	English	11/30/2020
40563	G	Real-time data with Azure Database for PostgreSQL Hyperscale	English	11/30/2020

- Courseware retirements on September 30th, 2020, and related localized course retirements on October 30th, 2020

Course number	Version	Title	Language	Retirement date
AZ-300T01	A	Deploying and Configuring Infrastructure	English	09/30/2020
AZ-300T01ZH	A	Deploying and Configuring Infrastructure	Chinese Simplified	10/30/2020
AZ-300T01KO	A	Deploying and Configuring Infrastructure	Korean	10/30/2020
AZ-300T01JA	A	Deploying and Configuring Infrastructure	Japanese	10/30/2020
AZ-300T02	A	Implementing Workloads and Security	English	09/30/2020
AZ-300T02ZH	A	Implementing Workloads and Security	Chinese Simplified	10/30/2020
AZ-300T02KO	A	Implementing Workloads and Security	Korean	10/30/2020
AZ-300T02JA	A	Implementing Workloads and Security	Japanese	10/30/2020
AZ-300T03	A	Understanding Cloud Architect Technology Solutions	English	09/30/2020
AZ-300T03ZH	A	Understanding Cloud Architect Technology Solutions	Chinese Simplified	10/30/2020
AZ-300T03KO	A	Understanding Cloud Architect Technology Solutions	Korean	10/30/2020
AZ-300T03JA	A	Understanding Cloud Architect Technology Solutions	Japanese	10/30/2020
AZ-300T04	A	Creating and Deploying Apps	English	09/30/2020
AZ-300T04ZH	A	Creating and Deploying Apps	Chinese Simplified	10/30/2020
AZ-300T04KO	A	Creating and Deploying Apps	Korean	10/30/2020
AZ-	A	Creating and Deploying Apps	Japanese	10/30/2020

Course number	Version	Title	Language	Retirement date
300T04JA				
AZ-300T06	A	Developing for the Cloud	English	09/30/2020
AZ-300T06ZH	A	Developing for the Cloud	Chinese Simplified	10/30/2020
AZ-300T06KO	A	Developing for the Cloud	Korean	10/30/2020
AZ-300T06JA	A	Developing for the Cloud	Japanese	10/30/2020
AZ-301T01	A	Designing for Identity and Security	English	09/30/2020
AZ-301T01ZH	A	Designing for Identity and Security	Chinese Simplified	10/30/2020
AZ-301T01KO	A	Designing for Identity and Security	Korean	10/30/2020
AZ-301T01JA	A	Designing for Identity and Security	Japanese	10/30/2020
AZ-301T02	A	Designing a Data Platform Solution	English	09/30/2020
AZ-301T02ZH	A	Designing a Data Platform Solution	Chinese Simplified	10/30/2020
AZ-301T02KO	A	Designing a Data Platform Solution	Korean	10/30/2020
AZ-301T02JA	A	Designing a Data Platform Solution	Japanese	10/30/2020
AZ-301T03	A	Design for Deployment, Migration, and Integration	English	09/30/2020
AZ-301T03ZH	A	Design for Deployment, Migration, and Integration	Chinese Simplified	10/30/2020
AZ-301T03KO	A	Design for Deployment, Migration, and Integration	Korean	10/30/2020
AZ-301T03JA	A	Design for Deployment, Migration, and Integration	Japanese	10/30/2020

Course number	Version	Title	Language	Retirement date
AZ-301T04	A	Designing an Infrastructure Strategy	English	09/30/2020
AZ-301T04ZH	A	Designing an Infrastructure Strategy	Chinese Simplified	10/30/2020
AZ-301T04KO	A	Designing an Infrastructure Strategy	Korean	10/30/2020
AZ-301T04JA	A	Designing an Infrastructure Strategy	Japanese	10/30/2020

- Courseware retirements on August 31st, 2020

Course number	Version	Title	Language	Retirement date
AZ-103T00	A	Microsoft Azure Administrator	English	08/31/2020
AZ-103T00ZH	A	Microsoft Azure Administrator	Chinese Simplified	08/31/2020
AZ-103T00KO	A	Microsoft Azure Administrator	Korean	08/31/2020
AZ-103T00JA	A	Microsoft Azure Administrator	Japanese	08/31/2020
AZ-203T01	A	Develop Azure Infrastructure as a Service compute solutions	English	08/31/2020
AZ-203T01ZH	A	Develop Azure Infrastructure as a Service compute solutions	Chinese Simplified	08/31/2020
AZ-203T01KO	A	Develop Azure Infrastructure as a Service compute solutions	Korean	08/31/2020
AZ-203T01JA	A	Develop Azure Infrastructure as a Service compute solutions	Japanese	08/31/2020
AZ-203T02	A	Develop Azure Platform as a Service compute solutions	English	08/31/2020
AZ-203T02ZH	A	Develop Azure Platform as a Service compute solutions	Chinese Simplified	08/31/2020
AZ-203T02KO	A	Develop Azure Platform as a Service compute solutions	Korean	08/31/2020

Course number	Version	Title	Language	Retirement date
AZ-203T02JA	A	Develop Azure Platform as a Service compute solutions	Japanese	08/31/2020
AZ-203T03	A	Develop for Azure storage	English	08/31/2020
AZ-203T03ZH	A	Develop for Azure storage	Chinese Simplified	08/31/2020
AZ-203T03KO	A	Develop for Azure storage	Korean	08/31/2020
AZ-203T03JA	A	Develop for Azure storage	Japanese	08/31/2020
AZ-203T04	A	Implement Azure security	English	08/31/2020
AZ-203T04ZH	A	Implement Azure security	Chinese Simplified	08/31/2020
AZ-203T04KO	A	Implement Azure security	Korean	08/31/2020
AZ-203T04JA	A	Implement Azure security	Japanese	08/31/2020
AZ-203T05	A	Monitor, troubleshoot, and optimize Azure solutions	English	08/31/2020
AZ-203T05ZH	A	Monitor, troubleshoot, and optimize Azure solutions	Chinese Simplified	08/31/2020
AZ-203T05KO	A	Monitor, troubleshoot, and optimize Azure solutions	Korean	08/31/2020
AZ-203T05JA	A	Monitor, troubleshoot, and optimize Azure solutions	Japanese	08/31/2020
AZ-203T06	A	Connect to and consume Azure and third-party services	English	08/31/2020
AZ-203T06ZH	A	Connect to and consume Azure and third-party services	Chinese Simplified	08/31/2020
AZ-203T06KO	A	Connect to and consume Azure and third-party services	Korean	08/31/2020
AZ-203T06JA	A	Connect to and consume Azure and third-party services	Japanese	08/31/2020

Course number	Version	Title	Language	Retirement date
MS-200T01	A	Understanding the Modern Messaging Infrastructure	English	08/31/2020
MS-200T02	A	Managing Client Access and Mail Flow	English	08/31/2020
MS-200T03	A	Managing Messaging High Availability and Disaster Recovery	English	08/31/2020
MS-201T01	A	Defining a Hybrid Messaging Strategy	English	08/31/2020
MS-201T02	A	Managing Messaging Security, Hygiene, and Compliance	English	08/31/2020
MS-300T01	A	Managing Office 365 Content Services	English	08/31/2020
MS-300T02	A	Managing SharePoint Online	English	08/31/2020
MS-300T03	A	Enabling Microsoft Teams for Collaboration	English	08/31/2020
MS-300T04	A	Enabling Office 365 Workloads for Collaboration	English	08/31/2020
MS-301T01	A	Implementing SharePoint 2019 Infrastructure	English	08/31/2020
MS-301T02	A	Implementing SharePoint 2019 Service Applications	English	08/31/2020
MS-301T03	A	Implementing SharePoint Hybrid Scenarios	English	08/31/2020
MS-301T04	A	Migrating to SharePoint Online	English	08/31/2020

- Courseware retirements on June 30th, 2020

Course number	Version	Title	Language	Retirement date
2274	C	Managing a Microsoft® Windows Server™ 2003 Environment	English	06/30/2020
2275	C	Maintaining a Microsoft® Windows Server™ 2003 Environment	English	06/30/2020

Course number	Version	Title	Language	Retirement date
2276	C	Implementing a Microsoft® Windows Server™ 2003 Network Infrastructure: Network Hosts	English	06/30/2020
2277	C	Implementing, Managing, and Maintaining a Microsoft® Windows Server™ 2003 Network Infrastructure: Network Services	English	06/30/2020
2310	D	Developing Web Applications Using Microsoft® Visual Studio® 2008 SP1	English	06/30/2020
2400	C	Implementing and Managing Microsoft Exchange Server 2003	English	06/30/2020
2778	A	Writing Queries Using Microsoft® SQL Server™ 2008 Transact-SQL	English	06/30/2020
6158	C	Updating Your SQL Server® 2005 Skills to SQL Server 2008	English	06/30/2020
6214	A	Effective Team Development using Microsoft® Visual Studio® Team System	English	06/30/2020
6215	A	Implementing and Administering Microsoft® Visual Studio® 2008 Team Foundation Server	English	06/30/2020
6231	B	Maintaining a Microsoft® SQL Server® 2008 R2 Database	English	06/30/2020
6232	B	Implementing a Microsoft® SQL Server® 2008 R2 Database	English	06/30/2020
6234	A	Implementing and Maintaining Microsoft® SQL Server® 2008 Analysis Services	English	06/30/2020
6236	A	Implementing and Maintaining Microsoft® SQL Server™ 2008 Reporting Services	English	06/30/2020
6292	A	Installing and Configuring Windows® 7 Client	English	06/30/2020
6293	A	Troubleshooting and Supporting Windows® 7 in the Enterprise	English	06/30/2020

Course number	Version	Title	Language	Retirement date
6294	A	Planning and Managing Windows® 7 Desktop Deployments and Environments	English	06/30/2020
6317	A	Upgrading Your SQL Server® 2000 Database Administration (DBA) Skills to SQL Server 2008 DBA Skills	English	06/30/2020
6367	A	Introduction to Object Oriented Programming using Microsoft® Visual Studio® 2008	English	06/30/2020
6368	A	Programming with the Microsoft® .NET Framework Using Microsoft® Visual Studio® 2008	English	06/30/2020
6416	D	Updating Your Windows Server® 2003 Technology Skills to Windows Server® 2008	English	06/30/2020
6418	C	Deploying Windows Server® 2008	English	06/30/2020
6419	B	Configuring, Managing and Maintaining Windows Server® 2008-based Servers	English	06/30/2020
6421	B	Configuring and Troubleshooting a Windows Server® 2008 Network Infrastructure	English	06/30/2020
6425	C	Configuring and Troubleshooting Windows Server® 2008 Active Directory® Domain Services	English	06/30/2020
6426	C	Configuring and Troubleshooting Identity and Access Solutions with Windows Server® 2008 Active Directory®	English	06/30/2020
6433	A	Planning and Implementing Windows Server® 2008	English	06/30/2020
6435	B	Designing a Windows Server® 2008 Network Infrastructure	English	06/30/2020
6436	B	Designing a Windows Server® 2008 Active Directory® Infrastructure and Services	English	06/30/2020

Course number	Version	Title	Language	Retirement date
6439	A	Configuring and Troubleshooting Windows Server® 2008 Application Infrastructure	English	06/30/2020
6445	A	Implementing and Administering Windows® Small Business Server 2008	English	06/30/2020
6460	A	Visual Studio® 2008: Windows® Presentation Foundation	English	06/30/2020
7197	A	Managing Enterprise Desktops using the Microsoft® Desktop Optimization Pack	English	06/30/2020
10035	A	Notions de base sur l'infrastructure réseau et la plateforme d'applications Windows Server® 2008	French	06/30/2020
10054	A	Écriture de requêtes avec Microsoft SQL Server 2008 Transact-SQL	French	06/30/2020
10055	A	Schreiben von Abfragen mit Microsoft SQL Server 2008 Transact-SQL	German	06/30/2020
10076	A	Maintaining a Microsoft® SQL Server® 2008 Database	Japanese	06/30/2020
10076	A	Maintaining a Microsoft® SQL Server® 2008 Database	Japanese	06/30/2020
10135	B	Configuring, Managing and Troubleshooting Microsoft® Exchange Server 2010	English	06/30/2020
10135	B	Configuring, Managing and Troubleshooting Microsoft® Exchange Server 2010 Service Pack 2	English	06/30/2020
10137	A	Konfigurieren, Verwalten und Warten von Windows Server® 2008-Servern	German	06/30/2020
10141	A	Verwalten einer Microsoft® SQL Server® 2008-Datenbank	German	06/30/2020
10165	A	Updating Your Skills from Microsoft® Exchange Server 2003 or Exchange	English	06/30/2020

Course number	Version	Title	Language	Retirement date
		Server 2007 to Exchange Server 2010 SP1		
10169	A	Implementing a Microsoft® SQL Server® 2008 Database	Brazilian Portuguese	06/30/2020
10174	B	Configuring and Administering Microsoft® SharePoint® 2010	English	06/30/2020
10175	A	Microsoft® SharePoint® 2010, Application Development	English	06/30/2020
10215	A	Implementing and Managing Microsoft® Server Virtualization	English	06/30/2020
10221	B	Configuração e solução de problemas de uma infraestrutura de rede do Windows Server® 2008	Brazilian Portuguese	06/30/2020
10227	A	Maintenance d'une base de données Microsoft SQL Server 2008	French	06/30/2020
10231	B	Designing a Microsoft® SharePoint® 2010 Infrastructure	English	06/30/2020
10232	A	Designing and Developing Microsoft® SharePoint® Server 2010 Applications	English	06/30/2020
10233	B	Designing and Deploying Messaging Solutions with Microsoft® Exchange Server 2010	English	06/30/2020
10262	A	Developing Windows® Applications with Microsoft® Visual Studio® 2010	English	06/30/2020
10263	A	Developing Windows® Communication Foundation Solutions with Microsoft® Visual Studio® 2010	English	06/30/2020
10264	A	Developing Web Applications with Microsoft® Visual Studio® 2010	English	06/30/2020
10265	A	Developing Data Access Solutions with Microsoft® Visual Studio® 2010	English	06/30/2020
10267	A	Introduction to Web Development with Microsoft® Visual Studio® 2010	English	06/30/2020

Course number	Version	Title	Language	Retirement date
10324	A	Implementing and Managing Microsoft® Desktop Virtualization	English	06/30/2020
10508	A	Planning, Deploying, and Managing Microsoft® Exchange Server 2010 Unified Messaging	English	06/30/2020
10533	A	Deploying, Configuring, and Administering Microsoft® Lync™ Server 2010	English	06/30/2020
10534	A	Planning and Designing a Microsoft® Lync™ Server 2010 Solution	English	06/30/2020
10553	A	Fundamentals of XAML and Microsoft® Expression Blend®	English	06/30/2020
10554	A	Developing Rich Internet Applications Using Microsoft® Silverlight® 4	English	06/30/2020
10558	A	Einführung in die Webentwicklung mit Microsoft® Visual Studio® 2010	German	06/30/2020
10558	A	Introduction to Web Development with Microsoft® Visual Studio® 2010	German	06/30/2020
10559	A	Introduction to Web Development Using Microsoft® Visual Studio® 2010	Japanese	06/30/2020
10559	A	Introduction to Web Development with Microsoft® Visual Studio® 2010	Japanese	06/30/2020
10711	A	Configuring, Managing and Troubleshooting Microsoft® Exchange Server 2010	Russian	06/30/2020
10712	A	Fundamentals of Windows Server® 2008	Russian	06/30/2020
10802	A	Microsoft® Enterprise Search for IT Professionals	English	06/30/2020
10805	A	Microsoft® SharePoint® 2010 Search for Application Developers	English	06/30/2020
10806	A	Microsoft® FAST Search Server 2010 for SharePoint® for Application	English	06/30/2020

Course number	Version	Title	Language	Retirement date
Developers				
10977	B	Upgrading Your SQL Server Skills to Microsoft® SQL Server® 2014	English	06/30/2020
10981	A	Infrastructure Provisioning with System Center Virtual Machine Manager	English	06/30/2020
10988	C	Managing SQL Business Intelligence Operations	English	06/30/2020
10999	A	SQL Server on Linux	English	06/30/2020
20332	B	Advanced Solutions of Microsoft SharePoint Server 2013	English	06/30/2020
20335	B	Network Readiness and Assessment for Lync	English	06/30/2020
20336	B	Core Solutions of Microsoft® Lync® Server 2013	English	06/30/2020
20337	B	Enterprise Voice and Online Services with Microsoft® Lync® Server 2013	English	06/30/2020
20342	B	Pro: Exchange Server 15	English	06/30/2020
20346	D	Managing Office 365 Identities and Services	English	06/30/2020
20398	B	Planning for and Managing Devices in the Enterprise: Enterprise Mobility Suite (EMS) & On-Premises Tools	English	06/30/2020
20409	B	Server Virtualization with Windows Server Hyper-V® and System Center	English	06/30/2020
20415	B	Implementing a Desktop Infrastructure	English	06/30/2020
20416	B	Implementing Desktop Application Environments	English	06/30/2020
20489	B	Developing Microsoft® SharePoint® 2013 Advanced Solutions	English	06/30/2020
20687	D	Configuring Windows® 8.1	English	06/30/2020

Course number	Version	Title	Language	Retirement date
20688	D	Supporting Windows® 8.1	English	06/30/2020
20689	D	Upgrading Your Skills to MCSA Windows® 8.1	English	06/30/2020
21331	B	Konfigurieren und Verwalten von Microsoft® SharePoint 15	German	06/30/2020
21341	B	Kernlösungen von Microsoft® Exchange Server 2013	English	06/30/2020
21415	B	Implementieren von Umgebungen für Desktopanwendungen	German	06/30/2020
21416	B	Implementieren von Umgebungen für Desktopanwendungen	German	06/30/2020
21687	B	Konfigurieren von Windows® 8	German	06/30/2020
21688	A	Verwalten und Warten von Windows® 8	German	06/30/2020
21689	A	Erweitern der Kenntnisse auf MCSA für Windows 8	German	06/30/2020
22331	B	Solutions principales de Microsoft® SharePoint® Server 2013	French	06/30/2020
22416	B	Implementing Desktop Application Environments	French	06/30/2020
22687	B	Configuration de Windows® 8	French	06/30/2020
22688	A	Managing and Maintaining Windows 8	French	06/30/2020
23332	B	Advanced Solutions of Microsoft® SharePoint® Server 2013	Japanese	06/30/2020
23336	B	Core Solutions of Microsoft® Lync® Server 2013	English	06/30/2020
23337	B	Enterprise Voice and Online Services with Microsoft® Lync® Server 2013	Japanese	06/30/2020
23341	B	Core Solutions of Microsoft® Exchange Server 2013	Japanese	06/30/2020

Course number	Version	Title	Language	Retirement date
23342	B	Advanced Solutions of Microsoft Exchange Server 2013	Japanese	06/30/2020
23346	C	Managing Office 365 Identities and Services	Japanese	06/30/2020
23347	A	Enabling and Managing Office 365	Japanese	06/30/2020
23409	B	Server Virtualization with Windows Server Hyper-V® and System Center	Japanese	06/30/2020
23532	B	Developing Microsoft Azure Solutions	Japanese	06/30/2020
23533	C	Implementing Microsoft Azure Infrastructure Solutions	Japanese	06/30/2020
23695	C	Deploying Windows Devices and Enterprise Apps	Japanese	06/30/2020
23696	C	Managing Enterprise Devices and Apps using System Center Configuration Manager	Japanese	06/30/2020
21697-2	B	Deploying and Managing Windows 10 Using Enterprise Services	German	06/30/2020
22697-2	B	Deploying and Managing Windows 10	French	06/30/2020
23697-1	B	Installing and Configuring Windows 10	Japanese	06/30/2020
23697-2	B	Deploying and Managing Windows 10 Using Enterprise Services	Japanese	06/30/2020

- Courseware retirements on May 29th, 2020

Course number	Version	Title	Language	Retirement date
AZ-400T01	A	Implementing DevOps Development Processes	English	05/29/2020
AZ-400T02	A	Implementing Continuous Integration	English	05/29/2020
AZ-400T03	A	Implementing Continuous Delivery	English	05/29/2020

Course number	Version	Title	Language	Retirement date
AZ-400T04	A	Implementing Dependency Management	English	05/29/2020
AZ-400T05	A	Implementing Application Infrastructure	English	05/29/2020
AZ-400T06	A	Implementing Continuous Feedback	English	05/29/2020
AZ-400T07	A	Designing a DevOps Strategy	English	05/29/2020
MS-500T01	A	Managing Microsoft 365 Identity and Access	English	05/29/2020
MS-500T02	A	Implementing Microsoft 365 Threat Protection	English	05/29/2020
MS-500T03	A	Implementing Microsoft 365 Information Protection	English	05/29/2020
MS-500T04	A	Administering Microsoft 365 Built-in Compliance	English	05/29/2020
40517	G	Microsoft Cloud Workshop: Migrate EDW to Azure SQL Data Warehouse	English	05/29/2020

- Courseware retirements on February 28th, 2020

Course number	Version	Title	Language	Retirement date
2778	A	Writing Queries Using Microsoft® SQL Server™ 2008 Transact-SQL	English	02/28/2020
6231	B	Maintaining a Microsoft® SQL Server® 2008 R2 Database	English	02/28/2020
6234	A	Implementing and Maintaining Microsoft® SQL Server® 2008 Analysis Services	English	02/28/2020
6236	A	Implementing and Maintaining Microsoft® SQL Server™ 2008 Reporting Services	English	02/28/2020
6421	B	Configuring and Troubleshooting a Windows Server® 2008 Network Infrastructure	English	02/28/2020

Course number	Version	Title	Language	Retirement date
6425	C	Configuring and Troubleshooting Windows Server® 2008 Active Directory® Domain Services	English	02/28/2020
6426	C	Configuring and Troubleshooting Identity and Access Solutions with Windows Server® 2008 Active Directory®	English	02/28/2020
6460	A	Visual Studio® 2008: Windows® Presentation Foundation	English	02/28/2020
10135	B	Configuring, Managing and Troubleshooting Microsoft® Exchange Server 2010	English	02/28/2020
10174	B	Configuring and Administering Microsoft® SharePoint® 2010	English	02/28/2020
10175	A	Microsoft® SharePoint® 2010, Application Development	English	02/28/2020
10262	A	Developing Windows® Applications with Microsoft® Visual Studio® 2010	English	02/28/2020
10263	A	Developing Windows® Communication Foundation Solutions with Microsoft® Visual Studio® 2010	English	02/28/2020
10264	A	Developing Web Applications with Microsoft® Visual Studio® 2010	English	02/28/2020
10265	A	Developing Data Access Solutions with Microsoft® Visual Studio® 2010	English	02/28/2020
10324	A	Implementing and Managing Microsoft® Desktop Virtualization	English	02/28/2020
10550	A	Programming in Visual Basic with Microsoft® Visual Studio® 2010	English	02/28/2020
10748	C	Planning and Deploying System Center 2012 Configuration Manager	English	02/28/2020
10977	B	Upgrading Your SQL Server Skills to Microsoft® SQL Server® 2014	English	02/28/2020
10981	A	Infrastructure Provisioning with System	English	02/28/2020

Course number	Version	Title	Language	Retirement date
Center Virtual Machine Manager				
10991	A	Troubleshooting Windows Server 2016 Core Technologies	English	02/28/2020
10993	B	Integrating Cloud Services with System Center Configuration Manager	English	02/28/2020
10999	A	SQL Server on Linux	English	02/28/2020
13969	B	Active Directory® Services with Windows Server	Japanese	02/28/2020
20331	B	Core Solutions of Microsoft® SharePoint® Server 2013	English	02/28/2020
20332	B	Advanced Solutions of Microsoft SharePoint Server 2013	English	02/28/2020
20341	B	Core Solutions of Microsoft® Exchange Server 2013	English	02/28/2020
20342	B	Advanced Solutions of Microsoft Exchange Server 2013	English	02/28/2020
20415	B	Implementing a Desktop Infrastructure	English	02/28/2020
20416	B	Implementing Desktop Application Environments	English	02/28/2020
20488	B	Developing Microsoft SharePoint Server 2013 Core Solutions	English	02/28/2020
20687	D	Configuring Windows® 8.1	English	02/28/2020
20688	D	Supporting Windows® 8.1	English	02/28/2020
23346	C	Managing Office 365 Identities and Services	Japanese	02/28/2020
40409	A	Deploying Voice Workloads for Skype for Business Online and Server 2015	English	02/28/2020
40552	A	Microsoft Security Workshop: Managing Identity	English	02/28/2020
40553	A	Microsoft Security Workshop: Planning for a Secure Enterprise - Improving Detection	English	02/28/2020

Course number	Version	Title	Language	Retirement date
40554	A	Microsoft Security Workshop: Implementing Windows 10 Security Features	English	02/28/2020
22697-1	B	Installing and Configuring Windows 10	French	02/28/2020
MB-900T01	A	Dynamics 365 fundamentals	English	02/28/2020

- Courseware retirements on January 31st, 2020

Course number	Version	Title	Language	Retirement date
10979	F	Introduction to Microsoft Azure for IT Professionals	English	01/31/2020
MB-200T01	A	Dynamics 365: Power Platform applications	English	01/31/2020
MB-200T02	A	Dynamics 365: Power Platform automation	English	01/31/2020
MB-200T03	A	Dynamics 365: Power Platform integrations	English	01/31/2020
MB-200T04	A	Dynamics 365: Power Platform test and deploy	English	01/31/2020
MB-220T01	A	Configure settings and core functionality in Dynamics 365 for Marketing	English	01/31/2020
MB-220T02	A	Set Up events and surveys in Dynamics 365 for Marketing	English	01/31/2020
MB-240T01	A	Configuring Dynamics 365 for Field Service	English	01/31/2020
MB-240T02	A	Work order and delivery execution for Dynamics 365 for Field Service	English	01/31/2020
MB-240T03	A	Universal Resource Scheduling for Dynamics 365 for Field Service	English	01/31/2020
MB-300T01	A	Core common features of Dynamics 365 for Finance and Operations	English	01/31/2020

Course number	Version	Title	Language	Retirement date
MB-300T02	A	Core configuration in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-300T03	A	Data migration and preparing for go-live with Dynamics 365 for Finance and Operations	English	01/31/2020
MB-310T01	A	Configure and use essential components of financial management in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-310T02	A	Configure and use accounts payable, receivable, and collections in Finance and Operations	English	01/31/2020
MB-310T03	A	Configure and use budgeting, fixed assets, and additional functionality in Finance and Operations	English	01/31/2020
MB-320T01	A	Configure and use discrete manufacturing in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-320T02	A	Configure and use lean manufacturing in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-320T03	A	Configure and use process manufacturing in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-330T01	A	Configure and use supply chain management in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-330T02	A	Use quality management, Intercompany trading and master planning in Dynamics 365 for Finance and Operations	English	01/31/2020
MB-330T03	A	Configure and use warehouse, and transportation management in Dynamics 365 for Finance and Operations	English	01/31/2020

- Courseware retirements on December 31st, 2019

Course number	Version	Title	Language	Retirement date
MD-100T01	A	Installing Windows 10	English	12/31/2019
MD-100T02	A	Configuring Windows 10	English	12/31/2019
MD-100T03	A	Protecting Windows 10	English	12/31/2019
MD-100T04	A	Maintaining Windows 10	English	12/31/2019
MD-101T01	A	Deploying the Modern Desktop	English	12/31/2019
MD-101T02	A	Managing Modern Desktops and Devices	English	12/31/2019
MD-101T03	A	Protecting Modern Desktops and Devices	English	12/31/2019
40507	G	Microsoft Cloud Workshop: Microservices Architecture	English	12/31/2019
40525	G	Microsoft Cloud Workshop: Media AI	English	12/31/2019
10992	B	Integrating On-Premises Core Infrastructure with Microsoft Azure	English	12/31/2019
10993	B	Integrating On-Premises Identity Infrastructure with Microsoft Azure	English	12/31/2019
40389	A	First Look Clinic: Windows Server 2016	English	12/31/2019
40525	G	Microsoft Cloud Workshop: Media AI	English	12/31/2019
20695	D	Deploying Windows Desktops and Enterprise Applications	English	12/31/2019
20703-2	B	Integrating Cloud Services with System Center Configuration Manager	English	12/31/2019
10050	A	Microsoft® SQL Server® 2008 データベースの実装	Japanese	12/31/2019
10078	A	Configuring and Troubleshooting Windows Server 2008 Active Directory Domain Services (Simplified Chinese)	Simplified Chinese	12/31/2019

Course number	Version	Title	Language	Retirement date
10136	A	Configuration, gestion et maintenance des serveurs Windows Server® 2008	French	12/31/2019
10138	A	Windows Server® 2008 サーバーの構成、管理、メンテナンス	Japanese	12/31/2019
10140	A	Configuring, Managing and Maintaining Windows Server 2008 Servers	Portuguese	12/31/2019
10142	A	Manutenção de um banco de dados do Microsoft® SQL Server® 2008	Portuguese	12/31/2019
10168	A	Conceitos básicos da infraestrutura de rede e aplicativos do Windows Server® 2008	Portuguese	12/31/2019
10216	A	Konfiguration, Verwaltung und Problembehandlung in Microsoft® Exchange Server 2010	German	12/31/2019
10217	A	Microsoft® Exchange Server 2010 の構成、管理、トラブルシューティング	Japanese	12/31/2019
10219	A	Configuration, gestion et résolution des problèmes de Microsoft® Exchange Server 2010	French	12/31/2019
10220	A	Planen und Verwalten von Windows® 7-Desktopbereitstellungen und -umgebungen	German	12/31/2019
10222	A	Configuração e solução de problemas dos Serviços de Domínio Active Directory® no Windows Server® 2008	Portuguese	12/31/2019
10223	A	Planification et gestion des environnements et des déploiements de postes de travail Windows® 7	French	12/31/2019
10224	A	Installation et configuration du client Windows® 7	French	12/31/2019
10225	A	Installieren und Konfigurieren von Windows® 7 Client	German	12/31/2019
10226	A	Windows® 7 クライアントのインストールおよび構成	Japanese	12/31/2019

Course number	Version	Title	Language	Retirement date
10228	A	Instalação e configuração do cliente Windows® 7	Portuguese	12/31/2019
10229	A	Konfigurieren von Identitäts- und Zugriffslösungen und Problembehandlung mit Windows Server® 2008 Active Directory®	German	12/31/2019
10230	A	Configuração e solução de problemas de soluções de identidade e acesso no Windows Server® 2008 Active Directory®	Portuguese	12/31/2019
10555	A	Configuração, gerenciamento e solução de problemas do Microsoft® Exchange Server 2010	Portuguese	12/31/2019
10557	A	Introduction au développement Web avec Microsoft® Visual Studio® 2010	French	12/31/2019
10560	A	Introdução ao Desenvolvimento na Web com o Microsoft® Visual Studio® 2010	Portuguese	12/31/2019
10561	A	Windows® 7 客户端的安装与配置	Simplified Chinese	12/31/2019
10563	A	Microsoft® Visual Studio® 2010 C# 编程	Simplified Chinese	12/31/2019
10564	A	Microsoft® Visual Studio® 2010 Web 开发基础	Simplified Chinese	12/31/2019
10701	A	Configuration et gestion de Microsoft SharePoint 2010	French	12/31/2019
10702	A	Konfiguration und Verwaltung von Microsoft SharePoint 2010	German	12/31/2019
10704	A	Configuração e gerenciamento do Microsoft SharePoint 2010	Portuguese	12/31/2019
10707	A	Instalowanie i konfigurowanie klienta systemu Windows® 7	Polish	12/31/2019
10708	A	Instalación y configuración del cliente de Windows® 7	Spanish	12/31/2019

Course number	Version	Title	Language	Retirement date
10709	A	Установка и настройка клиента Windows® 7	Russion	12/31/2019
10714	A	Desenvolvimento de aplicativos Web com o Microsoft® Visual Studio® 2010	Portuguese	12/31/2019
10755	A	Implémentation et gestion de la virtualisation de serveurs Microsoft®	French	12/31/2019
10756	A	Implementierung und Verwaltung von Microsoft® Server Virtualization	German	12/31/2019
10757	A	Implementação e gerenciamento da virtualização de servidores da Microsoft®	Portuguese	12/31/2019
10758	A	Implémentation et gestion de la virtualisation de postes de travail Microsoft	French	12/31/2019
10759	A	Implementierung und Verwaltung von Microsoft Desktop Virtualization	German	12/31/2019
10947	A	使用Visual Studio 2010 开发数据访问应用程序	Simplified Chinese	12/31/2019
10948	A	使用Visual Studio 2010 开发WCF应用程序	Simplified Chinese	12/31/2019
10949	A	使用Visual Studio 2010 开发 Windows 应用程序	Simplified Chinese	12/31/2019
10951	A	Implementing and Managing Microsoft® Server Virtualization (Simplified Chinese)	Simplified Chinese	12/31/2019
10952	A	Microsoft SharePoint 2010 配置与管理	Simplified Chinese	12/31/2019
21416	B	Implementieren von Umgebungen für Desktopanwendungen	German	12/31/2019
2180	A	Implementação de uma infra estrutura de rede do Microsoft® Windows Server™ 2003: hosts de rede	Portuguese	12/31/2019
2180	A	Implementação de uma infra estrutura de rede do Microsoft® Windows	Portuguese	12/31/2019

Course number	Version	Title	Language	Retirement date	
		Server™ 2003: hosts de rede			
2197	A	Planning, Implementing, and Maintaining a Microsoft® Windows® Server 2003 Active Directory® Infrastructure	Portuguese	12/31/2019	
2197	A	Planning, Implementing, and Maintaining a Microsoft® Windows Server™ 2003 Active Directory® Infrastructure	Portuguese	12/31/2019	
22413	B	Conception et implémentation d'une infrastructure de serveur	French	12/31/2019	
22415	B	Implémentation d'une infrastructure de bureau	French	12/31/2019	
23331	B	Core Solutions of Microsoft® SharePoint® Server 2013	Japanese	12/31/2019	
23332	B	Advanced Solutions of Microsoft® SharePoint® Server 2013	Japanese	12/31/2019	
23687	B	Configuring Windows 8	Japanese	12/31/2019	
23688	A	Managing and Maintaining Windows 8	Japanese	12/31/2019	
24687	B	Configuring Windows 8	Portuguese	12/31/2019	
24688	A	Managing and Maintaining Windows 8	Portuguese	12/31/2019	
28533	D	实施Microsoft Azure基础架构解决方案	Simplified Chinese	12/31/2019	
29533	D	實作 Microsoft Azure 基礎架構解決方案	Simplified Chinese	12/31/2019	
50287	A	Microsoft Virtualization Technology Overview (Version 2)	Japanese	12/31/2019	
50288	A	Install and Configure Hyper-V (Version 2)	Japanese	12/31/2019	
50403	B	Implementing Active Directory Rights Management Services with Exchange and SharePoint	English	12/31/2019	
50412	B	Implementing Active Directory	English	12/31/2019	

Course number	Version	Title	Language	Retirement date
Federation Services 2.0				
50497	A	Microsoft SQL Server 2008 System Administration (Preparation for MCTS 70-432)	Japanese	12/31/2019
50498	A	Planning and Management for Windows 7 Desktop Deployment Environment	Japanese	12/31/2019
50525	A	Team Foundation Server 2010 Fundamentals	Japanese	12/31/2019
50590	A	Microsoft Client Virtualization Solutions – Remote Desktop and VDI	Japanese	12/31/2019
50591	A	Installing, Configuring, and Deploying Windows 7 Clients	Japanese	12/31/2019
50600	A	Designing a Business Intelligence Infrastructure Using Microsoft SQL Server 2008	Japanese	12/31/2019
50601	A	Designing and Implementing Management Solution for Microsoft SQL Server 2008 Database	Japanese	12/31/2019
50602	A	Designing and Planning Microsoft Lync Server 2010 Solutions	Japanese	12/31/2019
50603	A	Configuring and Administering Microsoft Lync Server 2010	Japanese	12/31/2019
6237	B	Windows Server® 2008 Active Directory® -Domänenendienste: Konfiguration und Problembehandlung	German	12/31/2019
6238	B	Configuration et résolution des problèmes des services de domaine Active Directory® Windows Server® 2008	French	12/31/2019
6744	A	Configuration et résolution des problèmes en utilisant Internet Information Services dans Windows Server® 2008	French	12/31/2019
6745	A	Internetinformationsdienste in Windows Server® 2008: Konfiguration	German	12/31/2019

Course number	Version	Title	Language	Retirement date
und Problembehandlung				
6748	B	Einrichten von Servern unter Windows Server® 2008	German	12/31/2019
6850	A	Fundamentals of Windows Server® 2008 Network and Applications Infrastructure (Simplified Chinese)	Simplified Chinese	12/31/2019
6852	A	Configuring and Troubleshooting a Windows Server® 2008 Network Infrastructure (Simplified Chinese)	Simplified Chinese	12/31/2019
6854	A	Windows Server® 2008 Internet 信息服 务的配置与故障排除	Simplified Chinese	12/31/2019

- Courseware retirements on November 27th, 2019

Course number	Version	Title	Language	Retirement date
MS-100T01	A	Office 365 Management	English	11/27/2019
MS-100T02	A	Microsoft 365 Tenant & Service Management	English	11/27/2019
MS-100T03	A	Microsoft 365 Identity Management	English	11/27/2019
MS-101T01	A	Microsoft 365 Security Management	English	11/27/2019
MS-101T02	A	Microsoft 365 Compliance Management	English	11/27/2019
MS-101T03	A	Microsoft 365 Device Management	English	11/27/2019

- Courseware retirements on October 31st, 2019

Course number	Version	Title	Language	Retirement date
20347	B	Enabling & Managing Office 365	English	10/31/2019

- Courseware retirements on July 31st, 2019

Course number	Version	Title	Language	Retirement date
10970	B	Networking with Windows Server	English	7/31/2019
10971	B	Storage and High Availability with Windows Server	English	7/31/2019
10974	B	Deploying and Migrating Windows Servers	English	7/31/2019

- Courseware retirements on June 30th, 2019

Course number	Version	Title	Language	Retirement date
10958	B	Programming Fundamentals of Web Applications	English	6/30/2019
20481	C	Essentials of Developing Windows Store Apps Using HTML5 and JavaScript	English	6/30/2019
20482	C	Advanced Windows Store App Development Using HTML5 and JavaScript	English	6/30/2019
20484	C	Essentials of Developing Windows Store Apps Using C#	English	6/30/2019
20485	C	Advanced Windows Store App Development Using C#	English	6/30/2019
20697-1	D	Implementing and Managing Windows 10	English	6/30/2019
20697-2	C	Deploying and Managing Windows 10 Using Enterprise Services	English	6/30/2019
20698	B	Installing and Configuring Windows 10	English	6/30/2019
20773	A	Analyzing Big Data with Microsoft R	English	6/30/2019
20774	A	Perform Cloud Data Science with Azure Machine Learning	English	6/30/2019
20775	A	Perform Data Engineering on Microsoft HD Insight	English	6/30/2019

Course number	Version	Title	Language	Retirement date
20776	A	Engineering Data with Microsoft Cloud Services	English	6/30/2019
32410	B	Installing and Configuring Windows Server 2012	Turkish	6/30/2019
32411	B	Administering Windows Server 2012	Turkish	6/30/2019
40504	G	Microsoft Cloud Workshop: Intelligent Vending Machines	English	6/30/2019
40506	G	Microsoft Cloud Workshop: Lift and Shift / Azure Resource Manager	English	6/30/2019
40520	G	Microsoft Cloud Workshop: Optimized Architecture	English	6/30/2019
40523	G	Microsoft Cloud Workshop: Azure Blockchain	English	6/30/2019
40524	G	Microsoft Cloud Workshop: Linux Lift & Shift	English	6/30/2019
40532	G	Microsoft Cloud Workshop: Mobile app innovation	English	6/30/2019
40534	G	Microsoft Cloud Workshop: Securing PaaS	English	6/30/2019
AZ-100T01	A	Managing Azure Subscriptions and Resources	English	6/30/2019
AZ-100T02	A	Implementing and Managing Storage	English	6/30/2019
AZ-100T03	A	Deploying and Managing Virtual Machines	English	6/30/2019
AZ-100T04	A	Configure and Manage Virtual Networks	English	6/30/2019
AZ-100T05	A	Manage Identities	English	6/30/2019
AZ-101T01	A	Migrate Servers to Azure	English	6/30/2019
AZ-101T02	A	Implement and Manage Application Services	English	6/30/2019
AZ-101T03	A	Implement Advanced Virtual Networking	English	6/30/2019

Course number	Version	Title	Language	Retirement date
AZ-101T04	A	Secure Identities	English	6/30/2019

- Courseware retirements on May 1st, 2019

Course number	Version	Title	Language	Retirement date
40536	A	Build iOS apps with C# and .NET using the Xamarin tools for Visual Studio	English	5/01/2019
40537	A	Build Android apps with C# and .NET using the Xamarin tools for Visual Studio	English	5/01/2019
40538	A	Build native cross-platform mobile apps with a shared UI for iOS, Android, and UWP in C# .NET with Xamarin.Forms	English	5/01/2019
40539	A	Build iOS apps with C# and .NET using the Xamarin tools for Visual Studio	English	5/01/2019
40540	A	Build Android apps with C# and .NET using the Xamarin tools for Visual Studio	English	5/01/2019
40541	A	Build native cross-platform mobile apps with a shared C# business logic for iOS, Android, and UWP in C# .NET with Xamarin and Visual Studio	English	5/01/2019
40542	A	Build native cross-platform mobile apps with a shared UI for iOS, Android, and UWP in C# .NET with Xamarin.Forms (retiring on 01-May-19)	English	5/01/2019
AZ-200T01	A	Select the appropriate Azure technology development solution	English	5/01/2019
AZ-200T02	A	Develop for Azure storage	English	5/01/2019
AZ-200T03	A	Develop Azure Platform as a Service solutions	English	5/01/2019
AZ-200T04	A	Implement security in Azure development solutions	English	5/01/2019

Course number	Version	Title	Language	Retirement date
AZ-201T01	A	Develop for an Azure Cloud Model	English	5/01/2019
AZ-201T02	A	Implement Azure development integration Solutions	English	5/01/2019
AZ-201T03	A	Develop Azure Cognitive Services, Bot, and IoT solutions	English	5/01/2019

- Courseware retirements on March 31st, 2019

Course number	Version	Title	Language	Retirement date
10996	A	Hybrid Cloud and Datacenter Monitoring with Operations Management Suite (OMS)	English	3/31/2019
40457	A	MOC Workshop: Azure Developer Hackathon	English	3/31/2019
40500	A	DevOps Workshop	English	3/31/2019

- Courseware retirements on January 31st, 2019

Course number	Version	Title	Language	Retirement date
AZ-300T05	A	Implementing Authentication and Secure Data	English	1/31/2019

- Courseware retirements on December 31st, 2018

Course number	Version	Title	Language	Retirement date
20532	D	Developing Microsoft Azure Solutions	English	12/31/2018
20533	E	Implementing Microsoft Azure Infrastructure Solutions	English	12/31/2018
20535	A	Architecting Microsoft Azure Solutions	English	12/31/2018

- Courseware retirements on August 20th, 2018

Course number	Version	Title	Language	Retirement date
6235	A	Implementing and Maintaining Microsoft SQL Server 2008 Integration Services	English	08/20/2018

- Courseware retirements on July 31, 2018

Course number	Version	Title	Language	Retirement date
20398	B	Planning for and Managing Devices in the Enterprise: Enterprise Mobility Suite (EMS) & On-Premises Tools	English	07/31/2018
40008	A	Updating your Database Skills to Microsoft® SQL Server® 2012	English	07/31/2018
40009	A	Updating your Business Intelligence Skills to Microsoft® SQL Server® 2012	English	07/31/2018
40033	A	Windows Operating System and Windows Server Fundamentals: Training 2-Pack for MTA Exams 98-349 and 98-365	English	07/31/2018
40043	A	Windows® 8 UX Design Workshop	English	07/31/2018
40045	A	Microsoft® SQL Server® for Oracle DBAs	English	07/31/2018
40074	A	Microsoft® SQL Server® 2014 for Oracle DBAs	English	07/31/2018
40076	A	MVA Workshop: Troubleshooting Windows Systems with SysInternals Tools	English	07/31/2018
40390	B	Microsoft Azure for AWS Experts	English	07/31/2018
40365	A	Windows Server Administration Fundamentals: MTA Exam 98-365	English	07/31/2018
50040	A	Preparing for the Microsoft Certified Application Specialist Exam in Microsoft Office Access 2007	English	07/31/2018
50041	A	Preparing for the Microsoft Certified Application Specialist Exam in Microsoft	English	07/31/2018

Course number	Version	Title	Language	Retirement date	
		Office Excel 2007			
50042	A	Preparing for the Microsoft Certified Application Specialist Exam in Microsoft Office Outlook 2007	English	07/31/2018	
50043	A	Preparing for the Microsoft Certified Application Specialist Exam in Microsoft Office PowerPoint 2007	English	07/31/2018	
50044	A	Preparing for the Microsoft Certified Application Specialist Exam in Microsoft Office Word 2007	English	07/31/2018	
50045	A	Preparing for the Microsoft Certified Application Specialist Exam in Windows Vista	English	07/31/2018	
50107	A	Learn Microsoft® Office Visio® 2007 Step by Step	English	07/31/2018	
50123	A	Learn Microsoft® Office Excel® 2007 Step by Step, Level 1	English	07/31/2018	
50124	A	Learn Microsoft® Office Excel® 2007 Step by Step, Level 2	English	07/31/2018	
50125	A	Learn Microsoft® Office Excel® 2007 Step by Step, Level 3	English	07/31/2018	
50126	A	Learn Microsoft® Office Word 2007 Step by Step, Level 1	English	07/31/2018	
50127	A	Learn Microsoft® Office Word 2007 Step by Step, Level 2	English	07/31/2018	
50128	A	Learn Microsoft® Office Word 2007 Step by Step, Level 3	English	07/31/2018	
50129	A	Learn Microsoft® Office PowerPoint® 2007 Step by Step, Level 1	English	07/31/2018	
50130	A	Learn Microsoft® Office PowerPoint® 2007 Step by Step, Level 2	English	07/31/2018	
50131	A	Learn Microsoft® Office PowerPoint® 2007 Step by Step, Level 3	English	07/31/2018	

Course number	Version	Title	Language	Retirement date
50132	A	Learn Microsoft® Office Outlook® 2007 Step by Step, Level 1	English	07/31/2018
50133	A	Learn Microsoft® Office Outlook ® 2007 Step by Step, Level 2	English	07/31/2018
50134	A	Learn Microsoft® Office Outlook® 2007 Step by Step, Level 3	English	07/31/2018
50135	A	Learn Microsoft® Office Access® 2007 Step by Step, Level 1	English	07/31/2018
50136	A	Learn Microsoft® Office Access® 2007 Step by Step, Level 2	English	07/31/2018
50207	A	Learn Microsoft Office SharePoint® Designer 2007 Step by Step, Level 1	English	07/31/2018
50208	A	Learn Microsoft Office SharePoint® Designer 2007 Step by Step, Level 2	English	07/31/2018
50209	A	Learn Microsoft Office SharePoint® Designer 2007 Step by Step, Level 3	English	07/31/2018
50367	A	Learn Windows 7 Step by Step, Level 1	English	07/31/2018
50368	A	Learn Windows 7 Step by Step, Level 2	English	07/31/2018
50369	A	Learn Windows Internet Explorer 8 Step by Step	English	07/31/2018
50374	B	Microsoft Server Virtualization and Management for the Experienced VMware IT Pro	English	07/31/2018
50382	B	Implementing Forefront Identity Manager 2010	English	07/31/2018
50383	B	Upgrading Identity Lifecycle Manager 2007 to Forefront Identity Manager 2010	English	07/31/2018
50402	B	Implementing Forefront Unified Access Gateway 2010	English	07/31/2018
50403	B	Implementing Active Directory Rights Management Services with Exchange and SharePoint	English	07/31/2018

Course number	Version	Title	Language	Retirement date
50404	B	Overview of Active Directory Rights Management Services with Windows Server 2008 R2	English	07/31/2018
50412	B	Implementing Active Directory Federation Services 2.0	English	07/31/2018
50430	B	Administering Team Foundation Server 2010	English	07/31/2018
50466	B	Windows® Azure™ Solutions with Microsoft® Visual Studio® 2010	English	07/31/2018
50509	A	Implementing Forefront Endpoint Protection 2010	English	07/31/2018
50526	A	IT Basics I	English	07/31/2018
50527	A	IT Basics II	English	07/31/2018
50528	A	IT Basics III	English	07/31/2018
50529	A	IT Basics for Advanced Users I	English	07/31/2018
50530	A	IT Basics for Advanced Users II	English	07/31/2018
50532	A	Learn Microsoft Access 2010 Step by Step, Level 1	English	07/31/2018
50533	A	Learn Microsoft Access 2010 Step by Step, Level 2	English	07/31/2018
50534	A	Learn Microsoft Access 2010 Step by Step, Level 3	English	07/31/2018
50535	A	Learn Microsoft Outlook 2010 Step by Step, Level 1	English	07/31/2018
50536	A	Learn Microsoft Outlook 2010 Step by Step, Level 2	English	07/31/2018
50537	A	Learn Microsoft Outlook 2010 Step by Step, Level 3	English	07/31/2018
50538	A	Learn Microsoft PowerPoint 2010 Step by Step, Level 1	English	07/31/2018
50539	A	Learn Microsoft PowerPoint 2010 Step by Step, Level 2	English	07/31/2018

Course number	Version	Title	Language	Retirement date
50540	A	Learn Microsoft PowerPoint 2010 Step by Step, Level 3	English	07/31/2018
50541	A	Learn Microsoft Word 2010 Step by Step, Level 1	English	07/31/2018
50542	A	Learn Microsoft Word 2010 Step by Step, Level 2	English	07/31/2018
50543	A	Learn Microsoft Word 2010 Step by Step, Level 3	English	07/31/2018
50544	A	Learn Microsoft Excel 2010 Step by Step, Level 1	English	07/31/2018
50545	A	Learn Microsoft Excel 2010 Step by Step, Level 2	English	07/31/2018
50546	A	Learn Microsoft Excel 2010 Step by Step, Level 3	English	07/31/2018
50571	A	Partner Lync Support Training - Pre-Read Material	English	07/31/2018
50572	A	Premier Support for Lync Partners Tier 1	English	07/31/2018
50573	A	Premier Support for Lync Partners Tier 2	English	07/31/2018

- Courseware retirements on June 30, 2018

Course number	Version	Title	Language	Retirement date
1846	A	Microsoft® Solutions Framework Essentials	English	6/30/2018
1913	A	Exchanging and Transforming Data Using XML and XSLT	English	6/30/2018
2011	A	Troubleshooting Microsoft® Exchange Server 2003 Toolkit	English	6/30/2018
2011	A	Troubleshooting Microsoft® Exchange Server 2003 - Delivery Guide	English	6/30/2018
2097	A	Conception d'une infrastructure réseau et Active Directory® Microsoft® Windows Server™ 2003	French	6/30/2018

Course number	Version	Title	Language	Retirement date
2144	B	Administration d'un environnement Microsoft® Windows Server™ 2003	French	6/30/2018
2145	B	Verwalten Einer Microsoft® Windows Server 2003-Umgebung	German	6/30/2018
2149	B	Maintenance D'un Environnement Microsoft® Windows Server 2003	French	6/30/2018
2163	B	Warten Einer Microsoft® Windows Server™ 2003-Umgebung	German	6/30/2018
2182	A	Implémentation, administration et maintenance d'une infrastructure réseau Microsoft® Windows Server™ 2003 : services réseau	French	6/30/2018
2183	A	Implementieren, Verwalten und Warten einer Microsoft® Windows Server™ 2003-Netzwerkinfrastruktur: Netzwerkdienste	German	6/30/2018
2194	A	Planification, implémentation et maintenance d'une infrastructure Active Directory® Microsoft® Windows Server™ 2003	French	6/30/2018
2226	B	Instalação, configuração e administração do Microsoft® Windows® XP Professional	Portuguese	6/30/2018
2261	C	Supporting Users Running the Microsoft® Windows® XP Operating System	English	6/30/2018
2272	C	Implementing and Supporting Microsoft® Windows® XP Professional	English	6/30/2018
2285	B	Installing, Configuring & Administering Microsoft® Windows® XP Professional	English	6/30/2018
2311	A	Advanced Web Application Development using Microsoft® ASP.NET	English	6/30/2018
2335	A	Assistance aux utilisateurs exécutant le système d'exploitation Microsoft® Windows® XP	French	6/30/2018

Course number	Version	Title	Language	Retirement date
2336	A	Assistance aux utilisateurs exécutant des applications sous le système d'exploitation Microsoft® Windows® XP	French	6/30/2018
2349	B	Programming with the Microsoft® .NET Framework Microsoft Visual C#™ .NET)	English	6/30/2018
2368	A	Zarządzanie środowiskiem systemu Microsoft® Windows Server™ 2003	Polish	6/30/2018
2373	B	Programming with Microsoft® Visual Basic® .NET	English	6/30/2018
2389	B	Programming with Microsoft® ADO.NET	English	6/30/2018
2433	B	Microsoft® Visual Basic® Scripting and Microsoft Windows Script Host Essentials	English	6/30/2018
2441	A	Bereitstellen und Verwalten von Microsoft® Windows® XP Service Pack 2	German	6/30/2018
2500	A	Introduction to XML and the Microsoft® .NET Platform	English	6/30/2018
2541	B	Core Data Access with Microsoft® Visual Studio® 2005	English	6/30/2018
2542	A	Advanced Data Access With Microsoft® Visual Studio® 2005	English	6/30/2018
2543	B	Core Web Application Technologies With Microsoft® Visual Studio® 2005	English	6/30/2018
2544	A	Advanced Web Application Technologies with Microsoft® Visual Studio® 2005	English	6/30/2018
2546	B	Core Windows® Forms Technologies With Microsoft® Visual Studio® 2005	English	6/30/2018
2547	A	Advanced Windows® Forms Technologies With Microsoft® Visual Studio® 2005	English	6/30/2018
2548	B	Core Distributed Application Development With Microsoft® Visual	English	6/30/2018

Course number	Version	Title	Language	Retirement date	
		Studio® 2005			
2549	A	Advanced Distributed Application Development With Microsoft® Visual Studio® 2005	English	6/30/2018	
2555	A	Developing Microsoft.NET Applications for Windows (Visual C#.NET)	English	6/30/2018	
2556	A	Developing Mobile Applications Using the Microsoft® .NET Compact Framework	English	6/30/2018	
2559	B	Introduction to Visual Basic® .NET Programming with Microsoft® .NET	English	6/30/2018	
2572	A	Supporting Users Running the Microsoft® Windows® XP Operating System	Portuguese	6/30/2018	
2573	A	Supporting Users Running Applications on a Microsoft® Windows® XP Operating System	Portuguese	6/30/2018	
2576	A	Implementing And Administering Microsoft® Internet Information Services IIS) 6.0	English	6/30/2018	
2605	A	Managing a Microsoft® Windows Server™ 2003 Environment	Russian	6/30/2018	
2606	A	Maintaining a Microsoft® Windows Server™ 2003 Environment	Russian	6/30/2018	
2667	A	Introduction to Programming	English	6/30/2018	
2710	B	Analyzing Requirements and Defining Microsoft® .NET Solution Architectures	English	6/30/2018	
2717	C	Introduction to Microsoft® .NET Development	English	6/30/2018	
2730	A	Building Microsoft® Content Management Server 2002 Solutions	English	6/30/2018	
2810	A	Fundamentals of Network Security	English	6/30/2018	
2821	A	Designing and Managing a Microsoft® Windows® Public Key Infrastructure	English	6/30/2018	

Course number	Version	Title	Language	Retirement date
2821	A	Designing and Managing a Windows® Public Key Infrastructure	English	6/30/2018
2823	B	Implementing and Administering Security in a Microsoft® Windows Server™ 2003 Network	English	6/30/2018
2830	B	Designing Security for Microsoft® Networks	English	6/30/2018
2933	A	Developing Business Process and Integration Solutions Using Microsoft® BizTalk® Server 2006	English	6/30/2018
2956	B	Core Foundations of Microsoft® .NET 2.0 Development	English	6/30/2018
2957	B	Advanced Foundations of Microsoft® .NET 2.0 Development	English	6/30/2018
3938	C	Updating Your Skills from Microsoft® Exchange Server 2000 or Microsoft Exchange Server 2003 to Microsoft Exchange Server 2007 SP1	English	6/30/2018
4730	A	Weiterführende Webanwendungstechnologien Mit Microsoft® Visual Studio® 2005	German	6/30/2018
4730	A	Advanced Web Application Technologies with Microsoft® Visual Studio® 2005	German	6/30/2018
4994	A	Introduction to Programming Microsoft .NET Applications with Microsoft Visual Studio 2005	English	6/30/2018
4995	A	Programming with the Microsoft® .NET Framework using Microsoft Visual Studio® 2005	English	6/30/2018
5047	B	Introduction to Installing and Managing Microsoft® Exchange Server 2007 SP1	English	6/30/2018
5049	A	Managing Messaging Security Using Microsoft Exchange Server 2007	English	6/30/2018
5050	A	Recovering Messaging Servers and Databases Using Microsoft Exchange	English	6/30/2018

Course number	Version	Title	Language	Retirement date
5051	A	Monitoring and TroubleShooting Microsoft Exchange Server 2007	English	6/30/2018
5053	A	Designing a Messaging Infrastructure Using Microsoft Exchange Server 2007	English	6/30/2018
5054	A	Designing a High Availability Messaging Solution Using Microsoft Exchange Server 2007	English	6/30/2018
5058	A	Project Series: Deploying Microsoft Office 2007 Professional Edition	English	6/30/2018
5060	A	Implementing Windows® SharePoint® Services 3.0	English	6/30/2018
5061	A	Implementing Microsoft Office SharePoint Server 2007	English	6/30/2018
5105	C	Deploying Windows Vista® Business Desktops	English	6/30/2018
5115	B	Installing, Configuring, and Troubleshooting Windows Vista®	English	6/30/2018
5117	A	Installing, Configuring, Troubleshooting, and Maintaining Windows Vista®	English	6/30/2018
5118	B	Supporting Windows Vista® and Applications in the Enterprise	English	6/30/2018
5177	A	Implementing and Maintaining Instant Messaging Using Microsoft Office Communications Server 2007	English	6/30/2018
5178	A	Implementing and Maintaining Audio/Visual Conferencing and Web Conferencing Using Microsoft Office Communications Server 2007	English	6/30/2018
5179	A	Implementing and Maintaining Telephony Using Microsoft Office Communications Server 2007	English	6/30/2018
5909	A	Introduction à l'installation et à la gestion de Microsoft® Exchange Server 2007	French	6/30/2018

Course number	Version	Title	Language	Retirement date
5910	A	Einführung in die Installation und Verwaltung von Microsoft® Exchange Server 2007	German	6/30/2018
5911	A	Introduction to Installing and Managing Microsoft Exchange Server 2007	Japanese	6/30/2018
5912	A	Managing Messaging Security Using Microsoft Exchange Server 2007	French	6/30/2018
5913	A	Managing Messaging Security Using Microsoft Exchange Server 2007	German	6/30/2018
5914	A	Recovering Messaging Servers and Databases Using Microsoft Exchange Server 2007	French	6/30/2018
5915	A	Recovering Messaging Server and Databases Using Microsoft Exchange	German	6/30/2018
5915	A	Recovering Messaging Server and Databases Using Microsoft Exchange Server 2007	German	6/30/2018
5916	A	Monitoring and Troubleshooting Microsoft Exchange Server 2007	French	6/30/2018
5917	A	Monitoring and Troubleshooting Microsoft Exchange Server 2007	German	6/30/2018
5942	A	Implémentation de Microsoft® Windows® SharePoint® Services 3.0	French	6/30/2018
5943	A	Implementieren von Microsoft® Windows® SharePoint® Services 3.0	German	6/30/2018
5944	A	Implementing Microsoft® Office SharePoint® Server 2007	French	6/30/2018
5945	A	Implementing Microsoft® Office SharePoint® Server 2007	German	6/30/2018
5947	A	Deploying Microsoft® Windows Vista™ Business Desktops - German	German	6/30/2018
5949	A	Installing and Configuring the Windows Vista Operating System	German	6/30/2018

Course number	Version	Title	Language	Retirement date
5949	A	Installing and Configuring the Windows Vista™ Operating System	German	6/30/2018
5951	A	Configuring Windows Vista™ Applications and Tools -	German	6/30/2018
5954	A	Résolution des problèmes et maintenance des ordinateurs Windows Vista™	French	6/30/2018
5955	A	Verwalten von Computern und Problembehandlung unter Windows Vista	German	6/30/2018
5955	A	Verwalten von Computern und Problembehandlung unter Windows Vista™	German	6/30/2018
5957	A	Unterstützung von Windows Vista und Windows Vista Anwendungen	German	6/30/2018
5970	A	Installing and Configuring the Windows Vista Operating System -	Japanese	6/30/2018
5971	A	Configuring Windows Vista Mobile Computing and Applications -	Japanese	6/30/2018
5981	A	Maintaining and Troubleshooting Windows Vista Computers -	Japanese	6/30/2018
6066	A	Developing Managed Applications for Microsoft Windows Mobile 6.0	English	6/30/2018
6067	A	Developing Native Applications for Microsoft Windows Mobile 6.0	English	6/30/2018
6111	A	Core Data Access with Microsoft® Visual Studio® 2005	Chinese	6/30/2018
6112	A	Advanced Data Access with Microsoft® Visual Studio® 2005	Chinese	6/30/2018
6113	A	Core Web Application Technologies with Microsoft® Visual Studio® 2005	Chinese	6/30/2018
6114	A	Advanced Web Application Technologies with Microsoft® Visual Studio® 2005	Chinese	6/30/2018

Course number	Version	Title	Language	Retirement date
6115	A	Core development with the Microsoft® .NET Framework 2.0 Foundation	Chinese	6/30/2018
6116	A	Advanced Development with the Microsoft® .NET Framework 2.0 Foundation	Chinese	6/30/2018
6142	A	Implementing Microsoft Office SharePoint Server 2007	Japanese	6/30/2018
6160	A	Einführung in die Programmierung von Microsoft® .NET Framework-Anwendungen mit Microsoft Visual Studio® 2005	German	6/30/2018
6268	A	Installing and Configuring the Windows Vista™ Operating System	Arabic	6/30/2018
6269	A	Configuring Windows Vista Mobile Computing and Applications	Arabic	6/30/2018
6438	A	Implementing and Administering Windows® SharePoint® Services 3.0 in Windows Server® 2008	English	6/30/2018
6461	A	Visual Studio® 2008: Windows® Communication Foundation	English	6/30/2018
6462	A	Visual Studio® 2008: Windows® Workflow Foundation	English	6/30/2018
6730	B	Erweitern Ihrer Kenntnisse der Netzwerkinfrastruktur- und Active Directory-Technologie für Windows Server 2008	German	6/30/2018
6731	B	Erweitern Ihrer Kenntnisse der Anwendungsinfrastruktur-Technologie für Windows Server 2008	German	6/30/2018
6734	A	Updating your Network Infrastructure and Active Directory® Technology Skills to Windows Server® 2008	French	6/30/2018
6734	A	Mise à jour de vos compétences en matière d'infrastructure réseau et de technologie Active Directory® dans Windows Server® 2008	French	6/30/2018

Course number	Version	Title	Language	Retirement date
6735	A	Updating your Application Platform Technology Skills to Windows Server® 2008	French	6/30/2018
6738	A	Configuration et administration des services Windows Media® dans Windows Server® 2008	French	6/30/2018
6741	A	Configuration et dépannage d'une infrastructure réseau Windows Server 2008	French	6/30/2018
6742	A	Konfigurieren einer Netzwerkinfrastruktur und Problembehandlung unter Windows Server® 2008	German	6/30/2018
6743	A	Configuring and Troubleshooting a Windows Server® 2008 Network Infrastructure (Japanese)	Japanese	6/30/2018
6747	A	Planification et administration de serveurs Windows Server® 2008	French	6/30/2018
6851	A	Fundamentals of Windows Server® 2008 Active Directory®	Chinese	6/30/2018
6853	A	Deploying Windows Server® 2008	Chinese	6/30/2018
6855	A	Configuring and Troubleshooting Windows Server® 2008 Terminal Services (Simplified Chinese)	Chinese	6/30/2018
6856	A	Fundamentals of Windows Server 2008 Active Directory	German	6/30/2018
6857	A	Fundamentals of Windows Server 2008 Active Directory	French	6/30/2018
6871	A	Configuring and Troubleshooting Identity and Access Solutions with Windows Server® 2008 Active Directory® (Japanese)	Japanese	6/30/2018
7193	A	Developing Managed Applications for Windows Mobile 6	Chinese	6/30/2018
7196	A	Developing Native Applications for	Chinese	6/30/2018

Course number	Version	Title	Language	Retirement date
Microsoft Windows Mobile 6				
10036	A	Designing a Windows Server® 2008 Network Infrastructure - French	French	6/30/2018
10079	A	Configuring and Troubleshooting Identity and Access Solutions with Windows Server (Simplified Chinese)	Chinese	6/30/2018
10080	A	Conceitos básicos da infraestrutura de rede e aplicativos do Windows Server® 2008	Chinese	6/30/2018
10081	A	Maintaining a Microsoft® SQL Server® 2008 Database	Chinese	6/30/2018
10082	A	Implementing a Microsoft® SQL Server® 2008 Database	Chinese	6/30/2018
10083	A	Visual Studio 2008: Windows Presentation Foundation	Chinese	6/30/2018
10085	A	Visual Studio 2008: Windows Workflow Foundation	Chinese	6/30/2018
10086	A	Visual Studio® 2008: ASP.NET 3.5	Chinese	6/30/2018
10087	A	Visual Studio® 2008: ADO.NET 3.5	Chinese	6/30/2018
10184	A	Designing Windows Server 2008 Network Infrastructure	Chinese	6/30/2018
10185	A	Designing Active Directory® Infrastructure and Services in Windows Server® 2008	Chinese	6/30/2018
10218	A	Writing Queries Using Microsoft® SQL Server® 2008 Transact-SQL(Japanese)	Japanese	6/30/2018
10326	A	Implementieren und Verwalten von Windows Small Business Server 2008	German	6/30/2018
10562	A	Developing Web Applications with Microsoft® Visual Studio® 2010(Simplified Chinese)	Chinese	6/30/2018
80307	A	Enterprise Portal Development in Microsoft Dynamics® AX 2012	English	6/30/2018

Course number	Version	Title	Language	Retirement date
80308	A	Procurement in Microsoft Dynamics® AX 2012	English	6/30/2018
80310	A	LEAN Manufacturing in Microsoft Dynamics® AX 2012	English	6/30/2018
80312	A	Development III in Microsoft Dynamics® AX 2012	English	6/30/2018
80313	A	Development IV in Microsoft Dynamics® AX 2012	English	6/30/2018
80314	A	Discrete Manufacturing Basics in Microsoft Dynamics® AX 2012	English	6/30/2018
80315	A	Discrete Manufacturing Advanced in Microsoft Dynamics® AX 2012	English	6/30/2018
80318	A	Reporting in Microsoft Dynamics® AX 2012	English	6/30/2018
80338	A	Microsoft Dynamics® AX 2012 Public Sector - Financials	English	6/30/2018
80414	A	Service Management in Microsoft Dynamics® AX 2012	English	6/30/2018
80416	A	Application Integration Framework and Services in Microsoft Dynamics® AX 2012	English	6/30/2018
80419	A	Manufacturing Execution in Microsoft Dynamics® AX 2012	English	6/30/2018
80420	A	Data Upgrade and Code Upgrade to Microsoft Dynamics® AX 2012	English	6/30/2018
80421	A	Sales and Marketing in Microsoft Dynamics® AX 2012	English	6/30/2018
80422	A	Intercompany Setup and Order Processing in Microsoft Dynamics® AX 2012	English	6/30/2018
80423	A	Master Planning in Microsoft Dynamics® AX 2012	English	6/30/2018
80424	A	Product Configuration in Microsoft Dynamics® AX 2012	English	6/30/2018

Course number	Version	Title	Language	Retirement date
80489	A	Diskrete Fertigung I in Microsoft Dynamics® AX 2012	German	6/30/2018
80492	A	Diskrete Fertigung II in Microsoft Dynamics® AX 2012	German	6/30/2018
80526	A	Beschaffung in Microsoft Dynamics® AX 2012	German	6/30/2018
80530	A	Serviceverwaltung in Microsoft Dynamics® AX 2012	German	6/30/2018
80537	A	Microsoft Dynamics® AX 2012 R2 for Retail in Brick and Mortar Stores: Installation and Configuration	English	6/30/2018
80538	A	Human Resource Management in Microsoft Dynamics® AX 2012 R2	English	6/30/2018
80539	A	Installation and Deployment in Microsoft Dynamics® CRM 2013	English	6/30/2018
80541	A	Payroll in Microsoft Dynamics® AX 2012 R2	English	6/30/2018
80542	A	Customization and Configuration in Microsoft Dynamics® CRM 2013	English	6/30/2018
80544	A	Warehouse Management System in Microsoft Dynamics® AX 2012 R2	English	6/30/2018
80545	A	Customer Service in Microsoft Dynamics® CRM 2013	English	6/30/2018
80546	A	Sales Management in Microsoft Dynamics® CRM 2013	English	6/30/2018
80583	A	Microsoft Dynamics® AX 2012 R2 for Retail in eCommerce Stores: Installation and Configuration	English	6/30/2018
80584	A	Microsoft Dynamics® AX 2012 R2 for Retail in eCommerce Stores: Development and Customization	English	6/30/2018
80585	A	Microsoft Dynamics® AX 2012 R2 for Retail in Brick and Mortar Stores: Development and Customization	English	6/30/2018

Course number	Version	Title	Language	Retirement date
80616	A	Customization and Configuration in Microsoft Dynamics® CRM 2013 (Japanese)	Japanese	6/30/2018
80617	A	Konfiguration und Anpassung in Microsoft Dynamics® CRM 2013	German	6/30/2018
80618	A	Personalización y configuración de Microsoft Dynamics® CRM 2013	Spanish	6/30/2018
80619	A	Personnalisation et configuration dans Microsoft Dynamics® CRM 2013	French	6/30/2018
80620	A	Installation and Deployment in Microsoft Dynamics® CRM 2013 (Japanese)	Japanese	6/30/2018
80621	A	Instalación e implementación de Microsoft Dynamics® CRM 2013	French	6/30/2018
80622	A	Installation und Bereitstellung in Microsoft Dynamics® CRM 2013	German	6/30/2018
80623	A	Installation et déploiement dans Microsoft Dynamics® CRM 2013	French	6/30/2018
80624	A	Administración de ventas de Microsoft Dynamics® CRM 2013	Spanish	6/30/2018
80625	A	Vertriebsverwaltung in Microsoft Dynamics® CRM 2013	German	6/30/2018
80626	A	Gestion des ventes dans Microsoft Dynamics® CRM 2013	French	6/30/2018
80627	A	Sales Management in Microsoft Dynamics® CRM 2013 (Japanese)	Japanese	6/30/2018
80628	A	Kundenservice in Microsoft Dynamics® CRM 2013	German	6/30/2018
80629	A	Servicio al cliente de Microsoft Dynamics® CRM 2013	Spanish	6/30/2018
80630	A	Service clientèle dans Microsoft Dynamics® CRM 2013	French	6/30/2018
80631	A	Customer Service in Microsoft Dynamics® CRM 2013 (Japanese)	Japanese	6/30/2018

- Courseware retirements on March 30, 2018

Course number	Version	Title	Language	Retirement date
20696	C	Administering System Center Configuration Manager and Intune	English	03/30/2018

- Courseware retirements on January 31, 2018

Course number	Version	Title	Language	Retirement date
20246	D	Monitoring and Operating a Private Cloud	English	01/31/2018
20247	D	Configuring and Deploying a Private Cloud	English	01/31/2018
40441	A	Designing and Implementing Cloud Data Platform Solutions	English	01/31/2018
40442	A	MOC Workshop: Architecting Microsoft Azure Solutions	English	01/31/2018

- Courseware retirements on June 30, 2017

Course number	Version	Title	Language	Retirement date
2609	A	Introduction to C# Programming with Microsoft .NET	English	6/30/2017
10989	B	Analyzing Data with Power BI	English	6/30/2017
80311	B	Service Industries in Microsoft Dynamics AX 2012 R2	English	6/30/2017
80316	B	Project Essentials in Microsoft Dynamics AX 2012 R2	English	6/30/2017
80415	A	Public Sector Procurement and Payables in Microsoft Dynamics AX 2012	English	6/30/2017
80425	A	Intelligent Data Management Framework in Microsoft Dynamics AX 2012	English	6/30/2017

Course number	Version	Title	Language	Retirement date
80429	A	Travel and Expense Management in Microsoft Dynamics AX 2012	English	6/30/2017
80430	A	Vendor Management and Collaboration in Microsoft Dynamics AX 2012	English	6/30/2017
80476	A	Stücklisten in Microsoft Dynamics AX 2012	German	6/30/2017
80477	A	Nomenclature dans Microsoft Dynamics AX 2012	French	6/30/2017
80478	A	Distinte base in Microsoft Dynamics AX 2012	Italian	6/30/2017
80479	A	Lista de materiales de Microsoft Dynamics AX 2012	Spanish	6/30/2017
80480	A	LEAN Manufacturing in Microsoft Dynamics AX 2012	German	6/30/2017
80481	A	Production au plus juste dans Microsoft Dynamics AX 2012	French	6/30/2017
80482	A	LEAN Manufacturing (Producción ajustada) de Microsoft Dynamics AX 2012	Spanish	6/30/2017
80483	A	Produzione snella in Microsoft Dynamics AX 2012	Italian	6/30/2017
80488	A	Bases de fabrication distincte dans Microsoft Dynamics AX 2012	French	6/30/2017
80490	A	Produzione discreta di base in Microsoft Dynamics AX 2012	Italian	6/30/2017
80491	A	Conceptos básicos de la fabricación discreta de Microsoft Dynamics AX 2012	Spanish	6/30/2017
80493	A	Fabrication distincte avancée dans Microsoft Dynamics AX 2012	French	6/30/2017
80494	A	Produzione discreta avanzata in Microsoft Dynamics AX 2012	Italian	6/30/2017

Course number	Version	Title	Language	Retirement date
80495	A	Conceptos avanzados de la fabricación discreta de Microsoft Dynamics AX 2012	Spanish	6/30/2017
80496	A	Secteur Public Microsoft Dynamics AX 2012 – Finances	French	6/30/2017
80525	A	Approvisionnement dans Microsoft Dynamics AX 2012	French	6/30/2017
80527	A	Gestión de compras en Microsoft Dynamics AX 2012	Spanish	6/30/2017
80528	A	Approvvigionamento in Microsoft Dynamics AX 2012	Italian	6/30/2017
80529	A	Gestion des services dans Microsoft Dynamics AX 2012	French	6/30/2017
80531	A	Gestione assistenza in Microsoft Dynamics AX 2012	Italian	6/30/2017
80532	A	Gestión de servicios en Microsoft Dynamics AX 2012	Spanish	6/30/2017
80533	A	Approvisionnement du secteur public et achats dans Microsoft Dynamics AX 2012	French	6/30/2017
80559	A	Microsoft Dynamics AX 2012 中的物料清单	Simplified Chinese	6/30/2017
80580	A	Microsoft Dynamics AX 2012 の個別の製造の詳細	Japanese	6/30/2017
80581	A	Microsoft Dynamics AX 2012 の個別の製造の基本	Japanese	6/30/2017

- Courseware retirements on April 15, 2017

Course number	Version	Title	Language	Retirement date
10978	A	Introduction to Azure for Developers	English	4/15/2017

- Courseware retirements on March 31, 2017

Course number	Version	Title	Language	Retirement date
80229	A	Inventory Control in Microsoft Dynamics GP 2010	English	3/31/2017
80230	A	Project Series in Microsoft Dynamics GP 2010	English	3/31/2017
80231	A	Purchase Order Processing in Microsoft Dynamics GP 2010	English	3/31/2017
80232	A	Sales Order Processing in Microsoft Dynamics GP 2010	English	3/31/2017
80239	A	Extender for Microsoft Dynamics GP 2010	English	3/31/2017
80240	A	Using Microsoft SharePoint Technology with Microsoft Dynamics GP 2010	English	3/31/2017
80334	A	Control de inventarios en Microsoft Dynamics GP 2010	Spanish	3/31/2017
80335	A	Procesamiento de pedidos de compra en Microsoft Dynamics GP 2010	Spanish	3/31/2017
80337	A	Procesamiento de pedidos de venta en Microsoft Dynamics GP 2010	Spanish	3/31/2017
80433	A	Reporting in Microsoft Dynamics NAV 2013	English	3/31/2017
80434	A	Fixed Assets in Microsoft Dynamics NAV 2013	English	3/31/2017
80435	A	Application Setup in Microsoft Dynamics NAV 2013	English	3/31/2017
80436	A	C/Side Introduction in Microsoft Dynamics NAV 2013	English	3/31/2017
80437	A	C/Side Solution Development in Microsoft Dynamics NAV 2013	English	3/31/2017
80438	A	Installation and Configuration in Microsoft Dynamics NAV 2013	English	3/31/2017
80439	A	Introduction in Microsoft Dynamics NAV 2013	English	3/31/2017

Course number	Version	Title	Language	Retirement date
80440	A	Trade in Microsoft Dynamics NAV 2013	English	3/31/2017
80534	A	Finance Essentials in Microsoft Dynamics NAV 2013	English	3/31/2017
80535	A	Finance Advanced in Microsoft Dynamics NAV 2013	English	3/31/2017
80540	A	Installation and Configuration in Microsoft Dynamics GP 2013	English	3/31/2017
80549	A	Data Upgrade and Code Upgrade to Microsoft Dynamics NAV 2013	English	3/31/2017
80550	A	Manufacturing in Microsoft Dynamics NAV 2013	English	3/31/2017
80571	A	Introduction to Microsoft Dynamics GP 2013	English	3/31/2017
80572	A	General Ledger in Microsoft Dynamics GP 2013	English	3/31/2017
80573	A	Payables Management in Microsoft Dynamics GP 2013	English	3/31/2017
80574	A	Receivables Management in Microsoft Dynamics GP 2013	English	3/31/2017
80575	A	Bank Reconciliation in Microsoft Dynamics GP 2013	English	3/31/2017
80576	A	Fixed Assets in Microsoft Dynamics GP 2013	English	3/31/2017
80450	A	Delivering Microsoft Dynamics Solutions with Sure Step	English	3/31/2017

- Courseware retirements on December 31, 2016

Course number	Version	Title	Language	Retirement date
80317	B	Project Advanced in Microsoft Dynamics AX 2012 R2	English	12/31/2016

Course number	Version	Title	Language	Retirement date
80427	A	Warehouse Management in Microsoft Dynamics AX 2012	English	12/31/2016
80428	A	SQL Optimization for Microsoft Dynamics AX 2012	English	12/31/2016
80460	A	Finanzdaten I in Microsoft Dynamics AX 2012	German	12/31/2016
80461	A	Finances I dans Microsoft Dynamics AX 2012	French	12/31/2016
80462	A	Contabilità I in Microsoft Dynamics AX 2012	Italian	12/31/2016
80463	A	Operaciones financieras I de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80464	A	Operaciones financieras II de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80465	A	Finanzdaten II in Microsoft Dynamics AX 2012	German	12/31/2016
80466	A	Contabilità II in Microsoft Dynamics AX 2012	Italian	12/31/2016
80467	A	Finances II dans Microsoft Dynamics AX 2012	French	12/31/2016
80468	A	Anlagevermögen in Microsoft Dynamics AX 2012	German	12/31/2016
80469	A	Cespi in Microsoft Dynamics AX 2012	Italian	12/31/2016
80470	A	Activos fijos de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80471	A	Immobilisations dans Microsoft Dynamics AX 2012	French	12/31/2016
80472	A	Installation und Konfiguration in Microsoft Dynamics AX 2012	German	12/31/2016
80473	A	Installation et configuration pour Microsoft Dynamics AX 2012	French	12/31/2016

Course number	Version	Title	Language	Retirement date
80474	A	Installazione e configurazione di Microsoft Dynamics AX 2012	Italian	12/31/2016
80475	A	Instalación y configuración de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80484	A	Introducción a Microsoft Dynamics AX 2012	Spanish	12/31/2016
80485	A	Présentation de Microsoft Dynamics AX 2012	French	12/31/2016
80486	A	Introduzione a Microsoft Dynamics AX 2012	Italian	12/31/2016
80487	A	Einführung in Microsoft Dynamics AX 2012	German	12/31/2016
80497	A	Producción y logística de fabricación en procesos de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80498	A	Traitemet de la production et logistique Microsoft Dynamics AX 2012	French	12/31/2016
80499	A	Elaborazione della logistica e della produzione in Microsoft Dynamics AX 2012	Italian	12/31/2016
80500	A	Microsoft Dynamics AX 2012 Fertigungsverarbeitung - Produktion und Logistik	German	12/31/2016
80509	A	Concetti di base della supply chain in Microsoft Dynamics AX 2012	Italian	12/31/2016
80510	A	Base de la cadena de suministros de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80511	A	Grundkenntnisse der Lieferkette in Microsoft Dynamics AX 2012	German	12/31/2016
80512	A	Base de la chaîne logistique dans Microsoft Dynamics AX 2012	French	12/31/2016
80513	A	Distribuzione e commercio in Microsoft Dynamics AX 2012	Italian	12/31/2016

Course number	Version	Title	Language	Retirement date
80514	A	Distribución y comercio de Microsoft Dynamics AX 2012	Spanish	12/31/2016
80515	A	Handel und Logistik in Microsoft Dynamics AX 2012	German	12/31/2016
80516	A	Distribution et commerce dans Microsoft Dynamics AX 2012	French	12/31/2016
80517	A	Éléments de projet avancés dans Microsoft Dynamics AX 2012	French	12/31/2016
80518	A	Projektkostenrechnung II in Microsoft Dynamics AX 2012	German	12/31/2016
80519	A	Conceptos avanzados de gestión de proyectos en Microsoft Dynamics AX 2012	Spanish	12/31/2016
80520	A	Elementi avanzati dei progetti in Microsoft Dynamics AX 2012	Italian	12/31/2016
80521	A	Projektkostenrechnung I in Microsoft Dynamics AX 2012	German	12/31/2016
80522	A	Base de projet dans Microsoft Dynamics AX 2012	French	12/31/2016
80523	A	Conceptos básicos de gestión de proyectos en Microsoft Dynamics AX 2012	Spanish	12/31/2016
80524	A	Elementi essenziali dei progetti in Microsoft Dynamics AX 2012	Italian	12/31/2016
80554	A	Microsoft Dynamics AX 2012 中的开发 I	Simplified Chinese	12/31/2016
80557	A	Microsoft Dynamics AX 2012 中的财务 II	Simplified Chinese	12/31/2016
80558	A	Microsoft Dynamics AX 2012 中的开发 II	Simplified Chinese	12/31/2016
80560	A	Microsoft Dynamics AX 2012 中的固定资产	Simplified Chinese	12/31/2016
80563	A	Microsoft Dynamics AX 2012 中的分销和贸易	Simplified Chinese	12/31/2016

Course number	Version	Title	Language	Retirement date
80564	A	安装和配置 Microsoft Dynamics AX 2012	Simplified Chinese	12/31/2016
80565	A	Microsoft Dynamics AX 2012 中的供应链基础	Simplified Chinese	12/31/2016
80569	A	Microsoft Dynamics AX 2012 中的财务 I	Simplified Chinese	12/31/2016

- Courseware retirements on October 31, 2016

Course number	Version	Title	Language	Retirement date
10983	A	Upgrading Your Skills to Windows Server 2016	English	10/31/2016
20497	A	Software Testing with Visual Studio 2013	English	10/31/2016

- Courseware retirements on August 15, 2016

Course number	Version	Title	Language	Retirement date
10968	B	Designing for Office 365 Infrastructure	English	8/15/2016

- Courseware retirements on August 1, 2016

Course number	Version	Title	Language	Retirement date
10747	D	Administering System Center 2012 Configuration Manager	English	8/1/2016

- Courseware retirements on June 24, 2016

[Download the complete list of retiring e-learning courses.](#) ↗

- Courseware retirements on June 15, 2016

Course number	Version	Title	Language	Retirement date
20346	D	Managing Office 365 Identities and Services	English	6/15/2016

- Courseware retirements on April 18, 2016

Course number	Title	Language	Retirement date
38	Office 2013 and Office 365 Demonstration Sessions	Japanese	4/18/2016
37	Office 2013 and Office 365 Demonstration Sessions	Spanish	4/18/2016
36	Office 2013 and Office 365 Demonstration Sessions	German	4/18/2016
35	Office 2013 and Office 365 Demonstration Sessions	Russian	4/18/2016
34	Office 2013 and Office 365 Demonstration Sessions	Brazilian, Portuguese	4/18/2016
33	Office 2013 and Office 365 Demonstration Sessions	Chinese (Simplified)	4/18/2016
32	Office 2013 and Office 365 Demonstration Sessions	French	4/18/2016
31	Office 2013 and Office 365 Demonstration Sessions	English	4/18/2016
23	Windows 8 Demonstration Sessions	English	4/18/2016
22	Office 2010 Running Start: Demonstration Sessions	Dutch	4/18/2016
21	Office 2010 Running Start: Demonstration Sessions	Korean	4/18/2016
20	Office 2010 Running Start: Demonstration Sessions	Russian	4/18/2016
19	Office 2010 Running Start: Demonstration Sessions	Chinese (Traditional)	4/18/2016
18	Office 2010 Running Start: Demonstration Sessions	Chinese (Simplified)	4/18/2016

Course number	Title	Language	Retirement date
17	Office 2010 Running Start: Demonstration Sessions	Brazilian Portuguese	4/18/2016
16	Office 2010 Running Start: Demonstration Sessions	Chinese (Simplified), Italian	4/18/2016
15	Office 2010 Running Start: Demonstration Sessions	Spanish	4/18/2016
14	Office 2010 Running Start: Demonstration Sessions	Japanese	4/18/2016
13	Office 2010 Running Start: Demonstration Sessions	French	4/18/2016
12	Office 2010 Running Start: Demonstration Sessions	German	4/18/2016
11	Office 2010 Running Start: Demonstration Sessions	English	4/18/2016

- Courseware retirements on December 31, 2015

[Download the complete list of retiring instructor-led courses.](#) ↗

- Courseware retirements on August 31, 2015

Course number	Version	Title	Language	Retirement date
2148	A	Microsoft Windows Server 2003 環境の管理	Japanese	8/31/2015
2166	A	Microsoft Windows Server 2003 環境の保守	Japanese	8/31/2015
6194	B	ネットワークインフラストラクチャおよび Active Directory テクノロジスキルの Windows Server 2008へのアップデート	Japanese	8/31/2015
6195	B	アプリケーションインフラストラクチャ テクノロジスキルの Windows Server 2008へのアップデート	Japanese	8/31/2015
6746	A	Windows Server 2008におけるインターネット インフォメーションサービス	Japanese	8/31/2015

Course number	Version	Title	Language	Retirement date
の構成およびトラブルシューティング				
6749	A	Windows Server 2008 のサーバーの計画と管理	Japanese	8/31/2015
6858	A	Windows Server 2008 Active Directory の基礎	Japanese	8/31/2015
10703	A	Microsoft SharePoint 2010 の構成および管理	Japanese	8/31/2015
10713	A	Microsoft Visual Studio 2010 による Web アプリケーションの開発	Japanese	8/31/2015
10775	A	Administering Microsoft SQL Server 2012 Databases	English	8/31/2015
50430	B	Administering Team Foundation Server 2010	English	8/31/2015
50523	A	Deploying the Optimized Desktop with Windows 7 and Office 2010	English	8/31/2015

- Courseware retirements on June 30, 2015

[Download the complete list of retiring instructor-led learning courses.](#) ↗

- Courseware retirements on January 31, 2015

Course number	Version	Title	Language	Retirement date
10774	A	Querying Microsoft SQL Server 2012	English	1/31/2015
10776	A	Developing Microsoft SQL Server 2012 Databases	English	1/31/2015
10777	A	Implementing a Data Warehouse with Microsoft SQL Server 2012	English	1/31/2015
10778	A	Implementing Data Models and Reports with Microsoft SQL Server 2012	English	1/31/2015

- Courseware retirements on October 31, 2014

Course number	Version	Title	Language	Retirement date
10750	A	Monitoring and Operating a Private Cloud with System Center 2012	English	10/31/2014
10751	A	Configuring and Deploying a Private Cloud with System Center 2012	English	10/31/2014

- Courseware retirements on August 25, 2014

Course number	Version	Title	Language	Retirement date
1303	A	Mastering Microsoft Visual Basic 6 Fundamentals	English	8/25/2014
2147	B	Managing a Microsoft Windows Server 2003 Environment	Brazilian, Portuguese	8/25/2014
2165	B	Maintaining a Microsoft Windows Server 2003 Environment	Brazilian, Portuguese	8/25/2014
2186	A	Implementing, Managing, and Maintaining a Microsoft Windows Server 2003 Network Infrastructure: Network Services	Brazilian, Portuguese	8/25/2014
2524	C	Developing XML Web Services Using Microsoft ASP.NET	English	8/25/2014
2934	A	Deploying and Managing Business Process and Integration Solutions Using Microsoft BizTalk Server 2009 R2	English	8/25/2014
6463	A	Visual Studio 2008: ASP.NET 3.5	English	8/25/2014
6464	A	Visual Studio 2008: ADO.NET 3.5	English	8/25/2014
10953	A	HTML5 Programming	English	8/25/2014

- Courseware retirements on December 31, 2013

Course number	Version	Title	Language	Retirement date
2071	B	Querying Microsoft SQL Server 2000 with Transact-SQL	English	12/31/2013

Course number	Version	Title	Language	Retirement date
2262	B	Supporting Users Running Applications on a Microsoft Windows XP Operating System	English	12/31/2013
2779	B	Implementing a Microsoft SQL Server 2005 Database	English	12/31/2013
2780	B	Maintaining a Microsoft SQL Server 2005 Database	English	12/31/2013
2781	A	Designing Microsoft SQL Server 2005 Server-Side Solutions	English	12/31/2013
2782	A	Designing Microsoft SQL Server 2005 Databases	English	12/31/2013
2783	B	Designing the Data Tier for Microsoft SQL Server 2005	English	12/31/2013
2784	A	Tuning and Optimizing Queries Using Microsoft SQL Server 2005	English	12/31/2013
2786	B	Designing a Microsoft SQL Server 2005 Infrastructure	English	12/31/2013
2787	A	Designing Security for Microsoft SQL Server 2005	English	12/31/2013
2788	A	Designing High Availability Database Solutions Using Microsoft SQL Server 2005	English	12/31/2013
2789	B	Administering and Automating Microsoft SQL Server 2005 Databases and Servers	English	12/31/2013
2790	A	Troubleshooting and Optimizing Database Servers Using Microsoft SQL Server 2005	English	12/31/2013
2791	A	Implementing and Maintaining Microsoft SQL Server 2005 Analysis Services	English	12/31/2013
2792	A	Implementing and Maintaining Microsoft SQL Server 2005 Integration Services	English	12/31/2013

Course number	Version	Title	Language	Retirement date
2793	A	Implementing and Maintaining Microsoft SQL Server 2005 Reporting Services	English	12/31/2013
2794	A	Designing a Business Intelligence Solution for the Enterprise Using Microsoft SQL Server 2005	English	12/31/2013
2795	A	Designing an ETL Solution Architecture using Microsoft SQL Server 2005 Integration Services	English	12/31/2013
2796	A	Designing an Analysis Solution Architecture Using Microsoft SQL Server 2005 Analysis Services	English	12/31/2013
2797	A	Designing a Reporting Solution Architecture using Microsoft SQL Server 2005 Reporting Services	English	12/31/2013
4742	B	Maintenance d'une base de données Microsoft SQL Server 2005	French	12/31/2013
4744	B	Verwalten einer Microsoft SQL Server 2005-Datenbank	German	12/31/2013
6203	A	Microsoft SQL Server 2005 数据库维护	Chinese (Simplified)	12/31/2013
6420	B	Fundamentals of Windows Server 2008	English	12/31/2013
6449	A	Внедрение базы данных Microsoft SQL Server 2005	Russian	12/31/2013
6450	A	Обслуживание базы данных Microsoft SQL Server 2005	Russian	12/31/2013
6451	B	Planning, Deploying and Managing Microsoft System Center Configuration Manager 2007	English	12/31/2013
10159	A	Updating Your Windows Server 2008 Technology Skills to Windows Server 2008 R2	English	12/31/2013
10325	A	Automating Administration with Windows PowerShell 2.0	English	12/31/2013

Course number	Version	Title	Language	Retirement date
10337	A	Updating Your Microsoft SQL Server 2008 BI Skills to SQL Server 2008 R2	English	12/31/2013
40005	B	First Look Clinic: Windows Server 2012	English	12/31/2013
40006	B	Hands On Lab: Windows Server 2012	English	12/31/2013

- Courseware retirements on September 30, 2013

Course number	Version	Title	Language	Retirement date
2282	A	Designing a Microsoft Windows Server 2003 Active Directory and Network Infrastructure	English	9/30/2013
6434	A	Automating Windows Server 2008 Administration with Windows PowerShell	English	9/30/2013
2273	B	Managing and Maintaining a Microsoft Windows Server 2003 Environment	English	9/30/2013
2278	B	Planning and Maintaining a Microsoft Windows Server 2003 Network Infrastructure	English	9/30/2013
2279	B	Planning, Implementing, and Maintaining a Microsoft Windows Server 2003 Active Directory Infrastructure	English	9/30/2013

- Revisions and associated retirements

Microsoft occasionally combines courses or revises courses in such a way as to warrant the retirement of older, different courseware. This list communicates the connection between new, revised courses and any retiring courses that are associated with them.

Retiring June 30 Course number	Version	Title	Language	Notes
	6428	A Configuring and Troubleshooting Windows Server 2008 Terminal Services	English	Replaced by Course 6439: Configuring and Troubleshooting Windows Server 2008 Application Infrastructure
	6429	A Configuring and Managing Windows Media Services for Windows Server 2008	English	Replaced by Course 6439: Configuring and Troubleshooting Windows Server 2008 Application Infrastructure
	6437	A Designing a Windows Server 2008 Applications Infrastructure	English	Replaced by Course 6435B: Designing Windows Server 2008 Network and Applications Infrastructure

Retired courseware: Online learning

- Courseware retirements on December 29, 2017
 - [Download the complete list of retiring SA e-learning courses.](#) ↗
 - [Download the complete list of retiring MSIA e-learning courses.](#) ↗
- Courseware retirements on August 15, 2017

Course number	Title	Language	Retirement date
47003	Windows Server 2012 Jumpstart	English	8/15/2017

- Courseware retirements on June 30, 2017
 - [Download the complete list of retiring SA e-learning courses.](#) ↗
 - [Download the complete list of retiring MSIA e-learning courses.](#) ↗
- Courseware retirements on June 30, 2015
 - [Download the complete list of retiring e-learning courses.](#) ↗
- Courseware retirements on March 12, 2014
 - [Download the complete list of retiring e-learning courses.](#) ↗

Retired courses: MOC On-Demand

All Microsoft Official Course (MOC) On-Demand courses have been retired as of June 30, 2020. For a complete list of the retired courses, visit: [MOC On-Demand Courses are Retired](#).

Frequently asked questions about course and MOC On-Demand retirement

What criteria are used to determine that a course should be retired?

Typically, a course will be retired in one of the following scenarios:

- The course has been replaced. A new course is released which replaces one or more previous courses and which covers the material in a substantially new manner.
- If the technology covered in a course is no longer supported by Microsoft, the course will typically be retired.
- Business decisions related to the success of a course or the costs of keeping a course up to date may lead to retirement.
- The certification is retired. If the course was designed for a certification that is no longer offered, the course may be retired.
- Courses that are offered by non-Microsoft authors through the community-authoring program may be retired for any reason, at the author's request.
- Quality concerns may result in course retirement. If quality concerns are identified with a course, it may be retired until the quality can be improved.

How will I know if a course is retired?

Microsoft publishes a quarterly list of courses that are retired and those that are scheduled for retirement within the next three to six months. Retirement announcements are shared through communications with training partners, trainers, vendors, and other interested audiences. The course descriptions on the Microsoft Training Catalog and the Courseware Library Catalog are updated with an announcement of the retirement date.

How can I purchase a course after its retirement date?

After their retirement date, courses are no longer sold. The retirement date is published through the catalog webpage for each course and through regular communication channels for each audience. On the effective retirement date, the courseware is marked as no longer for sale. To avoid confusion, the course remains listed as not for sale for a period of time after the effective retirement, until it is archived and removed from the catalog entirely.

Can I purchase the digital version of a course before retirement and download or use it after the retirement date?

After the course is retired, you no longer have access to download it. If you downloaded or received the courseware prior to the retirement date, you may use it according to the licensing terms.

What happens to retired courses that were assigned to me, prior to their retirement, in my Learning Plan and/or added under the “My Courses” section?

You will continue to see these courses in the “My Courses” section after their retirement but attempting to launch a retired course will result in an error message.

If I did not complete a course before its retirement, will I be allowed to complete it after it has been retired?

No. After a course is retired, you can no longer access it.

How will course activity reports reflect in-progress courses at the time of their retirement?

The course activity reports reflect your progress on a course at the time of its retirement. For example, if a course is at 60% completion by a user when the course is retired, the course activity reports will show 60% completion progress. The completion percentage of a course cannot be changed after a course is retired.

Will I still be able to find a retired course on the online learning site?

No. Retired courses no longer appear in search results or in the course catalog.

Offers

Article • 09/19/2023

Exam Replay

In partnership with Pearson VUE, we offer a special package called Exam Replay. Exam Replay gives you a second chance to pass your certification exam. If you don't pass on your first try, don't worry, just polish your skills and retake the exam if needed.

This offer includes:

- One Microsoft Certified Professional Certification exam voucher.
- One retake of that same exam.

[Buy Exam Replay now.](#) ↗

Important notes about this offer

- The certification exam and the retake must be scheduled and taken within 12 months of purchase.
- You cannot schedule your retake until you have taken and failed to pass the initial exam.
- You can take the exams online with this offer.

If you need help purchasing or redeeming this offer

Please [contact the Pearson VUE team.](#) ↗

Special offers for students

Visit: [Student discounts.](#)

Cloud Games

Article • 04/29/2024

As part of our commitment to continuous improvement and innovation, we decided to retire Cloud Games. Effective April 29, 2024, this product is no longer available for use or support.

As technology evolves, so do our solutions. We believe that retiring Cloud Games allows us to focus on delivering even more value to our customers. Our team is developing exciting new products, and in the meantime, we encourage you to explore these alternatives.

Thank you for being a part of our journey. We appreciate your trust and look forward to serving you with our cutting-edge products.

About beta Certification exams

Article • 10/25/2023

We work hard to ensure our exams are technically accurate and relevant to real-life workplace situations, and beta exams are a critical part of our development process. When you take an exam in its beta form, your results provide useful information to evaluate the quality of the exam and its questions.

How to participate

We need approximately 400 beta test-takers to ensure a valid, reliable evaluation of the knowledge and skills needed for success. To ensure we have enough qualified people take the exam as quickly as possible, we offer a limited number of discounted seats during a 3–4-week window. We'll post announcements for upcoming beta exams with an eighty percent discount code on the [Microsoft Learn blog](#). Use of this code is on a first come, first served basis, and the available discounted seats for beta exams often fill quickly. If you want to take advantage of the discount, monitor the Microsoft Learn blog and register as soon as possible.

Note: If you miss the discount opportunity, you can still take a beta exam at full price.

How the discount works

Candidates who register for **and take** the exam using the eighty percent discount code receive a twenty-five percent discount from the exam provider on their next exam once rescore is complete--approximately two weeks after the exam goes live. Twenty-five percent discount vouchers will be sent to the email address used to register for the exam. If you don't receive your twenty-five percent discount voucher within six weeks of the exam live date, contact the exam delivery provider's customer support.

Note: If you pay for the beta exam using any other method (e.g., you pay for the exam yourself or use a voucher), you are not eligible for the twenty-five percent discount voucher. This is not a benefit of simply taking the beta exam.

Increase your chance of taking the discounted beta exam

To increase your chance for securing a discounted seat in a beta exam, consider adding yourself to our [SME Profile database](#). Qualified participants will receive an email

containing a different code from the one posted on the blog. Although the seats are limited with this code as well, because the group of people who have access to it is smaller, the probability of getting a seat with this code is higher than with the one you'll find on the Microsoft Learn blog.

For some exams, we have many more qualified candidates in the SME Profile database than we have available seats. In these cases, we randomly select an appropriate number of qualified candidates and send an invitation. If you aren't selected, you can still participate by using the code in the [Microsoft Learn blog](#) if seats are available.

If you don't get the discount but still want to participate in the beta

We understand some candidates may want to take the exam early to meet job requirements, career growth needs, or demonstrate they are early adopters of (and competent in) the covered technology. If you'd like to take the beta exam but did not get a discounted seat, you may take the exam by registering and paying regular price.

Keep in mind:

- Only candidates who have experience with the technology should participate in beta exams.
- The code can only be used for exams delivered during that 3–4-week window. If you attempt to schedule the exam outside that window, the code will not work.
- Candidates located in China, India, Pakistan, or Türkiye are not eligible to participate in beta exams for security reasons.

Pass the beta exam, earn a Certification

Passing a beta exam in the Certification path counts toward your Certification. You don't need to retake the exam in its final version. Make sure that you take another exam within a year so you can take advantage of the 25 percent discount earned for taking the beta exam through our discount program (if applicable).

If you don't pass the beta exam, you must wait until the exam goes live to retake it. If you're interested in earning a Certification that requires successful completion of that exam, you must wait to retake the exam at regular cost when it's live, or apply the 25 percent discount you received for taking the beta exam through our discount program (if applicable).

If you believe your beta score should be available (because it's at least 10 days after the exam is live), visit your Learn profile and choose Certifications from the profile menu. If it's not there, contact the exam delivery provider. If at least two weeks have passed since the exam went live and your score hasn't appeared in your Learn profile, contact [Certification support](#).

Preparing for a beta exam—with no prep materials

The Exam Details page lists the skills to be assessed on the exam. Although our goal is to provide some training materials prior to launching a beta exam, it's not always possible. People qualified to take beta exams are experienced in the job role, have access to other resources, or have access to early releases of the technology. We recommend consulting peers, community resources, and early-adopter articles for preparation materials.

For more suggestions and ideas on how to prepare for beta exams without preparation materials, see: [Just How Does One Prepare for Beta Exams without Preparation Materials?](#).

Beta exam scoring and results

When you complete a beta exam, you won't receive a score immediately because the scoring model for the exam is not yet finalized.

If you've taken a beta exam, you'll receive your score about 10 days after the exam becomes available worldwide or "*goes live*" -- approximately 10-12 weeks after the beta period **begins**. This time reflects a comprehensive process including statistically analyzing results and data, evaluating the performance of each question and reading and evaluating all comments provided during the beta exam. As a result, you may not receive a score for 14 weeks depending on when in the beta process you took the exam. Please note that the beta exam process and the time it takes to receive your results may vary.

About Applied Skills beta assessment labs

We work hard to ensure our Applied Skills assessment labs are technically accurate and relevant to real-life workplace situations, and we perform a beta process similar to what we do for Certification exams. Currently, however, this process is not publicly available.

Exam development

Article • 09/19/2023

About exam development

Microsoft Certification exams are carefully developed with input from industry professionals to reflect the skills needed to be successful in critical job roles that leverage Microsoft technology to support an organization's digital transformation objectives.

These are the steps we take as we develop each exam:

1. Define the skill domain. Experts identify the critical tasks performed within specific job roles or functions that leverage Microsoft technologies and solutions.
2. Define the distribution of skills on the exam. The skills identified in step one are evaluated by additional technical and job experts from around the world. Their evaluation becomes the blueprint that defines the distribution of questions across the skill domain.
3. Write the exam questions. Subject matter experts (SMEs) write exam questions to measure the critical skills according to the distribution defined by the blueprint created in step two.
4. Evaluate the accuracy, clarity, appropriateness, etc. of each question (alpha review). A panel of experts who did not write the questions reviews each one for technical accuracy, relevance, and alignment to the skill domain during the alpha review.
5. Beta test the questions. The alpha-reviewed questions are then pilot tested in an exam-like situation known as a "beta exam." This ensures that only the best content is included in the live exam. Visit: [Beta exams](#) for more information.
6. Finalize the question pool. The results of the beta exam are psychometrically analyzed for factors such as difficulty, ability to differentiate high and low performers, reliability, and more. Only those questions that meet Microsoft's psychometric criteria will appear on the live exam.
7. Set the cut score. A panel of experts works with Microsoft's psychometrician to determine a passing score. This score is based on the skills needed to be considered competent in the skill domain in relation to the difficulty of the questions included on the exam.
8. The exam is available worldwide through our exam delivery partners who administer the certification exam. The exam can be taken at testing centers worldwide or through online proctoring where available.
9. Sustain/maintain over the life of the exam. Microsoft monitors the psychometric performance of the exams throughout their lifetime, ensuring that they continue to

be valid and reliable measures of the skill domain. Questions that no longer perform psychometrically are removed, and new questions are added as features and functionality are updated and/or to replace questions removed for psychometric reasons or because of changes in the technology. Sometimes exams are retired. Visit: [Exam retirement](#) to learn more.

Certifications for students

Article • 07/08/2024

Student discounts

We're pleased to offer academic pricing on Microsoft Certification exams in most countries/regions (except India and China). To qualify, identify yourself as a student in your certification profile and verify your academic status. Once verified, you'll receive the student discount when registering for an exam.

Identify yourself as a student in your certification profile

1. Login at Learn Profile [settings](#)
2. Scroll down to "Edit Interests" and click on "Begin interest survey"

The screenshot shows the 'Edit interests' section of the Microsoft Learn Profile settings. On the left, there's a sidebar with links: 'Personal info, username and URL', 'Account Management', 'Connected certification profile', 'Manage email preferences', and 'Edit interests' (which is highlighted with a blue border). The main area has a heading 'Edit interests' and a sub-instruction 'Take/retake the user interest survey to help personalize recommendations and pages to your current interest and skill level.' Below this is a blue button labeled 'Begin interest survey'.

3. Select "Career Paths"

The screenshot shows the 'What are you interested in learning about?' section of the Microsoft Learn interest survey. It asks 'Select all that apply' and lists three categories: 'Microsoft Products', 'Career Paths' (which is checked), and 'Subjects'. Below this, it asks 'What would you say is your current career level?' with options: 'Just getting started (0 years)', 'Early career (0 - 5 years)' (which is checked), 'Mid career (5 - 10 years)', and 'Advanced career (10+ years)'. At the bottom, it asks 'What type of training content do you want to engage with?' with options: 'Self-paced (online)' (which is checked) and 'Instructor-led (in-person/virtual)'. There are 'Back' and 'Next' buttons at the bottom.

4. Select "Student".

Let's customize your experience on Microsoft Learn!

Answer the following set of questions to the best of your ability. Knowing your interests, we will provide custom recommendations and tweak some pages of the site to reflect your interests.

- Introduction
- Products
- Careers
- Subjects
- Get Recommendations

So, you're interested in careers. Which career(s) would you like to focus on?

Select 1-3 Careers you're interested in

Administrator	Developer	Functional Consultant
Solution Architect	Business User	<input checked="" type="checkbox"/> Student
Technology Manager	K-12 Educator	App Maker
DevOps Engineer	Security Engineer	Data Engineer
School Leader	Data Scientist	Data Analyst
Business Owner	Higher Education Educator	Security Operations Analyst
Business Analyst	AI Engineer	Database Administrator
Service Adoption Specialist	Support Engineer	Auditor
Risk Practitioner	Network Engineer	Privacy Manager
Identity and Access Administrator	Parent/Guardian	AI Edge Engineer

5. Complete the rest of the Interest Survey and click "Finished" when completed.

Get help with student discounts

Visit: [Certification support](#).

College credit for certification exams

Article • 07/15/2024

Earn college credit

Students may receive college credit after completing the requirements for earning some Microsoft Certifications. All eligible Microsoft certifications are listed at <https://aka.ms/ACECollegeCredit>.

ACE college credit

The American Council on Education (ACE) is a membership organization for U.S. accredited, degree granting institutions that mobilizes the higher education community. ACE is a nationally recognized leader in the evaluation of workforce and military training, providing standards, practices, and tools that higher education institutions rely on.

Many colleges and universities across the nation, including two-year, four-year, public, and private colleges and universities recognize ACE credit recommendations, like Microsoft certifications, as applicable toward a post-secondary degree or certificate.

ACE has reviewed and established credit recommendations for several Microsoft Certification exams. You can see the full list at <https://aka.ms/ACECollegeCredit>

For more information about ACE, visit <https://www.acenet.edu/Programs-Services/Pages/Credit-Transcripts/Students.aspx>.

How to send an official transcript to your college or university?

Most institutions consider a certification or transcript official only if it comes from the organization awarding the certification. In other words, you shouldn't email a copy or attachment of your certification or transcript. Instead, you must send your Microsoft Learn transcript via a verifiable link to your college or university.

To apply for certification credit hours for your Microsoft Certification, you'll need to email the following information to your school:

1. a link to the applicable [certification exam title](#) and
2. a verifiable link to your official Microsoft Learn transcript.

To do this:

1. Contact your college or university to determine the appropriate recipient and necessary contact information for receiving your Microsoft Learn transcript.
2. Sign into your Learn profile (or [create a Microsoft Learn profile](#) if you haven't).
3. Select "Transcript" from the menu on the left.
4. Select "Transcript Settings" and then select "Show legal name" and "Show contact email"
5. If you are sharing a link for the first time, select "Share link" and then select "Create link." If you've previously generated a link, select "Copy link."
6. Paste the link to your Microsoft Learn transcript into an email addressed to the appropriate contact at your college or university. Before sending the email, please refer to the ACE reviewed Microsoft certification exam at <https://aka.ms/ACECollegeCredit> and copy the link for the exam title corresponding to the credential you have earned. Make sure to include this certification exam link in the email to your college or university, along with the link to verify your Microsoft Learn transcript.

Frequently Asked Questions:

How do I receive college credit for a Microsoft Certification?

The American Council on Education (ACE) has reviewed and established credit recommendations for [select Microsoft Certifications](#). Upon earning a credential for an ACE recommended exam, you can send a verifiable link of your official Microsoft Learn transcript to your ACE member college or university and request credit for your certification.

Can I email a copy of my transcript as an attachment to my college or university?

No. You should send a verifiable link to your official Microsoft transcript to request credit. Most institutions consider a transcript official only if it comes from the organization awarding the certification.

Can I still use my Credly transcripts to request college credit for my Microsoft Certification?

Only certifications earned and claimed on Credly prior to June 30, 2023, will be available on the Credly transcripts for sharing.

How do I know if my college or university is an ACE member school?

Check the [ACE Members and Associates Directory](#).

Do colleges and universities accept ACE credits if they aren't an ACE member school?

Yes. Membership isn't required to accept ACE credit recommendations. Many colleges and universities accept ACE credit recommendations as transfer credit! You should check with the admissions or registration team at your school of choice to determine their acceptance policies.

Credential expiration policies

Article • 07/15/2024

Role-based and specialty Certifications expiry

Microsoft role-based (associate and expert) and specialty Certifications are valid for one (1) year from the date that you complete all requirements to earn that Certification.

To prevent your Certification from expiring you must renew the Certification before the Certification expiration date. For more information about Certification renewals, visit [Renew your Certification](#). After the Certification expires, you will no longer be able to renew that Certification and will need to re-earn the Certification by passing all the required exam(s).

Fundamentals Certifications expiry

Microsoft fundamentals Certifications do not expire.

Other Microsoft Certifications expiry

MOS, MTA, MCSA, MCSD, MCSE, and MCE Certifications do not expire.

Beta exam Certification expiry

If you passed a beta exam and earned a Certification as a result, your Certification achievement and expiration dates will be based on the date that your beta exam was rescored (approximately 10 days after it goes live). This ensures that you have sufficient time to renew your Certification after earning it.

Applied Skills credential expiry

Microsoft Applied Skills credentials do not expire.

Expiration of Certification and Applied Skills credentials based on technology changes

Technology is evolving, and some Certifications and Applied Skills become outdated and obsolete. To ensure that all Microsoft credentials remain relevant, valid, and meaningful, Microsoft reserves the right to retire exams, Certifications, and Applied Skills credentials at any time.

When a credential is retired, it will no longer be available for new candidates to earn. However, the credential will remain in the Active section of your transcript until it expires (if it has an expiration date) or for two years following the retirement of the credential (if it doesn't have an expiration date).

Challenging a Certification exam or renewal assessment item or an assessment lab task

Article • 10/25/2023

Microsoft Certification exams, certification renewal assessments, and Applied Skills assessment labs are designed to ensure that candidates who earn and maintain our credentials have demonstrated the required proficiency level across the skill domain. Each Microsoft Certification exam, renewal assessment question, and assessment lab task is carefully reviewed by a panel of technical and job experts for technical accuracy, clarity, and relevance. If you believe that a question on a Microsoft Certification exam or renewal assessment or an assessment lab task is inaccurate, you may request an evaluation of the question or task via the challenge process, designed to help identify and correct problematic questions and tasks. However, even if a question or task are flawed in some way, we cannot assume that you would have answered it correctly if it had not had that flaw, therefore most challenges do not result in a change in your exam or assessment result.

Criteria for accepting a challenge:

- The certification exam, renewal assessment, or assessment lab must have been taken within the last 15 calendar days (not business days).
- You are challenging a specific item on the exam or renewal assessment or task on the assessment lab.

Challenges will not be accepted for the following criteria:

- Challenges to the entire exam, renewal assessment, or assessment lab.
- Challenges based on study materials (practice tests, study guides, training materials, etc.).
- Challenges to the appropriateness of a question or task.
- Submission is more than 15 calendar days (not business days) after the exam was taken.
- Challenges based on technical issues experienced at a testing center or on Microsoft Learn.

- Challenges related to being unable to finish the exam or assessment lab as a result of taking unscheduled breaks.
- Challenges that are not submitted via this process.
- Challenges to the scoring methodologies (e.g., The bar graph does not represent my actual score.).
- Challenges to the exam, renewal assessment, or assessment lab format (standard, sort, adaptive).
- Challenges to beta exams.

Challenge process:

1. Review our criteria for accepting and not accepting a challenge.
2. Complete and submit the [challenge form](#).
3. The Microsoft Credentialing team will review your submission for completeness. If incomplete, you will be asked to provide more information. If complete, the Microsoft Credentialing team will review. A review takes approximately two weeks.
4. Once the review is complete, you will be notified of the outcome.

Thank you for your interest in helping make Microsoft Certification exams, Certification renewals, and Applied Skills assessment labs as valid and relevant as possible.

If you would like to provide feedback about a Practice Assessment, do **not** use the item challenge process. [Use the Practice Assessment feedback form](#) instead.

Exam and assessment lab security policy

Article • 10/25/2023

About exam and assessment lab security

We make every attempt to ensure the security of our credentials and testing process. As part of this, we will take actions such as banning candidates, revoking scores and credentials, and asking candidates to retake exams and assessment labs if we suspect fraudulent activity.

Ethical Conduct

The purpose of the Microsoft Credentials Program is to determine a person's ability to perform a specific job role or a set of tasks. Accordingly, all candidates are expected to pass the exam or assessment lab on their own merit without assistance from another person or entity (BOT, AI assistance) and are expected to maintain confidentiality of the validation content. Candidates are expected to abide by these ethical standards and to read, understand, and comply with our security rules. The obligation to abide by these ethical standards includes a commitment to honesty, truthfulness, full disclosure, accuracy, fairness, and integrity in all matters pertaining to the exam or assessment lab.

Microsoft Candidate Agreements

The Microsoft Certification Program requires candidates to accept the terms of a [Microsoft Certification Exam Candidate Agreement](#) before taking an exam, and the Microsoft Applied Skills Program requires candidates to accept the terms of a [Microsoft Applied Skills Assessment Lab Candidate Agreement](#) before attempting an Applied Skills assessment lab.

These agreements legally require candidates to keep information related to exam or assessment lab content confidential. Requiring the acceptance of the Agreement helps protect the security of Microsoft Certification exams, Applied Skills assessment labs, and the integrity of the Microsoft Credentials Program by legally discouraging piracy and/or unauthorized use of exam content.

Confidentiality of exam and assessment lab content

All content on exams and assessment labs represents confidential intellectual property of Microsoft. Obtaining, using, or distributing this content is strictly prohibited, regardless of the method employed (memorization, recording, copying, or other means). This prohibition includes discussion, distribution, or online posting of remembered assessment topics or solutions, in whole or in part. The use or sharing of any exam or assessment lab content violates the rules of conduct of the Microsoft Credentials Program. Such activities could provide an unfair advantage and threaten the validity and credibility of the program.

Microsoft Certification exam testing center security

Staff at testing centers are provided with security policies that must be enforced to acquire and maintain testing center status. Ongoing inspections ensure that each testing center maintains the security outlined by Microsoft and the exam delivery provider. In addition, proctors at testing centers are authorized to immediately take appropriate measures against candidates who violate testing rules. If you have concerns about the security of your exam experience, complete this [form](#).

To ensure the security of Microsoft Certification exams, testing center administrators ensure that the identification provided is appropriate and verify that it is the ID of the person who appeared to take the exam; walk through the testing area periodically; keep partitions between testing stations; remove crib sheets, electronic devices, and other unauthorized materials, and prevent the removal of exam content in any shape or form. In addition, test center administrators and proctors cannot provide any type of aid regarding any exam question. They can help resolve technical issues but cannot assist in the understanding or answering of any exam question.

Microsoft may suspend testing at any test center where security problems are suspected, including any test centers that might be affiliated with those under suspicion.

Testing center appeal process

Testing center owners can appeal a site closure by submitting an appeal to mlsecure@microsoft.com.

Certification exam unscheduled breaks security

You may take unscheduled breaks during all exams, except Microsoft Office Specialist (MOS) exams, without requesting them in advance through the accommodation request

process. However, Microsoft's security policies apply while you are on break. This means that you cannot access any unauthorized materials during your break. If the proctor sees you doing so, your exam will be revoked. To learn more about prohibited behaviors during exams, review the [OnVUE guide](#).

Identification (ID) requirements for taking Microsoft exams

All test takers are required to present one form of original (no photocopies), valid (unexpired) government issued ID with name, photo, and signature. The first and the last name that the test taker uses to register must match exactly the first and last name on the ID that is presented on test day.

For additional information, refer to the [Pearson VUE ID Policy](#).

Microsoft Certification exam out-of-country/region testing

To sit for a Microsoft Certification exam at a testing center in India, China, or Pakistan, you must be a legitimate resident of that country. If you are a legitimate resident of one of these countries, testing centers are required to confirm and record that you have shown documented proof that you are a legitimate resident of that specific country. To verify country of residence status, you are required to present one form of an original (no photocopies), valid (unexpired) government issued ID with your name, photo, and signature.

If you are not a legitimate resident of India, China, or Pakistan, you will **not** be allowed to sit for a Microsoft Certification exam within that country.

If you do not have an ID that meets the requirements of the ID policy and would like to request an exception, or if you are a candidate testing outside your home country/region, please contact [Pearson VUE support](#). Any candidate exceptions to the ID or out of country/region policy must be pre-approved by the Pearson VUE customer service center at least three business days before the scheduled exam appointment.

Right of exclusion

Based on security and integrity concerns, Microsoft reserves the right to exclude specific regions, countries, and testing centers from the Microsoft Credentials Program altogether.

Data forensics

Microsoft will use data forensics (statistical evidence improper activity during an exam) to cancel exam scores, revoke Certifications, ban candidates, close test centers, and take any other appropriate action to protect the integrity of the Microsoft Credentials Program.

Candidate retesting at request of Microsoft

Microsoft reserves the right to ask any candidate to retest for any suspected fraudulent activity or anomalous testing patterns at any time.

Revoking Credentials and Candidate Bans

If a candidate violates any rule, policy, or term within the [Microsoft Certification Exam Candidate Agreement](#) or the [Microsoft Applied Skills Assessment Lab Candidate Agreement](#), or engages in any misconduct that diminishes the security and integrity of the Microsoft Credentials Program in any way, the candidate may be permanently prohibited from taking any future credentials and may be banned from Microsoft's Credential Program. In addition, the candidate may have any credentials (Certifications or Applied Skills) and scores revoked.

Examples of such misconduct, misuse, and fraud include, but are not limited to, the following:

- Using AI in any way during the exam or assessment lab.
- Falsifying, modifying, and/or altering the original results/score reports for any exam or assessment lab record.
- Using unauthorized material in attempting to satisfy credential requirements (this includes using brain dump material and/or unauthorized publication of exam questions or assessment lab tasks with or without answers).
- Providing or accepting improper assistance.
- Falsifying identity or impersonating another individual to gain access to or attempt an exam or assessment lab.
- Copying, publishing, disclosing, transmitting, selling, offering to sell, posting, downloading, distributing in any way, or otherwise transferring, modifying, making derivative works of, reverse engineering, decompiling, disassembling, or translating any lab material in whole or in part, in any form or by any means, verbal or written, electronic or mechanical, for any purpose.
- Disclosing Microsoft intellectual property (IP).

- Disseminating actual exam or assessment lab content.
- Using the exam or assessment lab content or platform in any manner that violates applicable law or does not align with the requirements of the exam or assessment lab.
- Violating the retake policy.
- Cheating during the exam (such as looking at the monitors of other exam takers, using an unauthorized device, or looking at notes).
- Bringing non-authorized items into the testing center during an exam session (such as notes or unauthorized materials and electronic devices, such as cell phones).
- Violating the [Microsoft Certification Exam Candidate Agreement](#) or the [Microsoft Applied Skills Assessment Lab Candidate Agreement](#) in any way.

Candidate appeal process

Candidates may appeal their ban by submitting an appeal to mlsecure@microsoft.com within 14 calendar days of receiving notice from Microsoft (as established by the date the notification was sent by Microsoft). Any appeal requests submitted after that time will not be reviewed or granted.

The Microsoft Worldwide Learning Security Team will review all submitted appeal requests, conduct a thorough investigation of each specific case, and will communicate directly with the candidate regarding the conclusion of the investigation and final appeal decision.

A candidate may appeal a ban for falsifying a score report by submitting the original report (no scans or electronic copies) to:

Microsoft Worldwide Learning Security Team
One Microsoft Way
Redmond, WA 98052

Examples of fraudulent activity

Fraudulent activity is anything that enables an unqualified candidate to pass an exam or assessment lab. This type of egregious misconduct negatively affects the integrity of the Microsoft Credentials Program. Examples of fraudulent activity include, but are not limited to using AI to assist you during the exam or assessment lab, proxy testing, using brain dump sites to prepare for the exam or assessment lab, stealing content to share with others, falsifying score reports, etc.

Proxy testing is when someone takes an exam or assessment lab for another candidate. Some companies offer proxy testing, guaranteeing that you will pass the exam or assessment lab without having to take it. This is fraudulent activity.

A brain dump is a source, such as a website, that contains exam questions or assessment lab content that has been fraudulently obtained with the intention to share it with or sell it to other candidates. The content included in brain dumps is exactly the same or substantially similar to what appears on the exam or assessment lab. Because the exam or assessment lab content was fraudulently obtained, using this type of material to prepare for or during an exam or assessment lab constitutes cheating. Brain dump providers are in violation of Microsoft intellectual property rights and candidate agreements. If you think you have discovered a brain dump site with Microsoft content, please complete this [form](#).

Falsified score reports are reports that Microsoft deems to be inauthentic or that deceive or defraud others in any way. If Microsoft determines that a candidate has falsified a score report, the candidate will be ineligible to take any future Microsoft exams and/or assessment labs and his or her credentials may be revoked.

Exam and Applied Skills assessment lab retake policies

Article • 10/25/2023

Microsoft Certification exam retake policy for role-based, specialty, and fundamentals exams

- If you don't pass an exam the first time, you must wait 24 hours before retaking it.
- A 14-day waiting period is imposed between all subsequent attempts (up to 5).
- You may not take a given exam more than five (5) times within a 12-month period from the first attempt. If you failed the exam 5 times, you'll be eligible to retake it again 12 months from the date of your first attempt.
- You cannot retake an exam you've passed unless your Certification has expired.
- You must pay to retake the exam (if applicable.)

Submit a request for an exam retake inside the waiting period

You may request a waiver of the retake waiting period if you experienced internet connectivity issues or equipment failure during the exam and a Pearson VUE case was created. Waivers will not be granted for any other reason.

Waiver requests **must** include the Pearson VUE case number to confirm that you are eligible.

To request the waiting period to be waived, please contact [Training, Certification, and Program Support \(microsoft.com\)](#). If you did not experience an internet connectivity issue or equipment failure, you do not qualify for a waiver of the waiting period.

If you need assistance rescheduling your exam, please contact Pearson VUE Customer Support - [Customer service :: Microsoft :: Pearson VUE](#).

Microsoft Certified Educator (MCE) exam retake policy

- If you don't pass a Microsoft Certified Educator (MCE) exam the first time, you must wait 24 hours before retaking the exam.

- If you don't pass the second time, you must wait seven (7) days before each subsequent attempt (up to 5).
- You may not take a given exam more than five (5) times within a 12-month period from the first attempt. If you failed the exam 5 times, you'll be eligible to retake it again 12 months from the date of your first attempt.
- You cannot retake an exam you've passed unless your Certification has expired.
- You must pay to retake the exam (if applicable.)

Microsoft Office Specialist (MOS) exam retake policy

- If you don't pass a Microsoft Office Specialist (MOS) exam the first time, you must wait 24 hours before retaking it.
- If you don't pass the second time, you must wait 2 days (48 hours) before each subsequent exam retake.
- There is no annual limit on the number of attempts on the same exam.
- If you pass an Office exam, you may take it again.

Beta exam retake policy

- Beta exams may be taken only once during the beta period.
- If you pass a beta exam (determined after the beta period ends), it meets the requirement for the associated Certification. (Other exams may be required to earn the Certification, however.)
- If you fail the beta exam, it can be retaken once the exam is live. If you fail the exam once it's live, the general retake policy stated above applies to all subsequent attempts.
- This policy supersedes the general retake policy.

Applied Skills assessment lab retake policy

- You can retake an assessment lab by selecting the appropriate assessment lab from your profile 72 hours after your last attempt.
- Your profile will display all assessment attempts, including the date, score, and any relevant details. However, only passed assessment labs will appear on your transcript.
- Note that a cancelled lab or one that ends abruptly for any reason will be scored. As a result, this counts as an attempt, and you will need to wait for 72 hours before retaking the assessment lab.

Reschedule and cancellation policies

Article • 02/09/2024

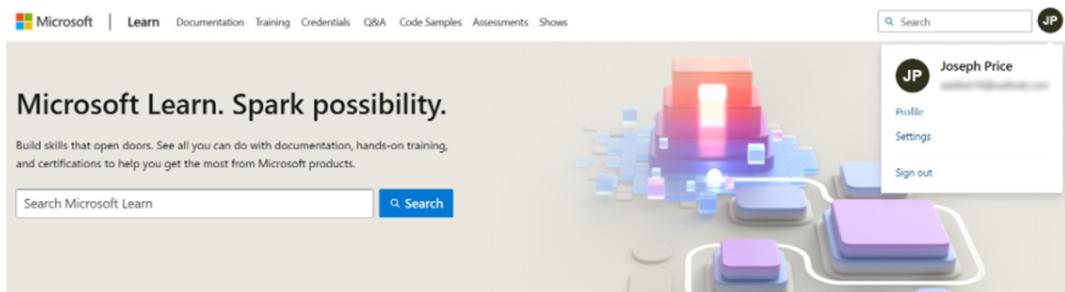
Rescheduling and cancellation policy details

Be sure to reschedule or cancel exam appointments at least 24 hours before your scheduled exam or your fee will be forfeited. If you used a company-purchased voucher, the voucher will be forfeited. If you no-show for your exam appointment, your Company may be charged a no-show Fee. Visit [registering and scheduling an exam](#) to review the latest updates to the exam scheduling policy.

How to reschedule or cancel your exam

Reschedule or cancel your exam appointment via your Learn profile.

1. Log in to your [Learn profile](#) and choose *Profile* from the dropdown menu in the photo avatar.



2. Go to *Credentials* in the profile menu and select *Certifications* beside Applied Skills.

The screenshot shows a user profile page with the following details:

- User icon: SA
- Badges: 0
- Trophies: 0
- Reputation points: 0
- Accepted answers: 0
- Following: 0
- Followers: 0

Below these statistics, there are two main sections:

- Activity**: Contains links for Applied Skills (underlined), Certifications, Training, Challenges, Credentials (boxed and numbered 1), Q&A, Achievements, Collections, and Transcript.
- Certifications**: Contains a red arrow pointing up from the "Credentials" section.

3. Scroll to the exam appointment you wish to cancel or reschedule and choose either the *"Cancel"* or *"Reschedule"* link.
4. You will be redirected to the exam delivery provider's site to cancel or reschedule your exam.

Microsoft Credentials Program Agreement

Article • 11/08/2023

Please read this Microsoft Credentials Program Agreement (the “**Agreement**”) carefully. This Agreement is by and between you (“**you**” or “**your**”) and Microsoft Corporation, a Washington Corporation located at One Microsoft Way, Redmond, WA, 98052, USA together with its affiliates (“**Microsoft**”) regarding your participation in the Microsoft Credentials Program (the “**Program**”).

BY REGISTERING FOR OR TAKING A MICROSOFT EVALUATION YOU AFFIRM THAT YOU ARE OF LEGAL AGE IN YOUR JURISDICTION TO ENTER INTO AN AGREEMENT WITH MICROSOFT, AND YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THIS AGREEMENT AND ALL TERMS INCORPORATED BY REFERENCE HEREIN AND YOU ACKNOWLEDGE THAT YOU HAVE REVIEWED THE [MICROSOFT PRIVACY STATEMENT](#) . IF YOU DO NOT AGREE TO THE TERMS AND CONDITIONS OF THIS AGREEMENT AND ALL TERMS INCORPORATED BY REFERENCE HEREIN, YOU CANNOT PARTICIPATE IN THE PROGRAM AND YOU SHOULD NOT CLICK THE CHECKBOX, REGISTER, OR TAKE THE EVALUATION. THE “EFFECTIVE DATE” OF THIS AGREEMENT IS THE DATE UPON WHICH YOU CLICK THE CHECKBOX, REGISTER, OR TAKE THE EVALUATION, AS APPLICABLE.

In consideration of the mutual covenants, terms and conditions set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, you and Microsoft hereby agree as follows:

1. Program Overview. The Program’s goal is to provide eligible participants with opportunities to earn (and, as applicable, maintain and renew) Microsoft Credentials. “**Microsoft Credentials**” means, collectively, the credentials listed at <https://learn.microsoft.com/en-us/credentials/browse/> or any successor site thereto (as updated from time to time, “**Certifications**” or “**Applied Skills**”). Upon entering into this Agreement and for the duration of the Term (as defined below), you will be eligible to enroll in and take the Program-designated Exams and Assessments (“**Evaluations**”) for Microsoft Credentials and, subject to you passing any applicable required Evaluations and complying with any applicable Credential-Specific Requirements (as defined below), and provided that Microsoft has not discontinued the applicable Microsoft Credential, earn, maintain and renew (as applicable) Microsoft Credentials. Evaluations applicable to Applied Skills are herein referred to as “**Assessments**” and Evaluations applicable to Certifications are herein referred to as “**Exams**”. You will only seek to take Evaluations or earn, maintain, or renew Microsoft Credentials for so long as you meet the eligibility

criteria set forth in Section 1. This Agreement hereby incorporates by reference the Exam and Assessment policies and procedures (the “**Evaluation Policies**”) set forth at <https://learn.microsoft.com/en-us/credentials/certifications/certification-exam-policies> (in each case, or any successor site thereto and as updated from time to time). Such Microsoft Credential-specific requirements and the Evaluation Policies are collectively referred to as the “**Credential-Specific Requirements**”. As used herein, “**Holding**” (or to “**Hold**” or have “**Held**”) a Microsoft Credential at any time during the Term means that, with respect to such Microsoft Credential, you have passed all applicable required Evaluations and are then in compliance with all applicable Credential-Specific Requirements (including with respect to maintenance and renewal), and Microsoft has not discontinued such Microsoft Credential. For clarity, participation in the Program includes any or all of: accessing and using Program Content (as defined below), scheduling and taking Evaluations, receiving a Transcript, Holding, using, or disclosing any Microsoft Credentials, and receiving a certificate or Verified Credential (as defined below). Your use of Microsoft Learn in connection with the Program is governed by the terms of use referenced within the Microsoft Learn website. You acknowledge that Microsoft may contact you in connection with the Program. You acknowledge that Microsoft Learn may require the payment of registration fees for Evaluations.

2. Changes. Microsoft may change this Agreement (including the Credential-Specific Requirements) from time to time by notifying you of such changes by any reasonable means. Any such changes will not apply to any dispute between you and Microsoft arising prior to the date on which Microsoft posted the revised Agreement incorporating such changes, or otherwise notified you of such changes. Your participation in the Program following any changes to this Agreement will constitute your acceptance of such changes. The “Last Updated” legend above indicates when this Agreement (including the Credential-Specific Requirements) was last changed. Microsoft may, at any time and without liability, modify or discontinue all or part of the Program, including Microsoft Credentials, Program Content and their availability, and Credential-Specific Requirements at any time without liability to you or any third party. Notwithstanding anything to the contrary herein, in the event Microsoft adds new requirement(s) to the Credential-Specific Requirements for a Microsoft Credential that you Hold at the time of such modification, your failure to comply with such new requirements will not result in your loss of the applicable Microsoft Credential until three (3) calendar months after the date that Microsoft added such requirement(s) to the applicable Credential-Specific Requirements.
3. Transcripts. You can track the Microsoft Credentials that you Hold, including Microsoft Credentials that have expired, through the Program transcript available

in your <https://review.learn.microsoft.com/en-us/credentials/certifications/manage-certification-profile> (the “**Transcript**”). While Microsoft makes efforts to maintain the timeliness and accuracy of Transcripts, it does not guarantee that Transcripts are or will remain updated, complete, or correct, or that access to Transcripts will be uninterrupted. You are responsible for periodically reviewing your Transcript to ensure it accurately reflects the Microsoft Credentials you Hold at any given time. If you believe your Transcript is inaccurate, you have up to one (1) year from the date you passed the last Evaluation necessary to Hold the applicable Microsoft Credential(s) to submit a request to Microsoft for evaluation of your fulfillment of such Microsoft Credential(s). Transcripts, together with Evaluations and any content that you are eligible to access or receive as a Program participant are collectively referred to as “**Program Content**”.

4. **Suppliers.** Participation in certain elements of the Program may require you to engage with and/or remit fees to third party Evaluation providers (“**Suppliers**”). Any such interactions may be subject to and governed by the terms, conditions, rules, and policies of the applicable Supplier(s) (“**Supplier Terms**”), and you acknowledge that certain aspects or benefits of Program may not be available unless you agree to the applicable Supplier Terms. To the extent Supplier Terms grant you any rights or licenses to particular content owned or controlled by Supplier (such content, the “**Supplier Content**”), such Supplier Content is governed solely by, and your rights and licenses in and to such Supplier Content are solely as set forth in, the applicable Supplier Terms. Except regarding Supplier Content and notwithstanding anything to the contrary in any Supplier Terms, your participation in the Program is governed by this Agreement (including the Credential-Specific Requirements). WITHOUT LIMITATION TO SECTION 7(C), MICROSOFT EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO SUPPLIER CONTENT AND SUPPLIERS’ ACTS OR OMISSIONS.

5. Use and Ownership of Program Assets.

a) **Licensed Content.** Subject to your compliance with the terms and conditions of this Agreement, Microsoft hereby grants to you a revocable, worldwide, fully paid-up, royalty-free, non-transferable, non-sublicensable, non-exclusive license to use Program Content excluding Supplier Content (“**Licensed Content**”) during the Term, solely in unaltered form and solely for purposes of participating in the Program. The license granted in this Section 5(a) is conditioned on you taking any and all steps reasonably necessary to ensure the confidentiality and security of Program Content and to protect the intellectual property rights of Microsoft in and to Program Content.

- b) **Restrictions.** You will not, and will not allow any other person or entity to:
- (i) record, modify, alter or create derivative works of Licensed Content;
 - (ii) distribute, copy, display, publish, summarize, photograph, record, download, transmit or post Licensed Content or any other Evaluation Related Information (as defined below);
 - (iii) work around any technical limitations or restrictions in Licensed Content;
 - (iv) sublicense, assign, distribute, publish, transfer or otherwise make Licensed Content available to third parties;
 - (v) attempt to discover any trade secrets related to Licensed Content or any proprietary materials of Microsoft;
 - (vi) access or use Licensed Content in any manner or for any purpose that infringes, misappropriates or otherwise violates any intellectual property or proprietary right or other right of any third party or that is otherwise unlawful;
 - (vii) make any representations, warranties or promises on behalf of Microsoft or its suppliers; or (viii) use Licensed Content for any purpose other than that explicitly permitted under this Agreement.
- c) **Use of Microsoft Credentials; Publicity.** You may not issue any press releases or other public announcements or make any other disclosures relating to this Agreement, the Program, Microsoft Credentials or Program Content (including your participation in or access or use of any of the foregoing) without the prior written approval of Microsoft, except that you may disclose your Transcript, certificate, Microsoft Credentials, and transcript for a single Microsoft Credential ("Verified Credential") that you Hold (as reflected on your Transcript at the time of such disclosure), subject to the terms of this Agreement (including this Section 5(c)). Without limiting the foregoing, you may not advertise, promote, imply, or suggest in any manner that you are employed by, affiliated with, endorsed, or sponsored by Microsoft except to state that you have successfully completed all requirements for the particular Microsoft Credential(s) that you Hold at the time of such statement. During the term of this Agreement, you will insert the following language in each contract under which you provide services involving Microsoft technologies:

"Microsoft is not a party to this agreement and Microsoft will have no liability whatsoever with respect to the services that are the subject of this contract. Any Microsoft Credential indicates that I have successfully completed the requirements for the corresponding Microsoft Credential. The services I provide are not endorsed or sponsored by Microsoft."

Some states, countries and regions regulate the use of the term "engineer"; you will comply as applicable with any such laws in the event you Hold any Microsoft Credentials that use the term "engineer" in title or description.

You may not use, disclose, or reproduce any Microsoft Credential in any manner whatsoever other than as expressly set forth in this Agreement. You will ensure that your use of Microsoft Credentials does not, and you will not take any action that may derogate from, interfere with, or diminish Microsoft's rights in any Microsoft Credentials or damage Microsoft's reputation or goodwill in any Microsoft Credentials. You will not use the Microsoft Credentials in a way that may cause confusion about whether any products or services you offer are Microsoft products or services. You will not misrepresent your Microsoft Credential status. If Microsoft suspects that you have misrepresented or fraudulently presented your Microsoft Credential status or your Transcript, Microsoft will notify you of such misrepresentation or fraud and you will immediately cease disclosure of your Microsoft Credential status or your Transcript, as applicable.

d) **MC ID.** Microsoft may assign a unique Microsoft Certification ID number ("MC ID") that will be used to identify you as a Program participant. This unique MC ID belongs to Microsoft, and you may only use the MC ID assigned to you during the Term. Your MC ID is for your use only and should be kept confidential; you, and not Microsoft, are responsible for any use or misuse of your MC ID, and you must promptly notify Microsoft of any confidentiality breach or unauthorized use of your MC ID.

e) **Ownership.** All rights not expressly granted herein are reserved by Microsoft. As between you and Microsoft, Microsoft owns all rights, title, and interests, including all intellectual property rights, in and to the Program Content and Microsoft Credentials, and any associated goodwill. The Program Content and Microsoft Credentials are the valuable property of Microsoft and its licensors and are protected by copyright and other intellectual property laws and treaties. All trade names, trademarks, service marks and logos on or in Program Content or Microsoft Credentials that are not owned by Microsoft are the property of their respective owners. Nothing contained on or in the Program Content or Microsoft Credentials or herein should be construed as granting any right to use any trade names, trademarks, service marks or logos without the express prior written consent of the owner. Microsoft is the sole beneficiary of the goodwill associated with your use of the Microsoft Credentials.

f) **Feedback.** You may provide suggestions, comments or other feedback to Microsoft about the Program, Program Content, Microsoft Credentials, or any element of the foregoing (including in response to surveys, focus groups, or other research inquiries from Microsoft) ("Feedback"). You hereby grant to Microsoft a non-exclusive, irrevocable, perpetual, worldwide, royalty-free, fully paid-up, fully sublicensable right and license to develop, market, promote, make, have made,

use, sell, offer for sale, and import any Feedback that you provide into any of Microsoft's products and services and any natural evolutions thereof.

6. **Evaluation Conduct**; Evaluation Policies. You will not participate in any behavior that could compromise the confidentiality or results of any Evaluation. You acknowledge and agree that Evaluation proctors (if any) are authorized by Microsoft to, and may, take immediate and appropriate measures against you (including restricting your ability to take future Evaluations) if you violate any Evaluation Policies or rules. Without prejudice to any other remedies, Microsoft may, in its sole discretion, prohibit you from taking any Evaluation and/or invalidate your Evaluation results if Microsoft believes you violated this Agreement (including the Credential-Specific Requirements) or engaged in any misconduct (whether or not such misconduct is identified in the applicable Evaluation Policies); in the event of any such prohibition or invalidation, Microsoft will not be obligated to refund any Evaluation-related fees. You are solely responsible for complying with all applicable Evaluation Policies (including any retake policies). If you believe your Evaluation score is inaccurate, you have up to the time set forth in the applicable Evaluation Policies to challenge that score.
7. **Representations and Warranties**.
 - a) **Mutual Representations and Warranties**. Each party represents and warrants that:
 - (i) it has full power to enter into this Agreement and perform its obligations hereunder; and
 - (ii) upon your entering into this Agreement, this Agreement will constitute the legal, valid, and binding obligation of such party, enforceable against such party in accordance with its terms.
 - b) **Your Representations and Warranties**. You additionally represent and warrant that:
 - (i) you will not engage or participate in any activity or course of action that could diminish or tarnish the image or reputation of Microsoft or the image, reputation or validity of the Program or any Evaluations or Microsoft Credentials;
 - (ii) you will avoid deceptive, misleading and unethical practices in connection with the Program (including in connection with Microsoft Credentials);
 - (iii) your participation in the Program will not infringe, misappropriate or otherwise violate the intellectual property or other rights of any third party or violate any applicable regulation or law;
 - (iv) you will promptly notify Microsoft if you experience a breach or other system failure that reasonably indicates any Program Content or your MC ID have been accessed by an unauthorized third party or otherwise modified or corrupted;
 - (v) you will not participate in any behavior that could compromise the confidentiality or results of any Evaluation;

- (vi) you have and will comply with all applicable Credential-Specific Requirements, laws, rules and regulations in participating in the Program;
- (vii) you will not make any representations, warranties or guarantees to any party on behalf of Microsoft; and
- (viii) you will not misrepresent your Microsoft Credential status, association with Microsoft partners or any other relationship with Microsoft.

c) **Disclaimer of Representations and Warranties.** TO THE MAXIMUM EXTENT PERMITTED BY LAW, THE PROGRAM, MICROSOFT CREDENTIALS, PROGRAM CONTENT, MS IDS AND MICROSOFT'S ACTIVITIES UNDER THIS AGREEMENT ARE PROVIDED ON AN "AS IS," "WHERE IS" BASIS AND WITH ALL FAULTS. EXCEPT AS EXPRESSLY PROVIDED IN SECTION 7(A), MICROSOFT EXPRESSLY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, WITH RESPECT TO THE PROGRAM, MICROSOFT CREDENTIALS, PROGRAM CONTENT, MS IDS AND SUPPLIERS, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT AND WARRANTIES THAT MAY ARISE OUT OF COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OR TRADE PRACTICE. MICROSOFT DOES NOT GUARANTEE YOUR SATISFACTION WITH THE PROGRAM OR YOUR RESULTS. WITHOUT LIMITATION TO THE FOREGOING, MICROSOFT DOES NOT GUARANTEE THAT YOU WILL PASS ANY EVALUATION EVEN IF YOU HAVE COMPLETED THE MICROSOFT-RECOMMENDED TRAININGS OR EXPERIENCES (IF ANY) PRIOR TO TAKING SUCH EVALUATION. ALL DISCLAIMERS OF ANY KIND (INCLUDING IN THIS SECTION AND ELSEWHERE IN THIS AGREEMENT) ARE MADE FOR THE BENEFIT OF BOTH MICROSOFT AND THE MICROSOFT PARTIES (DEFINED BELOW) AND ITS AND THEIR SUCCESSORS AND ASSIGNS.

8. **Indemnification.** a) **Indemnity.** You agree to defend, indemnify and hold harmless Microsoft and its officers, directors, employees, agents, affiliates, successors, assigns and customers (collectively, the "**Microsoft Parties**") from and against any and all losses, damages, liabilities and costs (including reasonable attorneys' fees) resulting from any third-party claims, suits, demands or proceedings (collectively, "**Claims**") arising out of, in connection with or related to:

- (i) any actual or alleged breach by you of your representations, warranties, covenants or other obligations hereunder;
- (ii) your participation in the Program;
- (iii) your use of (including any attempt to Hold) any Microsoft Credential in a manner which does not comply with the terms of this Agreement; or
- (iv) the performance, promotion, sale or distribution of your services.

b) **Indemnification Procedures.** In the event a Microsoft Party seeks indemnification from you under Section 8(a), Microsoft will promptly notify you in writing of the Claim(s) brought against Microsoft for which it seeks indemnification

and, at Microsoft's discretion, permit you, through counsel acceptable to Microsoft to answer and defend such Claim. You may not settle any Claim on Microsoft's behalf without first obtaining Microsoft's written permission, which will not be unreasonably withheld, and you will not publicize the settlement without Microsoft's prior written permission. Microsoft reserves the right, at its option, to assume full control of the defense of such Claim with legal counsel of its choice. If it so undertakes, any settlement of such Claim requiring payment from you will be subject to your prior written approval. You will reimburse Microsoft upon demand for any expenses reasonably incurred by Microsoft in defending such a Claim, including, without limitation, attorneys' fees and costs, as well as any judgment on or settlement of the Claim in respect to which the foregoing relates.

9. Limitation of Liability. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, MICROSOFT LIMITS ITS LIABILITY FOR ANY CLAIMS UNDER THIS AGREEMENT TO FIVE THOUSAND DOLLARS (\$5,000) AND IN NO EVENT WILL MICROSOFT OR THE MICROSOFT PARTIES BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS AGREEMENT. THESE EXCLUSIONS WILL APPLY REGARDLESS OF THE LEGAL THEORY UPON WHICH ANY CLAIM FOR SUCH DAMAGES IS BASED, REGARDLESS OF WHETHER APPLICATION OF THESE EXCLUSIONS CAUSES ANY REMEDY TO FAIL OF ITS ESSENTIAL PURPOSE, AND EVEN IF THE PARTIES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. WITHOUT LIMITING THE FOREGOING, YOUR SOLE AND EXCLUSIVE REMEDY FOR DISSATISFACTION WITH THE PROGRAM IS TO STOP PARTICIPATING IN THE PROGRAM. THIS SECTION 9 WILL NOT APPLY TO MICROSOFT'S LIABILITY ARISING OUT OF:
 - (i) VIOLATION OF ITS CONFIDENTIALITY OBLIGATIONS (EXCEPT OBLIGATIONS RELATED TO LEARNER PERSONAL DATA (DEFINED BELOW)); OR
 - (ii) WILLFUL MISCONDUCT.

10. Confidentiality.

- a) Each party will take reasonable steps to protect the other's Confidential Information (as defined below) and will use the other party's Confidential Information only for purposes of this Agreement. Neither party will disclose the other party's Confidential Information to third parties, except that:
 - (i) Microsoft may disclose your Confidential Information to Suppliers and Microsoft's employees, affiliates, contractors, advisors, and consultants (collectively, "**Representatives**") on a need-to-know basis; and
 - (ii) a party may disclose the other party's Confidential Information if required by law, but only after it notifies such other party (if legally permissible) to enable such other party to seek a protective order.

b) Microsoft is not required to restrict work assignments of its Representatives who have had access to Confidential Information. The parties acknowledge and agree that neither party can control information the other party may disclose in the course of the Program, or what Microsoft's respective Representatives may remember, even without notes or other aids. You agree that the use of information retained in Representatives' unaided memories in the provision of the Program or any components thereof does not create liability under this Agreement or trade secret law, and agree to limit what you disclose to Microsoft accordingly.

c) Except as expressly permitted herein, neither party will use or disclose the other's Confidential Information for five (5) years after receipt of such information. The five (5) year time period does not apply if applicable law requires a longer period.

d) As used herein, "**Confidential Information**" means non-public information that is designated "confidential" or that a reasonable person should understand is confidential, including the terms of this Agreement. For clarity, Confidential Information includes Program Content (including Evaluation tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments and other content and Evaluation Related information (collectively, "**Evaluation Related Information**") and Program communications. Confidential Information does not include information that:

- (i) becomes publicly available without a breach of this Agreement;
- (ii) the receiving party received lawfully from another source without a confidentiality obligation; or
- (iii) is independently developed.

11. **Personal Data.** You acknowledge that Microsoft may use, collect or disclose your personal data in connection with the Program as described in Microsoft's Privacy Statement (available at <https://privacy.microsoft.com/en-US/privacystatement> or any successor thereto) or as otherwise disclosed to you. For any questions regarding Microsoft's use of your personal data and to access any data subject rights that may be available, you can contact Microsoft by using the Microsoft webform (available at <https://www.microsoft.com/en-us/concern/privacy> or any successor thereto).

12. **Term and Termination.**

a) **Term.** This Agreement begins on the date on which you click the checkbox or otherwise register for or take an Evaluation and will continue in effect until the earliest of:

- (i) termination pursuant to Section 12(b);

- (ii) the date on which you cease to have a Microsoft Learn profile;
- (iii) the date on which you cease to Hold any Microsoft Credentials and are no longer eligible to earn Microsoft Credentials; and
- (iv) the date on which Microsoft ceases to make the Program available (the "Term").

b) **Termination.** Microsoft may terminate this Agreement at any time:

- (i) if you are in material breach of any provision of this Agreement (including the Credential-Specific Requirements) other than Sections 5, 6, 8 or 10, and you fail to cure that breach within thirty (30) days after receipt of written notice from Microsoft thereof; or
- (ii) immediately upon written notice if: (A) you breach Sections 5, 6, 8 or 10 of this Agreement (B) a government agency or court finds that any services you provided in relation to the Microsoft technologies to which any of your (then-currently or previously Held) Microsoft Credentials relates are defective in any way; or (C) in Microsoft's sole reasonable discretion, immediate termination is required (e.g., to prevent your further fraud or abuse of the Program, to prevent your further misconduct that could diminish or compromise the security or integrity of the Program or to comply with government mandates or orders). In addition, either party may terminate this Agreement with or without cause upon thirty (30) days prior written notice to the other party.

c) **Effect of Termination.** Upon expiration or termination of this Agreement for any reason:

- (i) your right to participate in the Program, take Evaluations, access or utilize Program Content and Hold Microsoft Credentials will automatically cease, and you will automatically be "decertified" and lose any Microsoft Credentials that you Hold at the time of such expiration or termination
- (ii) Microsoft may, without liability to you or any third party, immediately deactivate, delete or otherwise remove your access to Program Content and your MC ID, without any obligation to provide any further access thereto; and
- (iii) you will promptly return or destroy all full or partial copies of the Program Content in your possession or under your control. For clarity, upon expiration or termination of this Agreement for any reason, you will not identify yourself as participating in the Program or Holding (and will not otherwise use) any Microsoft Credentials. If this Agreement is terminated by Microsoft for cause, Microsoft may, in its sole discretion, prohibit you from re-entering into this Agreement and participating in the Program in the future.

d) **Survival.** The provisions of this Agreement that, by their terms, require performance after the Term or have application to events that may occur after the Term, will survive the expiration or termination of this Agreement. Without limiting

the foregoing, all of your confidentiality and indemnity provisions and all restrictions on the use of Microsoft Credentials and Program Content will survive the expiration or termination of this Agreement.

13. Miscellaneous.

- a) **Export Compliance.** The parties acknowledge that Program Content may be subject to U.S. and other countries' export jurisdiction. You must comply with all applicable international and national laws, including the U.S. Export Administration Regulations, as well as end-user, end use and destination restrictions by U.S. and other governments. For additional information, see <https://www.microsoft.com/en-us/exporting>.
- b) **Entire Agreement.** This Agreement constitutes the entire agreement between the parties concerning the subject matter hereof and supersedes all prior or contemporaneous representations, discussions, proposals, negotiations, conditions, and agreements, whether oral or written, and all communications between the parties relating to the subject matter hereof and all past courses of dealing or industry custom. In the event of any conflict between the terms of this Agreement and the Credential-Specific Requirements, the terms of the Credential-Specific Requirements will control solely to the extent of the inconsistency and solely with respect to the applicable Microsoft Credential.
- c) **Assignment.** You may not assign, transfer, or sublicense any of your rights or delegate any of your obligations hereunder, in each case whether voluntarily, involuntarily, by operation of law or otherwise.
- d) **Attorneys' Fees.** If either party employs attorneys to enforce any rights arising out of or relating to this Agreement, the prevailing party will be entitled to recover its reasonable attorney's fees, costs, and other expenses, including the costs and fees incurred on appeal or in a bankruptcy or similar action.
- e) **No Exclusivity.** Your participation in this Program is voluntary. Nothing in this Agreement restricts you from supporting, promoting, distributing, or using non-Microsoft technology.
- f) **Relationship of the Parties; Non-Microsoft Technology.** You will not, by virtue of this Agreement, have any right, power, or authority to act or create any obligation, express or implied, or to make any representation or warranty, on behalf of the Microsoft or to bind Microsoft in any respect whatsoever. For clarity, nothing in this Agreement restricts you from supporting, promoting, distributing, or using non-Microsoft technology.

g) Notices. All notices, requests, consents, claims, demands, waivers and other communications hereunder (each, a “**Notice**”) must be in writing and:

- (i) in the case of Notices to Microsoft, addressed to Microsoft at the address set forth in the first paragraph of this Agreement; and
- (ii) in the case of Notices to you, posted to Microsoft Learn or sent to your email address (or to such other address that may be designated by the party receiving Notice from time to time in accordance with this Section 13(g)). All Notices must be delivered by personal delivery, nationally recognized overnight courier (with all fees pre-paid), facsimile, email (with confirmation of transmission) or certified or registered mail (in each case, return receipt requested, postage pre-paid). Except as otherwise provided in this Agreement, a Notice is effective only (y) upon receipt by the receiving party and (z) if the party giving the Notice has complied with the requirements of this Section 13(g).

h) Waiver; Severability. No waiver by any party of any of the provisions hereof will be effective unless explicitly set forth in writing and signed by the party so waiving. Except as otherwise set forth in this Agreement, no failure to exercise or delay in exercising any right, remedy, power, or privilege arising from this Agreement will operate or be construed as a waiver thereof. If any provision of this Agreement is invalid, illegal, or unenforceable in any jurisdiction, such invalidity, illegality or unenforceability will not affect any other term or provision of this Agreement or invalidate or render unenforceable such term or provision in any other jurisdiction. Upon such determination that any term or other provision is invalid, illegal, or unenforceable, that provision will be deemed severable from this Agreement and will not affect the validity and enforceability of any remaining provision.

i) Microsoft Contracting Entity: The Microsoft contracting entity for this Agreement is determined by the country or region where you are located. See details below:

i. The Microsoft entity for the following countries or regions is indicated below:
Anguilla, Antigua and Barbuda, Argentina, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Chile, Colombia, Costa Rica, Curacao, Dominica, Dominican Republic, Ecuador, El Salvador, French Guiana, Grenada, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Martinique, Mexico, Montserrat, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Saint Kitts and Nevis, Saint Lucia, Saint Pierre and Miquelon, Saint Vincent and The Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, United States, Uruguay, Venezuela, Virgin Islands (British) and Virgin Islands (U.S.):

Microsoft Corporation
One Microsoft Way

Redmond, WA 98052 USA

ii. The Microsoft entity for the following countries or regions is indicated below:
Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan,
Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bouvet Island,
Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad,
Comoros, Congo, Cote d'Ivoire, Croatia, Cyprus, Czech Republic, Democratic
Republic of São Tomé and Príncipe, Democratic Republic of the Congo, Denmark,
Djibouti, Egypt, Estonia, Ethiopia, Faeroe Islands, Finland, France, Gabon, Gambia,
Georgia, Germany, Ghana, Gibraltar, Greece, Greenland, Guadeloupe, Guinea-
Bissau, Hungary, Iceland, Ireland, Israel, Italy, Jordan, Kazakhstan, Kenya, Kosovo,
Kuwait, Kyrgyzstan, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania,
Luxembourg, Libya, North Macedonia, Madagascar, Malawi, Mali, Malta,
Mauritania, Mauritius, Moldova, Monaco, Mongolia, Montenegro, Morocco,
Mozambique, Namibia, the Netherlands, New Caledonia, Niger, Nigeria, Norway,
Oman, Pakistan, Poland, Portugal, Qatar, Republic of Cabo Verde, Republic of
Equatorial Guinea, Republic of Guinea, Republic of Senegal, Reunion, Romania,
Russian Federation, Rwandese Republic, Saint Helena, San Marino, Saudi Arabia,
Serbia, Seychelles, Sierra Leone, Slovakia, Slovenia, Somalia, South Africa, Spain,
Svalbard and Jan Mayen, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Togo,
Tunisia, Türkiye, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United
Kingdom, Uzbekistan, Vatican City State, Yemen, Zaire, Zambia and Zimbabwe:

Microsoft Ireland Operations Limited
The Atrium, Block B, Carmenhall Road
Sandyford Industrial Estate
Dublin, 18, Ireland

iii. The Microsoft entity for the following countries or regions is indicated below:
Australia and its external territories, Bangladesh, Bhutan, Brunei Darussalam,
Cambodia, Cook Islands, Fiji, French Polynesia, French Southern Territories, Hong
Kong Special Administrative Unit, India, Indonesia, Kiribati, Lao People's
Democratic Republic, Macao Special Administrative Unit, Malaysia, Maldives,
Marshall Islands, Mayotte, Micronesia, Nauru, Nepal, New Zealand, Niue, Northern
Mariana Islands, Palau, Papua New Guinea, Philippines; Pitcairn, Samoa, Singapore,
Solomon Islands, Sri Lanka, Thailand, Timor Leste, Tokelau, Tonga, Tuvalu, Wallis
and Futuna Islands, Vanuatu and Vietnam:

Microsoft Regional Sales Corporation
438B Alexandra Road #04-09/12
Block B, Alexandra Technopark
Singapore 119968

iv. The Microsoft entity for Japan is:

Microsoft Japan Company, Limited
Shinagawa Grand Central Tower
2-16-3, 2 Konan, Minato-ku,
Tokyo 108-0075
Japan

v. The Microsoft entity for Taiwan is:

Microsoft Taiwan Corporation
8F, No 7, Sungren Rd.
Shinyi Chiu, Taipei
Taiwan 110

vi. The Microsoft entity for the People's Republic of China is:

Microsoft (China) Company Limited
6F Sigma Center
No. 49 Zhichun Road Haidian District
Beijing 100080, P.R.C

vii. The Microsoft entity for the Republic of Korea is:

Microsoft Korea, Inc.
5th Floor, West Wing
POSCO Center
892 Daechi-Dong Gangnam-Gu
Seoul, 135-777, Korea

j) **Applicable law.** Applicable law, jurisdiction and venue for this Agreement are identified below. This choice of jurisdiction and venue does not prevent either party from seeking injunctive relief for a violation of intellectual property rights, confidentiality obligations or enforcement of recognition of any award or order. Injunctive relief or enforcement of recognition may be sought in any appropriate jurisdiction.

i. Generally: Except as provided in Section 13(j)(ii), the laws of the State of Washington govern this Agreement. If federal jurisdiction exists, the parties' consent to exclusive jurisdiction and venue in the federal courts in King County, Washington. If not, the parties' consent to exclusive jurisdiction and venue in the Superior Court of King County, Washington.

ii. Other terms: If your principal place of business is in one of the countries or regions listed below, the corresponding provision applies and supersedes Section

13(j)(i) to the extent that it is inconsistent:

- A. If your principal place of business is in Australia and its external territories, Bangladesh, Bhutan, Brunei Darussalam, Cambodia, Cook Islands, Fiji, French Polynesia, French Southern Territories, Hong Kong SAR, India, Indonesia, Kiribati, Lao People's Democratic Republic, Macao SAR, Malaysia, Maldives, Marshall Islands, Mayotte, Micronesia, Nauru, Nepal, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Philippines; Pitcairn, Samoa, Singapore, Solomon Islands, Sri Lanka, Thailand, Timor Leste, Tokelau, Tonga, Tuvalu, Wallis and Futuna Islands, Vanuatu and Vietnam, this Agreement is construed and controlled by the laws of Singapore.
- B. If your principal place of business is in Australia or its external territories, Brunei, Malaysia, New Zealand, or Singapore, you consent to the non-exclusive jurisdiction of the Singapore courts.
- C. If your principal place of business is in Bangladesh, Bhutan, Cambodia, Cook Islands, Fiji, French Polynesia, French Southern Territories, Hong Kong SAR, India, Indonesia, Kiribati, Lao People's Democratic Republic, Macao SAR, Maldives, Marshall Islands, Mayotte, Micronesia, Nauru, Nepal, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Philippines; Pitcairn, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor Leste, Tokelau, Tonga, Tuvalu, Wallis and Futuna Islands, Vanuatu and Vietnam, any dispute related to this Agreement, including any question regarding its existence, validity or termination, will be referred to and finally resolved by arbitration in Singapore according to the Arbitration Rules of the Singapore International Arbitration Centre ("SIAC"). The SIAC Arbitration Rules are incorporated by this reference into the Agreement. The Tribunal will consist of one arbitrator appointed by the Chairman of SIAC. The language of the arbitration will be English. The arbitrator's decision will be final, binding and incontestable and may be used as a basis for judgment thereon in Bangladesh, India, Indonesia, Philippines, Sri Lanka, Thailand or Vietnam (as appropriate), or elsewhere.
- D. If your principal place of business is in Japan, the following applies: The Agreement will be construed and controlled by the laws of Japan. You consent to exclusive original jurisdiction and venue in the Tokyo District Court. The prevailing party in any action related to this Agreement may recover its reasonable attorneys' fees, costs, and other expenses.
- E. If your principal place of business is in Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Belgium, Benin, Bosnia and Herzegovina, Botswana, Bouvet Island, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Congo, Cote d'Ivoire, Croatia, Cyprus,

Czech Republic, Democratic Republic of São Tomé and Príncipe, Denmark, Djibouti, Egypt, Estonia, Ethiopia, Faeroe Islands, Finland, France, Gabon, Gambia, Georgia, Germany, Ghana, Gibraltar, Greece, Greenland, Guadeloupe, Guinea-Bissau, Hungary, Iceland, Ireland, Israel, Italy, Jordan, Kazakhstan, Kenya, Kosovo, Kuwait, Kyrgyzstan, Latvia, Lebanon, Lesotho, Liberia, Liechtenstein, Lithuania, Luxembourg, Libya, North Macedonia, Madagascar, Malawi, Mali, Malta, Mauritania, Mauritius, Moldova, Monaco, Mongolia, Montenegro, Morocco, Mozambique, Namibia, the Netherlands, New Caledonia, Niger, Nigeria, Norway, Oman, Pakistan, Poland, Portugal, Qatar, Republic of Cabo Verde, Republic of Equatorial Guinea, Republic of Guinea, Republic of Senegal, Reunion, Romania, Russian Federation, Rwandese Republic, Saint Helena, San Marino, Saudi Arabia, Serbia, Seychelles, Sierra Leone, Slovakia, Slovenia, Somalia, South Africa, Spain, Svalbard and Jan Mayen, Swaziland, Sweden, Switzerland, Tajikistan, Tanzania, Togo, Tunisia, Türkiye, Turkmenistan, Uganda, Ukraine, United Arab Emirates, United Kingdom, Uzbekistan, Vatican City State, Yemen, Zaire, Zambia, Zimbabwe, the following applies:

The Agreement is governed by and construed according to the laws of Ireland. You consent to the jurisdiction of and venue in the Irish courts in all disputes relating to this Agreement.

F. If your principal place of business is in the People's Republic of China, the following applies. For purpose of this Agreement, the People's Republic of China does not include Hong Kong SAR, Macao SAR, or Taiwan:

The Agreement will be construed and controlled by the laws of the People's Republic of China. You consent to submit any dispute relating to the Agreement and any addendum to binding arbitration. The arbitration will be at the China International Economic and Trade Arbitration Commission in Beijing ("CIETAC") according to its then current rules.

G. If your principal place of business is in Colombia or Uruguay, the following applies:

All disputes, claims, or proceedings between the parties relating to the validity, construction or performance of this Agreement will be settled by arbitration. The arbitration will be according to the UNCITRAL Arbitration Rules as presently in force. The appointing authority will be the International Chamber of Commerce ("ICC") acting according to the rules adopted by the ICC for this purpose. The place of arbitration will be Seattle, Washington, U.S.A. There will only be one arbitrator. The award will be in law and not in equity and will be final and binding on the parties. The parties hereto irrevocably agree to submit all matters and disputes

arising in connection with this Agreement to arbitration in Seattle, Washington, U.S.A.

H. If your principal place of business is in Republic of Korea, the following applies: The Agreement will be construed and controlled by the laws of Republic of Korea. You consent to the exclusive original jurisdiction and venue in the Seoul Central District Court. The prevailing party in any action to enforce a right or remedy under this Agreement or to interpret a provision of this Agreement will be entitled to recover its reasonable attorneys' fees, costs, and other expenses.

I. If your principal place of business is in Taiwan, the following applies:

The terms of this Agreement will be governed by and construed according to the laws of Taiwan. The parties hereby designate the Taipei District Court as the court of first instance having jurisdiction over any disputes arising out of or in connection with this Agreement.

k) **No Third-Party Beneficiaries.** This Agreement does not create or confer any legal or equitable right, benefit or remedy upon any person or entity other than the parties. No person or entity will be deemed a third-party beneficiary under or by reason of this Agreement.

l) **Headings; Construction.** The section and paragraph headings used in this Agreement are inserted for convenience only and will not affect the meaning or interpretation of this Agreement. Unless qualified by words such as "only" or "solely," the terms "including," "e.g." or similar words in this Agreement are deemed to be followed by the words "without limitation."

Microsoft Certification Exam – Candidate Agreement

Article • 02/28/2024

BY TAKING A MICROSOFT CERTIFICATION EXAM (EXAMS), YOU ACKNOWLEDGE THAT YOU HAVE AGREED TO BE BOUND BY THESE RULES AND REQUIREMENTS. IF YOU ARE TAKING THIS EXAM AS PART OF AN ACADEMIC INSTITUTION, THEN BY TAKING THIS EXAM, YOU ADDITIONALLY ACKNOWLEDGE THAT YOU ARE EITHER A STUDENT OR FACULTY MEMBER OF AN ACCREDITED ACADEMIC INSTITUTION.

1. Confidentiality

You will not and will not allow any other person or entity to distribute, copy, display, publish, summarize, photograph, record, download, transmit or post any exam or any exam tasks, questions, answers, computations, diagrams, drawings, worksheets or other content or exam-related information. Except as expressly set forth in the Microsoft Credentials Program Agreement, you may not:

- Use, disclose or reproduce any Microsoft Credential in any manner whatsoever; or
- Disclose Microsoft's confidential information (including without limitation exam tasks, questions, answers, computations, diagrams, drawings, worksheets and other content and exam-related information) to any third parties.

2. Misconduct

You will not participate in any behavior that could compromise the confidentiality or results of any exam. You are solely responsible for complying with all applicable exam policies, procedures, and rules. Exam proctors (if any) are authorized by Microsoft to, and may, take immediate and appropriate measures against you if you violate any exam policies, procedures, or rules. Without prejudice to any other remedies, Microsoft may, in its sole discretion, prohibit you from taking any exam and/or invalidate your exam results (in each case, without obligation to refund any exam-related fees) if Microsoft believes you violated the Microsoft Credentials Program Agreement (including the Credential-Specific Requirements) or engaged in any misconduct, including without limitation the following:

- Providing access to, disclosing, distributing, copying, photographing, recording, downloading, posting, displaying, publishing or transmitting, in any form or by any means, any exam or any tasks, questions, answers,

- computations, diagrams, drawings, worksheets or other content or exam-related information;
- Misrepresenting your identity or impersonating another individual;
 - Misrepresenting your country of residence or the country where an online proctored exam will be delivered;
 - Modifying or altering any exam, exam score or exam record;
 - Submitting any work or answers that are not entirely your own;
 - Using Artificial Intelligence or related products or services in any way to assist you;
 - Providing or receiving improper assistance during an exam;
 - Seeking or obtaining unauthorized access to any exam or any of the following elements of an exam: tasks, questions, answers, computations, diagrams, drawings, worksheets or other content or exam-related information (this includes using braindump material or unauthorized publication of exam questions with or without answers);
 - Possessing non-authorized items while taking an exam, including without limitation mobile phones, electronic devices, laptops, watches, notes, documentation, or content;
 - Misconduct as determined by statistical analysis;
 - Attempting to reverse engineer, decompile, or disassemble any exam;
 - Engaging in any other misconduct that could compromise the confidentiality, integrity, or security of the exam; and
 - Violating any Microsoft or exam delivery provider's policy, requirement, or rule.

3. Important Privacy Notice and Consent

By taking this exam, you agree that Microsoft, its affiliates, and the exam provider may:

- disclose your personal information and exam data with each other to administer the exam, to improve the testing program and testing experience, to facilitate statistical analyses, and to determine if you passed the exam;
- contact you regarding certificates showing that you passed the exam or information regarding the Microsoft Credential program;
- disclose your personal information and exam results with other Microsoft programs, e.g., the Microsoft Partner Network program, to verify your or your employer's compliance with the program requirements;
- disclose your information with standards and certification boards affiliated with the academic institution, company or government organization that provided you with an exam voucher;

- disclose your exam results and your personal information with the entity that issued the voucher or that purchased the site license if the exam was made available to you by one of the following methods:
 - A company or government organization purchased vouchers and then issued the vouchers to its employees or contractors,
 - An academic institution purchased vouchers and then issued the vouchers to its students or employees,
 - An academic institution or government organization operated an exam test center and did not charge you a standalone fee to take the exam, or
 - A government agency that provides training stipends to be applied based on completion conditions and subject to Microsoft's identified verification process.
- disclose your exam results and your personal information with an entity that funded your exam if the funding was made available through a government agency that provides training stipends to be applied based on completion conditions and subject to Microsoft's identified verification process.

To learn more about the data collection and use practices of Microsoft, please visit <https://privacy.microsoft.com>. To learn more about the data collection and use practices of the exam provider, please contact the exam provider.

4. Academic Exams

If you registered to take an academic exam, you must provide the exam provider with documentation that verifies you are currently enrolled as a student at or a faculty member of an accredited academic institution before you can take the exam. Prior to starting an academic exam, you will be required to acknowledge that you are either a student or faculty member of an accredited academic institution.

5. Score Challenge Policy

If you believe your exam score is inaccurate, you have fifteen (15) days after taking the applicable exam to challenge that score. To challenge an exam score within this time period, you can contact Microsoft at <https://learn.microsoft.com/en-us/credentials/support/help>.

6. Tenants

If you are being provided with a defined cloud environment ("Tenant") as a part of an exam lab delivery, the Tenant is made available solely for the purpose of assessing skills that are part of the exam. You will not share or use Tenants for purposes outside of the exam. The Tenant used in the exam is a trial tenant and

cannot be used or accessed after the exam is over and is not eligible for extension. Tenants must not be converted to a paid subscription. Tenants obtained as a part of this exam remain the property of Microsoft, and Microsoft reserves the right to obtain access and repossess at any time.

7. Additional Exam Policies

The following policies are also applicable to your participation in the Exam:

- For the exam security policy, see <https://learn.microsoft.com/en-us/credentials/support/exam-and-assessment-lab-security-policies>.
- For the Credential expiration policy, see <https://learn.microsoft.com/en-us/credentials/support/certification-expiration-policy>
- For additional exam policies, see <https://learn.microsoft.com/en-us/credentials/certifications/certification-exam-policies> and the exam provider's website.

Microsoft Applied Skills Assessment – Candidate Agreement

Article • 02/28/2024

BY TAKING THE APPLIED SKILLS ASSESSMENT (ASSESSMENTS), YOU ACKNOWLEDGE THAT YOU HAVE AGREED TO BE BOUND BY THESE RULES AND REQUIREMENTS. BY TAKING AN ASSESSMENT, YOU ADDITIONALLY ACKNOWLEDGE THAT: THE ACTIONS YOU TAKE WHILE COMPLETING THE ASSESSMENT WILL BE RECORDED, NEITHER YOUR FACE NOR YOUR VOICE WILL BE RECORDED, AND NO ACTIONS TAKEN OUTSIDE THE ASSESSMENT LAB ENVIRONMENT WILL BE RECORDED.

1. Confidentiality

You will not and will not allow any other person or entity to distribute, copy, display, publish, summarize, photograph, record, download, transmit or post any assessment or any assessment tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments or other content or assessment-related information. Except as expressly set forth in the Microsoft Credentials Program Agreement, you may not:

- Use, disclose or reproduce any Microsoft Credential in any manner whatsoever; or
- Disclose Microsoft's confidential information (including without limitation assessment tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments and other content and assessment-related information) to any third parties.

2. Misconduct

You will not participate in any behavior that could compromise the confidentiality or results of any assessment. You are solely responsible for complying with all applicable assessment policies, procedures and rules. Without prejudice to any other remedies, Microsoft may, in its sole discretion, prohibit you from taking any assessment and/or invalidate your assessment results (in each case, without obligation to refund any assessment-related fees) if Microsoft believes you violated the Microsoft Credentials Program Agreement (including the Credential-Specific Requirements) or engaged in any misconduct, including without limitation the following:

- Providing access to, disclosing, distributing, copying, photographing, recording, downloading, posting, displaying, publishing or transmitting, in

any form or by any means, any assessment or any tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments or other content or assessment-related information;

- Misrepresenting your identity or impersonating another individual;
- Misrepresenting your country of residence;
- Using Artificial Intelligence or related products or services in any way to assist you in an assessment;
- Using the resources provided in the assessment lab for any purpose other than to accomplish the required tasks;
- Modifying or altering any assessment, assessment score, or assessment record;
- Submitting any work or answers that are not entirely your own;
- Providing or receiving improper assistance of any kind during an assessment;
- Seeking or obtaining unauthorized access to any assessment or any of the following elements of an assessment: tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments, or other content or assessment-related information (this includes using braindump material or unauthorized publication of assessment questions with or without answers);
- Misconduct as determined by statistical analysis;
- Engaging in any other misconduct that could compromise the confidentiality, integrity, or security of an assessment; or
- Violating any Microsoft policy, requirement, or rule.

3. Important Privacy Notice and Consent

By taking this assessment, you agree that Microsoft, its affiliates, and the assessment provider may disclose your personal information and assessment results with other Microsoft programs, e.g., the Microsoft Partner Network program, to verify your or your employer's compliance with the program requirements.

To learn more about the data collection and use practices of Microsoft, please visit <https://privacy.microsoft.com>. To learn more about the data collection and use practices of the assessment provider, please contact the assessment provider.

4. Score Challenge Policy

If you believe your assessment score is inaccurate, you have fifteen (15) days after taking the applicable assessment to challenge that score. To challenge an assessment score within this time period, you can contact Microsoft at <https://learn.microsoft.com/en-us/credentials/support/help>.

5. Tenants

If you are being provided with a defined cloud environment (“Tenant”) as a part of an assessment lab delivery, the Tenant is made available solely for the purpose of assessing skills that are part of the assessment. You will not share or use Tenants for purposes outside of the assessment. The Tenant used in the assessment is a trial tenant and cannot be used or accessed after the assessment is over and is not eligible for extension. Tenants must not be converted to a paid subscription. Tenants obtained as a part of this assessment remain the property of Microsoft, and Microsoft reserves the right to obtain access and repossess at any time.

6. Additional Assessment Policies

The following policies are also applicable to your participation in the Assessment:

- For the Exam security policy, see <https://learn.microsoft.com/en-us/credentials/support/exam-and-assessment-lab-security-policies>.
- For the Credential expiration policy, see <https://learn.microsoft.com/en-us/credentials/support/certification-expiration-policy>
- For additional assessment policies, see <https://learn.microsoft.com/en-us/credentials/certifications/certification-exam-policies> and the assessment provider’s website.

Microsoft Certification Renewal Assessment – Candidate Agreement

Article • 12/27/2023

BY TAKING A CERTIFICATION RENEWAL ASSESSMENT (ASSESSMENTS), YOU ACKNOWLEDGE THAT YOU HAVE AGREED TO BE BOUND BY THESE RULES AND REQUIREMENTS.

1. Confidentiality

You will not and will not allow any other person or entity to distribute, copy, display, publish, summarize, photograph, record, download, transmit or post any assessment or any assessment questions, answers, computations, diagrams, drawings, worksheets, lab environments or other content or assessment-related information. Except as expressly set forth in the Microsoft Credentials Program Agreement, you may not:

- Use, disclose, or reproduce any Microsoft Credential in any manner whatsoever; or
- Disclose Microsoft's confidential information (including without limitation assessment questions, answers, computations, diagrams, drawings, worksheets, lab environments and other content and assessment-related information) to any third parties.

2. Misconduct

You will not participate in any behavior that could compromise the confidentiality or results of any assessment. You are solely responsible for complying with all applicable assessment policies, procedures and rules. Without prejudice to any other remedies, Microsoft may, in its sole discretion, prohibit you from taking any assessment and/or invalidate your assessment results (in each case, without obligation to refund any assessment-related fees) if Microsoft believes you violated the Microsoft Credentials Program Agreement (including the Credential-Specific Requirements) or engaged in any misconduct, including without limitation the following:

- Providing access to, disclosing, distributing, copying, photographing, recording, downloading, posting, displaying, publishing or transmitting, in any form or by any means, any assessment or any tasks, questions, answers, computations, diagrams, drawings, worksheets, lab environments or other content or assessment-related information;

- Misrepresenting your identity or impersonating another individual;
- Misrepresenting your country of residence;
- Using Artificial Intelligence or related products or services in any way to assist you in an assessment;
- Using the resources provided in the assessment lab for any purpose other than to accomplish the required tasks;
- Modifying or altering any assessment, assessment score, or assessment record;
- Submitting any work or answers that are not entirely your own;
- Providing or receiving improper assistance of any kind during an assessment;
- Seeking or obtaining unauthorized access to any assessment or any of the following elements of an assessment: questions, answers, computations, diagrams, drawings, worksheets, lab environments, or other content or assessment-related information (this includes using braindump material or unauthorized publication of assessment questions with or without answers);
- Misconduct as determined by statistical analysis;
- Engaging in any other misconduct that could compromise the confidentiality, integrity, or security of an assessment; or
- Violating any Microsoft policy, requirement, or rule.

3. Important Privacy Notice and Consent

By taking this assessment, you agree that Microsoft, its affiliates, and the assessment provider may disclose your personal information and assessment results with other Microsoft programs, e.g., the Microsoft Partner Network program, to verify your or your employer's compliance with the program requirements.

To learn more about the data collection and use practices of Microsoft, please visit <https://privacy.microsoft.com>.

4. Score Challenge Policy

If you believe your assessment score is inaccurate, you have fifteen (15) days after taking the applicable assessment to challenge that score. To challenge an assessment score within this time period, you can contact Microsoft at <https://learn.microsoft.com/en-us/credentials/support/help>.

5. Additional Assessment Policies

The following policies are also applicable to your participation in the Assessment:

- For the Exam security policy, see <https://learn.microsoft.com/en-us/credentials/support/exam-and-assessment-lab-security-policies>.
- For the Credential expiration policy, see <https://learn.microsoft.com/en-us/credentials/support/certification-expiration-policy>
- For additional assessment policies, see <https://learn.microsoft.com/en-us/credentials/certifications/certification-exam-policies> and the assessment provider's website.

Find a Training Services Partner

Article • 08/15/2024

About Microsoft training services partner

Whether you're an individual looking to skill up for your next role or a manager needing to boost your team's cloud skills, Microsoft training services partner offer a breadth of training solutions including blended learning, in-person, and online to meet your learning objectives. Training Services Partners around the world have met program requirements to teach training content developed by Microsoft and delivered by Microsoft Certified Trainers. To learn more about the value of working with Training Services Partners, visit: [Value of Training Services Partners](#).

Note: Only Silver and Gold training services partner will be added to the LP Directory

Find a Microsoft Training Services Partner by country/region

Our worldwide partner network delivers flexible, role-based, customized training and certifications in Microsoft technologies. All instructors are Microsoft Certified Trainers (MCTs) who have completed rigorous training and have met stringent technical certification requirements.

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- [Koenig Solutions ↗](#)
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[\[+\] Expand table](#)

Cabo Verde

- [Rumos ↗](#)

[\[+\] Expand table](#)

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- [Learning Tree ↗](#)
- [New Horizons Kingston ↗](#)
- [TD SYNNEX | ExitCertified ↗](#)
- [Web Age Solutions ↗](#)
- [Webucator ↗](#)

[\[+\] Expand table](#)

Chile

[Fast Lane LATAM ↗](#)
[Kibernum IT Academy ↗](#)
[Netec ↗](#)
[Netsolutions Learning ↗](#)

[\[\] Expand table](#)

China

[EastHome ↗](#)
[Fast Lane Cloud and Security Services Pte. Ltd. ↗](#)
[Kornerstone \(A Trainocate Company\) ↗](#)
[Shanghai Nanyang ↗](#)
[Shanghai Yungoal ↗](#)
[Wei Ye Xuan Ran ↗](#)

[\[\] Expand table](#)

Colombia

[Fast Lane LATAM ↗](#)
[Intelligent Training ↗](#)
[Inicio - ITTalent ↗](#)
[ITTALENT ↗](#)
[Netec ↗](#)

[\[\] Expand table](#)

Costa Rica

[Advance Learning Technology Center ↗](#)
[Fast Lane LATAM ↗](#)
[Interactive Technology Group ↗](#)
[New Horizons ↗](#)
[TEKNOWLEDGE ↗](#)

[\[\] Expand table](#)

Croatia

[Algebra d.o.o. Maksimirka ↗](#)
[Fast Lane ↗](#)
[Housing ↗](#)
[TD SYNEX Academy ↗](#)

[\[+\] Expand table](#)

Cyprus

- [Fast Lane ↗](#)
- [Formatech ↗](#)
- [New Horizons Cyprus](#)

[\[+\] Expand table](#)

Czech Republic

- [EDU Trainings ↗](#)
- [Gopas a s ↗](#)
- [Fast Lane ↗](#)
- [OKsystem a.s. ↗](#)
- [TD SYNNEX Academy ↗](#)

[\[+\] Expand table](#)

Denmark

- [4D A/S ↗](#)
- [Arrow ↗](#)
- [Fast Lane ↗](#)
- [Firebrand Training Limited ↗](#)
- [Global Knowledge ↗](#)
- [Koenig Solutions ↗](#)
- [Nordcloud ↗](#)
- [Readynez ↗](#)
- [Segment ↗](#)
- [Superusers ↗](#)
- [TD SYNNEX Academy ↗](#)
- [Teknologisk Institut ↗](#)

[\[+\] Expand table](#)

Dominican Republic

- [Interactive Technology Group Corp ↗](#)
- [Teorema C-E, S.r.l ↗](#)

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Ecuador

Business IT

 Expand table

Egypt

[CLS Learning Solutions](#) ↗
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[Global Knowledge](#) ↗
[Koenig Solutions](#) ↗
[New Horizons Cairo](#) ↗
[RAKCIT](#)
[Spectrum Networks DMCC](#) ↗

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Estonia

[Fast Lane](#) ↗

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Finland

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[Eduhouse Oy](#) ↗
[Nordcloud](#) ↗
[Sulava Oy](#) ↗
[TD SYNNEX Academy](#) ↗
[Tieturi Oy](#) ↗

 Expand table

France

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[Cellenza Training](#) ↗
[EduGroupe](#) ↗
[ENI Service](#) ↗
[Fast Lane](#) ↗
[Global Knowledge](#) ↗
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[ITTCert](#) ↗
[Koenig Solutions](#) ↗
[M2I Formation](#) ↗

France

[SQLI ↗](#)

[TD SYNTEX Academy ↗](#)

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Germany

[AddOn AG ↗](#)

[ADN Advanced Digital Network Distribution GmbH ↗](#)

[Arrow ECS GmbH ↗](#)

[Bechtle ↗](#)

[brainymotion AG ↗](#)

[CBT Training & Consulting GmbH ↗](#)

[cmt GmbH ↗](#)

[dama.go GmbH ↗](#)

[Fast Lane Institute for Knowledge Transfer GmbH ↗](#)

[Firebrand Training Limited ↗](#)

[get&use Academy GmbH. ↗](#)

[IAD GmbH ↗](#)

[GFN GmbH ↗](#)

[in-time IT Training Center GbR ↗](#)

[IT Schulungen New Elements GmbH ↗](#)

[Koenig Solutions ↗](#)

[Lanworks AG](#)

[LM IT Services ↗](#)

[netlogix GmbH & Co. KG. ↗](#)

[New Horizons ↗](#)

[Ingram Micro Distribution GmbH ↗](#)

[Nordcloud ↗](#)

[ppedv AG ↗](#)

[Private ptm-Akademie GmbH ↗](#)

[SoftEd Systems ↗](#)

[SoftwareONE ↗](#)

[TD SYNTEX Academy ↗](#)

[TUV Rheinland Akademie ↗](#)

[WBS TRAINING AG ↗](#)

[+] [Expand table](#)

Ghana

[Koenig Solutions ↗](#)

[+] [Expand table](#)

Greece

[CloudThat ↗](#)
[Fast Lane CEE ↗](#)
[Infolab ↗](#)
[New Horizons Greece ↗](#)
[TD SYNTEX Academy ↗](#)

[\[\] Expand table](#)

Hong Kong SAR

[CloudThat ↗](#)
[Fevaworks Techonology ↗](#)
[Infocan Computer ↗](#)
[Kenfil Hong Kong Limited ↗](#)
[Kornerstone \(A Trainocate Company\) ↗](#)
[Trainocate ↗](#)
[Welkin Computer Training ↗](#)

[\[\] Expand table](#)

Hungary

[Fast Lane CEE ↗](#)
[Szirtes Technologies Oktatóközpont ↗](#)
[TD SYNTEX Academy ↗](#)

[\[\] Expand table](#)

Iceland

[Promennt ↗](#)

[\[\] Expand table](#)

India

[Alchemy Solutions ↗](#)
[CloudThat ↗](#)
[Cognixia ↗](#)
[Dr.Computer.in IT and Ecom Services ↗](#)
[Fast Lane Cloud and Security Services Pte. Ltd. ↗](#)
[GTech Learn ↗](#)
[Intellipaat software solution pvt Ltd ↗](#)
[Koenig Solutions ↗](#)
[Mercury Solutions ↗](#)

India

[Palmeto Solutions ↗](#)
[RJP Infotek Private Limited](#)
[RPS Consulting Private Limited ↗](#)
[Simplilearn ↗](#)
[Spectrum Networks DMCC ↗](#)
[Synergetics Information Technology Services ↗](#)
[TAI Infotech Pvt. Ltd. ↗](#)
[Tech Data Corporation ↗](#)
[Technofocus Solutions ↗](#)
[Trainocate ↗](#)
[Vinsys IT Services ↗](#)

[\[\] Expand table](#)

Indonesia

[Fast Lane ↗](#)
[Koenig Solutions ↗](#)
[PT. Activindo System Informatika ↗](#)
[PT ExecuTrain Nusantarajaya ↗](#)
[PT Mitra Integrasi Informatika ↗](#)
[PT Sarana Solusindo Informatika ↗](#)
[PT Triutama Sistem Indonesia](#)
[Tech Data Corporation ↗](#)
[Trainocate Indonesia ↗](#)

[\[\] Expand table](#)

Ireland

[Fast Lane ↗](#)
[Global Knowledge ↗](#)
[Koenig Solutions ↗](#)
[Nexus Human ↗](#)
[TD SYNNEX Academy ↗](#)

[\[\] Expand table](#)

Israel

[Carmel Training Ltd. ↗](#)
[John Bryce ↗](#)
[Koenig Solutions ↗](#)
[SELA Group ↗](#)

Israel

[Spectrum Networks DMCC](#) ↗
[Unitraining AM Ltd](#) ↗

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Italy

[Fast Lane Italy S.r.l.](#) ↗
[Koenig Solutions](#) ↗
[PCSNET](#) ↗
[Pipeline Courseware & Software House SRL](#) ↗
[TD SYNNEX Academy](#) ↗

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Japan

[CTCテクノロジー株式会社](#) ↗
[Fast Lane](#) ↗
[NECマネジメントパートナー株式会社](#) ↗
[エディフィストラーニング株式会社](#) ↗
[トレノケート株式会社](#) ↗
[株式会社ISA](#) ↗
[株式会社富士通ラーニングメディア](#) ↗

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Jordan

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Kazakhstan

[Fast Lane Russia](#) ↗

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Kenya

[Koenig Solutions](#) ↗

[\[+\] Expand table](#)

Korea

[Fast Lane ↗](#)
[Korea Software Service Co., Ltd. ↗](#)
[LearningWay Korea, Inc. ↗](#)
[Maven Cloud Learning ↗](#)
[Skillsupport Co., Ltd. ↗](#)

[\[+\] Expand table](#)

Kosovo

[Semos Education ↗](#)
[TD SYNTEX Academy ↗](#)

[\[+\] Expand table](#)

Kuwait

[Fast Lane ↗](#)
[Koenig Solutions ↗](#)
[New Horizons Computer Learning Center ↗](#)
[Spectrum Networks DMCC ↗](#)
[Thinksmart for Training and Development W.L.L. ↗](#)

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Latvia

[Fast Lane ↗](#)

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Lebanon

[Formatech ↗](#)
[Koenig Solutions ↗](#)
[New Horizons Computer Learning Center ↗](#)

[\[+\] Expand table](#)

Lithuania

[Fast Lane ↗](#)

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Luxembourg

- [Business Training BeLux ↗](#)
- [Devoteam ↗](#)
- [Elgon S.A. ↗](#)
- [Firebrand Training Limited ↗](#)

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Macao SAR

- [CPTTM ↗](#)
- [Gallant Computer Co. Ltd. ↗](#)

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North Macedonia

- [Fast Lane ↗](#)
- [Semos Education ↗](#)
- [TD SYNNEX Academy ↗](#)

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Malaysia

- [CloudThat ↗](#)
- [Fast Lane Cloud and Security Services Pte. Ltd. ↗](#)
- [Info Trek ↗](#)
- [Iverson Associates ↗](#)
- [Koenig Solutions ↗](#)

- [New Horizons ↗](#)
- [Tech Data Corporation ↗](#)
- [Trainocate ↗](#)

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Mexico

- [CompuEducacion ↗](#)
- [Corporativo Art in Technology JFH ↗](#)
- [ExecuTrain ↗](#)
- [Fast Lane LATAM ↗](#)
- [Koenig Solutions ↗](#)

Mexico

[Net Capacitaciones, S.A. de C.V.](#) ↗

[Netec](#) ↗

 [Expand table](#)

Morocco

[Dyn IT Maroc](#) ↗

[Koenig Solutions](#) ↗

 [Expand table](#)

Namibia

[CTU Training Solutions](#) ↗

[Koenig Solutions](#) ↗

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Nepal

[Fast Lane Cloud and Security Services Pte. Ltd.](#) ↗

[Koenig Solutions](#) ↗

 [Expand table](#)

Netherlands

[@The Academy](#) ↗

[COMPU'TRAIN TRAININGEN BV](#) ↗

[Fast Lane Benelux B.V.](#) ↗

[Firebrand Training Benelux](#) ↗

[Global Knowledge](#) ↗

[InfoSupport](#) ↗

[Koenig Solutions](#) ↗

[Master it Training](#) ↗

[Nordcloud](#) ↗

[Startel de IT opleider](#) ↗

[TD SYNNEX Academy](#) ↗

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New Zealand

[ACE Training ↗](#)
[Fast Lane ↗](#)
[Koenig Solutions ↗](#)
[Lumify ↗](#)

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Nicaragua

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Nigeria

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[Ha-Shem Limited ↗](#)
[Koenig Solutions ↗](#)
[TEKNOWLEDGE ↗](#)

 [Expand table](#)

Norway

[Arrow ↗](#)
[Firebrand Training Limited ↗](#)
[Glasspaper AS ↗](#)
[Global Knowledge ↗](#)
[Nordcloud ↗](#)
[TD SYNNEX Academy ↗](#)

 [Expand table](#)

Oman

[Fast Lane ↗](#)
[Koenig Solutions ↗](#)
[New Horizons ↗](#)
[Spectrum Networks DMCC ↗](#)
[Thinksmart for Training and Development W.L.L. ↗](#)

 [Expand table](#)

Pakistan

[Koenig Solutions ↗](#)
[OnWire Technologies \(Pvt\) Ltd. ↗](#)

 [Expand table](#)

Panama

[Fast Lane LATAM ↗](#)

 [Expand table](#)

Peru

[New Horizons ↗](#)
[ENTRENAMIENTO CERTERO ↗](#)
[Fast Lane LATAM ↗](#)
[Netec ↗](#)
[Tecnofor Perú ↗](#)

 [Expand table](#)

Philippines

[Koenig Solutions ↗](#)
[Lumify Philippines ↗](#)
[Misnet Education Inc. ↗](#)
[NTT Data Philippines ↗](#)
[Trainocate Philippines ↗](#)

 [Expand table](#)

Poland

[Altkom Akademia S.A. ↗](#)
[CBSG Polska ↗](#)
[CloudTeam ↗](#)
[Compendium Centrum Edukacyjne ↗](#)
[Dagma ↗](#)
[Fast Lane Poland Sp. z.o.o. ↗](#)
[NT Group ↗](#)
[Nordcloud ↗](#)
[Softronic ↗](#)
[TD SYNTEX Academy ↗](#)

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Portugal

- [Claranet ↗](#)
- [Koenig Solutions ↗](#)
- [New Horizons ↗](#)
- [Rumos Formação e Comunicação, SA ↗](#)
- [TD SYNNEX Academy ↗](#)

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Puerto Rico

- [Interactive Technology Group ↗](#)

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Qatar

- [Fast Lane ↗](#)
- [Global Knowledge ↗](#)
- [Koenig Solutions ↗](#)
- [New Horizons Computer Learning Center ↗](#)
- [Spectrum Networks DMCC ↗](#)
- [TEKNOWLEDGE ↗](#)
- [Thinksmart for Training and Development W.L.L. ↗](#)

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República Dominicana

- [TEOREMA C-E, S.R.L. ↗](#)

[] [Expand table](#)

Romania

- [Bitnet Systems SA ↗](#)
- [Fast Lane Romania ↗](#)
- [Koenig Solutions ↗](#)
- [TD SYNNEX Academy ↗](#)

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Russia

[\[+\] Expand table](#)

Saudi Arabia

- [CloudThat ↗](#)
- [Global Knowledge ↗](#)
- [IT Learning Solutions Training Services ↗](#)
- [Koenig Solutions ↗](#)
- [New Horizons Computer Learning Center ↗](#)
- [Spectrum Networks DMCC ↗](#)
- [Thinksmart for Training and Development W.L.L. ↗](#)

[\[+\] Expand table](#)

Serbia

- [Eccentrix](#)
- [Informatika a.d. ↗](#)
- [Semos Education ↗](#)
- [Smart d.o.o. ↗](#)
- [TD SYNNEX Academy ↗](#)

[\[+\] Expand table](#)

Singapore

- [Avantus ↗](#)
- [CloudThat ↗](#)
- [Fast Lane Cloud and Security Services Pte. Ltd. ↗](#)
- [ITEL Learning Systems \(S\) Pte Ltd \(fka. New Horizons Singapore\) ↗](#)
- [Koenig Solutions ↗](#)
- [Lithan Academy Pte Ltd ↗](#)
- [Netassist ↗](#)
- [Simplilearn ↗](#)
- [Tech Data Corporation ↗](#)
- [Technofocus Solutions ↗](#)
- [Trainocate ↗](#)

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Slovakia

- [EDU Trainings ↗](#)
- [Gopas a s ↗](#)

Slovakia

[TD SYNNEX Academy ↗](#)

[\[\] Expand table](#)

Slovenia

[Fast Lane CEE ↗](#)

[Housing ↗](#)

[KOMPAS XNET d.o.o ↗](#)

[TD SYNNEX Academy ↗](#)

[Telekom Slovenije ↗](#)

[\[\] Expand table](#)

South Africa

[Adept Solutions Pvt Ltd ↗](#)

[CloudThat ↗](#)

[CTU Training Solutions ↗](#)

[Draca Investments ↗](#)

[Fast Lane ↗](#)

[Foster Melliar ↗](#)

[IT Certification Academy \(Pty\) Ltd ↗](#)

[IT Learning Solutions Training Services ↗](#)

[Koenig Solutions ↗](#)

[LGIT Smart Solutions ↗](#)

[MasterGrade IT ↗](#)

[Mecer Inter-Ed ↗](#)

[Netcampus ↗](#)

[Think360 ↗](#)

[Torque IT Computer Training ↗](#)

[\[\] Expand table](#)

Spain

[Arrow ↗](#)

[Cas Training ↗](#)

[Dignitae Formación y Certificación ↗ Fast Lane Spain ↗](#)

[Gadesoft ↗](#)

[Global Knowledge ↗](#)

[Idese Formacion ↗](#)

[Koenig Solutions ↗](#)

[Nanfor Iberica ↗](#)

[Netmind ↗](#)

[Puel ↗](#)

Spain

[TD SYNTEX Academy ↗](#)

[Tecnofor Iberica S.L. ↗](#)

[\[\] Expand table](#)

Sri Lanka

[CloudThat ↗](#)

[Koenig Solutions ↗](#)

[Trainocate ↗](#)

[\[\] Expand table](#)

Sweden

[Arrow ↗](#)

[Cornerstone ↗](#)

[Fast Lane ↗](#)

[Firebrand Training Limited ↗](#)

[Koenig Solutions ↗](#)

[Learning Tree ↗](#)

[Nordcloud ↗](#)

[TD SYNTEX Academy ↗](#)

[\[\] Expand table](#)

Switzerland

[Addon Schweiz AG ↗](#)

[Digicomp Academy AG ↗](#)

[Fast Lane Institute for Knowledge Transfer \(Switzerland\) AG ↗](#)

[Firebrand Training Limited ↗](#)

[ITTA - IT Training Academy SA ↗](#)

[Koenig Solutions ↗](#)

[Microwin AG ↗](#)

[New Horizons Training \(Schweiz\) AG ↗](#)

[TD SYNTEX Academy ↗](#)

[\[\] Expand table](#)

Taiwan

[全域科技報名網站 \(certitraining.org\) ↗](#)

[\[Great Master Information\] ↗](#)

Taiwan

[Systex ↗](#)

[Trainocate ↗](#)

[\[\] Expand table](#)

Tanzania

[Koenig Solutions ↗](#)

[\[\] Expand table](#)

Thailand

[Fast Lane ↗](#)

[Koenig Solutions ↗](#)

[Metro Systems Corp ↗](#)

[Trainocate ↗](#)

[\[\] Expand table](#)

Türkiye

Bahcesehir Wissen Akademi

[BilgeAdam IT Services ↗](#)

[Fast Lane ↗](#)

[i-Akademi ↗](#)

[Spectrum Networks DMCC ↗](#)

[TD SYNEX Academy ↗](#)

[\[\] Expand table](#)

Uganda

[Koenig Solutions ↗](#)

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Ukraine

[Fast Lane Ukraine ↗](#)

[IT Education Academy ↗](#)

[Techexpert ↗](#)

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United Arab Emirates

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- [Formatech](#) ↗
- [Global Knowledge](#) ↗
- [IT Learning Solutions Training Services](#) ↗
- [Koenig Solutions](#) ↗
- [New Horizons Computer Learning Center](#) ↗
- [OnWire Technologies \(Pvt\) Ltd.](#) ↗
- [Spectrum Networks DMCC](#) ↗
- [Sulava Oy](#) ↗
- [Thinksmart for Training and Development W.L.L.](#) ↗
- [Trainocate Gulf](#) ↗
- [Vinsys IT Services](#) ↗

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United Kingdom

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- [Global Knowledge](#) ↗
- [Indicia Training Ltd.](#) ↗
- [Intequal](#) ↗
- [Koenig Solutions](#) ↗
- [Learning Tree](#) ↗
- [New Horizons](#) ↗
- [Nordcloud](#) ↗
- [OnWire Technologies UK LTD](#) ↗
- [QA](#) ↗
- [TD SYNNEX Academy](#) ↗

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Uruguay

- [IT College S.A.](#) ↗

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Vietnam

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[Trainocate ↗](#)

 [Expand table](#)

Zambia

[Koenig Solutions ↗](#)

 [Expand table](#)

Zimbabwe

[IT-IQ Botswana ↗](#)
[Koenig Solutions ↗](#)

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Value of Training Services Partners

Article • 10/25/2023

How Training Services Partners help IT professionals and developers

Learn a new skill. With just one course, you can develop practical skills that cover the technology adoption life cycle—from planning to implementation to support. And you gain a level of proficiency that can only be taught through hands-on labs, simulations, and the real-world application of skills.

Prepare for certification. Microsoft Official Courses are built with Microsoft Certification in mind and are taught by qualified industry instructors.

Start a new career. The industry instructors who teach Microsoft Official Courses can help you gain IT skills that directly transfer from the classroom to the workplace. Courses offer access to valuable digital resources that remain available to you long after you complete a course.

How Training Service Partners help IT managers

Improve efficiency and productivity. Training Services Partners can help you get the most out of your organization's technology investment. Your employees can add to their proficiency with Microsoft technologies from classroom training or Microsoft Official Courses On-Demand.

Prepare for deployment. Training available through Microsoft Training Services Partners helps companies accelerate new Microsoft technology deployments and can reduce downtime.

Strengthen employee recruitment and development. Potential new hires want to know that you will invest in training and certification for your team. This is a benefit for the individual to develop new skills in specific technologies, hardware, and software, while helping your organization keep pace.

Become a Microsoft Training Services Partner

Whether you deliver training to your customers as one of your core services or as your entire business practice, attaining the certification competency can open new opportunities for your business. Microsoft Partner Network benefits can help you save time and money while you strengthen your capabilities, better serve customers, and build connections to reach your full business potential. [Join the Microsoft Training Services Partner program.](#) ↗

Additional resources about Training Services Partnership

Visit: [Training and certification in media](#)

Microsoft Certified Trainer

Article • 06/11/2024

Important

The MCT Program Enrollment Tool is temporarily offline. A manual application process to enroll in the MCT Program is being offered during this downtime. Your ISC Provider has authorization to initiate the manual application process on your behalf. Contact your ISC Provider to enroll in the MCT Program using the temporary manual application process.

Microsoft Certified Trainers (MCTs) are the premier technical and instructional experts in Microsoft technologies. When you join this esteemed group of worldwide training professionals, you'll enjoy exclusive access to Microsoft benefits and readiness resources designed to enhance your training career and engage with Microsoft teams. Microsoft Training Services Partners are required to deliver official Microsoft courseware using Microsoft Certified Trainers. Membership in the MCT Program qualifies you to deliver this official Microsoft courseware in our customer skilling ecosystem.

The Microsoft Certified Trainer status is an annual membership program for professionals who train Microsoft customers on our company's technologies. You must meet program enrollment or renewal requirements, complete the online application, and agree to the MCT Program Agreement each year to remain enrolled in the MCT Program. (Note: The MCT Program annual fee is currently being waived for all new and renewing program members as a response to the COVID-19 pandemic.)

IMPORTANT NOTE: Enrollment in the MCT Program will be paused from May 20 to October 1 to allow for system and process enhancements. Contact the [Instructional Skills Certificate Provider](#) used to fulfill the MCT instructional skills requirement to determine if your application can be processed prior to October 1.

MCT Program Value

Software and discounts

Active MCTs receive access to software licenses, service credits, exam discounts, and other benefits designed to help them prepare for Microsoft course deliveries and enhance their technical expertise. MCT benefits must be used in accordance with the

legal requirements defined in the MCT Program Agreement and all related Microsoft software licensing and resource policies. [Explore all the benefits available to MCTs](#).

MCT Lounge community platform

MCTs and MCT Alumni have access to [MCT Lounge](#), a gated community within the Microsoft Tech Community. MCT Lounge offers exclusive access to the following resources:

- MCT Program meetings
- Continuous updates on Microsoft courseware
- Professional development libraries with technical and instructional resources
- Opportunities to provide input and engage in discussion with Microsoft teams
- Connections to Microsoft Training Services Partners
- Discussion forums with MCT Program leaders and fellow MCTs.

Resources and tools offered within MCT Lounge are continuously updated, creating a dynamic experience where MCTs expand their knowledge on Microsoft technologies and enhance their instructional skills.

To join this dedicated MCT community space, MCTs must first request access and be verified as an active MCT Program member. Active MCTs and MCT Alumni can follow the [MCT Lounge Access Request process](#) to join MCT Lounge and get involved in the community.

Connection to Microsoft teams and partners

Through the MCT Lounge community space, Microsoft Certified Trainers can learn from our company's teams and connect with Training Services Partners. Virtual and in-person events with Microsoft employees give MCTs the inside track on our products, courseware, and global events. Training Services Partners also have a presence in MCT Lounge, allowing them to post job opportunities and create connections to the MCTs they seek to hire for customer trainings. Being an MCT will offer you connections in Microsoft and our skilling ecosystem.

MCT Program Enrollment

Are you ready to become an MCT or reinstate a previous MCT status? We're excited to have you as part of our world-class community of trainers.

Enrollment Instructions

- **New MCT Enrollment** - Visit this page for step-by-step instructions on achieving MCT career status. Please note that from May 28-October 1, 2024, the MCT Enrollment process will require you to contact your Instructional Skills Certificate Provider. Your ISCP organization will confirm your completion of an ISC program and initiate the application process.
- **MCT Renewal or Reinstatement** – Visit this page if you are a current or prior MCT to review the instructions for re-enrolling in the MCT Program.

MCT Lounge Access

Once approved for membership in the MCT Program, all MCTs must join MCT Lounge, our online community. MCT Lounge provides professional development resources and important announcements MCTs need to remain informed of Microsoft updates and engaged with MCT opportunities. When your MCT application has been approved, follow the steps provided at aka.ms/requestMCTaccess and check the MCT Lounge regularly.

MCT Alumni Program

For over three decades, MCTs have been at the forefront of Microsoft technology training and adoption. In recognition of their significant contributions, we offer the MCT Alumni program. This program is for all MCTs in good standing with Microsoft who no longer train as part of the MCT program but wish to maintain their relationship with the MCT community.

MCTs may choose to discontinue their active MCT Program membership and switch to the MCT Alumni Program. The MCT Alumni program will never require an annual fee, and it allows members to retain two important MCT Program benefits:

- Access to [MCT Lounge](#) to help former MCTs stay connected to MCT Program activities and announcements
- Discounts on exams to ease former MCTs ability to earn current Microsoft certifications and facilitate their re-entry into the MCT program in the future.

If you're interested in becoming a member of the MCT Alumni Program, please review the [MCT Alumni Program Agreement](#) to understand the terms of membership.

Apply for MCT Alumni membership or change your active MCT status to the Alumni status through the [MCT enrollment tool](#). If you require support in this process, visit the MCT Support forum available at trainingsupport.microsoft.com.

MCT Program and Microsoft Credentials Support

To access support for the MCT Program and the Microsoft Credentials Program, visit the moderated support forums available at trainingsupport.microsoft.com. On this support page, these Microsoft support resources are available:

- MCT Support forum is focused on helping MCT candidates or active MCTs in need of assistance with MCT applications, benefits, access to MCT tools, and general questions about the MCT program.
- Microsoft Credentials forum allows users to post issues related to Microsoft certifications, exams, and Microsoft Learn credentials.

Current MCTs can also review the [MCT Support Resources page](#) in our MCT Lounge platform. To access this page, MCTs will need to join the MCT Lounge by following the steps in the Request [MCT Access guide](#).

MCT Enrollment Requirements

Article • 09/13/2024

IMPORTANT NOTE: Online enrollment for the MCT Program will be paused from May 20 to October 1 to allow for system and process enhancements. Contact the Instructional Skills Certificate Provider used to fulfill your MCT instructional skills requirement to determine if your application can be processed prior to October 1.

If you're interested in becoming an MCT, we'd love to have you! Microsoft Certified Trainers are part of a world-class community of technical professionals who support the skilling journeys of our customers. Our enrollment process is designed to validate the technical skills and instructional capabilities of trainers who want to earn the Microsoft Certified Trainer status.

To qualify as a Microsoft Certified Trainer, professionals must meet 3 requirements for enrollment. The subsequent sections of this page provide details for each of these MCT requirements:

1. Review and agree to the MCT Program Agreement.
2. Obtain an MCT-qualifying credential.
3. Provide verified proof of instructional skills through a Microsoft-approved provider.

Review and agree to MCT Program Agreement

To begin the MCT enrollment process, first review the [MCT Program Agreement](#) for terms of membership. You will be asked to acknowledge and adhere to these terms when you submit your MCT application.

Obtain an MCT-Qualifying Credential

Your Microsoft Learn user profile must include an **Associate** or **Expert** level advanced role-based certification. This requirement for an Associate or Expert certification ensures MCTs possess advanced technical knowledge in Microsoft products and services.

- The Microsoft Learn credentials site provides details on all role-based certifications.
 - Only credentials for technical Roles qualify for MCT status. This excludes non-technical Roles, such as Business User and Business Owner.
 - And, only those credentials denoting "Associate" or "Expert" in the certification title will qualify you for MCT Program enrollment or renewal.

- Please note that Microsoft Office Specialist certifications do not qualify for MCT enrollment. For instance, the MOS Excel Expert certification is not an MCT-qualifying credential. Microsoft Office Specialist Certifications are only for renewals.
- Once you pass a qualifying Microsoft certification exam, your MCT-qualifying credential will be reflected in your [Microsoft Learn](#) profile. You can view your Microsoft Learn credentials by clicking on the Profile option of your Microsoft Learn user icon.
- Only 1 MCT-qualifying certification is required to enroll or renew membership in the MCT Program. However, MCTs are required to hold the associated certification for all Microsoft courses they teach to our customers.

Provide Verified Proof of Instructional Skills

As premier instructors of Microsoft technologies, MCT candidates must prove they possess the instructional skills needed to deliver engaging, world-class training experiences to our learners. New candidates applying to the MCT Program must verify their instructional skills by completing a course offered by an organization enrolled in our Instructional Skills Certificate Provider (ISCP) Program.

- Review the [MCT Instructional Skills Requirement page](#). This page includes the list of Microsoft-approved ISCPs and displays each organization's language offerings.
- Complete your instructional skills course from any Microsoft-approved ISCP you choose from this global list.
- Once you've completed your instructional skills course through your selected ISCP, the organization will submit your verified training completion to our MCT Program.
- When you complete the online MCT application, you will choose the Microsoft-approved organization which issued your instructional skills training. Your selection will be reviewed by Microsoft and verified with the information provided to us by the ISCP.

MCT qualification must be renewed each year to remain a member of the MCT Program. Verified proof of instructional skills is only required for your initial enrollment into the MCT Program. Once you become a qualified MCT, you will not be required to complete an instructional skills program for your annual MCT renewal process.

Online MCT application

Once you've reviewed the MCT Program Agreement, obtained your MCT-qualifying credential in your Microsoft Learn profile, and completed a course through a Microsoft-

approved ISCP, you're now ready to submit your application for MCT Program enrollment.

Go to the online application in the [MCT enrollment tool](#). Log in to this MCT enrollment tool with the account associated with your MCT-qualifying credential. The online application includes a few key steps:

- Verify you have reviewed the [MCT Program Agreement](#). Your electronic signature validates your acceptance of the MCT Program's terms and conditions.
- Provide your employment status.
- Select the name of your Instructional Skills Certificate Provider (ISCP). Microsoft will verify we have received confirmation of your instructional skills program completion from the ISCP you selected in your application. If your ISCP has not yet submitted your information to Microsoft, your application will be rejected, and you will be required to reapply.
- Make any required payment associated with the MCT Program (Note: The MCT annual fee is currently waived for all new and renewing MCT applicants.)
- Submit your MCT application for review. The MCT application review process can take up to 2 weeks to complete. You will receive an email response from Microsoft with the results of your application.

Get Support

If you require assistance or clarification during the MCT enrollment process or if you wish to check the status of your MCT application, visit the MCT Support Forum provided at [trainingsupport.microsoft.com](#). There you can review frequently asked questions or post a new question in the moderated discussion forum. A member of the Microsoft Support Team will respond to you within 24 business hours.

Volume Licensing for Microsoft training and certification solutions

Article • 12/04/2023

Microsoft training and certification solutions help businesses and accredited academic institutions accelerate adoption and use of Microsoft technologies. With these enterprise-ready, direct-from-the-source training and certification resources, your employees can gain the skills they need to work more efficiently and productively and students can gain the technology skills needed to be more successful in school and future careers.

Microsoft certification solutions for Advanced Role-Based (ARB) certification exams are available through the **Microsoft Volume Licensing** program, a customizable Microsoft software purchase program that grants discounted access to Microsoft certification solutions.

By consolidating the purchasing, budgeting, and tracking of the Microsoft certification solutions product SKUs described on this page with other Microsoft technology purchases through Volume Licensing, academic institutions can achieve significant cost savings (depending on the geography, product, and Volume Licensing contract level) – [see below](#).

For more details about purchasing other Microsoft Official Certification exams such as Microsoft Office Specialist, Microsoft Certified Educator, and Microsoft Fundamentals – [see below](#)

- Microsoft Certification exam vouchers

Microsoft Certified Professionals on staff can enhance your academic institution's competitive advantage, help increase student satisfaction, and reduce network downtime.

- Microsoft Certification class packs of Advanced Role-Based exams for academic institutions

With Microsoft Certifications, you can validate your students' technology skills, helping them to differentiate themselves and to enhance their education and career prospects. Plus, you can use Microsoft Certifications to support your faculty and staff professional development goals.

You can order exam class packs (qty. 30 exam vouchers) that put students on the path to earning a Microsoft Certification. Certification exam class packs include

exam vouchers that you can use over the course of one year. Exams may be taken by students, educators or staff online or at an authorized testing center. Whether for a high school, vocational school, two-year college, or four-year college or university, you can tailor a mix of certifications to meet your unique needs.

[+] Expand table

Microsoft volume license SKUs for Advanced Role-Based certifications		
Program - Worldwide	Part or SKU #	Microsoft Certified Professional (MCP) + MTC Fundamentals Certification Class Packs
-----	-----	-----
OVS (Level E)	H5T-00001	Cert in Acad VL Fee OLV E EA AP Fund-MCP Cert Pack (30)
OVS (Level F)	H5T-00002	Cert in Acad VL Fee OLV F EA Acad AP Fund-MCP Cert Pack (30)
EES, Campus, School	H5T-00003	Cert in Acad VL Fee Fund-MCP Cert Pack (30)

You can order your Microsoft Certification exam packs through the following Microsoft Academic Volume Licensing programs:

EES (Enrollment for Education Solutions), School, and OVS-ES (Open Value Subscription – Education Enrollment subscriptions) volume license subscriptions. For more information, contact your Academic Licensing Reseller or visit the [Microsoft Licensing programs for industries](#) page.

As of July 1, 2023, Microsoft Office Specialist (MOS), Microsoft Fundamentals (Fundamentals), and Microsoft Certified Educator (MCE) academic certifications will be available to purchase directly through Certiport and its partner network and will no longer be sold directly by Microsoft. Certiport, as Microsoft's key global exam delivery partner, will continue to sell MOS, MCE, and Fundamentals certifications directly to academic customers.

To help you purchase MOS, Fundamentals, and MCE certification exams, Certiport has put together this alias to route you to the right person on their team who can help you place an order: vlsales@pearson.com.

Microsoft is no longer selling e-learning in Volume Licensing. The following resources are for customers who are still consuming our e-learning content under their existing contracts. They are meant to help you deploy, configure, and administer your Volume Licensing e-learning purchase.

- [Volume Licensing Online Services Manager Guide to Online Use](#) ↗
- [Volume Licensing End User/Student Guide to Online Use](#) ↗
- Contact us

To get started with Microsoft Advanced Role-Based certification products, contact your Microsoft academic reseller or access the [How To Buy - Education Solutions - Microsoft Education](#) ↗ page.

Frequently asked questions

The following questions specifically address Volume Licensing for Microsoft certification solutions. Visit the [certification overview](#) or [exam policies and FAQ](#) pages for answers to general questions regarding Microsoft Certification or the exams.

Microsoft training and certification solutions

What products are supported by Microsoft certification solutions?

Microsoft training and certification solutions support Microsoft solution areas, including (copy categories from Jeff's cert roadmap to confirm the below list):

- Cloud and infrastructure
- Data and AI
- Modern work
- Security, compliance, and identity

As Microsoft adds or changes solutions areas, our certification program will be updated to reflect those priorities: [Browse Certifications and Exams | Microsoft Learn](#).

In what regions can I purchase certification products through my Volume Licensing agreement?

Microsoft certification solutions are available within Volume Licensing in all regions. Contact your Microsoft academic reseller with any questions about pricing, licensing, and accelerated discounting or access the [How To Buy - Education Solutions - Microsoft Education](#) ↗ page.

Product access and usage

If I acquire a Microsoft certification solutions license, how do I access the content?

You can access content for Microsoft certification solutions (Microsoft Certification Program exam vouchers) by using access codes. Access codes put the choice of learning in the hands of your educators and staff to best serve the campus or school community. As an administrator, you will receive your access codes digitally within a few business days of transacting your Volume Licensing agreement term. You can activate the codes at any time during the agreement term.

- **Microsoft Certification Program exam voucher codes.** You can register to take one exam for each Microsoft Certification Program exam voucher code. Exam voucher codes can only be used once.

If I do not use all the codes acquired during my agreement can I receive a refund for the unused codes?

No, all exam codes are valid for one year from the date of issuance. All unused codes expire after 12 months. Customers will not receive a refund for any unused codes.

After I place an order, how long does it take to receive exam voucher codes?

The order will be acknowledged within 48 hours of being processed by Microsoft. You will receive access codes within 5 to 7 business days after the order is invoiced by Microsoft.

How many codes should I acquire?

The more codes your organization acquires, the greater the volume discount you receive. We recommend that you use one of the following resources to determine your organization's training needs and to develop a learning plan that aligns with your company's business goals.

- [Send an email message to Microsoft training and certification solutions Volume Licensing Help.](#)
- [Find your local Microsoft Certified Partner for Microsoft training and certification solutions.](#)

How many exam vouchers should I order?

To determine how many vouchers you need, first determine:

- The number of people or students in your organization who need to be certified.
- Which certifications each learner needs.

- The number of exams required for each certification.
- The amount of time each learner requires to achieve certification.
- The number of months remaining on your license agreement.

Remember that it is important for your learner to gain hands-on experience with Microsoft products. We recommend three to nine months of preparation for certifications depending on the level or complexity of the subject matter.

Microsoft Certification exam packs for academic institutions

Which curriculum options are available to prepare for the exams?

Each exam has preparation materials available. Choose the exam from the [new exams list](#), and then look for the exam's available preparation options.

Credentials support

Article • 07/08/2024

How to contact support

[+] Expand table

Area of support	How to get help
<i>Microsoft Certifications and Microsoft Certification Exams</i>	<p>Check these resources for answers to common questions:</p> <ul style="list-style-type: none">- Certification process overview- Frequently asked questions about Certification exams- Frequently asked questions about online proctored exams- Frequently asked questions about Certification renewal- View, use, and share certificates and achievements <p>To update your legal name Visit the Credential Support Forums and post with the subject line 'Legal Name Change'. Please do not provide personal information. An agent will assist you through Private Messaging.</p> <p>To request exam accommodations If you rely on assistive technology or require testing accommodations due to a disability, please visit: How to request exam accommodations.</p> <p>English as a second language If your selected exam is not available in your native language you may apply for extra exam time. Please visit: How to request an exam when English is your Second Language.</p> <p>For technical issues with exam delivery For technical issues with an exam delivery, contact our Exam Delivery Partners:<ul style="list-style-type: none">- Pearson VUE Support- Certiport Support</p> <p>For Exam appointment and scheduling issues For issues with exam appointments or scheduling, contact our Exam Delivery Partners:<ul style="list-style-type: none">- Pearson VUE Support- Certiport Support</p> <p>To submit an Exam or Renewal Assessment item challenge To challenge a Microsoft Certification exam or renewal assessment question, review the challenge process to confirm eligibility and then submit the Credential item challenge form.</p>

Area of support	How to get help
	<p>To provide feedback on a MS Learn Practice Assessment To provide feedback on a Microsoft Practice Assessment delivered on Microsoft Learn, complete Practice Assessment item challenge form.</p> <p>For all other Microsoft Certification issues, get help through the Credential Support Forums.</p>
<i>Microsoft Applied Skills Credentials and Assessment Labs</i>	<p>Check these resources for answers to common questions:</p> <ul style="list-style-type: none"> - Applied Skills overview - Assessment lab duration & experience - Assessment scoring reports - Applied Skills frequently asked questions <p>To learn more about Applied Skills accommodations If you rely on assistive technology or require other accommodations due to a disability, please visit: Applied Skills accommodations.</p> <p>English as a second language If your assessment lab is not available in your native language, you can add an additional hour to your assessment lab if needed. To learn more, please visit: Applied Skills assessment lab extra time.</p> <p>Trouble launching your assessment lab? Review the Assessment lab technical requirements FAQs.</p> <p>Challenge an assessment lab item To challenge a task on an Applied Skills assessment lab, review the challenge process to confirm eligibility and then submit the Credential item challenge form.</p> <p>For all other Applied Skills issues, get help through the Credential Support Forums.</p>
<i>Microsoft Certified Trainer (MCT) program</i>	<p>Your question may be answered on our page about the Microsoft Certified Trainer program overview.</p> <p>MCT resources, events, and discussion forums are provided at MCT Lounge. To join this dedicated MCT community space, MCTs must first request access by following the MCT Lounge Access Request process.</p> <p>For issues with enrollment, benefits, or training courses, get help in the MCT support forums.</p>

How to post a support request in the forums

Please follow these steps to post a support request in the forums:

1. In the main navigation menu across the top of the page, click "Ask a question." You will need to sign in with your Microsoft account.
2. You'll create a display name, and then be offered the template to ask a question
3. Be specific in the subject of your question. **You should avoid including any personal information as your post will be publicly visible.**
4. A forum moderator will reply within 24 business hours.

Applied Skills assessment lab experience frequently asked questions

Article • 11/15/2023

Assessment lab overview FAQ

What is an Applied Skills assessment lab?

The Applied Skills assessment lab gives you the opportunity to demonstrate your skills by completing tasks in the associated technology, such as Azure, Microsoft 365, or Power Platform. You will perform tasks in a virtual environment. The virtual machine is remotely connected to a live environment where you perform tasks on real software and applications.

In the lab, you will be asked to perform several tasks. The guidelines and requirements for completing these tasks can be found in a series of email messages that are accessed through the lab environment. You will complete these tasks using tools, such as the Azure Portal, the Microsoft 365 Admin Center, Azure CloudShell, etc. Unless the email states otherwise, you can complete the task using any method or tool.

What can I expect during the assessment process?

You will perform tasks in a virtual environment. The virtual machine is remotely connected to a live environment where you perform tasks on real software and applications.

It will take a few minutes to load the lab. You may do other activities while it loads. You will have 2 hours to complete the lab tasks. You will NOT be able to save your work and come back later, so plan to complete all the tasks in a single session. The actions you take while completing the assessment lab will be recorded for quality control purposes.

After the lab launches, start by reviewing the **Instructions**, located in a pane on the right side of the lab environment. These instructions provide important information for accessing and completing the lab. **Step 1** details the lab scenario.

Step 2 provides information on how to access the email messages. To access them, select the “Open Emails” button at the bottom of the **Instructions** pane. This will open an interface in the lab environment that simulates an Outlook inbox. Read all the emails before beginning to understand the full scope of what’s required in the lab.

Your username and password are provided in **Step 3 of the Instructions**. To log into the associated technology (e.g., Azure, Microsoft 365 admin console, etc.), simply select the username, and it will automatically complete the username field. Do the same for your password after entering your username.

In the **Troubleshooting** section of the **Instructions** pane, you will find key tips for navigating the lab environment.

After you leave a lab, you will not be able to return to it because scoring starts in the background as soon as you exit a lab.

To learn more about the assessment lab experience, watch [this tutorial](#).

How do I prepare my computer to take an assessment lab?

1. Review the System Readiness [FAQs](#) to ensure that your computer meets the minimum requirements for a successful lab delivery.
2. Review the [Assessment Lab Interface FAQs](#) to get familiar with the lab UI.
3. Run a [speed test](#).
4. Check to see if your machine can connect and function within the lab environment by launching the [Lab Orientation & Connectivity Check](#).

Why did I have to wait before I could start my assessment lab?

It takes time to provision the environment in the cloud, and the environment you will access to complete the tasks is loaded only when the resources are fully provisioned.

You will be informed how long it will take to load, and you may do other activities while it loads.

The VM inside the lab is too small or the resolution is too small. What should I do?

The default resolution setting for the VMs is 1024 x 768. You are most likely launching at a lower resolution. If you increase your resolution to the default or higher, that should solve the issue.

When I launch the assessment lab, the emails don't open? What should I do?

Select "Open Emails" at the bottom of the Instructions pane. If you are still unable to open the emails, please contact [Support](#).

What should I do if the Azure portal or the Microsoft 365 admin center does NOT open immediately?

If your lab launches with a blank white screen, or an authentication error in one of the portals, try opening a new tab and navigating to <https://portal.azure.com> or <https://admin.microsoft.com> in the virtual machine. Make sure you do this in the virtual machine; we will NOT be able to score your work if you open the portal on your machine rather than the virtual machine. Opening the portal in this way will resolve the issue most of the time.

I'm having issues logging into Azure/Microsoft 365/Dynamics 365 when I access the assessment lab. What should I do?

Clear the credential cache in the Windows Credential Manager by taking the following steps:

- Close Edge.
- Start -> Search for "Credential Manager."
- Select the specific credentials and select "Remove."
- Try logging in again.

If that doesn't work, clear the browser cache. If you are still unable to log in, please contact [Support](#).

Do I need to type in my username and password?

No, you don't need to type your username or password. Simply select your username from Step 3 of the **Instructions** pane, and your username will automatically be added to the username space in your login credentials. Do the same for your password after your username is entered. Alternatively, you can copy and paste both your username and password.

The emails in the assessment lab are asking me to perform several tasks. Should I perform them in a specific order?

In general, we have tried to design the assessment labs so that you can perform the tasks in any order. However, we recommend that you read through all the emails before you start because there may be some tasks that require other tasks to be fully executed before those tasks can be performed correctly.

Remember to read the tasks carefully and only do what's required to solve the problem posed in the task.

Some tasks require the deployment of resources in Azure. What should I do if the deployment in Azure takes a long time?

Read through the remaining emails if you haven't done so already. If you have carefully read the emails, perform a task that is not dependent on that task to finish executing so you can maximize your time.

In some cases, starting a task may be sufficient for scoring (for example, creating a resource in Azure); you can let the task execute in the background while you work on other tasks. If you only need to start a task, you will be notified in the guidelines provided in the associate email. You can move on to other tasks without being penalized.

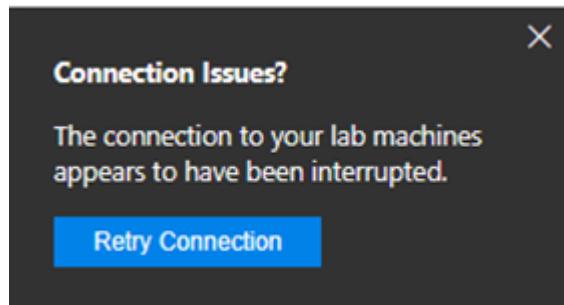
Why is the lab being recorded? What does that mean?

The actions you take during the lab will be recorded for quality control purposes. This is being done to ensure that if anything unexpected happens during the assessment lab we can investigate the issue and make any necessary adjustments to the assessment lab or email content. With the pace at which technology is changing, Microsoft often changes features and functionality that could change the assessment lab experience. Recording the actions that you take during the assessment lab is one of the ways that we can rapidly identify changes that impact the assessment lab and scoring and respond.

Only the actions that you take in the assessment lab are recorded. Neither your face nor your voice will be recorded, and no actions taken outside the assessment lab environment will be recorded.

What happens if I lose my internet connection while completing an assessment lab?

If you lose connection to the lab, you'll receive a warning that asks you to retry the connection. If you're able to reconnect within 15 minutes, you will not lose any work, and you'll be able to complete the lab.



Note that labs will only be scored if you are able to "submit" them for scoring. If the assessment lab is launched, it is considered an attempt, and the [retake policy](#) applies.

System readiness FAQs

What are the system requirements for the assessment labs?

To launch and use a lab, the following requirements must be met:

1. Use a supported operating system:

- Windows 7 or later
- Ubuntu 14.04 or later (or comparable distribution)'
- macOS 10.12 or later

2. Have the latest version (strongly recommended) of Edge, Chrome, Firefox, or Safari. Chromium based browsers, such as Opera or Vivaldi, can connect, but default hotkeys they set may interfere with lab inputs. They are not recommended.

At a minimum:

Browser	Version
Chrome	16+
Firefox	11+
Microsoft Edge	1+

3. Be connected to a network that allows at least one of the following:

- Secure Web sockets on HTTPS port 443 and 43443

- RDP over port 21xxx or 443 (Enhanced control)

4. Meet the bandwidth requirements:

- Minimum 200kbps consistent bandwidth with 1mbps burst.
 - Machine controller bandwidth consumption is based on the rate onscreen content changes, some scenarios (i.e., web browsing inside the lab) may require more.
 - For optimal experience, we recommend at least 1mbps.
- When using Cloud Slice labs where the target environment is a website, additional bandwidth may be required.
 - For the Azure management portals, we recommend at least 512kbps.

How can I see the quality of my connection to my lab?

Just to the left of the title of the lab, you can see a visual representation of the “number of bars” that you have. It will show several bars in increasing size. The more bars, the better your connection is at that moment.

You can view your lab latency (measured in milliseconds) by hovering your mouse cursor over the connection bars in the lab.

- 0 - 100 milliseconds = Excellent (4 bars)
- 100 - 250 milliseconds = Good (3 bars)
- 250 - 500 milliseconds = OK (2 bars)
- 500 milliseconds or higher = Poor (1 bars)

This measures the network latency between your browser and the server where the VMs are hosted. This is the last latency value received from your machine. Large latency numbers may cause your lab to seem sluggish or even non-responsive. The issue may be with your network, internet provider, the overall internet health, or the lab host.

You can check to see if your machine can connect and function within the lab environment by launching the [Lab Orientation & Connectivity Check](#).

How will I be able to determine if my lab issue is related to connectivity?

If you experience a blank or black screen, this may be due to a connectivity issue. A common symptom of slow labs is a delay in input from the mouse or keyboard. Even with sufficient internet bandwidth, latency issues may still arise due to hops along the path, and datacenter connectivity.

You may receive an error message, such as: "*The Connection to your lab machines appears to have been interrupted*"

How do I fix assessment lab connectivity issues?

- **Work Issued Device:** If you are using a work issued device, please try > using a personal device instead. Your company device could have built in > protocols that could prohibit access to remote sessions, causing connection > issues to your labs.
- **Managed Network:** If the lab is being run through a managed network > through your Work or school, please review our [Connectivity Requirements]> <https://docs.skillable.com/tms/connectivity-requires.md> and have your IT > department look over all the necessary requirements.
- **Lab Latency Indicator:** The lab interface latency indicator may show latency as good or excellent. This does not rule out problems with the local connection as it only considers the current latency and does not test for firewall or routing problems. There are "hops" between the initial lab launch location and our hosts that can fail and are also not detected by the in-lab indicator.
- **Run a Speed Test:** If you are experiencing frequent disconnects or lag when controlling your machines, you may run a [speed test](#). This page allows you to run a connection assessment test. A connection assessment test is a very deep and thorough test that measures throughput speed, capacity, and packet quality to assess the user experience of a connection to their respective data center. This includes efficiency, data loss, recovery, duplication of data, retransmissions and even corruption.

If these don't apply to your situation, please take the following steps to rule out your local connection.

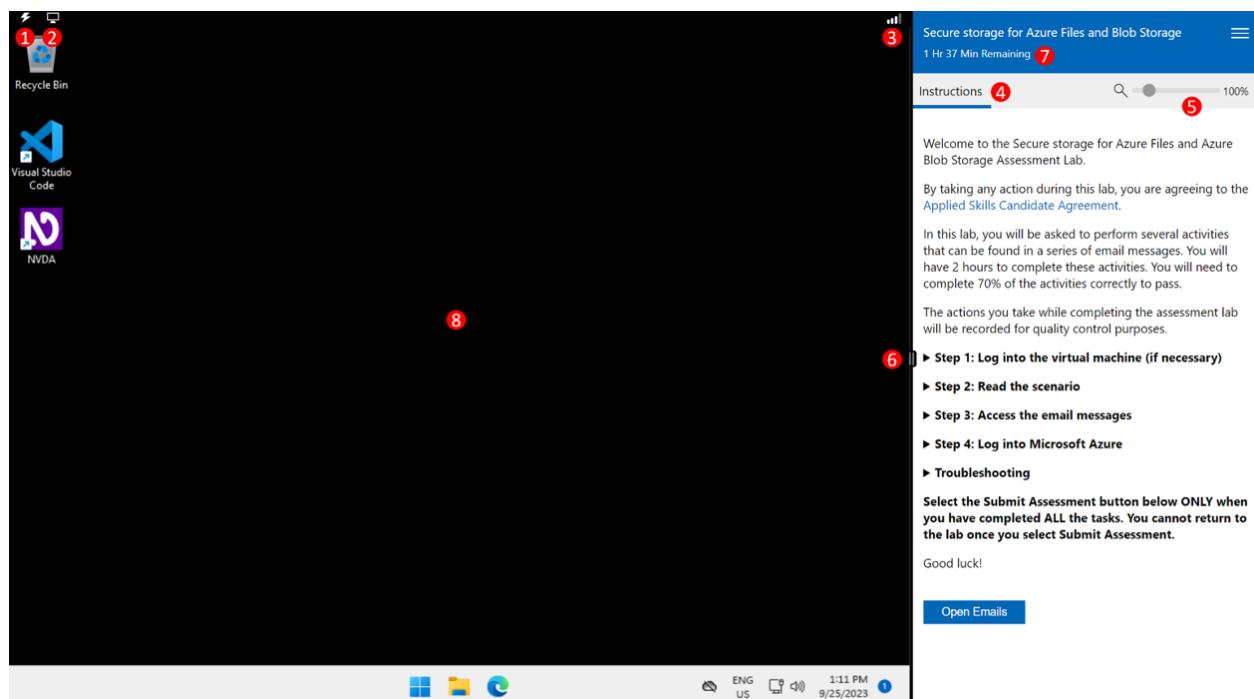
- **VPN/Proxy:** While you can have success with VPN's, they are not recommended as certain configuration requirements must be met to avoid issues properly connecting with the lab: [Proxy Requirements](#).
- **Use a hardwired connection:** Hotspots, Wi-Fi, cellular, and satellite internet typically have higher latency and can cause packet loss, which can result in a poor lab experience.
- **Review your security software:** Turn off any third-party anti-virus programs, pop up blockers, add blockers, Etc.
- **Review your network:** Port 443 must be open for inbound and outbound traffic. Additional firewall exceptions may be needed. Please review our Connectivity Requirements.
- **Reset your local Network:** Power cycle your modem and router.

- **Confirm your bandwidth:** The minimum Speed for labs is 200kbps up and down consistent/1mbps burst, Per user.
- **Try a different browser:** Some browser extensions can cause certain aspects of our lab environments to not load correctly.
- **Try a different computer:** Some work-issued computers have built-in software that cannot be disabled, sometimes this software interferes with connection to our service. If possible, please try a personal computer.

Assessment lab interface FAQ

How do I interact and use the lab interface?

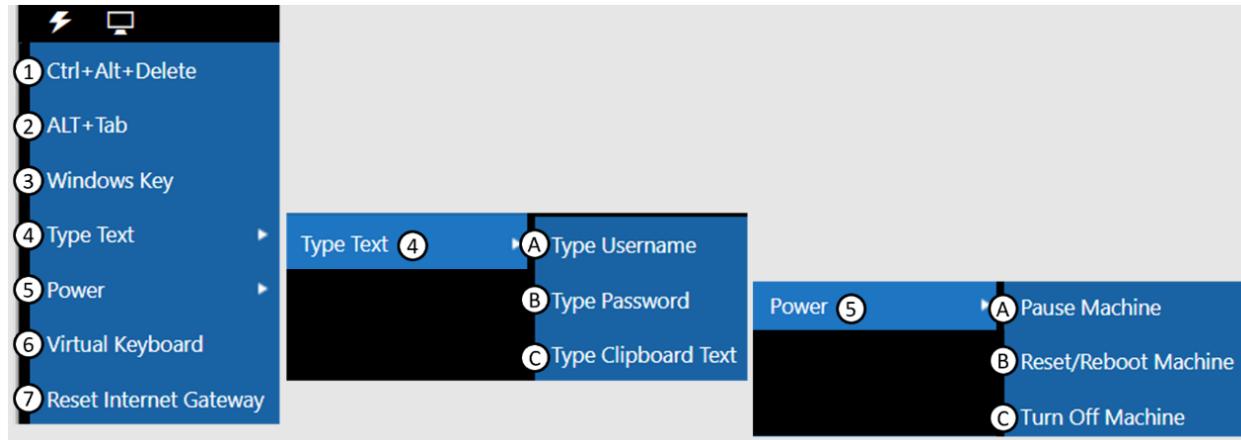
Within the lab interface, some buttons expand to display a menu of options.



1. **Commands menu:** Contains advanced lab functions. See the [Commands menu](#) section for more information.
2. **Display menu:** Contains display settings. See the [Display menu](#) section for more information.
3. **Connection indicator:** Displays the connection quality between your local machine and the virtual machine in the lab environment. The connection quality is displayed in milliseconds and a description of Excellent, Good, Fair and Poor. For more information about each connection quality description, or to conduct a speed test, please see [Speed Test](#).
4. **Lab instruction pane:** Displays the lab instructions.
5. **Lab instruction zoom slider:** This allows you to zoom the display of the lab instruction pane.

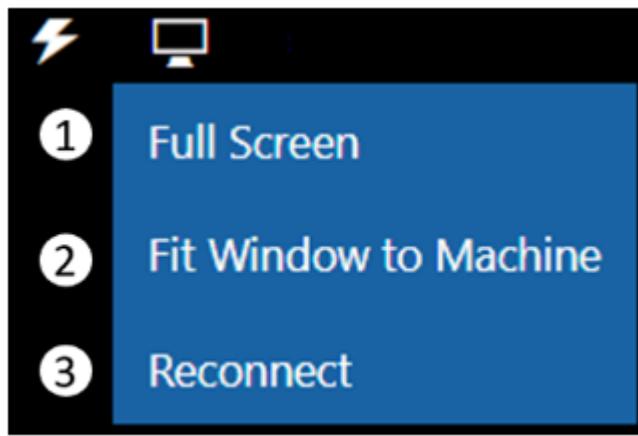
6. **Instruction resizer:** Drag left and right to adjust the size of the instruction pane.
7. **Timer/Time Remaining:** Indicates the amount of time remaining in the lab session.
8. **Virtual machine:** The virtual machine window.

Commands Menu



1. **Ctrl+Alt+Delete:** Sends the Ctrl-Alt-Delete key combination to the virtual machine.
2. **ALT+Tab:** Sends the ALT+Tab key combination to the virtual machine.
3. **Windows Key:** Sends the Windows key command to the virtual machine.
4. **Type Text:**
 - A. **Type Username:** Types the username into the virtual machine at the current cursor position.
 - B. **Type Password:** Types the password into the virtual machine at the current cursor position.
 - C. **Type Clipboard Text:** Opens a dialog box to paste text from your local clipboard into the virtual machine at the current cursor position.
5. **Power:**
 - A. **Pause Machine:** Puts the virtual machine into a paused state. Once it's paused, it must be resumed to continue using the virtual machine.
 - B. **Reset/Reboot Machine:** Reboots the virtual machine. This **does not** gracefully shut down the machine. It's recommended to save your work before using this.
 - C. **Turn Off Machine:** Powers down the virtual machine.
6. **Virtual Keyboard:** Enables an on-screen virtual keyboard for inputting keystrokes into the virtual machine.
7. **Reset Internet Gateway:** Resets the gateway used by the virtual machine to connect to the internet.

Display Menu



1. **Full Screen:** Sets the lab to display in a full screen window.
2. **Fit Machine to Window:** This resizes the virtual machine to fit the browser window.
3. **Reconnect:** This will reconnect your local machine to the remote virtual machine, if the connection is interrupted.

How do I make my international keyboard work in the lab interface?

Learn more [about using an international keyboard](#).

How do I extend the amount of time on the lab timer?

Each assessment lab has a timer in the upper right corner showing you the amount of time that you have left to complete the assessment lab.

When there are less than 10 minutes remaining, you may extend the time through a pop-up window by clicking **Yes**. The amount of time you can extend the lab will vary depending on the lab. The time you can extend is noted in the pop-up window.

How do I remove the scroll bars in my lab's virtual machine?

Learn more [about removing scroll bars in virtual machines](#).

How do I make my assessment lab display in full screen?

Learn more [about displaying in full screen](#).

How do I resize the screen resolution setting on my computer to view the lab better?

Learn more about resizing screen resolution [↗](#).

How does the exit menu work?

You should not exit the lab until you have completed it and submitted it for scoring. If you do, you'll lose any work that you have done and will not be able to return to the lab to complete it (there is no "save and come back later" option).

Note that if you exit the assessment lab for any reason, your lab will be scored on the actions that you took prior to ending the lab. This will count as an attempt and the retake policy will apply.

Assessment lab scoring FAQs

I received the same score each time I took the same assessment. Is something wrong?

No, receiving the same score on multiple attempts does not indicate an error. It's not uncommon for candidates to earn similar or identical scores on multiple attempts. This consistent result demonstrates the reliability of the assessment lab in evaluating skills. If this happens, consider other ways to learn and practice. Learn more about how to [prepare for an Applied Skills assessment lab](#).

Does the score report show a numerical score for each skill?

No, we provide an overall passing result as well as skill level information to show your strengths and weaknesses more clearly

The chart showing the skill level results showed that I performed well in most of the skills. Why didn't I pass?

Because each skill is assessed by a different number of tasks, you cannot combine the results across the skills to determine your overall result. In other words, there is no one-to-one relationship between skill performance and your pass/fail status.

My assessment lab ended abruptly. Will it be scored?

No. Labs will only be scored if you “submit” them for scoring. Note that if the assessment lab is launched, it is considered an attempt, and the [retake policy](#) applies.

Exam frequently asked questions

FAQ

Exam basics

How long is the exam and what types of questions can I expect?

Visit: [Exam duration and exam experience.](#)

Can I take a break during my exam?

Yes. We have added 5 minutes to our exams to allow for unscheduled breaks that do not need to be requested in advance. Visit: [Unscheduled breaks on exams.](#)

If you need more than 5 minutes for breaks, you may request additional time through our accommodation process.

How should I prepare for an exam?

Visit: [Prepare for an exam.](#)

How do I register for a Microsoft Certification exam?

Visit: [Register and schedule an exam.](#)

What is my window for scheduling an exam?

You can schedule certification exams through Pearson VUE no more than 90 days in advance. If you have questions on this policy, visit: [Pearson VUE customer service for test-takers ↗](#).

How many exams can I schedule at any point in time?

Effective January 16, 2023, you can have a maximum of two Microsoft Certification exams scheduled at a time, either on the same day or on separate days through Pearson VUE. After you take (or cancel) one of these exams, you can register for another. Please note, there are no changes to exam scheduling through Certiport. Visit: [Register and schedule an exam](#).

Am I required to take an exam in English?

Microsoft Certification exams are available in several languages. However, if you must take an exam in English rather than in your native language, you can request an accommodation for additional time. Approval for extra time is provided on a case-by-case basis and needs to be requested in advance of the exam. This should be requested through the [English as a Second Language process](#).

What disability accommodations are available?

Visit: [Request accommodations](#).

How much do exams cost?

Associate and Expert exams typically cost US\$165 but are priced according to currency values in specific countries and regions. Exam prices are subject to change. In some countries and regions, additional taxes may apply.

- For exact pricing for Microsoft Office Specialist (MOS), contact [Certiport](#).
- For all other exams, [browse all exams](#) to find the exam page where you will find the price of the exam.
- Special packages may also be available, for additional details visit: [Offers](#).
- Academic pricing is also available, for additional details visit: [Student discounts](#).

How can I provide feedback about study materials or training for the exam?

If you have feedback about an instructor-led Microsoft training course, provide it directly to the instructor. If you have feedback about a Microsoft online course, complete the feedback form that appears when you finish the course. Microsoft does not review study materials developed by third parties and is not responsible for their content. If you have questions or comments about exam preparation materials developed by third parties, please contact the publishers directly.

How can I submit feedback about an exam question or exam experience?

- If you have a concern about the technical accuracy of a particular item, please visit: [Exam item challenge process](#).
- To report a concern about a testing center or technical difficulties experienced during your exam, please contact customer service at the appropriate exam delivery provider.
- To report a security concern, please complete this [form ↗](#).
- To offer other types of feedback, please contact [certification support. ↗](#)

Exam specifics

How does Microsoft decide how many questions on a particular subject to include on the exam?

The skills measured on an exam are identified by subject matter experts external to Microsoft (in other words, they are not Microsoft employees). This list of skills, called the “objective domain,” is the basis for exam development. The number of questions that measure each skill area is determined through the blueprinting process; sections of the exam measuring critical and/or more frequently performed skills will contain more questions than those that assess less important or less frequently performed skills.

Why is the case study exam format used?

The case study exam format uses complex scenarios that more accurately simulate what professionals do on the job. Scenario-based questions included in the case studies are designed to test your ability to identify the critical information needed to solve a problem and then analyze and synthesize it to make decisions. You can refer to scenario details as often as you’d like while you are working on questions in a case study.

After I complete a case study, will I be able to review the questions?

You may review the questions in a case study until you move to the next case or section of the exam. Once you leave a case study, however, you will not be able to review the questions associated with that case. When you complete a case study and its associated questions, a review screen will appear. This screen lets you review your answers and make changes before you move to the next case study.

Case studies are not timed separately from the rest of the exam. The number of case studies in an exam is noted on the exam introduction screen. Manage your exam time accordingly so that you can complete all case studies and all other sections of your exam.

What is the process for determining if an exam has been updated when a new feature or function is added or when something has changed in the associated technology?

We review our cloud-based exams quarterly. Any changes that affect the objective domain and the existing questions are incorporated into the exam. Specifically, technically inaccurate questions are removed from the exam; some items are modified, and new items may be created to assess new, but related, skills.

Microsoft reserves the right to update content for any reason at any time to maintain the validity and relevance of our certifications. This includes, but is not limited to, incorporating functionality and features related to technology changes, changing skills needed for success within a job role, etc.

While most questions cover features that are General Availability (GA), the exam may contain questions on Preview features if those features are commonly used.

Will the training kits, books, courseware, and other exam preparation materials be updated when the exam changes?

Microsoft makes every attempt to keep the training and exam aligned when changes occur; however, that is not always possible. Keep in mind that Microsoft exams are not intended as post-tests of any preparation or training product created by Microsoft or any third-party provider. Our certifications are designed to measure experience-based skills regardless of the way candidates obtain these skills.

The best way to prepare for an exam is to practice the skills listed in the "Skills measured" section of the exam details page. Hands-on experience with the technology is required to successfully pass Microsoft Certification exams.

Microsoft does not review study materials developed by third parties and is not responsible for their content or for ensuring that they are updated to reflect product

updates. If you have questions or comments about exam preparation materials developed by third parties, please contact the publishers directly.

Why did an exam include material that was not covered in the Microsoft training or Microsoft Press book?

All learning materials related to a given job role are built from the same job task analysis. As a result, the learning content should be closely aligned to the exams. Keep in mind, however, that the learning materials are developed independently of exam content because the exams are intended to assess competence in the job role, not the effectiveness of training materials or learning. Because the exams are designed to assess your ability to apply skills beyond what was explicitly covered in the learning, the skills will be assessed at a higher level than what was taught in the training. For some candidates, this can give the impression that the skill was not taught in the associated learning; however, all skills assessed on the exam are included in our learning options.

Microsoft works hard to ensure that some form of training material exists for all skills that will be measured on an exam. A list of these resources can be found on the exam details page.

Scoring and results

How are exams scored?

Visit: [Exam scoring and score reports](#).

What is the exam retake policy?

Visit: [Exam retake policy](#).

Can I request a re-evaluation of my score?

If you have a concern about the technical accuracy of a particular item, please [submit an online request](#).[↗] An Item Challenge form will be sent to you. However, a re-evaluation of your score is unlikely to change your pass/fail status. Because Microsoft must ensure that candidates who pass exams and earn our certifications have demonstrated the required proficiency level(s) across the skill domain(s), the final result of an exam is rarely changed based on a re-evaluation of your exam results. Even if a question is

flawed in some way, we cannot assume that you would have answered it correctly if it had not been. In these cases, we provide candidates with the opportunity to retake the exam free of charge.

How can I challenge an exam question?

Visit: [Exam item challenge process](#).

If I do not pass an exam, can I have a refund?

No. Microsoft does not offer refunds for exams you do not pass or exam appointments you miss.

Exam security

What is the exam security policy?

Visit: [Exam security policy](#).

Performance-based testing

What is performance-based testing (PBT)?

Performance based testing gives you the opportunity to demonstrate your skills by completing tasks in the technology. Today, this means completing tasks in a graded lab, but in the future, PBT may take a different form. For example, for those of you who are currently performing the job role, Microsoft is exploring ways to incorporate the work that you do every day into our certification requirements. For those of you who are not in the job role yet, we'll continue to have other ways for you to demonstrate your skills through portfolios and graded labs. Microsoft is constantly innovating to ensure that we assess your skills and abilities in ways that align to how you actually get your work done.

To view the PBT tutorial video, [click here](#). ↗

What can I expect when I complete the labs?

This type of question asks you to perform tasks in a virtual environment. You will see a screen that includes a virtual machine window and a Tasks pane. The virtual machine window is a remotely connected live environment where you perform tasks on real software and applications.

The Tasks pane lists the tasks you need to perform in the lab. You can expand or collapse each task with the + or - symbols. For your convenience, each task has a checkbox so you can mark tasks as you complete them. Doing this won't affect anything in the lab or scoring. Nothing in the lab will indicate if you did not complete a required task, so you may want to keep track of the tasks that you have completed by checking the boxes.

After you leave a lab, you will not be able to return to it because scoring starts (in the background) as soon as you leave a lab. When you click Next, you will be asked to confirm that you really want to leave the lab. Clicking Yes will end the lab section, and the tasks will be scored.

How is the exam structured when it has labs?

When you launch the exam, you will see a screen that tells you how many items, case studies, and labs, including the number of tasks, that will be on the exam. Please make note of this information so that you can plan your exam time accordingly.

After you launch the exam, you will answer all of the traditional questions (for example, multiple choice, drag and drop, build list, etc.) on the exam as the labs load. The lab(s) will be the last section of the exam. Please note the following:

- After you leave any section of the exam (e.g., case study or labs), you cannot return to it. However, at the end of most sections, you have the opportunity to review your answers (your exam may include a section that cannot be reviewed; this is noted at the beginning of the section). **Exam time does NOT stop while you are reviewing your answers. Make sure you manage your time;** pay attention to the time AND number of questions remaining.
- Exams with labs contain one or two performance sections/labs with multiple tasks that you must complete. Research shows that tasks take approximately 3 times longer to complete than a traditional item. Please manage your time so that are able to complete the labs in the time remaining when you get to them. We have ensured that candidates who manage their time wisely will have more than enough time to complete the lab(s).
- The number of labs and tasks on the exam is provided on the overview page preceding the first lab. Read it! And then, manage your time accordingly.
- Do NOT wait for tasks to execute before moving onto another task. In some cases, you need something to execute before you can complete another task, but this will be noted in the task, and there will be other tasks that you can be working on while that task executes. **Don't lose time waiting for tasks to run.** Move onto something that is not dependent on that task so you can maximize your exam time. In some cases, starting a task may be sufficient for scoring (for example,

creating a resource in Azure); you can let the task execute in the background while you work on other tasks. We include a note in the task list telling you that you only need to start the task. You can move on to other tasks or even leave the section (move to the next lab if applicable or end the exam) without being penalized. **Read the task carefully. Do what's required to solve the problem posed in the task.**

Why does an exam with labs contain traditional question types (for example, multiple choice, drag and drop, build list, etc.)?

For a variety of reasons, we cannot assess all critical skills with labs. For example, we can't ask you to complete tasks that take more than a few minutes to run or that require significant resources; as a result, we will continue to assess those skills using question types that are more appropriate to the exam experience.

How many labs are on an exam? How many tasks are in each lab?

If an exam contains labs, it will have at least 1 lab. Each lab contains between 7–15 tasks. You will be told if the exam has labs and how many in the introduction to the exam.

How are tasks scored?

The tasks are scored based on the end result. We do not care how you accomplish the task (for example, through the UI or using PowerShell commands)—only that you successfully accomplished it. Complete the task as you normally would; the scoring script evaluates the end result based on the key characteristics to determine if it was done correctly. For example, if the task was to add a user, the scoring script ensures that you added that user.

We do NOT require you to use a specific method to perform tasks. If you are more comfortable using PowerShell or CLI, instead of a GUI, that's what we want you to use. We test you on the end result of your task—did you perform it correctly?—not on the method that you use to perform a task.

How many points is each task worth?

Most tasks are worth one point; if the task is worth more than one point, that information is provided in the task description.

How much time do I have to complete the labs?

Labs are not timed separately from the exam. At the beginning of the exam, the number of labs, case studies, and questions as well as the exam time will be provided in the introduction (read it!). You must answer all questions, including completing tasks associated with any labs, in the time provided. Manage your time accordingly so that you can complete all activities that must be done.

Will I have enough time to complete the labs?

The labs are designed to be completed within the exam time provided. You will not be asked to perform tasks that execute long running operations or tasks that have many dependencies. If important skills need to be assessed that are based on tasks that require long running operations or have many dependencies, we will either assess them with traditional items, or, if possible, set up the labs so that these operations have already taken place, and then you will perform tasks that logically build on the outcomes of those operations.

How do you determine which tasks to include in the labs?

Like all questions on the exam, lab tasks map to the objective domain. We select the tasks that best lend themselves to lab-based assessment, that do not require long execution times or resources, and that can be completed within the anticipated time for test takers to complete the exam.

Why did I have to wait before I could start my lab?

It takes time to provision the environment in the cloud, and the environment you will access to complete the tasks is loaded only when the resources are fully provisioned. As a result, the exam begins with a series of traditional items (multiple choice, drag and drop, build list, etc.) that allows time to provision the labs and load them into the environment. If you answer these questions too quickly, you will have to wait for the labs to finish loading.

I have heard that labs can launch with a blank white screen. Is there something I can do to fix

this?

If your lab launches with a blank white screen, try opening a new tab and navigating to <https://portal.azure.com>.[↗] Opening this new tab will resolve the issue most of the time.

I had some issues with my labs. How do I let Microsoft know?

If you run into issues with labs, please complete the [Exam item challenge process](#).

Although we won't be able to provide a specific explanation for your experience, our investigation will help us identify root causes and identify solutions that will improve the experience for everyone.

I had some issues with my labs. How do I request a rescore?

If you received a score, it is an accurate reflection of your performance on the exam; we have designed scoring to account for any lab issues that you may experience. If you failed, a rescore will not change that result.

When will I receive my score?

Labs take longer to score than traditional item types. Because the labs appear at the end of the exam, you may not get your result immediately. It can take 30 minutes or longer to receive a score. You do not have to wait for the score report. It will be passed automatically to our certification database and will show up in your MC dashboard. This should occur within 24 hours of the exam delivery. If it does not appear, please contact [certification support](#).[↗]

Do exams with performance-based questions take longer to complete?

Yes. These exams may take longer to complete than exams that do not contain performance-based items. The amount of time allotted for each exam takes this into account.

Should I prepare for the performance-based exams differently than I prepare for other

exams?

No. The skills measured remain the same regardless of the format of the question. The knowledge and skills assessed on the exam are listed in the "Skills measured" section of the exam details page. If you practice the skills, you'll be prepared for any item type, including labs.

Are there any specific test center requirements for exams that have labs? Many test centers are not listed when I try to schedule the exams that have labs, but the same test centers are listed for exams that do not.

Exams that include labs require testing centers to meet certain internet connectivity requirements, so a smaller set of testing centers are available. As labs are added to more of the new role-based exams, they will also be subject to these testing center limitations. If you have specific testing centers in mind, contact the specific test center to learn if they can deliver labs; alternately, they will not be listed as available test centers once you select the exam. If that occurs, we recommend finding a different test center or taking the exam through online proctoring. In the future, you may be able to take labs through online proctoring, but we are currently limiting lab delivery to only test centers that meet the connectivity and technical requirements needed to deliver them successfully.

Where can I find a list of exams that contain labs?

We do not share a list of exams that have labs because the presence or absence of labs can literally change from one candidate to the next based on Azure availability, outages, and bandwidth, leading to escalations when candidates think the exam was to have labs but didn't.

The goal is to have labs on every role-based certification, so it is best to plan for labs as you're preparing. An added benefit is that by preparing as if the exam will have labs, you get additional experience that only puts you in a better spot to have the experience needed to pass the exam.

At the beginning of the exam, the instructions provide information on what to expect on the exam, including if it will have labs. Read the instructions carefully so you know if the

exam contains labs (as well as case studies and other question types that may have different requirements than what's typical).

Practice Assessments frequently asked questions

What are Practice Assessments?

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 provide insight into the difficulty of the certification exam and may help you determine if additional preparation is required before taking the exam.

These questions are not the same as what you will see on the exam nor is this document illustrative of the length of the exam or its complexity. For example, you may see additional question types, multiple case studies, and labs. These questions are examples only to provide insight into what to expect on the exam and help you determine if additional preparation is required. Taking a Practice Assessment is not a replacement for training taken or experience using Microsoft products.

Why should I take Practice Assessments?

While not a guarantee, research shows that attaining a high score on a Practice Assessment increases the likelihood that someone will pass a Microsoft Certification exam. These Practice Assessments are intended to provide an overview of the style, wording, and difficulty of the questions that you are likely to experience on this exam. To help you better prepare, the score report provides the answer, a rationale, and a URL that will link you to additional information for every question.

Who can take a Practice Assessment?

Practice Assessments are available for free to every learner and can be taken as many times as you want. You will need to sign in to your Learn profile or create an account before taking the Practice Assessment.

Where can I find a Practice Assessment?

If the exam that you're interested in taking has a Practice Assessment (not all of them do), you will find the link to it on the exam details page for that specific exam in the

"Schedule exam" section. (See image below)

Schedule exam

The screenshot shows the 'Schedule exam' section for the Microsoft Security, Compliance, and Identity Fundamentals exam (SC-900). The page includes the exam title, languages offered, price, and a 'Schedule with Pearson VUE' button. It also features sections for practice assessments and previous attempts.

Exam SC-900: Microsoft Security, Compliance, and Identity Fundamentals

Languages: English, Japanese, Chinese (Simplified), Korean, French, Spanish, Portuguese (Brazil), Russian, Arabic (Saudi Arabia), Indonesian (Indonesia), German, Chinese (Traditional), Italian
Retirement date: none

This exam measures your ability to describe the following: concepts of security, compliance, and identity; capabilities of Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra; capabilities of Microsoft Security solutions; and capabilities of Microsoft compliance solutions.

Schedule with Pearson VUE >

For students or instructors

Schedule with Certiport >

Take a free practice assessment
Test your skills with practice questions to help you prepare for the exam. Learn more about practice assessments.

Previous practice attempts ▾

⊕ Save

I can't find a free Practice Assessment for the exam I want to take. Where is it?

Currently, not all Microsoft Certification exams have free Practice Assessments. However, some have practice tests available through MeasureUp. These are available for purchase. They can be found on the exam details page for that exam or [here](#).

Are Practice Assessments available for all Microsoft Certifications?

No. Over the next few months, Microsoft will roll out free Practice Assessments for additional exams.

Are the Practice Assessments free?

Yes. Practice Assessments are free and available to all learners who wish to use them as an exam preparation resource for Microsoft Certifications.

Will Practice Assessments be available in multiple languages?

Yes. Practice Assessments will be available in multiple languages.

Can I still take the Practice Tests from MeasureUp?

Practice Tests from MeasureUp are still available and can be found [here](#).

How is the multiple choice select n (e.g., choose two) question type scored?

To earn the point for this type of question, you must select all of the correct options without selecting any incorrect options. Note that this is different from how these question types are scored on Microsoft Certification exams.

How can I get help with issues or problems I have on Practice Assessments? How can I provide feedback?

Please use the [Practice Assessment Feedback Form](#) to report a technical issue. You can provide feedback on the overall experience by completing the [Practice Assessment Survey](#).

Frequently asked questions about academic pricing

Are student discounts available for exams?

Visit: [Student discounts](#).

Can I get a refund if I initially registered and paid for an exam without verifying an academic discount, but I'm verified now?

No. If you decide to register and pay for an exam before you have verified your student status, you must pay commercial pricing and will not receive a refund. You must ensure that you are verified before completing your registration and payment.

Does my academic verification expire?

Yes. Your academic verification is only valid for 12 months. After 12 months, you need to repeat the verification process.

I'm an educator. Can I still receive an academic discount (in applicable countries/regions) on my Microsoft Certification exam delivered in the commercial channel?

Yes. You need to follow the same process as a student. In other words, you must select "Student" as your job function in your Microsoft account profile, and you must verify your status through the same process as a student. For more information, visit: [Student discounts](#).

Who do I contact for questions regarding the academic verification process for Microsoft Certification exams?

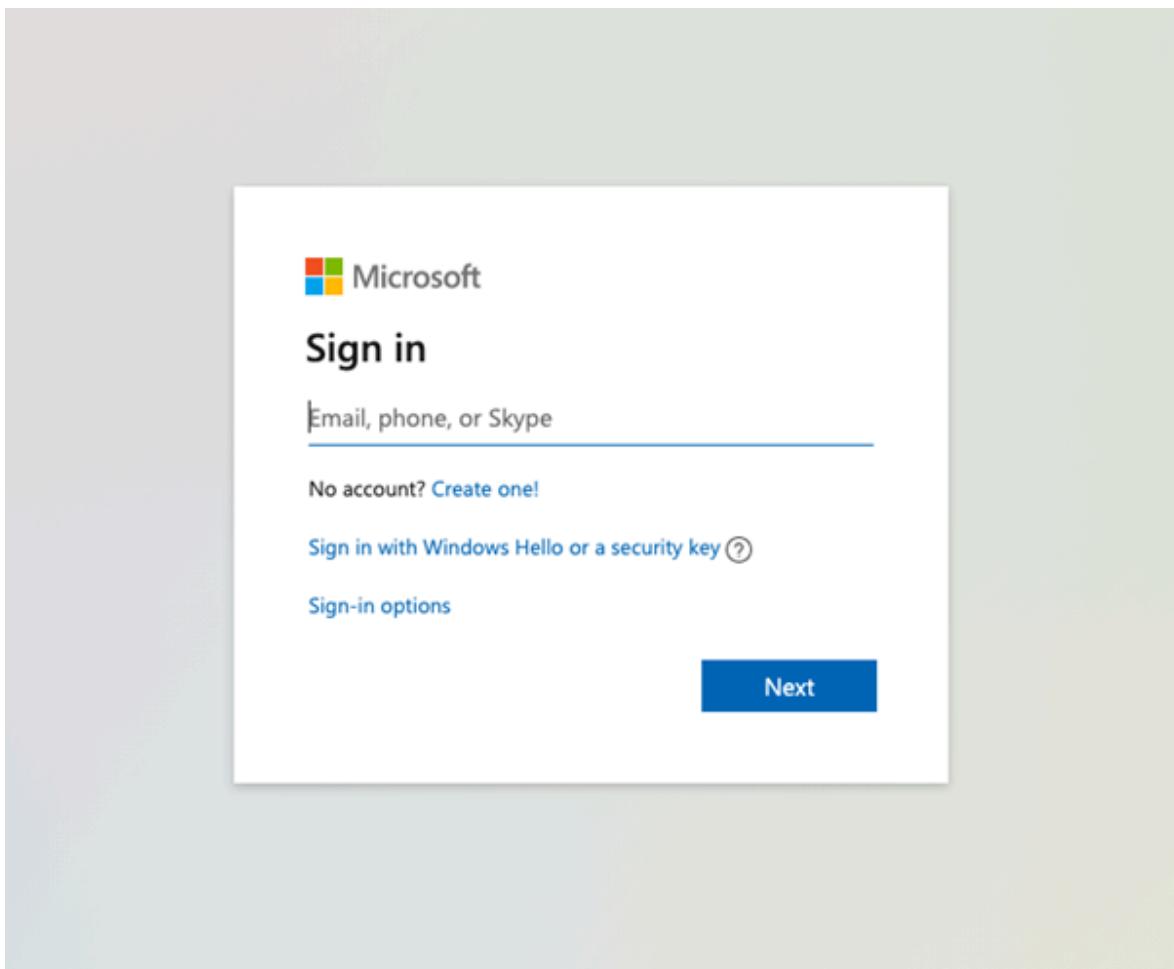
If you have general questions related to exam registration or questions specific to a new or pending verification request, please contact [certification support](#).↗

Vouchers and redeeming discounts

Article • 07/10/2024

How to redeem an employee or event attendee discount

1. Begin the registration process by selecting the "Schedule exam" button from any exam or certifications detail page. For detailed instructions on how to register, visit: [Register and schedule an exam](#).
2. Sign into your existing [Microsoft Learn profile](#) or create one using a Microsoft account.



3. When logged in, enter your address and contact information in the [Transfer to Pearson Vue](#) dialog box for Pearson Vue, the exam delivery provider.

Any discounts will be applied during checkout. If you have a voucher code, you will enter it on Pearson Vue website during payment.

Transfer to Pearson Vue

Please enter your address so that Pearson Vue, the exam delivery provider, can validate your identity.

Address 1 * Enter address	Address 2 Enter address	City * Enter city
State * Enter state	Country/Region * United States	Postal code * Enter postal code

Please enter your phone number and contact email so that Pearson Vue, the exam delivery provider, can contact you, if you encounter any issues while taking your exam.

Country/Region code * United States (+1)	Phone number * Enter phone number	Contact email * Enter contact email
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Any discounts will be applied at Pearson Vue during payment.
If you have a voucher code, enter the code on Pearson Vue during payment.
Please proceed to the PEARSON VUE portal to advance with your exam registration.

Microsoft will NOT store the address and phone number information you provided. We will now transfer you to Pearson Vue to complete your exam registration. [Microsoft Privacy Statement](#)

Cancel **Submit**

4. Select the "Submit" button to proceed to the Pearson Vue website to complete your exam registration
5. Complete the exam options, confirm your selections, and proceed to your Cart to checkout.

If you are eligible for an exam discount, it will be applied during checkout.

How to redeem a voucher with Pearson VUE

To redeem a voucher, you will register and schedule your exam with Pearson VUE using the standard process. For detailed information about registering, visit: [Register and schedule an exam](#).

On the screen where you enter payment and billing information, select "Add Voucher or Promo Code" and follow the on-screen instructions to redeem your voucher.

» < Enter payment and billing

Order Total

Subtotal: 99.00

Estimated Tax: 0.00

ESTIMATED TOTAL DUE: **USD 99.00**

Add Voucher or Promo Code [What is this?](#)

Study guide for Exam AI-102: Designing and Implementing a Microsoft Azure AI Solution

Article • 06/24/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 25, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 25, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized exams as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 25, 2024

Audience profile

As a Microsoft Azure AI engineer, you build, manage, and deploy AI solutions that leverage Azure AI.

Your responsibilities include participating in all phases of AI solutions development, including:

- Requirements definition and design

- Development
- Deployment
- Integration
- Maintenance
- Performance tuning
- Monitoring

You work with solution architects to translate their vision. You also work with data scientists, data engineers, Internet of Things (IoT) specialists, infrastructure administrators, and other software developers to:

- Build complete and secure end-to-end AI solutions.
- Integrate AI capabilities in other applications and solutions.

As an Azure AI engineer, you have experience developing solutions that use languages such as:

- Python
- C#

You should be able to use Representational State Transfer (REST) APIs and SDKs to build secure image processing, video processing, natural language processing, knowledge mining, and generative AI solutions on Azure. You should:

- Understand the components that make up the Azure AI portfolio and the available data storage options.
- Be able to apply responsible AI principles.

Skills at a glance

- Plan and manage an Azure AI solution (15–20%)
- Implement content moderation solutions (10–15%)
- Implement computer vision solutions (15–20%)
- Implement natural language processing solutions (30–35%)
- Implement knowledge mining and document intelligence solutions (10–15%)

- Implement generative AI solutions (10–15%)

Plan and manage an Azure AI solution (15–20%)

Select the appropriate Azure AI service

- Select the appropriate service for a computer vision solution
- Select the appropriate service for a natural language processing solution
- Select the appropriate service for a speech solution
- Select the appropriate service for a generative AI solution
- Select the appropriate service for a document intelligence solution
- Select the appropriate service for a knowledge mining solution

Plan, create and deploy an Azure AI service

- Plan for a solution that meets Responsible AI principles
- Create an Azure AI resource
- Determine a default endpoint for a service
- Integrate Azure AI services into a continuous integration and continuous delivery (CI/CD) pipeline
- Plan and implement a container deployment

Manage, monitor, and secure an Azure AI service

- Configure diagnostic logging
- Monitor an Azure AI resource
- Manage costs for Azure AI services
- Manage account keys
- Protect account keys by using Azure Key Vault
- Manage authentication for an Azure AI Service resource
- Manage private communications

Implement content moderation solutions (10–15%)

Create solutions for content delivery

- Implement a text moderation solution with Azure AI Content Safety
- Implement an image moderation solution with Azure AI Content Safety

Implement computer vision solutions (15–20%)

Analyze images

- Select visual features to meet image processing requirements
- Detect objects in images and generate image tags
- Include image analysis features in an image processing request
- Interpret image processing responses
- Extract text from images using Azure AI Vision
- Convert handwritten text using Azure AI Vision

Implement custom computer vision models by using Azure AI Vision

- Choose between image classification and object detection models
- Label images
- Train a custom image model, including image classification and object detection
- Evaluate custom vision model metrics
- Publish a custom vision model
- Consume a custom vision model

Analyze videos

- Use Azure AI Video Indexer to extract insights from a video or live stream

- Use Azure AI Vision Spatial Analysis to detect presence and movement of people in video

Implement natural language processing solutions (30–35%)

Analyze text by using Azure AI Language

- Extract key phrases
- Extract entities
- Determine sentiment of text
- Detect the language used in text
- Detect personally identifiable information (PII) in text

Process speech by using Azure AI Speech

- Implement text-to-speech
- Implement speech-to-text
- Improve text-to-speech by using Speech Synthesis Markup Language (SSML)
- Implement custom speech solutions
- Implement intent recognition
- Implement keyword recognition

Translate language

- Translate text and documents by using the Azure AI Translator service
- Implement custom translation, including training, improving, and publishing a custom model
- Translate speech-to-speech by using the Azure AI Speech service
- Translate speech-to-text by using the Azure AI Speech service
- Translate to multiple languages simultaneously

Implement and manage a language understanding model by using Azure AI Language

- Create intents and add utterances
- Create entities
- Train, evaluate, deploy, and test a language understanding model
- Optimize a language understanding model
- Consume a language model from a client application
- Backup and recover language understanding models

Create a custom question answering solution by using Azure AI Language

- Create a custom question answering project
- Add question-and-answer pairs manually
- Import sources
- Train and test a knowledge base
- Publish a knowledge base
- Create a multi-turn conversation
- Add alternate phrasing
- Add chit-chat to a knowledge base
- Export a knowledge base
- Create a multi-language question answering solution

Implement knowledge mining and document intelligence solutions (10–15%)

Implement an Azure AI Search solution

- Provision an Azure AI Search resource
- Create data sources

- Create an index
- Define a skillset
- Implement custom skills and include them in a skillset
- Create and run an indexer
- Query an index, including syntax, sorting, filtering, and wildcards
- Manage Knowledge Store projections, including file, object, and table projections

Implement an Azure AI Document Intelligence solution

- Provision a Document Intelligence resource
- Use prebuilt models to extract data from documents
- Implement a custom document intelligence model
- Train, test, and publish a custom document intelligence model
- Create a composed document intelligence model
- Implement a document intelligence model as a custom Azure AI Search skill

Implement generative AI solutions (10–15%)

Use Azure OpenAI Service to generate content

- Provision an Azure OpenAI Service resource
- Select and deploy an Azure OpenAI model
- Submit prompts to generate natural language
- Submit prompts to generate code
- Use the DALL-E model to generate images
- Use Azure OpenAI APIs to submit prompts and receive responses

Optimize generative AI

- Configure parameters to control generative behavior

- Apply prompt engineering techniques to improve responses
- Use your own data with an Azure OpenAI model
- Fine-tune an Azure OpenAI model

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure AI services Azure AI Vision Azure AI Video Indexer Azure AI Language Azure AI Speech Azure AI Search Azure OpenAI Azure AI Document Intelligence
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	AI - Machine Learning - Microsoft Tech Community ↗ AI - Machine Learning Blog - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	The AI Show Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 25, 2024	Skill area as of July 25, 2024	Change
Audience profile		No change
Plan and manage an Azure AI solution	Plan and manage an Azure AI solution	No change
Select the appropriate Azure AI service	Select the appropriate Azure AI service	No change
Plan, create and deploy an Azure AI service	Plan, create and deploy an Azure AI service	No change
Manage, monitor, and secure an Azure AI service	Manage, monitor, and secure an Azure AI service	No change
Implement content moderation solutions	Implement content moderation solutions	No change
Create solutions for content delivery	Create solutions for content delivery	No change
Implement computer vision solutions	Implement computer vision solutions	No change
Analyze images	Analyze images	No change
Implement custom computer vision models by using Azure AI Vision	Implement custom computer vision models by using Azure AI Vision	No change
Analyze videos	Analyze videos	No change
Implement natural language processing solutions	Implement natural language processing solutions	No change
Analyze text by using Azure AI Language	Analyze text by using Azure AI Language	No change
Process speech by using Azure AI Speech	Process speech by using Azure AI Speech	No change
Translate language	Translate language	No change
Implement and manage a language understanding model by using Azure AI Language	Implement and manage a language understanding model by using Azure AI Language	No change

Skill area prior to July 25, 2024	Skill area as of July 25, 2024	Change
Create a question answering solution by using Azure AI Language	Create a custom question answering solution by using Azure AI Language	Minor
Implement knowledge mining and document intelligence solutions	Implement knowledge mining and document intelligence solutions	No change
Implement an Azure AI Search solution	Implement an Azure AI Search solution	No change
Implement an Azure AI Document Intelligence solution	Implement an Azure AI Document Intelligence solution	No change
Implement generative AI solutions	Implement generative AI solutions	No change
Use Azure OpenAI Service to generate content	Use Azure OpenAI Service to generate content	No change
Optimize generative AI	Optimize generative AI	No change

Skills measured prior to July 25, 2024

Audience profile

As a Microsoft Azure AI engineer, you build, manage, and deploy AI solutions that leverage Azure AI.

Your responsibilities include participating in all phases of AI solutions development, including:

- Requirements definition and design
- Development
- Deployment
- Integration
- Maintenance
- Performance tuning
- Monitoring

You work with solution architects to translate their vision. You also work with data scientists, data engineers, Internet of Things (IoT) specialists, infrastructure administrators, and other software developers to:

- Build complete and secure end-to-end AI solutions.
- Integrate AI capabilities in other applications and solutions.

As an Azure AI engineer, you have experience developing solutions that use languages such as:

- Python
- C#

You should be able to use Representational State Transfer (REST) APIs and SDKs to build secure image processing, video processing, natural language processing, knowledge mining, and generative AI solutions on Azure. You should:

- Understand the components that make up the Azure AI portfolio and the available data storage options.
- Be able to apply responsible AI principles.

Skills at a glance

- Plan and manage an Azure AI solution (15–20%)
- Implement content moderation solutions (10–15%)
- Implement computer vision solutions (15–20%)
- Implement natural language processing solutions (30–35%)
- Implement knowledge mining and document intelligence solutions (10–15%)
- Implement generative AI solutions (10–15%)

Plan and manage an Azure AI solution (15–20%)

Select the appropriate Azure AI service

- Select the appropriate service for a computer vision solution
- Select the appropriate service for a natural language processing solution

- Select the appropriate service for a speech solution
- Select the appropriate service for a generative AI solution
- Select the appropriate service for a document intelligence solution
- Select the appropriate service for a knowledge mining solution

Plan, create and deploy an Azure AI service

- Plan for a solution that meets Responsible AI principles
- Create an Azure AI resource
- Determine a default endpoint for a service
- Integrate Azure AI services into a continuous integration and continuous delivery (CI/CD) pipeline
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- Configure diagnostic logging
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- Manage account keys
- Protect account keys by using Azure Key Vault
- Manage authentication for an Azure AI Service resource
- Manage private communications

Implement content moderation solutions (10–15%)

Create solutions for content delivery

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Implement computer vision solutions (15–20%)

Analyze images

- Select visual features to meet image processing requirements
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- Create intents and add utterances
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Create a question answering solution by using Azure AI Language

- Create a question answering project
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- Export a knowledge base
- Create a multi-language question answering solution

Implement knowledge mining and document intelligence solutions (10–15%)

Implement an Azure AI Search solution

- Provision an Azure AI Search resource
- Create data sources
- Create an index
- Define a skillset
- Implement custom skills and include them in a skillset
- Create and run an indexer
- Query an index, including syntax, sorting, filtering, and wildcards
- Manage Knowledge Store projections, including file, object, and table projections

Implement an Azure AI Document Intelligence solution

- Provision a Document Intelligence resource
- Use prebuilt models to extract data from documents
- Implement a custom document intelligence model
- Train, test, and publish a custom document intelligence model
- Create a composed document intelligence model
- Implement a document intelligence model as a custom Azure AI Search skill

Implement generative AI solutions (10–15%)

Use Azure OpenAI Service to generate content

- Provision an Azure OpenAI Service resource
- Select and deploy an Azure OpenAI model
- Submit prompts to generate natural language
- Submit prompts to generate code
- Use the DALL-E model to generate images
- Use Azure OpenAI APIs to submit prompts and receive responses

Optimize generative AI

- Configure parameters to control generative behavior
- Apply prompt engineering techniques to improve responses
- Use your own data with an Azure OpenAI model
- Fine-tune an Azure OpenAI model

Study guide for Exam AI-900: Microsoft Azure AI Fundamentals

Article • 03/05/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of April 24, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
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Useful links	Description
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Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of April 24, 2024

Audience profile

This exam is an opportunity for you to demonstrate knowledge of machine learning and AI concepts and related Microsoft Azure services. As a candidate for this exam, you should have familiarity with Exam AI-900's self-paced or instructor-led learning material.

This exam is intended for you if you have both technical and non-technical backgrounds. Data science and software engineering experience are not required. However, you would benefit from having awareness of:

- Basic cloud concepts
- Client-server applications

You can use Azure AI Fundamentals to prepare for other Azure role-based certifications like Azure Data Scientist Associate or Azure AI Engineer Associate, but it's not a prerequisite for any of them.

Skills at a glance

- Describe Artificial Intelligence workloads and considerations (15–20%)
- Describe fundamental principles of machine learning on Azure (20–25%)
- Describe features of computer vision workloads on Azure (15–20%)
- Describe features of Natural Language Processing (NLP) workloads on Azure (15–20%)
- Describe features of generative AI workloads on Azure (15–20%)

Describe Artificial Intelligence workloads and considerations (15–20%)

Identify features of common AI workloads

- Identify features of content moderation and personalization workloads
- Identify computer vision workloads
- Identify natural language processing workloads
- Identify knowledge mining workloads
- Identify document intelligence workloads
- Identify features of generative AI workloads

Identify guiding principles for responsible AI

- Describe considerations for fairness in an AI solution
- Describe considerations for reliability and safety in an AI solution
- Describe considerations for privacy and security in an AI solution

- Describe considerations for inclusiveness in an AI solution
- Describe considerations for transparency in an AI solution
- Describe considerations for accountability in an AI solution

Describe fundamental principles of machine learning on Azure (20–25%)

Identify common machine learning techniques

- Identify regression machine learning scenarios
- Identify classification machine learning scenarios
- Identify clustering machine learning scenarios
- Identify features of deep learning techniques

Describe core machine learning concepts

- Identify features and labels in a dataset for machine learning
- Describe how training and validation datasets are used in machine learning

Describe Azure Machine Learning capabilities

- Describe capabilities of automated machine learning
- Describe data and compute services for data science and machine learning
- Describe model management and deployment capabilities in Azure Machine Learning

Describe features of computer vision workloads on Azure (15–20%)

Identify common types of computer vision solution

- Identify features of image classification solutions
- Identify features of object detection solutions

- Identify features of optical character recognition solutions
- Identify features of facial detection and facial analysis solutions

Identify Azure tools and services for computer vision tasks

- Describe capabilities of the Azure AI Vision service
- Describe capabilities of the Azure AI Face detection service

Describe features of Natural Language Processing (NLP) workloads on Azure (15–20%)

Identify features of common NLP Workload Scenarios

- Identify features and uses for key phrase extraction
- Identify features and uses for entity recognition
- Identify features and uses for sentiment analysis
- Identify features and uses for language modeling
- Identify features and uses for speech recognition and synthesis
- Identify features and uses for translation

Identify Azure tools and services for NLP workloads

- Describe capabilities of the Azure AI Language service
- Describe capabilities of the Azure AI Speech service

Describe features of generative AI workloads on Azure (15–20%)

Identify features of generative AI solutions

- Identify features of generative AI models
- Identify common scenarios for generative AI
- Identify responsible AI considerations for generative AI

Identify capabilities of Azure OpenAI Service

- Describe natural language generation capabilities of Azure OpenAI Service
- Describe code generation capabilities of Azure OpenAI Service
- Describe image generation capabilities of Azure OpenAI Service

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Anomaly Detector Language Understanding Azure Machine Learning Computer Vision Natural language processing technology Azure Bot Service Speech to Text Speech Translation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Artificial Intelligence and Machine Learning Hub ↗
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Find a video	The AI Show Browse other Microsoft Learn shows

Change log

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between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to April 24, 2024	Skill area as of April 24, 2024	Change
Audience profile		No change
Describe Artificial Intelligence workloads and considerations	Describe Artificial Intelligence workloads and considerations	No change
Identify features of common AI workloads	Identify features of common AI workloads	No change
Identify guiding principles for responsible AI	Identify guiding principles for responsible AI	No change
Describe fundamental principles of machine learning on Azure	Describe fundamental principles of machine learning on Azure	No change
Identify common machine learning techniques	Identify common machine learning techniques	No change
Describe core machine learning concepts	Describe core machine learning concepts	No change
Describe Azure Machine Learning capabilities	Describe Azure Machine Learning capabilities	Minor
Describe features of computer vision workloads on Azure	Describe features of computer vision workloads on Azure	No change
Identify common types of computer vision solution	Identify common types of computer vision solution	No change
Identify Azure tools and services for computer vision tasks	Identify Azure tools and services for computer vision tasks	Minor
Describe features of Natural Language Processing (NLP) workloads on Azure	Describe features of Natural Language Processing (NLP) workloads on Azure	No change
Identify features of common NLP Workload Scenarios	Identify features of common NLP Workload Scenarios	No change
Identify Azure tools and services for NLP workloads	Identify Azure tools and services for NLP workloads	Minor
Describe features of generative AI workloads on Azure	Describe features of generative AI workloads on Azure	No change

Skill area prior to April 24, 2024	Skill area as of April 24, 2024	Change
Identify features of generative AI solutions	Identify features of generative AI solutions	No change
Identify capabilities of Azure OpenAI Service	Identify capabilities of Azure OpenAI Service	No change

Skills measured prior to April 24, 2024

Audience profile

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You can use Azure AI Fundamentals to prepare for other Azure role-based certifications like Azure Data Scientist Associate or Azure AI Engineer Associate, but it's not a prerequisite for any of them.

Skills at a glance

- Describe Artificial Intelligence workloads and considerations (15–20%)
- Describe fundamental principles of machine learning on Azure (20–25%)
- Describe features of computer vision workloads on Azure (15–20%)
- Describe features of Natural Language Processing (NLP) workloads on Azure (15–20%)
- Describe features of generative AI workloads on Azure (15–20%)

Describe Artificial Intelligence workloads and considerations (15–20%)

Identify features of common AI workloads

- Identify features of content moderation and personalization workloads
- Identify computer vision workloads
- Identify natural language processing workloads
- Identify knowledge mining workloads
- Identify document intelligence workloads
- Identify features of generative AI workloads

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- Describe considerations for fairness in an AI solution
- Describe considerations for reliability and safety in an AI solution
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Describe fundamental principles of machine learning on Azure (20–25%)

Identify common machine learning techniques

- Identify regression machine learning scenarios
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- Identify clustering machine learning scenarios
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Describe features of computer vision workloads on Azure (15–20%)

Identify common types of computer vision solution:

- Identify features of image classification solutions
- Identify features of object detection solutions
- Identify features of optical character recognition solutions
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Identify Azure tools and services for computer vision tasks

- Describe capabilities of the Azure AI Vision service
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- Describe capabilities of the Azure AI Video Indexer service

Describe features of Natural Language Processing (NLP) workloads on Azure (15–20%)

Identify features of common NLP Workload Scenarios

- Identify features and uses for key phrase extraction
- Identify features and uses for entity recognition
- Identify features and uses for sentiment analysis

- Identify features and uses for language modeling
- Identify features and uses for speech recognition and synthesis
- Identify features and uses for translation

Identify Azure tools and services for NLP workloads

- Describe capabilities of the Azure AI Language service
- Describe capabilities of the Azure AI Speech service
- Describe capabilities of the Azure AI Translator service

Describe features of generative AI workloads on Azure (15–20%)

Identify features of generative AI solutions

- Identify features of generative AI models
- Identify common scenarios for generative AI
- Identify responsible AI considerations for generative AI

Identify capabilities of Azure OpenAI Service

- Describe natural language generation capabilities of Azure OpenAI Service
- Describe code generation capabilities of Azure OpenAI Service
- Describe image generation capabilities of Azure OpenAI Service

Study guide for Exam AZ-104: Microsoft Azure Administrator

Article • 01/10/2024

Purpose of this document

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 Expand table

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Skills measured as of October 26, 2023

Audience profile

As a candidate for this exam, you should have subject matter expertise in implementing, managing, and monitoring an organization's Microsoft Azure environment, including virtual networks, storage, compute, identity, security, and governance.

As an Azure administrator, you often serve as part of a larger team dedicated to implementing an organization's cloud infrastructure. You also coordinate with other

roles to deliver Azure networking, security, database, application development, and DevOps solutions.

You should be familiar with:

- Operating systems
- Networking
- Servers
- Virtualization

In addition, you should have experience with:

- PowerShell
- Azure CLI
- The Azure portal
- Azure Resource Manager templates
- Microsoft Entra ID

Skills at a glance

- Manage Azure identities and governance (20–25%)
- Implement and manage storage (15–20%)
- Deploy and manage Azure compute resources (20–25%)
- Implement and manage virtual networking (15–20%)
- Monitor and maintain Azure resources (10–15%)

Manage Azure identities and governance (20–25%)

Manage Microsoft Entra users and groups

- Create users and groups
- Manage user and group properties
- Manage licenses in Microsoft Entra ID

- Manage external users
- Configure self-service password reset (SSPR)

Manage access to Azure resources

- Manage built-in Azure roles
- Assign roles at different scopes
- Interpret access assignments

Manage Azure subscriptions and governance

- Implement and manage Azure Policy
- Configure resource locks
- Apply and manage tags on resources
- Manage resource groups
- Manage subscriptions
- Manage costs by using alerts, budgets, and Azure Advisor recommendations
- Configure management groups

Implement and manage storage (15–20%)

Configure access to storage

- Configure Azure Storage firewalls and virtual networks
- Create and use shared access signature (SAS) tokens
- Configure stored access policies
- Manage access keys
- Configure identity-based access for Azure Files

Configure and manage storage accounts

- Create and configure storage accounts

- Configure Azure Storage redundancy
- Configure object replication
- Configure storage account encryption
- Manage data by using Azure Storage Explorer and AzCopy

Configure Azure Files and Azure Blob Storage

- Create and configure a file share in Azure Storage
- Create and configure a container in Blob Storage
- Configure storage tiers
- Configure snapshots and soft delete for Azure Files
- Configure blob lifecycle management
- Configure blob versioning

Deploy and manage Azure compute resources (20–25%)

Automate deployment of resources by using Azure Resource Manager (ARM) templates or Bicep files

- Interpret an Azure Resource Manager template or a Bicep file
- Modify an existing Azure Resource Manager template
- Modify an existing Bicep file
- Deploy resources by using an Azure Resource Manager template or a Bicep file
- Export a deployment as an Azure Resource Manager template or convert an Azure Resource Manager template to a Bicep file

Create and configure virtual machines

- Create a virtual machine
- Configure Azure Disk Encryption
- Move a virtual machine to another resource group, subscription, or region

- Manage virtual machine sizes
- Manage virtual machine disks
- Deploy virtual machines to availability zones and availability sets
- Deploy and configure an Azure Virtual Machine Scale Sets

Provision and manage containers in the Azure portal

- Create and manage an Azure container registry
- Provision a container by using Azure Container Instances
- Provision a container by using Azure Container Apps
- Manage sizing and scaling for containers, including Azure Container Instances and Azure Container Apps

Create and configure Azure App Service

- Provision an App Service plan
- Configure scaling for an App Service plan
- Create an App Service
- Configure certificates and Transport Layer Security (TLS) for an App Service
- Map an existing custom DNS name to an App Service
- Configure backup for an App Service
- Configure networking settings for an App Service
- Configure deployment slots for an App Service

Implement and manage virtual networking (15–20%)

Configure and manage virtual networks in Azure

- Create and configure virtual networks and subnets
- Create and configure virtual network peering
- Configure public IP addresses

- Configure user-defined network routes
- Troubleshoot network connectivity

Configure secure access to virtual networks

- Create and configure network security groups (NSGs) and application security groups
- Evaluate effective security rules in NSGs
- Implement Azure Bastion
- Configure service endpoints for Azure platform as a service (PaaS)
- Configure private endpoints for Azure PaaS

Configure name resolution and load balancing

- Configure Azure DNS
- Configure an internal or public load balancer
- Troubleshoot load balancing

Monitor and maintain Azure resources (10–15%)

Monitor resources in Azure

- Interpret metrics in Azure Monitor
- Configure log settings in Azure Monitor
- Query and analyze logs in Azure Monitor
- Set up alert rules, action groups, and alert processing rules in Azure Monitor
- Configure and interpret monitoring of virtual machines, storage accounts, and networks by using Azure Monitor Insights
- Use Azure Network Watcher and Connection Monitor

Implement backup and recovery

- Create a Recovery Services vault
- Create an Azure Backup vault
- Create and configure a backup policy
- Perform backup and restore operations by using Azure Backup
- Configure Azure Site Recovery for Azure resources
- Perform a failover to a secondary region by using Site Recovery
- Configure and interpret reports and alerts for backups

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Microsoft Entra ID Azure Policy Azure Storage Azure Storage Explorer Azure Blob Storage ARM templates Azure Container Instances Azure Container Apps App Service Azure DNS Azure Bastion Application Gateway Azure Monitor Network Watcher Azure Site Recovery Azure Backup service
Ask a question	Microsoft Q&A Microsoft Docs

Study resources	Links to learning and documentation
Get community support	Azure Community Support
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone Azure Fridays Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to October 26, 2023	Skill area as of October 26, 2023	Change
Audience profile		Minor
Manage Azure identities and governance	Manage Azure identities and governance	No change
Manage Azure AD users and groups	Manage Microsoft Entra users and groups	Minor
Manage access to Azure resources	Manage access to Azure resources	No change
Manage Azure subscriptions and governance	Manage Azure subscriptions and governance	No change
Implement and manage storage	Implement and manage storage	No change
Configure access to storage	Configure access to storage	No change
Configure and manage storage accounts	Configure and manage storage accounts	No change
Configure Azure Files and Azure Blob Storage	Configure Azure Files and Azure Blob Storage	No change

Skill area prior to October 26, 2023	Skill area as of October 26, 2023	Change
Deploy and manage Azure compute resources	Deploy and manage Azure compute resources	No change
Automate deployment of resources by using Azure Resource Manager (ARM) templates or Bicep files	Automate deployment of resources by using Azure Resource Manager (ARM) templates or Bicep files	No change
Create and configure VMs	Create and configure virtual machines	No change
Provision and manage containers in the Azure portal	Provision and manage containers in the Azure portal	No change
Create and configure an Azure App Service	Create and configure an Azure App Service	No change
Implement and manage virtual networking	Implement and manage virtual networking	No change
Configure and manage virtual networks in Azure	Configure and manage virtual networks in Azure	No change
Configure secure access to virtual networks	Configure secure access to virtual networks	No change
Configure name resolution and load balancing	Configure name resolution and load balancing	No change
Monitor and maintain Azure resources	Monitor and maintain Azure resources	No change
Monitor resources in Azure	Monitor resources in Azure	No change
Implement backup and recovery	Implement backup and recovery	No change

Skills measured prior to October 26, 2023

Audience profile

Candidates for this exam should have subject matter expertise in implementing, managing, and monitoring an organization's Microsoft Azure environment, including virtual networks, storage, compute, identity, security, and governance.

An Azure administrator often serves as part of a larger team dedicated to implementing an organization's cloud infrastructure. Azure administrators also coordinate with other roles to deliver Azure networking, security, database, application development, and DevOps solutions.

Candidates for this exam should be familiar with operating systems, networking, servers, and virtualization. In addition, professionals in this role should have experience using PowerShell, Azure Command-Line Interface (CLI), the Azure portal, Azure Resource Manager (ARM) templates, and Microsoft Azure Active Directory (Azure AD), part of Microsoft Entra.

Skills at a glance

- Manage Azure identities and governance (20–25%)
- Implement and manage storage (15–20%)
- Deploy and manage Azure compute resources (20–25%)
- Implement and manage virtual networking (15–20%)
- Monitor and maintain Azure resources (10–15%)

Manage Azure identities and governance (20–25%)

Manage Azure AD users and groups

- Create users and groups
- Manage user and group properties
- Manage licenses in Azure AD
- Manage external users
- Configure self-service password reset (SSPR)

Manage access to Azure resources

- Manage built-in Azure roles
- Assign roles at different scopes
- Interpret access assignments

Manage Azure subscriptions and governance

- Implement and manage Azure Policy
- Configure resource locks
- Apply and manage tags on resources
- Manage resource groups
- Manage subscriptions
- Manage costs by using alerts, budgets, and Azure Advisor recommendations
- Configure management groups

Implement and manage storage (15–20%)

Configure access to storage

- Configure Azure Storage firewalls and virtual networks
- Create and use shared access signature (SAS) tokens
- Configure stored access policies
- Manage access keys
- Configure identity-based access for Azure Files

Configure and manage storage accounts

- Create and configure storage accounts
- Configure Azure Storage redundancy
- Configure object replication
- Configure storage account encryption
- Manage data by using Azure Storage Explorer and AzCopy

Configure Azure Files and Azure Blob Storage

- Create and configure a file share in Azure Storage

- Create and configure a container in Blob Storage
- Configure storage tiers
- Configure snapshots and soft delete for Azure Files
- Configure blob lifecycle management
- Configure blob versioning

Deploy and manage Azure compute resources (20–25%)

Automate deployment of resources by using Azure Resource Manager (ARM) templates or Bicep files

- Interpret an ARM template or a Bicep file
- Modify an existing ARM template
- Modify an existing Bicep file
- Deploy resources by using an ARM template or a Bicep file
- Export a deployment as an ARM template or compile a deployment as a Bicep file

Create and configure virtual machines

- Create a virtual machine
- Configure Azure Disk Encryption
- Move a virtual machine to another resource group, subscription, or region
- Manage virtual machine sizes
- Manage virtual machine disks
- Deploy virtual machines to availability zones and availability sets
- Deploy and configure an Azure Virtual Machine Scale Sets

Provision and manage containers in the Azure portal

- Create and manage an Azure container registry

- Provision a container by using Azure Container Instances
- Provision a container by using Azure Container Apps
- Manage sizing and scaling for containers, including Azure Container Instances and Azure Container Apps

Create and configure Azure App Service

- Provision an App Service plan
- Configure scaling for an App Service plan
- Create an App Service
- Configure certificates and TLS for an App Service
- Map an existing custom DNS name to an App Service
- Configure backup for an App Service
- Configure networking settings for an App Service
- Configure deployment slots for an App Service

Implement and manage virtual networking (15–20%)

Configure and manage virtual networks in Azure

- Create and configure virtual networks and subnets
- Create and configure virtual network peering
- Configure public IP addresses
- Configure user-defined network routes
- Troubleshoot network connectivity

Configure secure access to virtual networks

- Create and configure network security groups (NSGs) and application security groups
- Evaluate effective security rules in NSGs

- Implement Azure Bastion
- Configure service endpoints for Azure platform as a service (PaaS)
- Configure private endpoints for Azure PaaS

Configure name resolution and load balancing

- Configure Azure DNS
- Configure an internal or public load balancer
- Troubleshoot load balancing

Monitor and maintain Azure resources (10–15%)

Monitor resources in Azure

- Interpret metrics in Azure Monitor
- Configure log settings in Azure Monitor
- Query and analyze logs in Azure Monitor
- Set up alert rules, action groups, and alert processing rules in Azure Monitor
- Configure and interpret monitoring of virtual machines, storage accounts, and networks by using Azure Monitor Insights
- Use Azure Network Watcher and Connection Monitor

Implement backup and recovery

- Create a Recovery Services vault
- Create an Azure Backup vault
- Create and configure a backup policy
- Perform backup and restore operations by using Azure Backup
- Configure Azure Site Recovery for Azure resources
- Perform a failover to a secondary region by using Site Recovery
- Configure and interpret reports and alerts for backups

Study guide for Exam AZ-120: Planning and Administering Azure for SAP Workloads

Article • 09/18/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of this exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 11, 2024

Audience profile

As a candidate for this exam, you're an architect or engineer who designs and manages the SAP landscape on Azure. Your responsibilities include:

- Implementing industry-specific standards for migrations and integrations.
- Ensuring the sustained operation of an SAP solution within the Azure environment.

You recommend services and adjust resources as appropriate for optimal:

- Resiliency
- Performance
- Scale
- Provision
- Size
- Monitoring

You partner with cloud administrators, cloud database administrators, and clients to implement solutions, including RISE with SAP. You manage SAP infrastructure by using:

- The Azure portal
- Azure Marketplace
- Azure Resource Manager templates

You should have extensive experience and knowledge of the SAP applications and databases including:

- SAP high-performance Analytic Appliance (HANA)
- SAP Business Suite
- SAP NetWeaver

You should also have experience with virtualization, cloud infrastructure, storage structures, high availability, backup, disaster recovery, data protection, and networking.

For this exam, we strongly recommend that candidates have an Azure Administrator Associate certification.

Skills at a glance

- Migrate SAP workloads to Azure (25–30%)
- Design and implement an infrastructure to support SAP workloads on Azure (25–30%)
- Design and implement high availability and disaster recovery (HADR) (20–25%)
- Maintain SAP workloads on Azure (20–25%)

Migrate SAP workloads to Azure (25–30%)

Identify requirements for target infrastructure

- Estimate target sizing for SAP workloads
- Identify supported scenarios for SAP deployments on Azure
- Identify compute, storage, and network requirements for SAP workloads
- Assess constraints imposed by subscription models and quota limits

- Identify software licensing requirements for target workloads
- Identify cost implications for target workloads
- Specify an Azure support plan for the target infrastructure
- Choose between lift and shift, lift-shift-migrate, and lift-shift-migrate to HANA
- Choose an appropriate SAP workload migration strategy and tools

Design and implement an Azure environment to support SAP workloads

- Design and implement authorization and access control for SAP workloads
- Design and implement governance and compliance by using Azure Policy
- Design and implement authentication for SAP workloads
- Design and implement authentication for SAP software as a service (SaaS) applications
- Design and implement a management hierarchy, including management groups, subscriptions, and resource groups
- Design Azure landing zones for SAP

Design and implement integration with SAP RISE

- Design networking for SAP RISE
- Implement networking for SAP RISE
- Design and implement Azure compute, network, and storage services with SAP RISE
- Design and implement integration of data management services such as data archiving
- Design and implement integration of identity and security services with SAP RISE

Design and implement an infrastructure to support SAP workloads on Azure (25–30%)

Design and implement a compute solution for SAP workloads

- Choose an SAP-certified Azure virtual machine for a given SAP workload
- Configure the Azure VM extension for SAP solutions
- Deploy an operating system by using an Azure Marketplace image
- Create a custom image and deploy it to an Azure virtual machine
- Automate a deployment of Azure virtual machines by using IaC, including Bicep and Azure Resource Manager (ARM) templates
- Automate a deployment by using the SAP on Azure Deployment Automation Framework
- Automate a deployment by using Azure Center for SAP solutions

Design and implement networking for SAP on Azure virtual machines

- Design and implement virtual networks and subnets
- Implement Accelerated Networking for Azure virtual machines
- Design and configure proximity placement groups
- Design networking to meet SAP workload latency requirements
- Design and implement network flow control
- Design and implement network security
- Design and implement service endpoints and private endpoints for Azure Storage
- Design name resolution for integration with Azure DNS
- Design and configure ExpressRoute for hybrid connectivity

Design and implement a storage solution for SAP on Azure virtual machines

- Choose a storage type
- Specify when to use disk striping and simple volumes
- Design for storage security considerations

- Design and implement data protection
- Design and implement caching for disks
- Configure Write Accelerator
- Configure encryption for storage, disks, and data
- Design and implement volumes by using Azure NetApp Files
- Design and implement volumes by using Azure Files

Design and implement high availability and disaster recovery (HADR) (20–25%)

Design and implement a high availability solution for SAP on Azure virtual machines

- Design for service-level agreement (SLA) considerations
- Design and deploy SAP workloads into availability sets and availability zones
- Design and implement load balancing for high availability
- Configure clustering for HANA and SAP Central Services (SCS)
- Configure clustering for SQL
- Configure Pacemaker and STONITH
- Configure an Azure fence agent or STONITH Block Device (SBD)
- Design and configure storage-level replication for SAP workloads
- Configure restart of SAP systems, instances, and HANA databases

Design and implement a disaster recovery solution for SAP on Azure virtual machines

- Design and implement an Azure Site Recovery strategy for an SAP infrastructure
- Design a disaster recovery solution with regional considerations
- Specify network configurations for disaster recovery
- Design a backup strategy to meet SLA requirements

- Implement policies for backups and snapshots
- Configure and validate snapshots and backups for SAP workloads
- Perform backup and restore
- Test disaster recovery

Maintain SAP workloads on Azure (20–25%)

Optimize performance and costs

- Optimize performance and costs for an SAP workload by using Azure Advisor recommendations
- Analyze and optimize network performance
- Optimize costs by configuring snoozing and deploying reserved instances
- Optimize performance and costs by resizing Azure virtual machines
- Optimize storage costs
- Optimize data performance by using archiving
- Optimize performance and costs of SAP application servers and databases

Monitor and maintain SAP on Azure

- Monitor Azure virtual machines by using Azure Monitor
- Monitor high availability by using Azure Monitor
- Monitor storage by using Azure Monitor
- Monitor networking by using Azure Monitor and Azure Network Watcher
- Configure Azure Monitor for SAP solutions
- Manage backups by using Azure Backup
- Start and stop SAP systems by using Azure Center for SAP solutions
- Manage virtual instances by using Azure Center for SAP solutions
- Implement the SAP Landscape Management (LaMa) connector for Azure

Study resources

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[+] Expand table

Study resources	Links to learning and documentation
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Find documentation	SAP on Azure Development and test environments for SAP workloads on Azure SAP on Azure architecture center
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support ↗
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Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill area prior to October 11, 2024	Skill area as of October 11, 2024	Change
Audience profile		Major
Migrate SAP workloads to Azure	Migrate SAP workloads to Azure	No change
	Design and implement integration	New

Skill area prior to October 11, 2024	Skill area as of October 11, 2024	Change
	with SAP RISE	
Design and implement an infrastructure to support SAP workloads on Azure	Design and implement an infrastructure to support SAP workloads on Azure	% of the exam decreased
**Design and implement high availability and disaster recovery (HA/DR)	Design and implement high availability and disaster recovery (HADR)	% of the exam increased
Maintain SAP workloads on Azure	Maintain SAP workloads on Azure	% of the exam increased
Optimize performance and costs	Optimize performance and costs	Minor

Study guide for Exam AZ-140: Configuring and Operating Microsoft Azure Virtual Desktop

Article • 06/24/2024

Purpose of this document

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[] Expand table

Useful links	Description
Review the skills measured as of July 22, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 22, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
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Useful links	Description
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Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 22, 2024

Audience profile

As a candidate for this exam, you should be a server or desktop administrator with subject matter expertise in designing, implementing, managing, and maintaining Microsoft Azure Virtual Desktop experiences and remote apps for any device.

To deliver these experiences, you should work closely with:

- Azure administrators

- Azure architects
- Microsoft 365 administrators
- Azure security engineers
- Azure Stack HCI administrators

You should have experience with Azure technologies, including:

- Compute
- Networking
- Identity
- Storage
- Resiliency

You should be able to manage end-user desktop environments, including delivering applications and configuring user settings. You should use the Azure portal, templates, scripting, and command-line tools to manage an Azure Virtual Desktop deployment.

Skills at a glance

- Plan and implement an Azure Virtual Desktop infrastructure (40–45%)
- Plan and implement identity and security (15–20%)
- Plan and implement user environments and apps (20–25%)
- Monitor and maintain an Azure Virtual Desktop infrastructure (10–15%)

Plan and implement an Azure Virtual Desktop infrastructure (40–45%)

Plan, implement, and manage networking for Azure Virtual Desktop

- Assess network capacity and speed requirements for Azure Virtual Desktop
- Design network configuration for session hosts to meet requirements for Azure Virtual Desktop

- Plan and implement Remote Desktop Protocol (RDP) Shortpath and quality of service (QoS) policies
- Plan and implement an Azure Private Link solution for Azure Virtual Desktop
- Monitor and troubleshoot network connectivity

Plan and implement storage for Azure Virtual Desktop user data

- Plan storage for Azure Virtual Desktop user data
- Implement storage for FSLogix components
- Implement storage accounts for Azure Virtual Desktop
- Implement file shares for Azure Virtual Desktop
- Implement Azure NetApp Files for Azure Virtual Desktop

Plan host pools and session hosts

- Recommend resource groups, subscriptions, and management groups for Azure Virtual Desktop resources
- Recommend an operating system (OS) for Azure Virtual Desktop session hosts
- Recommend an appropriate licensing model for Azure Virtual Desktop based on requirements
- Plan a host pool architecture
- Design an Azure Virtual Desktop configuration for performance requirements
- Design an Azure Virtual Desktop configuration for Azure Virtual Machines capacity requirements

Implement host pools and session hosts

- Create host pools and session hosts by using the Azure portal
- Automate creation of Azure Virtual Desktop hosts and host pools by using PowerShell, Azure CLI, Azure Resource Manager templates (ARM templates), and Bicep
- Configure host pool and session host settings

- Apply a Windows client or Windows Server license to a session host

Create and manage session host images

- Create an image manually
- Create an image by using Azure virtual machine Image Builder
- Modify an image
- Plan and implement lifecycle management for images
- Apply OS and application updates to an image
- Create a session host by using a custom image
- Plan and implement image storage, including Compute Gallery

Plan and implement identity and security (15–20%)

Plan and implement identity integration

- Select an identity scenario for Azure Virtual Desktop, including Active Directory Domain Services (AD DS), Microsoft Entra ID, and Microsoft Entra Domain Services
- Specify requirements to configure the Azure Virtual Desktop session host for an identity scenario
- Plan and implement Azure roles and role-based access control (RBAC) for Azure Virtual Desktop
- Plan and implement Conditional Access policies for connections to Azure Virtual Desktop
- Plan and implement authentication options in Azure Virtual Desktop, including passwordless, smart card, and multifactor authentication
- Manage roles, groups, and rights assignments on Azure Virtual Desktop session hosts
- Configure single sign-on

Plan and implement security

- Plan, implement, and manage security for Azure Virtual Desktop session hosts by using Microsoft Defender for Cloud
- Configure session host protection by using Microsoft Defender Antivirus
- Configure session host protection by using Microsoft Defender for Endpoint, including onboarding and scanning options
- Implement and manage network security for connections to Azure Virtual Desktop, including user defined routes (UDRs), network security groups (NSGs), and Azure Firewall
- Configure Azure Bastion or just-in-time (JIT) for administrative access to session hosts
- Plan and implement Windows threat protection features on Azure Virtual Desktop session hosts, including Windows Defender Application Control and Controlled Folder Access
- Plan for and implement Confidential VM and Trusted Launch security features for Azure Virtual Desktop session host provisioning

Plan and implement user environments and apps (20–25%)

Plan and implement FSLogix

- Recommend FSLogix configuration
- Configure FSLogix Profile Containers
- Configure FSLogix Office Containers
- Configure FSLogix Cloud Cache
- Implement FSLogix application masking

Plan and implement user experience and client settings

- Choose an Azure Virtual Desktop client
- Choose a deployment method for the client
- Deploy and troubleshoot Azure Virtual Desktop clients

- Configure device redirection
- Configure multimedia redirection
- Configure printing and Universal Print
- Configure user settings through Microsoft Intune policies or Group Policy
- Configure Remote Desktop Protocol (RDP) properties on a host pool
- Configure session timeout properties
- Implement the Start Virtual Machine on Connect feature
- Assign and unassign personal desktops for users

Install and configure apps on a session host

- Choose a method for deploying an app to Azure Virtual Desktop
- Create and configure an application group
- Assign users to application groups
- Publish an application as a RemoteApp
- Implement and manage Microsoft 365 apps on Azure Virtual Desktop session hosts
- Implement and manage OneDrive, including multisession environments
- Implement and manage Microsoft Teams, including the Remote Desktop WebRTC Redirector Service
- Implement and manage browsers for Azure Virtual Desktop sessions
- Configure dynamic application delivery by using app attach or MSIX app attach
- Create an application package for app attach or MSIX app attach

Monitor and maintain an Azure Virtual Desktop infrastructure (10–15%)

Monitor and manage Azure Virtual Desktop services

- Configure log collection and analysis for Azure Virtual Desktop session hosts

- Monitor Azure Virtual Desktop by using Azure Monitor
- Customize Azure Monitor workbooks for Azure Virtual Desktop Insights
- Optimize session host capacity and performance
- Implement autoscaling in host pools
- Monitor and manage active sessions and application groups

Plan and implement updates, backups, and disaster recovery

- Recommend an update strategy for session hosts
- Plan and implement a disaster recovery plan for Azure Virtual Desktop
- Plan for multi-region implementation
- Design and implement a backup strategy for Azure Virtual Desktop
- Configure backup and restore for FSLogix user profiles, personal virtual desktop infrastructures (VDIs), and golden images

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Azure Virtual Desktop documentation FSLogix configuration examples Azure Virtual Desktop FSLogix profile containers files
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support ↗

Study resources	Links to learning and documentation
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Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Audience profile		Minor
Plan and implement an Azure Virtual Desktop infrastructure	Plan and implement an Azure Virtual Desktop infrastructure	No change
Plan, implement, and manage networking for Azure Virtual Desktop	Plan, implement, and manage networking for Azure Virtual Desktop	Major
Plan and implement storage for Azure Virtual Desktop user data	Plan and implement storage for Azure Virtual Desktop user data	Minor
Plan host pools and session hosts	Plan host pools and session hosts	Minor
Implement host pools and session hosts	Implement host pools and session hosts	Minor
Create and manage session host images	Create and manage session host images	Minor
Plan and implement identity and security	Plan and implement identity and security	No change
Plan and implement identity integration	Plan and implement identity integration	Minor
Plan and implement security	Plan and implement security	Minor
Plan and implement user environments and apps	Plan and implement user environments and apps	No change
Plan and implement FSLogix	Plan and implement FSLogix	Minor

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Plan and implement user experience and client settings	Plan and implement user experience and client settings	Minor
Install and configure apps on a session host	Install and configure apps on a session host	Minor
Monitor and maintain an Azure Virtual Desktop infrastructure	Monitor and maintain an Azure Virtual Desktop infrastructure	No change
Monitor and manage Azure Virtual Desktop services	Monitor and manage Azure Virtual Desktop services	Major
Plan, implement, and maintain business continuity	Plan and implement updates, backups, and disaster recovery	Minor

Skills measured prior to July 22, 2024

Audience profile

As a candidate for this exam, you should be a server or desktop administrator with subject matter expertise in designing, implementing, managing, and maintaining Microsoft Azure Virtual Desktop experiences and remote apps for any device.

To deliver these experiences, you should work closely with:

- Azure administrators
- Azure architects
- Microsoft 365 administrators
- Azure security engineers

You should have experience with Azure technologies, including:

- Virtualization
- Networking
- Identity
- Storage
- Resiliency

You should be able to manage end-user desktop environments, including delivering applications and configuring user settings. You should use the Azure portal, templates, scripting, and command-line tools to manage an Azure Virtual Desktop deployment.

Skills at a glance

- Plan and implement an Azure Virtual Desktop infrastructure (40–45%)
- Plan and implement identity and security (15–20%)
- Plan and implement user environments and apps (20–25%)
- Monitor and maintain an Azure Virtual Desktop infrastructure (10–15%)

Plan and implement an Azure Virtual Desktop infrastructure (40–45%)

Plan, implement, and manage networking for Azure Virtual Desktop

- Assess network capacity and speed requirements for Azure Virtual Desktop
- Calculate and recommend a configuration for network requirements
- Plan and implement Azure virtual network connectivity
- Manage connectivity to the internet and on-premises networks
- Plan and implement Remote Desktop Protocol (RDP) Shortpath and quality of service (QoS) policies
- Plan and implement Azure Private Link with Azure Virtual Desktop
- Plan and implement name resolution for Azure Virtual Desktop
- Monitor and troubleshoot network connectivity

Plan and implement storage for Azure Virtual Desktop user data

- Plan storage for Azure Virtual Desktop user data
- Implement storage for FSLogix components
- Implement storage accounts

- Implement file shares
- Implement Azure NetApp Files

Plan host pools and session hosts

- Recommend resource groups, subscriptions, and management groups
- Recommend an operating system (OS) for an Azure Virtual Desktop implementation
- Recommend an appropriate licensing model for Azure Virtual Desktop based on requirements
- Plan a host pools architecture
- Calculate and recommend a configuration for performance requirements
- Calculate and recommend a configuration for Azure Virtual Machines capacity requirements

Implement host pools and session hosts

- Create host pools and session hosts by using the Azure portal
- Automate creation of Azure Virtual Desktop hosts and host pools by using PowerShell, Azure CLI, Azure Resource Manager templates (ARM templates), and Bicep
- Configure host pool and session host settings
- Apply a Windows client or Windows Server license to a session host

Create and manage session host images

- Create a golden image manually
- Create a golden image by using Azure virtual machine Image Builder
- Modify a session host image
- Plan and implement lifecycle management for images
- Apply OS and application updates to an image
- Create a session host by using a golden image

- Plan and implement image storage
- Create and manage Azure Compute Gallery

Plan and implement identity and security (15–20%)

Plan and implement identity integration

- Choose an identity management and authentication method
- Identify Azure Virtual Desktop requirements for Active Directory Domain Services (AD DS), Microsoft Entra Domain Services, and Microsoft Entra ID
- Plan and implement Azure roles and role-based access control (RBAC) for Azure Virtual Desktop
- Plan and implement Conditional Access policies for connections to Azure Virtual Desktop
- Plan and implement multifactor authentication in Azure Virtual Desktop
- Manage roles, groups, and rights assignments on Azure Virtual Desktop session hosts

Plan and implement security

- Plan, implement, and manage security for Azure Virtual Desktop session hosts by using Microsoft Defender for Cloud
- Configure Microsoft Defender Antivirus for session hosts
- Implement and manage network security for connections to Azure Virtual Desktop
- Configure Azure Bastion or just-in-time (JIT) for administrative access to session hosts
- Plan and implement Windows Threat Protection features on Azure Virtual Desktop session hosts, including Windows Defender Application Control
- Plan for and implement Confidential VM and Trusted Launch security features for Azure Virtual Desktop host pool provisioning

Plan and implement user environments and apps (20–25%)

Plan and implement FSLogix

- Recommend FSLogix configuration
- Install and configure FSLogix
- Configure Profile Containers
- Configure Office Containers
- Configure Cloud Cache

Plan and implement user experience and client settings

- Choose an Azure Virtual Desktop client and deployment method
- Deploy and troubleshoot Azure Virtual Desktop clients
- Configure device redirection
- Configure multimedia redirection
- Configure printing and Universal Print
- Configure user settings through Group Policy and Microsoft Intune policies
- Configure Remote Desktop Protocol (RDP) properties on a host pool
- Configure session timeout properties
- Implement the Start Virtual Machine on Connect feature
- Assign and unassign personal desktops for users

Install and configure apps on a session host

- Choose a method for deploying an app to Azure Virtual Desktop
- Configure dynamic application delivery by using MSIX app attach
- Publish an application as a RemoteApp
- Implement FSLogix application masking
- Implement and manage OneDrive, including multisession environments

- Implement and manage Microsoft Teams, including the Remote Desktop WebRTC Redirector Service
- Implement and manage Microsoft 365 apps on Azure Virtual Desktop session hosts
- Implement and manage browsers for Azure Virtual Desktop sessions
- Create and configure an application group
- Assign users to application groups

Monitor and maintain an Azure Virtual Desktop infrastructure (10–15%)

Monitor and manage Azure Virtual Desktop services

- Configure log collection and analysis for Azure Virtual Desktop session hosts
- Configure Azure Virtual Desktop monitoring by using Azure Monitor
- Monitor Azure Virtual Desktop by using Azure Monitor
- Customize Azure Monitor workbooks for Azure Virtual Desktop Insights
- Monitor Azure Virtual Desktop by using Azure Advisor
- Optimize session host capacity and performance
- Implement autoscaling in host pools
- Monitor and manage active sessions and application groups
- Configure automation for Azure Virtual Desktop
- Automate management of host pools, session hosts, and user sessions by using PowerShell and Azure CLI

Plan, implement, and maintain business continuity

- Recommend an update strategy for session hosts
- Plan and implement a disaster recovery plan for Azure Virtual Desktop
- Plan for multi-region implementation

- Design a backup strategy for Azure Virtual Desktop
- Configure backup and restore for FSLogix user profiles, personal virtual desktop infrastructures (VDIs), and golden images

Study guide for Exam AZ-204: Developing Solutions for Microsoft Azure

Article • 09/19/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

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We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after

the English version is updated. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 11, 2024

Audience profile

As a candidate for this exam, you're responsible for participating in all phases of development, including requirements gathering, design, development, deployment, security, maintenance, performance tuning, and monitoring.

You should be proficient in Azure:

- SDK
- Data storage options
- Data connections
- APIs
- App authentication and authorization
- Compute and container deployment
- Debugging

To implement solutions, you partner with:

- Cloud solution architects
- DBAs

- DevOps
- Infrastructure admins
- Other stakeholders

You should have:

- At least two years of programming experience.
- Proficiency in programming with Azure SDKs.
- Proficiency using Azure CLI, Azure PowerShell, and other tools.

Skills at a glance

- Develop Azure compute solutions (25–30%)
- Develop for Azure storage (15–20%)
- Implement Azure security (15–20%)
- Monitor, troubleshoot, and optimize Azure solutions (10–15%)
- Connect to and consume Azure services and third-party services (20–25%)

Develop Azure compute solutions (25–30%)

Implement containerized solutions

- Create and manage container images for solutions
- Publish an image to Azure Container Registry
- Run containers by using Azure Container Instance
- Create solutions by using Azure Container Apps

Implement Azure App Service Web Apps

- Create an Azure App Service Web App
- Configure and implement diagnostics and logging
- Deploy code and containers

- Configure settings including Transport Layer Security (TLS), API settings, and service connections
- Implement autoscaling
- Configure deployment slots

Implement Azure Functions

- Create and configure an Azure Functions app
- Implement input and output bindings
- Implement function triggers by using data operations, timers, and webhooks

Develop for Azure storage (15–20%)

Develop solutions that use Azure Cosmos DB

- Perform operations on containers and items by using the SDK
- Set the appropriate consistency level for operations
- Implement change feed notifications

Develop solutions that use Azure Blob Storage

- Set and retrieve properties and metadata
- Perform operations on data by using the appropriate SDK
- Implement storage policies and data lifecycle management

Implement Azure security (15–20%)

Implement user authentication and authorization

- Authenticate and authorize users by using the Microsoft Identity platform
- Authenticate and authorize users and apps by using Microsoft Entra ID
- Create and implement shared access signatures
- Implement solutions that interact with Microsoft Graph

Implement secure Azure solutions

- Secure app configuration data by using App Configuration or Azure Key Vault
- Develop code that uses keys, secrets, and certificates stored in Azure Key Vault
- Implement Managed Identities for Azure resources

Monitor, troubleshoot, and optimize Azure solutions (10–15%)

Implement caching for solutions

- Configure cache and expiration policies for Azure Cache for Redis
- Implement secure and optimized application cache patterns including data sizing, connections, encryption, and expiration
- Implement Azure Content Delivery Network endpoints and profiles

Troubleshoot solutions by using Application Insights

- Monitor and analyze metrics, logs, and traces
- Implement Application Insights web tests and alerts
- Implement an app or service to use Application Insights

Connect to and consume Azure services and third-party services (20–25%)

Implement API Management

- Create an Azure API Management instance
- Create and document APIs
- Configure access to APIs
- Implement policies for APIs

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Container Registry Container Instances App Service Azure Functions Azure Cosmos DB Blob Storage Microsoft Entra ID Key Vault Azure Cache for Redis API Apps API Management Event Hubs Event Grid Service Bus Messaging Queue Storage
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Azure Fridays ↗ Browse other Microsoft Learn shows

Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to October 11, 2024	Skill area as of October 11, 2024	Change
Audience profile		Minor
Develop Azure compute solutions	Develop Azure compute solutions	No % change
Implement Azure App Service Web Apps	Implement Azure App Service Web Apps	Minor
Develop for Azure storage	Develop for Azure storage	No % change
Implement Azure security	Implement Azure security	% of exam decreased
Monitor, troubleshoot, and optimize Azure solutions	Monitor, troubleshoot, and optimize Azure solutions	% of exam decreased
Troubleshoot solutions by using Application Insights	Troubleshoot solutions by using Application Insights	Minor
Connect to and consume Azure services and third-party services	Connect to and consume Azure services and third-party services	% of exam increased

Study guide for Exam AZ-305: Designing Microsoft Azure Infrastructure Solutions

Article • 09/20/2024

Purpose of this document

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Note

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Note

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Skills measured as of October 18, 2024

Audience profile

As a Microsoft Azure solutions architect, you have subject matter expertise in designing cloud and hybrid solutions that run on Azure, including:

- Compute
- Network
- Storage
- Monitoring
- Security

Your responsibilities for this role include advising stakeholders and translating business requirements into designs for Azure solutions that align with the Azure Well-Architected Framework and Cloud Adoption Framework for Azure. In this role, you implement solutions on Azure by partnering with various other job roles, including:

- Developers
- Administrators
- Security engineers
- Data engineers

As a candidate for this exam, you should have advanced experience and knowledge of IT operations, including networking, virtualization, identity, security, business continuity, disaster recovery, data platforms, and governance. You should manage how decisions in each area affect an overall solution. In addition, you should have experience with:

- Azure administration
- Azure development
- DevOps processes

Skills at a glance

- Design identity, governance, and monitoring solutions (25–30%)
- Design data storage solutions (20–25%)
- Design business continuity solutions (15–20%)
- Design infrastructure solutions (30–35%)

Design identity, governance, and monitoring solutions (25–30%)

Design solutions for logging and monitoring

- Recommend a logging solution
- Recommend a solution for routing logs
- Recommend a monitoring solution

Design authentication and authorization solutions

- Recommend an authentication solution
- Recommend an identity management solution
- Recommend a solution for authorizing access to Azure resources
- Recommend a solution for authorizing access to on-premises resources
- Recommend a solution to manage secrets, certificates, and keys

Design governance

- Recommend a structure for management groups, subscriptions, and resource groups, and a strategy for resource tagging
- Recommend a solution for managing compliance
- Recommend a solution for identity governance

Design data storage solutions (20–25%)

Design data storage solutions for relational data

- Recommend a solution for storing relational data
- Recommend a database service tier and compute tier
- Recommend a solution for database scalability
- Recommend a solution for data protection

Design data storage solutions for semi-structured and unstructured data

- Recommend a solution for storing semi-structured data
- Recommend a solution for storing unstructured data
- Recommend a data storage solution to balance features, performance, and costs
- Recommend a data solution for protection and durability

Design data integration

- Recommend a solution for data integration
- Recommend a solution for data analysis

Design business continuity solutions (15–20%)

Design solutions for backup and disaster recovery

- Recommend a recovery solution for Azure and hybrid workloads that meets recovery objectives
- Recommend a backup and recovery solution for compute
- Recommend a backup and recovery solution for databases
- Recommend a backup and recovery solution for unstructured data

Design for high availability

- Recommend a high availability solution for compute
- Recommend a high availability solution for relational data
- Recommend a high availability solution for semi-structured and unstructured data

Design infrastructure solutions (30–35%)

Design compute solutions

- Specify components of a compute solution based on workload requirements
- Recommend a virtual machine-based solution
- Recommend a container-based solution
- Recommend a serverless-based solution
- Recommend a compute solution for batch processing

Design an application architecture

- Recommend a messaging architecture
- Recommend an event-driven architecture
- Recommend a solution for API integration
- Recommend a caching solution for applications
- Recommend an application configuration management solution
- Recommend an automated deployment solution for applications

Design migrations

- Evaluate a migration solution that leverages the Microsoft Cloud Adoption Framework for Azure
- Evaluate on-premises servers, data, and applications for migration
- Recommend a solution for migrating workloads to infrastructure as a service (IaaS) and platform as a service (PaaS)
- Recommend a solution for migrating databases
- Recommend a solution for migrating unstructured data

Design network solutions

- Recommend a connectivity solution that connects Azure resources to the internet
- Recommend a connectivity solution that connects Azure resources to on-premises networks
- Recommend a solution to optimize network performance
- Recommend a solution to optimize network security
- Recommend a load-balancing and routing solution

Study resources

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Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to October 18, 2024	Skill area as of October 18, 2024	Change
Design identity, governance, and monitoring solutions	Design identity, governance, and monitoring solutions	No change
Design authentication and authorization solutions	Design authentication and authorization solutions	Minor

Study guide for Exam AZ-400: Designing and Implementing Microsoft DevOps Solutions

Article • 06/26/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 26, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 26, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
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Useful links	Description
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Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions of exams as noted, there may be times when localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

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Skills measured as of July 26, 2024

Audience profile

As a DevOps engineer, you're a developer or infrastructure administrator who also has subject matter expertise in working with people, processes, and products to enable continuous delivery of value in organizations.

Your responsibilities for this role include delivering Microsoft DevOps solutions that provide continuous security, integration, testing, delivery, deployment, monitoring, and

feedback. You design and implement flow of work, collaboration, communication, source control, and automation.

As a DevOps engineer, you work on cross-functional teams that include:

- Developers
- Site reliability engineers
- Azure administrators
- Security engineers

You must have experience both administering and developing in Azure, with strong skills in at least one of these areas. You should also have experience implementing both GitHub and Azure DevOps solutions.

Skills at a glance

- Design and implement processes and communications (10–15%)
- Design and implement a source control strategy (10–15%)
- Design and implement build and release pipelines (50–55%)
- Develop a security and compliance plan (10–15%)
- Implement an instrumentation strategy (5–10%)

Design and implement processes and communications (10–15%)

Design and implement traceability and flow of work

- Design and implement a structure for the flow of work, including GitHub Flow
- Design and implement a strategy for feedback cycles, including notifications and GitHub issues
- Design and implement integration for tracking work, including GitHub projects, Azure Boards, and repositories
- Design and implement source, bug, and quality traceability

Design and implement appropriate metrics and queries for DevOps

- Design and implement a dashboard, including flow of work, such as cycle times, time to recovery, and lead time
- Design and implement appropriate metrics and queries for project planning
- Design and implement appropriate metrics and queries for development
- Design and implement appropriate metrics and queries for testing
- Design and implement appropriate metrics and queries for security
- Design and implement appropriate metrics and queries for delivery
- Design and implement appropriate metrics and queries for operations

Configure collaboration and communication

- Document a project by configuring wikis and process diagrams, including Markdown and Mermaid syntax
- Configure release documentation, including release notes and API documentation
- Automate creation of documentation from Git history
- Configure integration by using webhooks
- Configure integration between Azure Boards and GitHub repositories
- Configure integration between GitHub or Azure DevOps and Microsoft Teams

Design and implement a source control strategy (10–15%)

Design and implement branching strategies for the source code

- Design a branch strategy, including trunk-based, feature branch, and release branch
- Design and implement a pull request workflow by using branch policies and branch protections
- Implement branch merging restrictions by using branch policies and branch protections

Configure and manage repositories

- Design and implement a strategy for managing large files, including Git Large File Storage (LFS) and git-fat
- Design a strategy for scaling and optimizing a Git repository, including Scalar and cross-repository sharing
- Configure permissions in the source control repository
- Configure tags to organize the source control repository
- Recover specific data by using Git commands
- Remove specific data from source control

Design and implement build and release pipelines (50–55%)

Design and implement a package management strategy

- Recommend package management tools including GitHub Packages registry and Azure Artifacts
- Design and implement package feeds and views for local and upstream packages
- Design and implement a dependency versioning strategy for code assets and packages, including semantic versioning (SemVer) and date-based (CalVer)
- Design and implement a versioning strategy for pipeline artifacts

Design and implement a testing strategy for pipelines

- Design and implement quality and release gates, including security and governance
- Design a comprehensive testing strategy, including local tests, unit tests, integration tests, and load tests
- Implement tests in a pipeline, including configuring test tasks, configuring test agents, and integration of test results
- Implement code coverage analysis

Design and implement pipelines

- Select a deployment automation solution, including GitHub Actions and Azure Pipelines
- Design and implement a GitHub runner or Azure DevOps agent infrastructure, including cost, tool selection, licenses, connectivity, and maintainability
- Design and implement integration between GitHub repositories and Azure Pipelines
- Develop and implement pipeline trigger rules
- Develop pipelines by using YAML
- Design and implement a strategy for job execution order, including parallelism and multi-stage pipelines
- Develop and implement complex pipeline scenarios, such as hybrid pipelines, VM templates, and self-hosted runners or agents
- Create reusable pipeline elements, including YAML templates, task groups, variables, and variable groups
- Design and implement checks and approvals by using YAML-based environments

Design and implement deployments

- Design a deployment strategy, including blue-green, canary, ring, progressive exposure, feature flags, and A/B testing
- Design a pipeline to ensure that dependency deployments are reliably ordered
- Plan for minimizing downtime during deployments by using virtual IP address (VIP) swap, load balancing, rolling deployments, and deployment slot usage and swap
- Design a hotfix path plan for responding to high-priority code fixes
- Design and implement a resiliency strategy for deployment
- Implement feature flags by using Azure App Configuration Feature Manager
- Implement application deployment by using containers, binaries, and scripts
- Implement a deployment that includes database tasks

Design and implement infrastructure as code (IaC)

- Recommend a configuration management technology for application infrastructure
- Implement a configuration management strategy for application infrastructure
- Define an IaC strategy, including source control and automation of testing and deployment
- Design and implement desired state configuration for environments, including Azure Automation State Configuration, Azure Resource Manager, Bicep, and Azure Automanage Machine Configuration
- Design and implement Azure Deployment Environments for on-demand self-deployment

Maintain pipelines

- Monitor pipeline health, including failure rate, duration, and flaky tests
- Optimize a pipeline for cost, time, performance, and reliability
- Optimize pipeline concurrency for performance and cost
- Design and implement a retention strategy for pipeline artifacts and dependencies
- Migrate a pipeline from classic to YAML in Azure Pipelines

Develop a security and compliance plan (10–15%)

Design and implement authentication and authorization methods

- Choose between Service Principals and Managed Identity (including system-assigned and user-assigned)
- Implement and manage GitHub authentication, including GitHub Apps, GITHUB_TOKEN, and personal access tokens
- Implement and manage Azure DevOps service connections and personal access tokens
- Design and implement permissions and roles in GitHub
- Design and implement permissions and security groups in Azure DevOps

- Recommend appropriate access levels, including stakeholder access in Azure DevOps and outside collaborator access in GitHub
- Configure projects and teams in Azure DevOps

Design and implement a strategy for managing sensitive information in automation

- Implement and manage secrets, keys, and certificates by using Azure Key Vault
- Implement and manage secrets in GitHub Actions and Azure Pipelines
- Design and implement a strategy for managing sensitive files during deployment, including Azure Pipelines secure files
- Design pipelines to prevent leakage of sensitive information

Automate security and compliance scanning

- Design a strategy for security and compliance scanning, including dependency, code, secret, and licensing scanning
- Configure Microsoft Defender for Cloud DevOps Security
- Configure GitHub Advanced Security for both GitHub and Azure DevOps
- Integrate GitHub Advanced Security with Microsoft Defender for Cloud
- Automate container scanning, including scanning container images and configuring an action to run CodeQL analysis in a container
- Automate analysis of licensing, vulnerabilities, and versioning of open-source components by using Dependabot alerts

Implement an instrumentation strategy (5–10%)

Configure monitoring for a DevOps environment

- Configure Azure Monitor and Log Analytics to integrate with DevOps tools
- Configure collection of telemetry by using Application Insights, VM Insights, Container Insights, Storage Insights, and Network Insights

- Configure monitoring in GitHub, including enabling insights and creating and configuring charts
- Configure alerts for events in GitHub Actions and Azure Pipelines

Analyze metrics from instrumentation

- Inspect infrastructure performance indicators, including CPU, memory, disk, and network
- Analyze metrics by using collected telemetry, including usage and application performance
- Inspect distributed tracing by using Application Insights
- Interrogate logs using basic Kusto Query Language (KQL) queries

Study resources

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Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure DevOps - Microsoft Tech Community ↗
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Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Design and implement processes and communications	Design and implement processes and communications	No change
Design and implement traceability and flow of work	Design and implement traceability and flow of work	Minor
Design and implement appropriate metrics and queries for DevOps	Design and implement appropriate metrics and queries for DevOps	No change
Configure collaboration and communication	Configure collaboration and communication	Minor
Design and implement a source control strategy	Design and implement a source control strategy	No change
Design and implement branching strategies for the source code	Design and implement branching strategies for the source code	No change
Configure and manage repositories	Configure and manage repositories	No change
Design and implement build and release pipelines	Design and implement build and release pipelines	No change
Design and implement a package management strategy	Design and implement a package management strategy	Minor
Design and implement a testing strategy for pipelines	Design and implement a testing strategy for pipelines	No change

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Design and implement pipelines	Design and implement pipelines	Minor
Design and implement deployments	Design and implement deployments	Minor
Design and implement infrastructure as code (IaC)	Design and implement infrastructure as code (IaC)	No change
Maintain pipelines	Maintain pipelines	No change
Develop a security and compliance plan	Develop a security and compliance plan	No change
Design and implement authentication and authorization methods	Design and implement authentication and authorization methods	Minor
Design and implement a strategy for managing sensitive information in automation	Design and implement a strategy for managing sensitive information in automation	No change
Automate security and compliance scanning	Automate security and compliance scanning	No change
Implement an instrumentation strategy	Implement an instrumentation strategy	No change
Configure monitoring for a DevOps environment	Configure monitoring for a DevOps environment	No change
Analyze metrics from instrumentation	Analyze metrics from instrumentation	No change

Skills measured prior to July 26, 2024

Audience profile

As a DevOps engineer, you're a developer or infrastructure administrator who also has subject matter expertise in working with people, processes, and products to enable continuous delivery of value in organizations.

Your responsibilities for this role include delivering Microsoft DevOps solutions that provide continuous security, integration, testing, delivery, deployment, monitoring, and feedback. You design and implement flow of work, collaboration, communication, source control, and automation.

As a DevOps engineer, you work on cross-functional teams that include:

- Developers
- Site reliability engineers
- Azure administrators
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You must have experience both administering and developing in Azure, with strong skills in at least one of these areas. You should also have experience implementing both GitHub and Azure DevOps solutions.

Skills at a glance

- Design and implement processes and communications (10–15%)
- Design and implement a source control strategy (10–15%)
- Design and implement build and release pipelines (50–55%)
- Develop a security and compliance plan (10–15%)
- Implement an instrumentation strategy (5–10%)

Design and implement processes and communications (10–15%)

Design and implement traceability and flow of work

- Design and implement a structure for the flow of work, including GitHub Flow
- Design and implement a strategy for feedback cycles, including notifications and issues
- Design and implement integration for tracking work, including GitHub projects, Azure Boards, and repositories
- Design and implement source, bug, and quality traceability

Design and implement appropriate metrics and queries for DevOps

- Design and implement a dashboard, including flow of work, such as cycle times, time to recovery, and lead time
- Design and implement appropriate metrics and queries for project planning
- Design and implement appropriate metrics and queries for development
- Design and implement appropriate metrics and queries for testing
- Design and implement appropriate metrics and queries for security
- Design and implement appropriate metrics and queries for delivery
- Design and implement appropriate metrics and queries for operations

Configure collaboration and communication

- Document a project by configuring wikis and process diagrams, including Markdown and Mermaid syntax
- Configure release documentation, including release notes and API documentation
- Automate creation of documentation from Git history
- Configure integration by using webhooks
- Configure integration between GitHub or Azure DevOps and Microsoft Teams

Design and implement a source control strategy (10–15%)

Design and implement branching strategies for the source code

- Design a branch strategy, including trunk-based, feature branch, and release branch
- Design and implement a pull request workflow by using branch policies and branch protections
- Implement branch merging restrictions by using branch policies and branch protections

Configure and manage repositories

- Design and implement a strategy for managing large files, including Git Large File Storage (LFS) and git-fat
- Design a strategy for scaling and optimizing a Git repository, including Scalar and cross-repository sharing
- Configure permissions in the source control repository
- Configure tags to organize the source control repository
- Recover specific data by using Git commands
- Remove specific data from source control

Design and implement build and release pipelines (50–55%)

Design and implement a package management strategy

- Recommend package management tools including GitHub Packages registry and Azure Artifacts
- Design and implement package feeds and views for local and upstream packages
- Design and implement a dependency versioning strategy for code assets and packages, including semantic versioning and date-based
- Design and implement a versioning strategy for pipeline artifacts

Design and implement a testing strategy for pipelines

- Design and implement quality and release gates, including security and governance
- Design a comprehensive testing strategy, including local tests, unit tests, integration tests, and load tests
- Implement tests in a pipeline, including configuring test tasks, configuring test agents, and integration of test results
- Implement code coverage analysis

Design and implement pipelines

- Select a deployment automation solution, including GitHub Actions and Azure Pipelines
- Design and implement a GitHub runner or Azure DevOps agent infrastructure, including cost, tool selection, licenses, connectivity, and maintainability
- Design and implement integration between GitHub repositories and Azure Pipelines
- Develop and implement pipeline trigger rules
- Develop pipelines by using YAML
- Design and implement a strategy for job execution order, including parallelism and multi-stage pipelines
- Develop and implement complex pipeline scenarios, such as hybrid pipelines, VM templates, and self-hosted runners or agents
- Create reusable pipeline elements, including YAML templates, task groups, variables, and variable groups
- Design and implement checks and approvals by using YAML environments

Design and implement deployments

- Design a deployment strategy, including blue-green, canary, ring, progressive exposure, feature flags, and A/B testing
- Design a pipeline to ensure that dependency deployments are reliably ordered
- Plan for minimizing downtime during deployments by using virtual IP address (VIP) swap, load balancing, rolling deployments, and deployment slots
- Design a hotfix path plan for responding to high-priority code fixes
- Design and implement a resiliency strategy for deployment
- Implement feature flags by using Azure App Configuration Feature Manager
- Implement application deployment by using containers, binaries, and scripts
- Implement a deployment that includes database tasks

Design and implement infrastructure as code (IaC)

- Recommend a configuration management technology for application infrastructure
- Implement a configuration management strategy for application infrastructure
- Define an IaC strategy, including source control and automation of testing and deployment
- Design and implement desired state configuration for environments, including Azure Automation State Configuration, Azure Resource Manager, Bicep, and Azure Automanage Machine Configuration
- Design and implement Azure Deployment Environments for on-demand self-deployment

Maintain pipelines

- Monitor pipeline health, including failure rate, duration, and flaky tests
- Optimize a pipeline for cost, time, performance, and reliability
- Optimize pipeline concurrency for performance and cost
- Design and implement a retention strategy for pipeline artifacts and dependencies
- Migrate a pipeline from classic to YAML in Azure Pipelines

Develop a security and compliance plan (10–15%)

Design and implement authentication and authorization methods

- Choose between Service Principals and Managed Identity
- Implement and manage GitHub authentication, including GitHub Apps, GITHUB_TOKEN, and personal access tokens
- Implement and manage Azure DevOps service connections and personal access tokens
- Design and implement permissions and roles in GitHub
- Design and implement permissions and security groups in Azure DevOps
- Recommend appropriate access levels, including stakeholder access in Azure DevOps and outside collaborator access in GitHub

- Configure projects and teams in Azure DevOps

Design and implement a strategy for managing sensitive information in automation

- Implement and manage secrets, keys, and certificates by using Azure Key Vault
- Implement and manage secrets in GitHub Actions and Azure Pipelines
- Design and implement a strategy for managing sensitive files during deployment, including Azure Pipelines secure files
- Design pipelines to prevent leakage of sensitive information

Automate security and compliance scanning

- Design a strategy for security and compliance scanning, including dependency, code, secret, and licensing scanning
- Configure Microsoft Defender for Cloud DevOps Security
- Configure GitHub Advanced Security for both GitHub and Azure DevOps
- Integrate GitHub Advanced Security with Microsoft Defender for Cloud
- Automate container scanning, including scanning container images and configuring an action to run CodeQL analysis in a container
- Automate analysis of licensing, vulnerabilities, and versioning of open-source components by using Dependabot alerts

Implement an instrumentation strategy (5–10%)

Configure monitoring for a DevOps environment

- Configure Azure Monitor and Log Analytics to integrate with DevOps tools
- Configure collection of telemetry by using Application Insights, VM Insights, Container Insights, Storage Insights, and Network Insights
- Configure monitoring in GitHub, including enabling insights and creating and configuring charts
- Configure alerts for events in GitHub Actions and Azure Pipelines

Analyze metrics from instrumentation

- Inspect infrastructure performance indicators, including CPU, memory, disk, and network
- Analyze metrics by using collected telemetry, including usage and application performance
- Inspect distributed tracing by using Application Insights
- Interrogate logs using basic Kusto Query Language (KQL) queries

Study guide for Exam AZ-500: Microsoft Azure Security Technologies

Article • 05/30/2024

Purpose of this document

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 Expand table

Useful links	Description
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Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
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Useful links	Description
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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 31, 2024

Audience profile

As the Azure security engineer, you implement, manage, and monitor security for resources in Azure, multi-cloud, and hybrid environments as part of an end-to-end infrastructure. You recommend security components and configurations to protect the following:

- Identity and access
- Data

- Applications
- Networks

Your responsibilities as an Azure security engineer include:

- Managing the security posture.
- Identifying and remediating vulnerabilities.
- Performing threat modelling.
- Implementing threat protection.

You may also participate in responding to security incidents. As an Azure security engineer, you work with architects, administrators, and developers to plan and implement solutions that meet security and compliance requirements.

You should have:

- Practical experience in administration of Microsoft Azure and hybrid environments.
- Strong familiarity with compute, network, and storage in Azure and Microsoft Entra ID.

Skills at a glance

- Manage identity and access (25–30%)
- Secure networking (20–25%)
- Secure compute, storage, and databases (20–25%)
- Manage security operations (25–30%)

Manage identity and access (25–30%)

Manage Microsoft Entra identities

- Secure Microsoft Entra users
- Secure Microsoft Entra groups
- Recommend when to use external identities
- Secure external identities

- Implement Microsoft Entra ID Protection

Manage Microsoft Entra authentication

- Implement multi-factor authentication (MFA)
- Configure Microsoft Entra Verified ID
- Implement passwordless authentication
- Implement password protection
- Implement single sign-on (SSO)
- Integrate single sign on (SSO) and identity providers
- Recommend and enforce modern authentication methods

Manage Microsoft Entra authorization

- Configure Azure role permissions for management groups, subscriptions, resource groups, and resources
- Assign Microsoft Entra built-in roles
- Assign Azure built-in roles
- Create and assign custom roles, including Azure roles and Microsoft Entra roles
- Implement and manage Microsoft Entra Permissions Management
- Configure Microsoft Entra Privileged Identity Management
- Configure role management and access reviews in Microsoft Entra
- Implement Conditional Access policies

Manage Microsoft Entra application access

- Manage access to enterprise applications in Microsoft Entra ID, including OAuth permission grants
- Manage Microsoft Entra app registrations
- Configure app registration permission scopes

- Manage app registration permission consent
- Manage and use service principals
- Manage managed identities for Azure resources
- Recommend when to use and configure an Microsoft Entra Application Proxy, including authentication

Secure networking (20–25%)

Plan and implement security for virtual networks

- Plan and implement Network Security Groups (NSGs) and Application Security Groups (ASGs)
- Plan and implement user-defined routes (UDRs)
- Plan and implement Virtual Network peering or VPN gateway
- Plan and implement Virtual WAN, including secured virtual hub
- Secure VPN connectivity, including point-to-site and site-to-site
- Implement encryption over ExpressRoute
- Configure firewall settings on PaaS resources
- Monitor network security by using Network Watcher, including NSG flow logging

Plan and implement security for private access to Azure resources

- Plan and implement virtual network Service Endpoints
- Plan and implement Private Endpoints
- Plan and implement Private Link services
- Plan and implement network integration for Azure App Service and Azure Functions
- Plan and implement network security configurations for an App Service Environment (ASE)
- Plan and implement network security configurations for an Azure SQL Managed Instance

Plan and implement security for public access to Azure resources

- Plan and implement Transport Layer Security (TLS) to applications, including Azure App Service and API Management
- Plan, implement, and manage an Azure Firewall, including Azure Firewall Manager and firewall policies
- Plan and implement an Azure Application Gateway
- Plan and implement an Azure Front Door, including Content Delivery Network (CDN)
- Plan and implement a Web Application Firewall (WAF)
- Recommend when to use Azure DDoS Protection Standard

Secure compute, storage, and databases (20–25%)

Plan and implement advanced security for compute

- Plan and implement remote access to public endpoints, including Azure Bastion and just-in-time (JIT) virtual machine (VM) access
- Configure network isolation for Azure Kubernetes Service (AKS)
- Secure and monitor AKS
- Configure authentication for AKS
- Configure security monitoring for Azure Container Instances (ACIs)
- Configure security monitoring for Azure Container Apps (ACAs)
- Manage access to Azure Container Registry (ACR)
- Configure disk encryption, including Azure Disk Encryption (ADE), encryption at host, and confidential disk encryption
- Recommend security configurations for Azure API Management

Plan and implement security for storage

- Configure access control for storage accounts
- Manage life cycle for storage account access keys

- Select and configure an appropriate method for access to Azure Files
- Select and configure an appropriate method for access to Azure Blob Storage
- Select and configure an appropriate method for access to Azure Tables
- Select and configure an appropriate method for access to Azure Queues
- Select and configure appropriate methods for protecting against data security threats, including soft delete, backups, versioning, and immutable storage
- Configure Bring your own key (BYOK)
- Enable double encryption at the Azure Storage infrastructure level

Plan and implement security for Azure SQL Database and Azure SQL Managed Instance

- Enable Microsoft Entra database authentication
- Enable database auditing
- Identify use cases for the Microsoft Purview governance portal
- Implement data classification of sensitive information by using the Microsoft Purview governance portal
- Plan and implement dynamic masking
- Implement Transparent Data Encryption (TDE)
- Recommend when to use Azure SQL Database Always Encrypted

Manage security operations (25–30%)

Plan, implement, and manage governance for security

- Create, assign, and interpret security policies and initiatives in Azure Policy
- Configure security settings by using Azure Blueprints
- Deploy secure infrastructures by using a landing zone
- Create and configure an Azure Key Vault
- Recommend when to use a dedicated Hardware Security Module (HSM)

- Configure access to Key Vault, including vault access policies and Azure Role Based Access Control
- Manage certificates, secrets, and keys
- Configure key rotation
- Configure backup and recovery of certificates, secrets, and keys

Manage security posture by using Microsoft Defender for Cloud

- Identify and remediate security risks by using the Microsoft Defender for Cloud Secure Score and Inventory
- Assess compliance against security frameworks and Microsoft Defender for Cloud
- Add industry and regulatory standards to Microsoft Defender for Cloud
- Add custom initiatives to Microsoft Defender for Cloud
- Connect hybrid cloud and multi-cloud environments to Microsoft Defender for Cloud
- Identify and monitor external assets by using Microsoft Defender External Attack Surface Management

Configure and manage threat protection by using Microsoft Defender for Cloud

- Enable workload protection services in Microsoft Defender for Cloud, including Microsoft Defender for Storage, Databases, Containers, App Service, Key Vault, and Resource Manager
- Configure Microsoft Defender for Servers
- Configure Microsoft Defender for Azure SQL Database
- Manage and respond to security alerts in Microsoft Defender for Cloud
- Configure workflow automation by using Microsoft Defender for Cloud
- Evaluate vulnerability scans from Microsoft Defender for Server

Configure and manage security monitoring and automation solutions

- Monitor security events by using Azure Monitor
- Configure data connectors in Microsoft Sentinel
- Create and customize analytics rules in Microsoft Sentinel
- Evaluate alerts and incidents in Microsoft Sentinel
- Configure automation in Microsoft Sentinel

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Microsoft Entra ID Azure Firewall documentation Azure Firewall Manager documentation Azure Application Gateway documentation Azure Front Door and CDN Documentation Web Application Firewall documentation Azure Key Vault documentation Virtual network service endpoint policies for Azure Storage Manage Azure Private Endpoints - Azure Private Link Create a Private Link service by using the Azure portal Azure DDoS Protection documentation Virtual machines in Azure Secure and use policies on virtual machines in Azure Security - Azure App Service Azure Policy documentation Plan your Defender for Servers deployment Microsoft Defender for Cloud documentation Microsoft Threat Modeling Tool overview Azure Monitor documentation Microsoft Sentinel documentation Azure Storage documentation Azure Files documentation Azure SQL documentation

Study resources	Links to learning and documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Azure Fridays ↗ Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to July 31, 2024	Skill area as of July 31, 2024	Changes
Audience profile		Minor
Manage identity and access	Manage identity and access	No change
Manage Microsoft Entra identities	Manage Microsoft Entra identities	No change
Manage Microsoft Entra authentication	Manage Microsoft Entra authentication	Minor
Manage Microsoft Entra authorization	Manage Microsoft Entra authorization	No change
Manage Microsoft Entra application access	Manage Microsoft Entra application access	No change
Secure networking	Secure networking	No change
Plan and implement security for virtual networks	Plan and implement security for virtual networks	No change
Plan and implement security for private	Plan and implement security for private	No

Skill area prior to July 31, 2024	Skill area as of July 31, 2024	Changes
access to Azure resources	access to Azure resources	change
Plan and implement security for public access to Azure resources	Plan and implement security for public access to Azure resources	No change
Secure compute, storage, and databases	Secure compute, storage, and databases	No change
Plan and implement advanced security for compute	Plan and implement advanced security for compute	No change
Plan and implement security for storage	Plan and implement security for storage	No change
Plan and implement security for Azure SQL Database and Azure SQL Managed Instance	Plan and implement security for Azure SQL Database and Azure SQL Managed Instance	No change
Manage security operations	Manage security operations	No change
Plan, implement, and manage governance for security	Plan, implement, and manage governance for security	No change
Manage security posture by using Microsoft Defender for Cloud	Manage security posture by using Microsoft Defender for Cloud	No change
Configure and manage threat protection by using Microsoft Defender for Cloud	Configure and manage threat protection by using Microsoft Defender for Cloud	No change
Configure and manage security monitoring and automation solutions	Configure and manage security monitoring and automation solutions	No change

Skills measured prior to July 31, 2024

Audience profile

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Study guide for Exam AZ-700: Designing and Implementing Microsoft Azure Networking Solutions

Article • 05/30/2024

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Useful links	Description
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Skills measured as of July 26, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in planning, implementing, and managing Azure networking solutions, including:

- Core network infrastructure
- Hybrid connectivity
- Application delivery services

- Private access to Azure services
- Network security

As an Azure network engineer your responsibilities include optimizing performance, resiliency, scale, and security of Azure networking solutions. You proactively monitor network environments to identify issues and minimize risk. You also identify and resolve connectivity issues.

To deliver Azure solutions, you work with:

- Solution architects
- Cloud administrators
- Security engineers
- Application developers
- DevOps engineers

As a candidate for this exam, you should have experience creating and managing compute, storage, and networking resources in Azure. You should understand networking fundamentals, such as:

- Name resolution
- Network protocols
- Network address management

Skills at a glance

- Design and implement core networking infrastructure (25–30%)
- Design, implement, and manage connectivity services (20–25%)
- Design and implement application delivery services (15–20%)
- Design and implement private access to Azure services (10–15%)
- Design and implement Azure network security services (15–20%)

Design and implement core networking infrastructure (25–30%)

Design and implement IP addressing for Azure resources

- Plan and implement network segmentation and address spaces
- Create a virtual network (VNet)
- Plan and configure subnetting for services, including VNet gateways, private endpoints, service endpoints, firewalls, application gateways, VNet-integrated platform services, and Azure Bastion
- Plan and configure subnet delegation
- Plan and configure shared or dedicated subnets
- Create a prefix for public IP addresses
- Choose when to use a public IP address prefix
- Plan and implement a custom public IP address prefix (bring your own IP)
- Create a public IP address
- Associate public IP addresses to resources
- Upgrade IP address SKU

Design and implement name resolution

- Design name resolution inside a VNet
- Configure DNS settings for a VNet
- Design public DNS zones
- Design private DNS zones
- Configure public and private DNS zones
- Link a private DNS zone to a VNet
- Design and implement Azure DNS Private Resolver

Design and implement VNet connectivity and routing

- Design service chaining, including gateway transit
- Implement VNet peering

- Implement and manage virtual networks by using Azure Virtual Network Manager
- Design and implement user-defined routes (UDRs)
- Associate a route table with a subnet
- Configure forced tunneling
- Diagnose and resolve routing issues
- Design and implement Azure Route Server
- Identify appropriate use cases for a network address translation (NAT) gateway
- Implement a NAT gateway

Monitor networks

- Configure monitoring, network diagnostics, and logs in Azure Network Watcher
- Monitor and troubleshoot network health by using Azure Network Watcher
- Monitor and troubleshoot networks by using Azure Monitor Network Insights
- Activate and monitor distributed denial-of-service (DDoS) protection
- Evaluate network security recommendations identified by Microsoft Defender for Cloud Secure Score
- Evaluate network security recommendations identified by Microsoft Defender For Cloud Attack Path Analysis
- Identify network resources by using Microsoft Defender for Cloud Security Explorer

Design, implement, and manage connectivity services (20–25%)

Design, implement, and manage a site-to-site VPN connection

- Design a site-to-site VPN connection, including for high availability
- Select an appropriate VNet gateway stock-keeping unit (SKU) for site-to-site VPN requirements
- Implement a site-to-site VPN connection

- Identify when to use a policy-based VPN versus a route-based VPN connection
- Create and configure a local network gateway
- Create and configure an IPsec/Internet Key Exchange (IKE) policy
- Create and configure a virtual network gateway
- Diagnose and resolve virtual network gateway connectivity issues
- Implement Azure Extended Network

Design, implement, and manage a point-to-site VPN connection

- Select an appropriate virtual network gateway SKU for point-to-site VPN requirements
- Select and configure a tunnel type
- Select an appropriate authentication method
- Configure RADIUS authentication
- Configure authentication by using Microsoft Entra ID
- Implement a VPN client configuration file
- Diagnose and resolve client-side and authentication issues
- Specify Azure requirements for Always On VPN
- Specify Azure requirements for Azure Network Adapter

Design, implement, and manage Azure ExpressRoute

- Select an ExpressRoute connectivity model
- Select an appropriate ExpressRoute SKU and tier
- Design and implement ExpressRoute to meet requirements, including cross-region connectivity, redundancy, and disaster recovery
- Design and implement ExpressRoute options, including Global Reach, FastPath, and ExpressRoute Direct
- Choose between Azure private peering only, Microsoft peering only, or both

- Configure Azure private peering
- Configure Microsoft peering
- Create and configure an ExpressRoute gateway
- Connect a virtual network to an ExpressRoute circuit
- Recommend a route advertisement configuration
- Configure encryption over ExpressRoute
- Implement Bidirectional Forwarding Detection
- Diagnose and resolve ExpressRoute connection issues

Design and implement an Azure Virtual WAN architecture

- Select a Virtual WAN SKU
- Design a Virtual WAN architecture, including selecting types and services
- Create a hub in Virtual WAN
- Choose an appropriate scale unit for each gateway type
- Deploy a gateway into a Virtual WAN hub
- Configure virtual hub routing
- Integrate a Virtual WAN hub with a third-party NVA for cloud connectivity

Design and implement application delivery services (15–20%)

Design and implement Azure Load Balancer and Azure Traffic Manager

- Map requirements to features and capabilities of Azure Load Balancer
- Identify appropriate use cases for Azure Load Balancer
- Choose an Azure Load Balancer SKU and tier
- Choose between public and internal load balancers

- Choose between regional and global load balancers
- Create and configure an Azure Load Balancer
- Implement Azure Traffic Manager
- Implement a gateway load balancer
- Implement a load balancing rule
- Create and configure inbound NAT rules
- Create and configure explicit outbound rules, including source network address translation (SNAT)

Design and implement Azure Application Gateway

- Map requirements to features and capabilities of Azure Application Gateway
- Identify appropriate use cases for Azure Application Gateway
- Choose between manual and autoscale
- Create a back-end pool
- Configure health probes
- Configure listeners
- Configure routing rules
- Configure HTTP settings
- Configure Transport Layer Security (TLS)
- Configure rewrite sets

Design and implement Azure Front Door

- Map requirements to features and capabilities of Azure Front Door
- Identify appropriate use cases for Azure Front Door
- Choose an appropriate tier
- Configure an Azure Front Door, including routing, origins, and endpoints
- Configure SSL termination and end-to-end SSL encryption

- Configure caching
- Configure traffic acceleration
- Implement rules, URL rewrite, and URL redirect
- Secure an origin by using Azure Private Link in Azure Front Door

Design and implement private access to Azure services (10–15%)

Design and implement Azure Private Link service and Azure private endpoints

- Plan private endpoints
- Create private endpoints
- Configure access to private endpoints
- Create a Private Link service
- Integrate Private Link and Private Endpoint with DNS
- Integrate a Private Link service with on-premises clients

Design and implement service endpoints

- Choose when to use a service endpoint
- Create service endpoints
- Configure service endpoint policies
- Configure access to service endpoints

Design and implement Azure network security services (15–20%)

Implement and manage network security groups

- Create a network security group (NSG)
- Associate a NSG to a resource

- Create an application security group (ASG)
- Associate an ASG to a network interface card (NIC)
- Create and configure NSG rules
- Interpret NSG flow logs
- Validate NSG flow rules
- Verify IP flow
- Configure an NSG for remote server administration, including Azure Bastion

Design and implement Azure Firewall and Azure Firewall Manager

- Map requirements to features and capabilities of Azure Firewall
- Select an appropriate Azure Firewall SKU
- Design an Azure Firewall deployment
- Create and implement an Azure Firewall deployment
- Configure Azure Firewall rules
- Create and implement Azure Firewall Manager policies
- Create a secure hub by deploying Azure Firewall inside an Azure Virtual WAN hub

Design and implement a Web Application Firewall (WAF) deployment

- Map requirements to features and capabilities of WAF
- Design a WAF deployment
- Configure detection or prevention mode
- Configure rule sets for WAF on Azure Front Door
- Configure rule sets for WAF on Application Gateway
- Implement a WAF policy
- Associate a WAF policy

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure documentation Virtual Private Networking (VPN) Microsoft Entra ID documentation RADIUS authentication with Azure Active Directory Azure ExpressRoute Overview Create virtual network (VNet) DNS Zones and Records overview - Azure DNS Azure Virtual WAN Overview Azure Route Server documentation Load Balancer Azure Application Gateway documentation Azure Front Door and CDN documentation Azure Traffic Manager Azure NAT Gateway documentation Azure Firewall documentation Web Application Firewall documentation Azure Monitor documentation What is Azure Private Link? Manage Azure Private Endpoints
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Azure Fridays ↗ Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Design and implement core networking infrastructure	Design and implement core networking infrastructure	No change
Design and implement IP addressing for Azure resources	Design and implement IP addressing for Azure resources	Minor
Design and implement name resolution	Design and implement name resolution	No change
Design and implement VNet connectivity and routing	Design and implement VNet connectivity and routing	No change
Monitor networks	Monitor networks	No change
Design, implement, and manage connectivity services	Design, implement, and manage connectivity services	No change
Design, implement, and manage a site-to-site VPN connection	Design, implement, and manage a site-to-site VPN connection	No change
Design, implement, and manage a point-to-site VPN connection	Design, implement, and manage a point-to-site VPN connection	No change
Design, implement, and manage Azure ExpressRoute	Design, implement, and manage Azure ExpressRoute	No change
Design and implement an Azure Virtual WAN architecture	Design and implement an Azure Virtual WAN architecture	No change
Design and implement application delivery services	Design and implement application delivery services	No change
Design and implement Azure Load Balancer and Azure Traffic Manager	Design and implement Azure Load Balancer and Azure Traffic Manager	No change
Design and implement Azure Application Gateway	Design and implement Azure Application Gateway	No change

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Design and implement Azure Front Door	Design and implement Azure Front Door	No change
Design and implement private access to Azure services	Design and implement private access to Azure services	No change
Design and implement Azure Private Link service and Azure private endpoints	Design and implement Azure Private Link service and Azure private endpoints	No change
Design and implement service endpoints	Design and implement service endpoints	No change
Design and implement Azure network security services	Design and implement Azure network security services	No change
Implement and manage network security groups	Implement and manage network security groups	No change
Design and implement Azure Firewall and Azure Firewall Manager	Design and implement Azure Firewall and Azure Firewall Manager	No change
Design and implement a Web Application Firewall (WAF) deployment	Design and implement a Web Application Firewall (WAF) deployment	No change

Skills measured prior to July 26, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in planning, implementing, and managing Azure networking solutions, including:

- Core network infrastructure
- Hybrid connectivity
- Application delivery services
- Private access to Azure services
- Network security

As an Azure network engineer your responsibilities include optimizing performance, resiliency, scale, and security of Azure networking solutions. You proactively monitor network environments to identify issues and minimize risk. You also identify and resolve connectivity issues.

To deliver Azure solutions, you work with:

- Solution architects
- Cloud administrators
- Security engineers
- Application developers
- DevOps engineers

As a candidate for this exam, you should have experience creating and managing compute, storage, and networking resources in Azure. You should understand networking fundamentals, such as:

- Name resolution
- Network protocols
- Network address management

Skills at a glance

- Design and implement core networking infrastructure (25–30%)
- Design, implement, and manage connectivity services (20–25%)
- Design and implement application delivery services (15–20%)
- Design and implement private access to Azure services (10–15%)
- Design and implement Azure network security services (15–20%)

Design and implement core networking infrastructure (25–30%)

Design and implement IP addressing for Azure resources

- Plan and implement network segmentation and address spaces
- Create a virtual network (VNet)
- Plan and configure subnetting for services, including VNet gateways, private endpoints, service endpoints, firewalls, application gateways, VNet-integrated

platform services, and Azure Bastion

- Plan and configure subnet delegation
- Plan and configure shared or dedicated subnets
- Create a prefix for public IP addresses
- Choose when to use a public IP address prefix
- Plan and implement a custom public IP address prefix (bring your own IP)
- Create a public IP address
- Associate public IP addresses to resources

Design and implement name resolution

- Design name resolution inside a VNet
- Configure DNS settings for a VNet
- Design public DNS zones
- Design private DNS zones
- Configure public and private DNS zones
- Link a private DNS zone to a VNet
- Design and implement Azure DNS Private Resolver

Design and implement VNet connectivity and routing

- Design service chaining, including gateway transit
- Implement VNet peering
- Implement and manage virtual networks by using Azure Virtual Network Manager
- Design and implement user-defined routes (UDRs)
- Associate a route table with a subnet
- Configure forced tunneling
- Diagnose and resolve routing issues

- Design and implement Azure Route Server
- Identify appropriate use cases for a network address translation (NAT) gateway
- Implement a NAT gateway

Monitor networks

- Configure monitoring, network diagnostics, and logs in Azure Network Watcher
- Monitor and troubleshoot network health by using Azure Network Watcher
- Monitor and troubleshoot networks by using Azure Monitor Network Insights
- Activate and monitor distributed denial-of-service (DDoS) protection
- Evaluate network security recommendations identified by Microsoft Defender for Cloud Secure Score
- Evaluate network security recommendations identified by Microsoft Defender For Cloud Attack Path Analysis
- Identify network resources by using Microsoft Defender for Cloud Security Explorer

Design, implement, and manage connectivity services (20–25%)

Design, implement, and manage a site-to-site VPN connection

- Design a site-to-site VPN connection, including for high availability
- Select an appropriate VNet gateway stock-keeping unit (SKU) for site-to-site VPN requirements
- Implement a site-to-site VPN connection
- Identify when to use a policy-based VPN versus a route-based VPN connection
- Create and configure a local network gateway
- Create and configure an IPsec/Internet Key Exchange (IKE) policy
- Create and configure a virtual network gateway
- Diagnose and resolve virtual network gateway connectivity issues

- Implement Azure Extended Network

Design, implement, and manage a point-to-site VPN connection

- Select an appropriate virtual network gateway SKU for point-to-site VPN requirements
- Select and configure a tunnel type
- Select an appropriate authentication method
- Configure RADIUS authentication
- Configure authentication by using Microsoft Entra ID
- Implement a VPN client configuration file
- Diagnose and resolve client-side and authentication issues
- Specify Azure requirements for Always On VPN
- Specify Azure requirements for Azure Network Adapter

Design, implement, and manage Azure ExpressRoute

- Select an ExpressRoute connectivity model
- Select an appropriate ExpressRoute SKU and tier
- Design and implement ExpressRoute to meet requirements, including cross-region connectivity, redundancy, and disaster recovery
- Design and implement ExpressRoute options, including Global Reach, FastPath, and ExpressRoute Direct
- Choose between Azure private peering only, Microsoft peering only, or both
- Configure Azure private peering
- Configure Microsoft peering
- Create and configure an ExpressRoute gateway
- Connect a virtual network to an ExpressRoute circuit
- Recommend a route advertisement configuration

- Configure encryption over ExpressRoute
- Implement Bidirectional Forwarding Detection
- Diagnose and resolve ExpressRoute connection issues

Design and implement an Azure Virtual WAN architecture

- Select a Virtual WAN SKU
- Design a Virtual WAN architecture, including selecting types and services
- Create a hub in Virtual WAN
- Choose an appropriate scale unit for each gateway type
- Deploy a gateway into a Virtual WAN hub
- Configure virtual hub routing
- Integrate a Virtual WAN hub with a third-party NVA for cloud connectivity

Design and implement application delivery services (15–20%)

Design and implement Azure Load Balancer and Azure Traffic Manager

- Map requirements to features and capabilities of Azure Load Balancer
- Identify appropriate use cases for Azure Load Balancer
- Choose an Azure Load Balancer SKU and tier
- Choose between public and internal load balancers
- Choose between regional and global load balancers
- Create and configure an Azure Load Balancer
- Implement Azure Traffic Manager
- Implement a gateway load balancer
- Implement a load balancing rule

- Create and configure inbound NAT rules
- Create and configure explicit outbound rules, including source network address translation (SNAT)

Design and implement Azure Application Gateway

- Map requirements to features and capabilities of Azure Application Gateway
- Identify appropriate use cases for Azure Application Gateway
- Choose between manual and autoscale
- Create a back-end pool
- Configure health probes
- Configure listeners
- Configure routing rules
- Configure HTTP settings
- Configure Transport Layer Security (TLS)
- Configure rewrite sets

Design and implement Azure Front Door

- Map requirements to features and capabilities of Azure Front Door
- Identify appropriate use cases for Azure Front Door
- Choose an appropriate tier
- Configure an Azure Front Door, including routing, origins, and endpoints
- Configure SSL termination and end-to-end SSL encryption
- Configure caching
- Configure traffic acceleration
- Implement rules, URL rewrite, and URL redirect
- Secure an origin by using Azure Private Link in Azure Front Door

Design and implement private access to Azure services (10–15%)

Design and implement Azure Private Link service and Azure private endpoints

- Plan private endpoints
- Create private endpoints
- Configure access to private endpoints
- Create a Private Link service
- Integrate Private Link and Private Endpoint with DNS
- Integrate a Private Link service with on-premises clients

Design and implement service endpoints

- Choose when to use a service endpoint
- Create service endpoints
- Configure service endpoint policies
- Configure access to service endpoints

Design and implement Azure network security services (15–20%)

Implement and manage network security groups

- Create a network security group (NSG)
- Associate a NSG to a resource
- Create an application security group (ASG)
- Associate an ASG to a network interface card (NIC)
- Create and configure NSG rules
- Interpret NSG flow logs

- Validate NSG flow rules
- Verify IP flow
- Configure an NSG for remote server administration, including Azure Bastion

Design and implement Azure Firewall and Azure Firewall Manager

- Map requirements to features and capabilities of Azure Firewall
- Select an appropriate Azure Firewall SKU
- Design an Azure Firewall deployment
- Create and implement an Azure Firewall deployment
- Configure Azure Firewall rules
- Create and implement Azure Firewall Manager policies
- Create a secure hub by deploying Azure Firewall inside an Azure Virtual WAN hub

Design and implement a Web Application Firewall (WAF) deployment

- Map requirements to features and capabilities of WAF
- Design a WAF deployment
- Configure detection or prevention mode
- Configure rule sets for WAF on Azure Front Door
- Configure rule sets for WAF on Application Gateway
- Implement a WAF policy
- Associate a WAF policy

Study guide for Exam AZ-800: Administering Windows Server Hybrid Core Infrastructure

Article • 05/30/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 26, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 26, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 26, 2024

Audience profile

As a candidate for this exam, you're responsible for configuring and managing Windows Server on-premises, hybrid, and infrastructure as a service (IaaS) platform workloads. As a Windows Server hybrid administrator, you're tasked with:

- Integrating Windows Server environments with Azure services.
- Managing Windows Server in on-premises networks.

In this role, you manage and maintain Windows Server IaaS workloads in Azure as well as migrating and deploying workloads to Azure. You typically collaborate with:

- Azure administrators
- Enterprise architects
- Microsoft 365 administrators
- Network engineers

As a candidate for this exam, you deploy, package, secure, update, and configure Windows Server workloads using on-premises, hybrid, and cloud technologies. In this role, you implement and manage on-premises and hybrid solutions, such as identity, security, management, compute, networking, storage, monitoring, high availability, and disaster recovery.

You use administrative tools and technologies such as Windows Admin Center, PowerShell, Azure Arc, Azure Policy, Azure Monitor, Azure Automation Update Management, Microsoft Defender for Identity, Microsoft Defender for Cloud, and IaaS virtual machine (VM) administration.

As a candidate for this exam, you should have several years of experience with Windows Server operating systems.

Skills at a glance

- Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments (30–35%)
- Manage Windows Servers and workloads in a hybrid environment (10–15%)
- Manage virtual machines and containers (15–20%)
- Implement and manage an on-premises and hybrid networking infrastructure (15–20%)
- Manage storage and file services (15–20%)

Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments (30–35%)

Deploy and manage AD DS domain controllers

- Deploy and manage domain controllers on-premises
- Deploy and manage domain controllers in Azure
- Deploy read-only domain controllers (RODCs)
- Troubleshoot flexible single master operation (FSMO) roles

Configure and manage multi-site, multi-domain, and multi-forest environments

- Configure and manage forest and domain trusts
- Configure and manage AD DS sites
- Configure and manage AD DS replication

Create and manage AD DS security principals

- Create and manage AD DS users and groups
- Manage users and groups in multi-domain and multi-forest scenarios
- Implement Group Managed Service Accounts (gMSAs)
- Join Windows Servers to AD DS, Microsoft Entra Domain Services, and Microsoft Entra

Implement and manage hybrid identities

- Integrate Microsoft Entra ID, AD DS and Microsoft Entra Domain Services
- Implement Microsoft Entra Connect Sync
- Manage Microsoft Entra Connect Sync synchronization
- Implement Microsoft Entra Cloud Sync
- Manage Microsoft Entra Domain Services
- Manage Microsoft Entra Connect Health
- Manage authentication in on-premises and hybrid environments

- Configure and manage AD DS passwords

Manage Windows Server by using domain-based Group Policies

- Implement Group Policy in AD DS
- Implement Group Policy Preferences in AD DS
- Implement Group Policy in Microsoft Entra Domain Services

Manage Windows Servers and workloads in a hybrid environment (10–15%)

Manage Windows Servers in a hybrid environment

- Deploy a Windows Admin Center Gateway server
- Configure a target machine for Windows Admin Center
- Configure PowerShell remoting
- Configure Credential Security Support Provider protocol (CredSSP) or Kerberos Delegation for 2nd Hop Remoting
- Configure Just Enough Administration (JEA) for PowerShell remoting

Manage Windows Servers and workloads by using Azure services

- Manage Windows Servers by using Azure Arc
- Create and assign Azure Policy that uses guest configuration extension
- Deploy Azure services using VM extensions on non-Azure machines
- Manage updates for Windows machines
- Integrate Windows Servers with Log Analytics
- Integrate Windows Servers with Microsoft Defender for Cloud
- Manage Windows Server Azure VMs
- Implement Azure Automation for hybrid workloads
- Create runbooks to automate tasks on target VMs

- Implement Azure Automation State Configuration to prevent configuration drift in IaaS machines

Manage virtual machines and containers (15–20%)

Manage Hyper-V and guest virtual machines

- Enable VM Enhanced session mode
- Manage VM using PowerShell remoting, PowerShell Direct and Secure Shell (SSH) Direct for Linux VMs
- Configure nested virtualization
- Configure VM Memory
- Configure integration services
- Configure Discrete Device Assignment
- Configure VM resource groups
- Configure VM CPU groups
- Configure hypervisor scheduling types
- Manage VM checkpoints
- Implementing high availability for virtual machines
- Manage virtual hard disk (VHD) and virtual hard disk v2 (VHDX) files
- Configure Hyper-V Network Adapter
- Configure network interface card (NIC) Teaming
- Configure Hyper-V Switch

Create and manage containers

- Create Windows Server container images
- Manage Windows Server container images
- Configure container networking

- Manage container instances

Manage Azure Virtual Machines that run Windows Server

- Manage data disks
- Resize Azure VM
- Configure connections to VMs
- Manage Azure VM network configuration

Implement and manage an on-premises and hybrid networking infrastructure (15–20%)

Implement on-premises and hybrid name resolution

- Integrate DNS with AD DS
- Create and manage DNS zones and records
- Configure DNS forwarding/conditional forwarding
- Integrate Windows Server DNS with Azure DNS private zones
- Implement Domain Name System Security Extensions (DNSSEC)

Manage IP addressing in on-premises and hybrid scenarios

- Implement and manage IP Address Management (IPAM)
- Implement and configure the Dynamic Host Configuration protocol (DHCP) server role (on-premises only)
- Resolve IP address issues in hybrid environments
- Create and manage DHCP scopes
- Create and manage IP reservations
- Implement DHCP high availability

Implement on-premises and hybrid network connectivity

- Implement and manage the Remote Access role
- Implement and manage Azure Network Adapter
- Implement and manage Azure extended network
- Implement and manage Network Policy and Access Services role
- Implement Web Application Proxy
- Implement Azure Relay
- Implement site-to-site VPN
- Implement Azure Virtual WAN
- Implement Microsoft Entra Application Proxy

Manage storage and file services (15–20%)

Configure and manage Azure File Sync

- Create Azure File Sync Service
- Create sync groups
- Create cloud endpoints
- Register servers
- Create server endpoints
- Configure cloud tiering
- Monitor File Sync
- Migrate Distributed File System (DFS) to Azure File Sync

Configure and manage Windows Server file shares

- Configure Windows Server file share access
- Configuring file screens
- Configure file server resource manager (FSRM) quotas
- Configure BranchCache

- Implement and configure Distributed File System (DFS)

Configure Windows Server storage

- Configure disks and volumes
- Configure and manage Storage Spaces
- Configure and manage Storage Replica
- Configure Data Deduplication
- Configure Server Message Block (SMB) direct
- Configure Storage QoS
- Configure file systems

Study resources

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 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Windows Server documentation Azure documentation Connecting Windows Server to Azure hybrid services Azure AD Domain Services documentation Microsoft Entra ID documentation Hybrid identity with Azure Active Directory Administer Group Policy in Azure AD Domain Services managed domain Deploy a Windows Admin Center gateway in Azure PowerShell remoting Azure Arc Windows security baseline Manage hybrid Azure workloads using Windows Admin Center Virtualization documentation Containers on Windows documentation

Study resources	Links to learning and documentation
	Networking documentation Windows Server Storage documentation
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Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments	Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments	No change
Deploy and manage AD DS domain controllers	Deploy and manage AD DS domain controllers	No change
Configure and manage multi-site, multi-domain, and multi-forest environments	Configure and manage multi-site, multi-domain, and multi-forest environments	No change
Create and manage AD DS security principals	Create and manage AD DS security principals	No change
Implement and manage hybrid identities	Implement and manage hybrid identities	Minor
Manage Windows Server by using domain-based Group Policies	Manage Windows Server by using domain-based Group Policies	No change

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Manage Windows Servers and workloads in a hybrid environment	Manage Windows Servers and workloads in a hybrid environment	No change
Manage Windows Servers in a hybrid environment	Manage Windows Servers in a hybrid environment	No change
Manage Windows Servers and workloads by using Azure services	Manage Windows Servers and workloads by using Azure services	Minor
Manage virtual machines and containers	Manage virtual machines and containers	No change
Manage Hyper-V and guest virtual machines	Manage Hyper-V and guest virtual machines	No change
Create and manage containers	Create and manage containers	No change
Manage Azure Virtual Machines that run Windows Server	Manage Azure Virtual Machines that run Windows Server	No change
Implement and manage an on-premises and hybrid networking infrastructure	Implement and manage an on-premises and hybrid networking infrastructure	No change
Implement on-premises and hybrid name resolution	Implement on-premises and hybrid name resolution	No change
Manage IP addressing in on-premises and hybrid scenarios	Manage IP addressing in on-premises and hybrid scenarios	No change
Implement on-premises and hybrid network connectivity	Implement on-premises and hybrid network connectivity	No change
Manage storage and file services	Manage storage and file services	No change
Configure and manage Azure File Sync	Configure and manage Azure File Sync	No change
Configure and manage Windows Server file shares	Configure and manage Windows Server file shares	No change
Configure Windows Server storage	Configure Windows Server storage	No change

Skills measured prior to July 26, 2024

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Skills at a glance

- Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments (30–35%)
- Manage Windows Servers and workloads in a hybrid environment (10–15%)
- Manage virtual machines and containers (15–20%)

- Implement and manage an on-premises and hybrid networking infrastructure (15–20%)
- Manage storage and file services (15–20%)

Deploy and manage Active Directory Domain Services (AD DS) in on-premises and cloud environments (30–35%)

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- Deploy and manage domain controllers on-premises
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- Configure and manage AD DS sites
- Configure and manage AD DS replication

Create and manage AD DS security principals

- Create and manage AD DS users and groups
- Manage users and groups in multi-domain and multi-forest scenarios
- Implement Group Managed Service Accounts (gMSAs)
- Join Windows Servers to AD DS, Microsoft Entra Domain Services, and Microsoft Entra

Implement and manage hybrid identities

- Integrate Microsoft Entra ID, AD DS and Microsoft Entra Domain Services

- Implement Microsoft Entra Connect
- Manage Microsoft Entra Connect synchronization
- Implement Microsoft Entra Connect cloud sync
- Manage Microsoft Entra Domain Services
- Manage Microsoft Entra Connect Health
- Manage authentication in on-premises and hybrid environments
- Configure and manage AD DS passwords

Manage Windows Server by using domain-based Group Policies

- Implement Group Policy in AD DS
- Implement Group Policy Preferences in AD DS
- Implement Group Policy in Microsoft Entra Domain Services

Manage Windows Servers and workloads in a hybrid environment (10–15%)

Manage Windows Servers in a hybrid environment

- Deploy a Windows Admin Center Gateway server
- Configure a target machine for Windows Admin Center
- Configure PowerShell remoting
- Configure Credential Security Support Provider protocol (CredSSP) or Kerberos Delegation for 2nd Hop Remoting
- Configure Just Enough Administration (JEA) for PowerShell remoting

Manage Windows Servers and workloads by using Azure services

- Manage Windows Servers by using Azure Arc
- Create and assign Azure Policy that uses guest configuration extension
- Deploy Azure services using Azure VM extensions on non-Azure machines

- Manage updates for Windows machines
- Integrate Windows Servers with Log Analytics
- Integrate Windows Servers with Microsoft Defender for Cloud
- Manage IaaS VMs in Azure that run Windows Server
- Implement Azure Automation for hybrid workloads
- Create runbooks to automate tasks on target VMs
- Implement Azure Automation State Configuration to prevent configuration drift in IaaS machines

Manage virtual machines and containers (15–20%)

Manage Hyper-V and guest virtual machines

- Enable VM Enhanced session mode
- Manage VM using PowerShell remoting, PowerShell Direct and Secure Shell (SSH) Direct for Linux VMs
- Configure nested virtualization
- Configure VM Memory
- Configure integration services
- Configure Discrete Device Assignment
- Configure VM resource groups
- Configure VM CPU groups
- Configure hypervisor scheduling types
- Manage VM checkpoints
- Implementing high availability for virtual machines
- Manage virtual hard disk (VHD) and virtual hard disk v2 (VHDX) files
- Configure Hyper-V Network Adapter
- Configure network interface card (NIC) Teaming

- Configure Hyper-V Switch

Create and manage containers

- Create Windows Server container images
- Manage Windows Server container images
- Configure container networking
- Manage container instances

Manage Azure Virtual Machines that run Windows Server

- Manage data disks
- Resize Azure VM
- Configure connections to VMs
- Manage Azure VM network configuration

Implement and manage an on-premises and hybrid networking infrastructure (15–20%)

Implement on-premises and hybrid name resolution

- Integrate DNS with AD DS
- Create and manage DNS zones and records
- Configure DNS forwarding/conditional forwarding
- Integrate Windows Server DNS with Azure DNS private zones
- Implement Domain Name System Security Extensions (DNSSEC)

Manage IP addressing in on-premises and hybrid scenarios

- Implement and manage IP Address Management (IPAM)
- Implement and configure the Dynamic Host Configuration protocol (DHCP) server role (on-premises only)

- Resolve IP address issues in hybrid environments
- Create and manage DHCP scopes
- Create and manage IP reservations
- Implement DHCP high availability

Implement on-premises and hybrid network connectivity

- Implement and manage the Remote Access role
- Implement and manage Azure Network Adapter
- Implement and manage Azure extended network
- Implement and manage Network Policy and Access Services role
- Implement Web Application Proxy
- Implement Azure Relay
- Implement site-to-site VPN
- Implement Azure Virtual WAN
- Implement Microsoft Entra Application Proxy

Manage storage and file services (15–20%)

Configure and manage Azure File Sync

- Create Azure File Sync Service
- Create sync groups
- Create cloud endpoints
- Register servers
- Create server endpoints
- Configure cloud tiering
- Monitor File Sync
- Migrate Distributed File System (DFS) to Azure File Sync

Configure and manage Windows Server file shares

- Configure Windows Server file share access
- Configuring file screens
- Configure file server resource manager (FSRM) quotas
- Configure BranchCache
- Implement and configure Distributed File System (DFS)

Configure Windows Server storage

- Configure disks and volumes
- Configure and manage Storage Spaces
- Configure and manage Storage Replica
- Configure Data Deduplication
- Configure Server Message Block (SMB) direct
- Configure Storage QoS
- Configure file systems

Study guide for Exam AZ-801: Configuring Windows Server Hybrid Advanced Services

Article • 05/30/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[+] Expand table

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How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 26, 2024

Audience profile

As a candidate for this exam, you're responsible for configuring and managing Windows Server on-premises, hybrid, and infrastructure as a service (IaaS) platform workloads. As a Windows Server hybrid administrator, you're tasked with:

- Integrating Windows Server environments with Azure services.
- Managing Windows Server in on-premises networks.

In this role, you manage and maintain Windows Server IaaS workloads in Azure as well as migrating and deploying workloads to Azure. You typically collaborate with:

- Azure administrators
- Enterprise architects
- Microsoft 365 administrators
- Network engineers

As a candidate for this exam, you deploy, package, secure, update, and configure Windows Server workloads using on-premises, hybrid, and cloud technologies. In this role, you implement and manage on-premises and hybrid solutions, such as identity, security, management, compute, networking, storage, monitoring, high availability, and disaster recovery.

You use administrative tools and technologies such as Windows Admin Center, PowerShell, Azure Arc, Azure Policy, Azure Monitor, Azure Automation Update Management, Microsoft Defender for Identity, Microsoft Defender for Cloud, and IaaS virtual machine (VM) administration.

As a candidate for this exam, you should have several years of experience with Windows Server operating systems.

Skills at a glance

- Secure Windows Server on-premises and hybrid infrastructures (25–30%)
- Implement and manage Windows Server high availability (10–15%)
- Implement disaster recovery (10–15%)
- Migrate servers and workloads (20–25%)
- Monitor and troubleshoot Windows Server environments (20–25%)

Secure Windows Server on-premises and hybrid infrastructures (25–30%)

Secure Windows Server operating system

- Configure and manage Exploit Protection

- Configure and manage Windows Defender Application Control
- Configure and manage Microsoft Defender for Servers
- Configure and manage Windows Defender Credential Guard
- Configure SmartScreen
- Implement operating system security by using Group Policies

Secure a hybrid Active Directory infrastructure

- Configure password policies
- Enable password block lists
- Manage protected users
- Manage account security on a Read-Only Domain Controller (RODC)
- Harden domain controllers
- Configure authentication policy silos
- Restrict access to domain controllers
- Configure account security
- Manage AD built-in administrative groups
- Manage AD delegation
- Implement and manage Microsoft Defender for Identity

Identify and remediate Windows Server security issues by using Azure services

- Monitor on-premises servers and Azure VMs by using Microsoft Sentinel
- Identify and remediate security issues in on-premises servers and Azure VMs by using Microsoft Defender for Cloud

Secure Windows Server networking

- Manage Windows Defender Firewall

- Implement domain isolation
- Implement connection security rules

Secure Windows Server storage

- Manage Windows BitLocker Drive Encryption (BitLocker)
- Manage and recover encrypted volumes
- Enable storage encryption by using Azure Disk Encryption
- Manage disk encryption keys for IaaS virtual machines

Implement and manage Windows Server high availability (10–15%)

Implement a Windows Server failover cluster

- Implement a failover cluster on-premises, hybrid, or cloud-only
- Create a Windows failover cluster
- Implement a stretch cluster across datacenters or Azure regions
- Configure storage for failover clustering
- Modify quorum options
- Configure network adapters for failover clustering
- Configure cluster workload options
- Configure cluster sets
- Configure Scale-Out File servers
- Create an Azure witness
- Configure a floating IP address for the cluster
- Implement load balancing for the failover cluster

Manage failover clustering

- Implement cluster-aware updating
- Recover a failed cluster node
- Upgrade a node to Windows Server 2022
- Failover workloads between nodes
- Install Windows updates on cluster nodes
- Manage failover clusters using Windows Admin Center

Implement and manage Storage Spaces Direct

- Create a failover cluster using Storage Spaces Direct
- Upgrade a Storage Spaces Direct node
- Implement networking for Storage Spaces Direct
- Configure Storage Spaces Direct

Implement disaster recovery (10–15%)

Manage backup and recovery for Windows Server

- Back up and restore files and folders to Azure Recovery Services Vault
- Install and manage Azure Backup Server
- Back up and recover using Azure Backup Server
- Manage backups in Azure Recovery Services Vault
- Create a backup policy
- Configure backup for Azure VM using the built-in backup agent
- Recover VM using temporary snapshots
- Recover VMs to new Azure VMs
- Restore a VM

Implement disaster recovery by using Azure Site Recovery

- Configure Azure Site Recovery networking
- Configure Site Recovery for on-premises VMs
- Configure a recovery plan
- Configure Site Recovery for Azure VMs
- Implement VM replication to secondary datacenter or Azure region
- Configure Azure Site Recovery policies

Protect virtual machines by using Hyper-V replicas

- Configure Hyper-V hosts for replication
- Manage Hyper-V replica servers
- Configure VM replication
- Perform a failover

Migrate servers and workloads (20–25%)

Migrate on-premises storage to on-premises servers or Azure

- Transfer data and share
- Cut over to a new server by using Storage Migration Service (SMS)
- Use Storage Migration Service to migrate to Azure VMs
- Migrate to Azure file shares

Migrate on-premises servers to Azure

- Deploy and configure Azure Migrate appliance
- Migrate VM workloads to Azure IaaS
- Migrate physical workloads to Azure IaaS
- Migrate by using Azure Migrate

Migrate workloads from previous versions to Windows Server 2022

- Migrate IIS
- Migrate Hyper-V hosts
- Migrate Remote Desktop Services (RDS) host servers
- Migrate Dynamic Host Configuration protocol (DHCP)
- Migrate print servers

Migrate IIS workloads to Azure

- Migrate IIS workloads to Azure Web Apps
- Migrate IIS workloads to containers

Migrate an Active Directory Domain Services (AD DS) infrastructure to Windows Server 2022 AD DS

- Migrate AD DS objects, including users, groups and Group Policies using AD Migration Tool
- Migrate to a new Active Directory forest
- Upgrade an existing forest

Monitor and troubleshoot Windows Server environments (20–25%)

Monitor Windows Server by using Windows Server tools and Azure services

- Monitor Windows Server by using Performance Monitor
- Create and configure Data Collector Sets
- Monitor servers and configure alerts by using Windows Admin Center
- Analyze Windows Server system data by using System Insights
- Manage event logs
- Deploy Azure Monitor agents
- Collect performance counters to Azure

- Create alerts
- Monitor Azure VMs by using Azure diagnostics extension
- Monitor Azure VMs performance by using VM Insights

Troubleshoot Windows Server on-premises and hybrid networking

- Troubleshoot hybrid network connectivity
- Troubleshoot on-premises connectivity

Troubleshoot Windows Server virtual machines in Azure

- Troubleshoot deployment failures
- Troubleshoot booting failures
- Troubleshoot VM performance issues
- Troubleshoot VM extension issues
- Troubleshoot disk encryption issues
- Troubleshoot storage
- Troubleshoot VM connection issues

Troubleshoot Active Directory

- Restore objects from AD recycle bin
- Recover Active Directory database using Directory Services Restore mode
- Recover system volume (SYSVOL)
- Troubleshoot Active Directory replication
- Troubleshoot Hybrid authentication issues
- Troubleshoot on-premises Active Directory

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[+] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Windows Server documentation Azure documentation Windows Server Security documentation Protect data and infrastructure documentation Best Practices for Securing Active Directory Microsoft Sentinel documentation Failover Clustering Storage Spaces Direct overview Azure Site Recovery documentation Azure Backup Documentation Virtualization documentation Windows Server Storage documentation Azure Migrate documentation Migrating apps to Azure Active Directory Azure Monitor documentation Identity and Access documentation
Ask a question	Microsoft Q&A
Get community support	Windows Server Community ↗ Azure Community Support ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Azure Fridays ↗ Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Secure Windows Server On-premises and Hybrid Infrastructures	Secure Windows Server on-premises and hybrid infrastructures	No change
Secure Windows Server operating system	Secure Windows Server operating system	No change
Secure a hybrid Active Directory infrastructure	Secure a hybrid Active Directory infrastructure	No change
Identify and remediate Windows Server security issues by using Azure Services	Identify and remediate Windows Server security issues by using Azure services	Minor
Secure Windows Server networking	Secure Windows Server networking	No change
Secure Windows Server storage	Secure Windows Server storage	No change
Implement and Manage Windows Server High Availability	Implement and manage Windows Server high availability	No change
Implement a Windows Server failover cluster	Implement a Windows Server failover cluster	No change
Manage failover clustering	Manage failover clustering	No change
Implement and manage Storage Spaces Direct	Implement and manage Storage Spaces Direct	No change
Implement Disaster Recovery	Implement disaster recovery	No change
Manage backup and recovery for Windows Server	Manage backup and recovery for Windows Server	No change
Implement disaster recovery by using Azure Site Recovery	Implement disaster recovery by using Azure Site Recovery	No change
Protect virtual machines by using Hyper-V replicas	Protect virtual machines by using Hyper-V replicas	No change
Migrate Servers and Workloads	Migrate servers and workloads	No change

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Migrate on-premises storage to on-premises servers or Azure	Migrate on-premises storage to on-premises servers or Azure	No change
Migrate on-premises servers to Azure	Migrate on-premises servers to Azure	No change
Migrate workloads from previous versions to Windows Server 2022	Migrate workloads from previous versions to Windows Server 2022	No change
Migrate IIS workloads to Azure	Migrate IIS workloads to Azure	No change
Migrate an Active Directory Domain Services (AD DS) Infrastructure to Windows Server 2022 AD DS	Migrate an Active Directory Domain Services (AD DS) infrastructure to Windows Server 2022 AD DS	No change
Monitor and Troubleshoot Windows Server Environments	Monitor and troubleshoot Windows Server environments	No change
Monitor Windows Server by using Windows Server tools and Azure services	Monitor Windows Server by using Windows Server tools and Azure services	No change
Troubleshoot Windows Server On-premises and Hybrid networking	Troubleshoot Windows Server On-premises and Hybrid networking	No change
Troubleshoot Windows Server virtual machines in Azure	Troubleshoot Windows Server virtual machines in Azure	No change
Troubleshoot Active Directory	Troubleshoot Active Directory	No change

Skills measured prior to July 26, 2024

Audience profile

Candidates for this exam are responsible for configuring and managing Windows Server on-premises, hybrid, and Infrastructure as a Service (IaaS) platform workloads. The Windows Server Hybrid Administrator is tasked with integrating Windows Server environments with Azure services and managing Windows Server in on-premises networks. This role manages and maintains Windows Server IaaS workloads in Azure as well as migrating and deploying workloads to Azure. This role typically collaborates with Azure Administrators, Enterprise Architects, Microsoft 365 administrators, and network engineers.

Candidates for this exam deploy, package, secure, update, and configure Windows Server workloads using on-premises, hybrid, and cloud technologies. This role implements and manages on-premises and hybrid solutions, such as identity, security, management, compute, networking, storage, monitoring, high availability, and disaster recovery. This role uses administrative tools and technologies such as Windows Admin Center, PowerShell, Azure Arc, Azure Policy, Azure Monitor, Azure Automation Update Management, Microsoft Defender for Identity, Microsoft Defender for Cloud, and IaaS VM administration.

Candidates for this exam have several years of experience with Windows Server operating systems.

- Secure Windows Server on-premises and hybrid infrastructures (25–30%)
- Implement and manage Windows Server high availability (10–15%)
- Implement disaster recovery (10–15%)
- Migrate servers and workloads (20–25%)
- Monitor and troubleshoot Windows Server environments (20–25%)

Secure Windows Server on-premises and hybrid infrastructures (25–30%)

Secure Windows Server operating system

- Configure and manage Exploit Protection
- Configure and manage Windows Defender Application Control
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- Configure and manage Windows Defender Credential Guard
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Secure a hybrid Active Directory infrastructure

- Configure password policies
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- Manage AD delegation
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- Implement cluster-aware updating
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- Back up and restore files and folders to Azure Recovery Services Vault
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- Recover SYSVOL
- Troubleshoot Active Directory replication
- Troubleshoot Hybrid authentication issues
- Troubleshoot on-premises Active Directory

Study guide for Exam AZ-900: Microsoft Azure Fundamentals

Article • 12/22/2023

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Skills measured as of January 23, 2024

Audience profile

As a candidate for this exam, you're a technology professional who wants to demonstrate foundational knowledge of cloud concepts in general and Microsoft Azure in particular. This exam is a common starting point in a journey towards a career in Azure.

You can describe Azure architectural components and Azure services, such as:

- Compute
- Networking
- Storage

You can also describe features and tools to secure, govern, and administer Azure.

You should have skills and experience working with an area of IT, such as:

- Infrastructure management
- Database management
- Software development

Skills at a glance

- Describe cloud concepts (25–30%)
- Describe Azure architecture and services (35–40%)
- Describe Azure management and governance (30–35%)

Describe cloud concepts (25–30%)

Describe cloud computing

- Define cloud computing
- Describe the shared responsibility model
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model
- Compare cloud pricing models
- Describe serverless

Describe the benefits of using cloud services

- Describe the benefits of high availability and scalability in the cloud
- Describe the benefits of reliability and predictability in the cloud
- Describe the benefits of security and governance in the cloud
- Describe the benefits of manageability in the cloud

Describe cloud service types

- Describe infrastructure as a service (IaaS)
- Describe platform as a service (PaaS)
- Describe software as a service (SaaS)
- Identify appropriate use cases for each cloud service type (IaaS, PaaS, and SaaS)

Describe Azure architecture and services (35–40%)

Describe the core architectural components of Azure

- Describe Azure regions, region pairs, and sovereign regions
- Describe availability zones
- Describe Azure datacenters
- Describe Azure resources and resource groups
- Describe subscriptions
- Describe management groups
- Describe the hierarchy of resource groups, subscriptions, and management groups

Describe Azure compute and networking services

- Compare compute types, including containers, virtual machines, and functions
- Describe virtual machine options, including Azure virtual machines, Azure Virtual Machine Scale Sets, availability sets, and Azure Virtual Desktop
- Describe the resources required for virtual machines
- Describe application hosting options, including web apps, containers, and virtual machines
- Describe virtual networking, including the purpose of Azure virtual networks, Azure virtual subnets, peering, Azure DNS, Azure VPN Gateway, and ExpressRoute
- Define public and private endpoints

Describe Azure storage services

- Compare Azure Storage services
- Describe storage tiers
- Describe redundancy options
- Describe storage account options and storage types
- Identify options for moving files, including AzCopy, Azure Storage Explorer, and Azure File Sync
- Describe migration options, including Azure Migrate and Azure Data Box

Describe Azure identity, access, and security

- Describe directory services in Azure, including Microsoft Entra ID and Microsoft Entra Domain Services
- Describe authentication methods in Azure, including single sign-on (SSO), multi-factor authentication (MFA), and passwordless
- Describe external identities in Azure, including business-to-business (B2B) and business-to-customer (B2C)
- Describe Microsoft Entra Conditional Access
- Describe Azure role-based access control (RBAC)
- Describe the concept of Zero Trust
- Describe the purpose of the defense-in-depth model
- Describe the purpose of Microsoft Defender for Cloud

Describe Azure management and governance (30–35%)

Describe cost management in Azure

- Describe factors that can affect costs in Azure
- Compare the pricing calculator and the Total Cost of Ownership (TCO) Calculator
- Describe cost management capabilities in Azure
- Describe the purpose of tags

Describe features and tools in Azure for governance and compliance

- Describe the purpose of Microsoft Purview in Azure
- Describe the purpose of Azure Policy
- Describe the purpose of resource locks

Describe features and tools for managing and deploying Azure resources

- Describe the Azure portal
- Describe Azure Cloud Shell, including Azure Command-Line Interface (CLI) and Azure PowerShell
- Describe the purpose of Azure Arc
- Describe infrastructure as code (IaC)
- Describe Azure Resource Manager (ARM) and ARM templates

Describe monitoring tools in Azure

- Describe the purpose of Azure Advisor
- Describe Azure Service Health
- Describe Azure Monitor, including Log Analytics, Azure Monitor alerts, and Application Insights

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course

Study resources	Links to learning and documentation
Find documentation	Azure on Microsoft Learn Azure documentation Microsoft Cloud Adoption Framework for Azure Accelerate cloud adoption with the Microsoft Cloud Adoption Framework for Azure
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Community Support
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone Azure Fridays Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill area prior to January 23, 2024	Skill area as of January 23, 2024	Change
Audience profile		No change
Describe cloud concepts	Describe cloud concepts	No change
Describe cloud computing	Describe cloud computing	No change
Describe the benefits of using cloud services	Describe the benefits of using cloud services	No change
Describe cloud service types	Describe cloud service types	Minor
Describe Azure architecture and services	Describe Azure architecture and services	No change

Skill area prior to January 23, 2024	Skill area as of January 23, 2024	Change
Describe the core architectural components of Azure	Describe the core architectural components of Azure	No change
Describe Azure compute and networking services	Describe Azure compute and networking services	No change
Describe Azure storage services	Describe Azure storage services	No change
Describe Azure identity, access, and security	Describe Azure identity, access, and security	Minor
Describe Azure management and governance	Describe Azure management and governance	No change
Describe cost management in Azure	Describe cost management in Azure	No change
Describe features and tools in Azure for governance and compliance	Describe features and tools in Azure for governance and compliance	No change
Describe features and tools for managing and deploying Azure resources	Describe features and tools for managing and deploying Azure resources	No change
Describe monitoring tools in Azure	Describe monitoring tools in Azure	No change

Skills measured prior to January 23, 2024

Audience profile

Candidates for this exam are technology professionals who want to demonstrate foundational knowledge of cloud concepts in general and Azure in particular. This certification is a common starting point in a journey towards a career in Azure.

These professionals can describe Azure architectural components and Azure services, such as compute, networking, and storage. They can also describe features and tools to secure, govern, and administer Azure.

Candidates for this exam have skills and experience working with an area of information technology (IT), such as infrastructure management, database management, or software development.

- Describe cloud concepts (25–30%)

- Describe Azure architecture and services (35–40%)
- Describe Azure management and governance (30–35%)

Describe cloud concepts (25–30%)

Describe cloud computing

- Define cloud computing
- Describe the shared responsibility model
- Define cloud models, including public, private, and hybrid
- Identify appropriate use cases for each cloud model
- Describe the consumption-based model
- Compare cloud pricing models
- Describe serverless

Describe the benefits of using cloud services

- Describe the benefits of high availability and scalability in the cloud
- Describe the benefits of reliability and predictability in the cloud
- Describe the benefits of security and governance in the cloud
- Describe the benefits of manageability in the cloud

Describe cloud service types

- Describe infrastructure as a service (IaaS)
- Describe platform as a service (PaaS)
- Describe software as a service (SaaS)
- Identify appropriate use cases for each cloud service (IaaS, PaaS, and SaaS)

Describe Azure architecture and services (35–40%)

Describe the core architectural components of Azure

- Describe Azure regions, region pairs, and sovereign regions
- Describe availability zones
- Describe Azure datacenters
- Describe Azure resources and resource groups
- Describe subscriptions
- Describe management groups
- Describe the hierarchy of resource groups, subscriptions, and management groups

Describe Azure compute and networking services

- Compare compute types, including containers, virtual machines, and functions
- Describe virtual machine options, including Azure virtual machines, Azure Virtual Machine Scale Sets, availability sets, and Azure Virtual Desktop
- Describe the resources required for virtual machines
- Describe application hosting options, including web apps, containers, and virtual machines
- Describe virtual networking, including the purpose of Azure virtual networks, Azure virtual subnets, peering, Azure DNS, Azure VPN Gateway, and ExpressRoute
- Define public and private endpoints

Describe Azure storage services

- Compare Azure Storage services
- Describe storage tiers
- Describe redundancy options
- Describe storage account options and storage types
- Identify options for moving files, including AzCopy, Azure Storage Explorer, and Azure File Sync
- Describe migration options, including Azure Migrate and Azure Data Box

Describe Azure identity, access, and security

- Describe directory services in Azure, including Azure Active Directory (Azure AD), part of Microsoft Entra and Azure Active Directory Domain Services (Azure AD DS)
- Describe authentication methods in Azure, including single sign-on (SSO), multi-factor authentication (MFA), and passwordless
- Describe external identities in Azure, including business-to-business (B2B) and business-to-customer (B2C)
- Describe Conditional Access in Azure AD
- Describe Azure role-based access control (RBAC)
- Describe the concept of Zero Trust
- Describe the purpose of the defense-in-depth model
- Describe the purpose of Microsoft Defender for Cloud

Describe Azure management and governance (30–35%)

Describe cost management in Azure

- Describe factors that can affect costs in Azure
- Compare the pricing calculator and the Total Cost of Ownership (TCO) Calculator
- Describe cost management capabilities in Azure
- Describe the purpose of tags

Describe features and tools in Azure for governance and compliance

- Describe the purpose of Microsoft Purview in Azure
- Describe the purpose of Azure Policy
- Describe the purpose of resource locks

Describe features and tools for managing and deploying Azure resources

- Describe the Azure portal
- Describe Azure Cloud Shell, including Azure Command-Line Interface (CLI) and Azure PowerShell
- Describe the purpose of Azure Arc
- Describe infrastructure as code (IaC)
- Describe Azure Resource Manager (ARM) and ARM templates

Describe monitoring tools in Azure

- Describe the purpose of Azure Advisor
- Describe Azure Service Health
- Describe Azure Monitor, including Log Analytics, Azure Monitor alerts, and Application Insights

Study guide for Exam DP-100: Designing and Implementing a Data Science Solution on Azure

Article • 09/18/2024

Purpose of this document

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Note

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Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 16, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in applying data science and machine learning to implement and run machine learning workloads on Azure.

Your responsibilities for this role include:

- Designing and creating a suitable working environment for data science workloads.
- Exploring data.
- Training machine learning models.
- Implementing pipelines.
- Running jobs to prepare for production.
- Managing, deploying, and monitoring scalable machine learning solutions.

As a candidate for this exam, you should have knowledge and experience in data science by using:

- Azure Machine Learning
- MLflow

Skills at a glance

- Design and prepare a machine learning solution (20–25%)
- Explore data, and train models (35–40%)
- Prepare a model for deployment (20–25%)
- Deploy and retrain a model (10–15%)

Design and prepare a machine learning solution (20–25%)

Design a machine learning solution

- Determine the appropriate compute specifications for a training workload
- Describe model deployment requirements
- Select which development approach to use to build or train a model

Manage an Azure Machine Learning workspace

- Create an Azure Machine Learning workspace
- Manage a workspace by using developer tools for workspace interaction
- Set up Git integration for source control
- Create and manage registries

Manage data in an Azure Machine Learning workspace

- Select Azure Storage resources
- Register and maintain datastores
- Create and manage data assets

Manage compute for experiments in Azure Machine Learning

- Create compute targets for experiments and training
- Select an environment for a machine learning use case

- Configure attached compute resources, including Azure Synapse Spark pools and serverless Spark compute
- Monitor compute utilization

Explore data, and train models (35–40%)

Explore data by using data assets and data stores

- Access and wrangle data during interactive development
- Wrangle data interactively with attached Synapse Spark pools and serverless Spark compute

Create models by using the Azure Machine Learning designer

- Create a training pipeline
- Consume data assets from the designer
- Use custom code components in designer
- Evaluate the model, including responsible AI guidelines

Use automated machine learning to explore optimal models

- Use automated machine learning for tabular data
- Use automated machine learning for computer vision
- Use automated machine learning for natural language processing
- Select and understand training options, including preprocessing and algorithms
- Evaluate an automated machine learning run, including responsible AI guidelines

Use notebooks for custom model training

- Develop code by using a compute instance
- Track model training by using MLflow
- Evaluate a model

- Train a model by using Python SDK v2
- Use the terminal to configure a compute instance

Tune hyperparameters with Azure Machine Learning

- Select a sampling method
- Define the search space
- Define the primary metric
- Define early termination options

Prepare a model for deployment (20–25%)

Run model training scripts

- Configure job run settings for a script
- Configure compute for a job run
- Consume data from a data asset in a job
- Run a script as a job by using Azure Machine Learning
- Use MLflow to log metrics from a job run
- Use logs to troubleshoot job run errors
- Configure an environment for a job run
- Define parameters for a job

Implement training pipelines

- Create a pipeline
- Pass data between steps in a pipeline
- Run and schedule a pipeline
- Monitor pipeline runs
- Create custom components

- Use component-based pipelines

Manage models in Azure Machine Learning

- Describe MLflow model output
- Identify an appropriate framework to package a model
- Assess a model by using responsible AI principles

Deploy and retrain a model (10–15%)

Deploy a model

- Configure settings for online deployment
- Configure compute for a batch deployment
- Deploy a model to an online endpoint
- Deploy a model to a batch endpoint
- Test an online deployed service
- Invoke the batch endpoint to start a batch scoring job

Apply machine learning operations (MLOps) practices

- Trigger an Azure Machine Learning job, including from Azure DevOps or GitHub
- Automate model retraining based on new data additions or data changes
- Define event-based retraining triggers

Study resources

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Get community support	AI - Machine Learning - Microsoft Tech Community ↗ AI - Machine Learning Blog - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Microsoft Learn Shows

Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to October 16, 2024	Skill area as of October 16, 2024	Change
Explore data, and train models	Explore data, and train models	No % change
Explore data by using data assets and data stores	Explore data by using data assets and data stores	Minor

Study guide for Exam DP-203: Data Engineering on Microsoft Azure

Article • 09/24/2024

Purpose of this document

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Updates to the exam

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Note

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Note

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Skills measured as of October 24, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in integrating, transforming, and consolidating data from various structured, unstructured, and streaming data systems into a suitable schema for building analytics solutions.

As an Azure data engineer, you help stakeholders understand the data through exploration, and build and maintain secure and compliant data processing pipelines by using different tools and techniques. You use various Azure data services and frameworks to store and produce cleansed and enhanced datasets for analysis. This data store can be designed with different architecture patterns based on business requirements, including:

- Modern data warehouse (MDW)
- Big data
- Lakehouse architecture

As an Azure data engineer, you also help to ensure that the operationalization of data pipelines and data stores are high-performing, efficient, organized, and reliable, given a set of business requirements and constraints. You help to identify and troubleshoot operational and data quality issues. You also design, implement, monitor, and optimize data platforms to meet the data pipelines.

As a candidate for this exam, you must have solid knowledge of data processing languages, including:

- SQL
- Python
- Scala

You need to understand parallel processing and data architecture patterns. You should be proficient in using the following to create data processing solutions:

- Azure Data Factory
- Azure Synapse Analytics
- Azure Stream Analytics
- Azure Event Hubs
- Azure Data Lake Storage
- Azure Databricks

Skills at a glance

- Design and implement data storage (15–20%)
- Develop data processing (40–45%)
- Secure, monitor, and optimize data storage and data processing (30–35%)

Design and implement data storage (15–20%)

Implement a partition strategy

- Implement a partition strategy for files
- Implement a partition strategy for analytical workloads
- Implement a partition strategy for streaming workloads
- Implement a partition strategy for Azure Synapse Analytics
- Identify when partitioning is needed in Azure Data Lake Storage Gen2

Design and implement the data exploration layer

- Create and execute queries by using a compute solution that leverages SQL serverless and Spark clusters
- Recommend and implement Azure Synapse Analytics database templates
- Push new or updated data lineage to Microsoft Purview
- Browse and search metadata in Microsoft Purview Data Catalog

Develop data processing (40–45%)

Ingest and transform data

- Design and implement incremental data loads
- Transform data by using Apache Spark
- Transform data by using Transact-SQL (T-SQL) in Azure Synapse Analytics
- Ingest and transform data by using Azure Synapse Pipelines or Azure Data Factory
- Transform data by using Azure Stream Analytics
- Cleanse data
- Handle duplicate data
- Avoiding duplicate data by using Azure Stream Analytics Exactly Once Delivery
- Handle missing data
- Handle late-arriving data
- Split data
- Shred JSON
- Encode and decode data
- Configure error handling for a transformation
- Normalize and denormalize data
- Perform data exploratory analysis

Develop a batch processing solution

- Develop batch processing solutions by using Azure Data Lake Storage Gen2, Azure Databricks, Azure Synapse Analytics, and Azure Data Factory
- Use PolyBase to load data to a SQL pool
- Implement Azure Synapse Link and query the replicated data
- Create data pipelines
- Scale resources
- Configure the batch size
- Create tests for data pipelines
- Integrate Jupyter or Python notebooks into a data pipeline
- Upsert batch data
- Revert data to a previous state
- Configure exception handling
- Configure batch retention
- Read from and write to a delta lake

Develop a stream processing solution

- Create a stream processing solution by using Stream Analytics and Azure Event Hubs
- Process data by using Spark structured streaming
- Create windowed aggregates
- Handle schema drift
- Process time series data
- Process data across partitions
- Process within one partition
- Configure checkpoints and watermarking during processing
- Scale resources

- Create tests for data pipelines
- Optimize pipelines for analytical or transactional purposes
- Handle interruptions
- Configure exception handling
- Upsert stream data
- Replay archived stream data
- Read from and write to a delta lake

Manage batches and pipelines

- Trigger batches
- Handle failed batch loads
- Validate batch loads
- Manage data pipelines in Azure Data Factory or Azure Synapse Pipelines
- Schedule data pipelines in Data Factory or Azure Synapse Pipelines
- Implement version control for pipeline artifacts
- Manage Spark jobs in a pipeline

Secure, monitor, and optimize data storage and data processing (30–35%)

Implement data security

- Implement data masking
- Encrypt data at rest and in motion
- Implement row-level and column-level security
- Implement Azure role-based access control (RBAC)
- Implement POSIX-like access control lists (ACLs) for Data Lake Storage Gen2
- Implement a data retention policy

- Implement secure endpoints (private and public)
- Implement resource tokens in Azure Databricks
- Load a DataFrame with sensitive information
- Write encrypted data to tables or Parquet files
- Manage sensitive information

Monitor data storage and data processing

- Implement logging used by Azure Monitor
- Configure monitoring services
- Monitor stream processing
- Measure performance of data movement
- Monitor and update statistics about data across a system
- Monitor data pipeline performance
- Measure query performance
- Schedule and monitor pipeline tests
- Interpret Azure Monitor metrics and logs
- Implement a pipeline alert strategy

Optimize and troubleshoot data storage and data processing

- Compact small files
- Handle skew in data
- Handle data spill
- Optimize resource management
- Tune queries by using indexers
- Tune queries by using cache
- Troubleshoot a failed Spark job

- Troubleshoot a failed pipeline run, including activities executed in external services

Study resources

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Change log

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[] [Expand table](#)

Skill area prior to October 24, 2024	Skill area as of October 24, 2024	Change
Develop data processing	Develop data processing	No change
Ingest and transform data	Ingest and transform data	Minor

Study guide for Exam DP-300: Administering Microsoft Azure SQL Solutions

Article • 05/30/2024

Purpose of this document

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[] Expand table

Useful links	Description
Review the skills measured as of July 26, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 26, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
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Skills measured as of July 26, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in building database solutions that are designed to support multiple workloads built with:

- SQL Server on-premises
- Azure SQL services

You're a database administrator who manages on-premises and cloud databases built with SQL Server and Azure SQL services.

As the Azure database administrator, you implement and manage the operational aspects of cloud-native and hybrid data platform solutions built on SQL Server and Azure SQL services. You use a variety of methods and tools to perform and automate day-to-day operations, including applying knowledge of using Transact-SQL (T-SQL) and other tools for administrative management purposes.

You're responsible for the following concerning database solutions:

- Management
- Availability
- Security
- Performance monitoring and optimization

You evaluate and implement migration strategies for moving databases between Azure and on-premises. Plus, you work with Azure data engineers, Azure solution architects, Azure developers, data scientists, and other professionals to manage operational aspects of data platform solutions.

As a candidate for this exam, you should have knowledge of and experience with:

- Azure SQL Database
- Azure SQL Managed Instance
- SQL Server on Azure Virtual Machines (Windows and Linux)

Skills at a glance

- Plan and implement data platform resources (20–25%)
- Implement a secure environment (15–20%)
- Monitor, configure, and optimize database resources (20–25%)
- Configure and manage automation of tasks (15–20%)
- Plan and configure a high availability and disaster recovery (HA/DR) environment (20–25%)

Plan and implement data platform resources (20–25%)

Plan and deploy Azure SQL solutions

- Deploy database offerings on selected platforms
- Understand automated deployment
- Apply patches and updates for hybrid and infrastructure as a service (IaaS) deployment
- Deploy hybrid SQL Server solutions
- Recommend an appropriate database offering based on specific requirements
- Evaluate the security aspects of the possible database offering
- Recommend a table partitioning solution
- Recommend a database sharding solution

Configure resources for scale and performance

- Configure Azure SQL Database for scale and performance
- Configure Azure SQL Managed Instance for scale and performance
- Configure SQL Server on Azure Virtual Machines for scale and performance
- Configure table partitioning
- Configure data compression

Plan and implement a migration strategy

- Evaluate requirements for the migration
- Evaluate offline or online migration strategies
- Implement an online migration strategy
- Implement an offline migration strategy
- Perform post migration validations
- Troubleshoot a migration
- Set up SQL Data Sync for Azure

- Implement a migration to Azure
- Implement a migration between Azure SQL services
- Implement Azure SQL Managed Instance database copy and move

Implement a secure environment (15–20%)

Configure database authentication and authorization

- Configure authentication by using Active Directory and Microsoft Entra ID
- Create users from Microsoft Entra identities
- Configure security principals
- Configure database and object-level permissions using graphical tools
- Apply the principle of least privilege for all securables
- Troubleshoot authentication and authorization issues
- Manage authentication and authorization by using T-SQL

Implement security for data at rest and data in transit

- Implement transparent data encryption (TDE)
- Implement object-level encryption
- Configure server- and database-level firewall rules
- Implement Always Encrypted
- Implement Always Encrypted with VBS enclaves
- Configure secure access
- Configure Transport Layer Security (TLS)

Implement compliance controls for sensitive data

- Apply a data classification strategy
- Configure server and database audits

- Implement data change tracking
- Implement dynamic data masking
- Manage database resources by using Azure Purview
- Implement database ledger in Azure SQL
- Implement row-level security
- Configure Microsoft Defender for SQL

Monitor, configure, and optimize database resources (20–25%)

Monitor resource activity and performance

- Prepare an operational performance baseline
- Determine sources for performance metrics
- Interpret performance metrics
- Configure and monitor activity and performance
- Monitor by using SQL Insights
- Monitor by using Extended Events

Monitor and optimize query performance

- Configure Query Store
- Monitor by using Query Store
- Identify sessions that cause blocking
- Identify performance issues using dynamic management views (DMVs)
- Identify and implement index changes for queries
- Recommend query construct modifications based on resource usage
- Assess the use of query hints for query performance
- Review execution plans

- Monitor by using Intelligent Insights

Configure database solutions for optimal performance

- Implement index maintenance tasks
- Implement statistics maintenance tasks
- Implement database integrity checks
- Configure database automatic tuning
- Configure server settings for performance
- Configure Resource Governor for performance
- Implement database-scoped configuration
- Configure compute and storage resources for scaling
- Configure intelligent query processing (IQP)

Configure and manage automation of tasks (15–20%)

Create and manage SQL Server Agent jobs

- Manage schedules for regular maintenance jobs
- Configure job alerts and notifications
- Troubleshoot SQL Server Agent jobs

Automate deployment of database resources

- Automate deployment by using Azure Resource Manager (ARM) and Bicep templates
- Automate deployment by using PowerShell
- Automate deployment by using Azure CLI
- Monitor and troubleshoot deployments

Create and manage database tasks in Azure

- Create and configure elastic jobs
- Create and configure database tasks by using automation
- Configure alerts and notifications on database tasks
- Troubleshoot automated database tasks

Plan and configure a high availability and disaster recovery (HA/DR) environment (20–25%)

Recommend an HA/DR strategy for database solutions

- Recommend HA/DR strategy based on Recovery Point Objective/Recovery Time Objective (RPO/RTO) requirements
- Evaluate HA/DR for hybrid deployments
- Evaluate Azure-specific HA/DR solutions
- Recommend a testing procedure for an HA/DR solution

Plan and perform backup and restore of a database

- Recommend a database backup and restore strategy
- Perform a database backup by using database tools
- Perform a database restore by using database tools
- Perform a database restore to a point in time
- Configure long-term backup retention
- Backup and restore a database by using T-SQL
- Backup and restore to and from cloud storage

Configure HA/DR for database solutions

- Configure active geo-replication
- Configure an Always On availability group on Azure virtual machines
- Configure failover groups

- Configure quorum options for a Windows Server Failover Cluster
- Configure Always On Failover Cluster Instances on Azure virtual machines
- Configure log shipping
- Monitor an HA/DR solution
- Troubleshoot an HA/DR solution

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Find documentation	Azure SQL documentation Azure SQL Database documentation Azure documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Azure Data - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Data Exposed Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Plan and implement data platform resources	Plan and implement data platform resources	No change
Plan and deploy Azure SQL solutions	Plan and deploy Azure SQL solutions	No change
Configure resources for scale and performance	Configure resources for scale and performance	No change
Plan and implement a migration strategy	Plan and implement a migration strategy	Minor
Implement a secure environment	Implement a secure environment	No change
Configure database authentication and authorization	Configure database authentication and authorization	No change
Implement security for data at rest and data in transit	Implement security for data at rest and data in transit	Minor
Implement compliance controls for sensitive data	Implement compliance controls for sensitive data	No change
Monitor, configure, and optimize database resources	Monitor, configure, and optimize database resources	No change
Monitor resource activity and performance	Monitor resource activity and performance	No change
Monitor and optimize query performance	Monitor and optimize query performance	No change
Configure database solutions for optimal performance	Configure database solutions for optimal performance	No change
Configure and manage automation of tasks	Configure and manage automation of tasks	No change
Create and manage SQL Server Agent jobs	Create and manage SQL Server Agent jobs	No change
Automate deployment of database resources	Automate deployment of database resources	Minor

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Create and manage database tasks in Azure	Create and manage database tasks in Azure	No change
Plan and configure a high availability and disaster recovery (HA/DR) environment	Plan and configure a high availability and disaster recovery (HA/DR) environment	No change
Recommend an HA/DR strategy for database solutions	Recommend an HA/DR strategy for database solutions	No change
Plan and perform backup and restore of a database	Plan and perform backup and restore of a database	No change
Configure HA/DR for database solutions	Configure HA/DR for database solutions	No change

Skills measured prior to July 26, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in building database solutions that are designed to support multiple workloads built with:

- SQL Server on-premises
- Azure SQL services

You're a database administrator who manages on-premises and cloud databases built with SQL Server and Azure SQL services.

As the Azure database administrator, you implement and manage the operational aspects of cloud-native and hybrid data platform solutions built on SQL Server and Azure SQL services. You use a variety of methods and tools to perform and automate day-to-day operations, including applying knowledge of using Transact-SQL (T-SQL) and other tools for administrative management purposes.

You're responsible for the following concerning database solutions:

- Management
- Availability
- Security

- Performance monitoring and optimization

You evaluate and implement migration strategies for moving databases between Azure and on-premises. Plus, you work with Azure data engineers, Azure solution architects, Azure developers, data scientists, and other professionals to manage operational aspects of data platform solutions.

As a candidate for this exam, you should have knowledge of and experience with:

- Azure SQL Database
- Azure SQL Managed Instance
- SQL Server on Azure Virtual Machines (Windows and Linux)

Skills at a glance

- Plan and implement data platform resources (20–25%)
- Implement a secure environment (15–20%)
- Monitor, configure, and optimize database resources (20–25%)
- Configure and manage automation of tasks (15–20%)
- Plan and configure a high availability and disaster recovery (HA/DR) environment (20–25%)

Plan and implement data platform resources (20–25%)

Plan and deploy Azure SQL solutions

- Deploy database offerings on selected platforms
- Understand automated deployment
- Apply patches and updates for hybrid and infrastructure as a service (IaaS) deployment
- Deploy hybrid SQL Server solutions
- Recommend an appropriate database offering based on specific requirements
- Evaluate the security aspects of the possible database offering
- Recommend a table partitioning solution

- Recommend a database sharding solution

Configure resources for scale and performance

- Configure Azure SQL Database for scale and performance
- Configure Azure SQL Managed Instance for scale and performance
- Configure SQL Server on Azure Virtual Machines for scale and performance
- Configure table partitioning
- Configure data compression

Plan and implement a migration strategy

- Evaluate requirements for the migration
- Evaluate offline or online migration strategies
- Implement an online migration strategy
- Implement an offline migration strategy
- Perform post migration validations
- Troubleshoot a migration
- Set up SQL Data Sync for Azure
- Implement a migration to Azure
- Implement a migration between Azure SQL services

Implement a secure environment (15–20%)

Configure database authentication and authorization

- Configure authentication by using Active Directory and Microsoft Entra ID
- Create users from Microsoft Entra identities
- Configure security principals
- Configure database and object-level permissions using graphical tools

- Apply the principle of least privilege for all securables
- Troubleshoot authentication and authorization issues
- Manage authentication and authorization by using T-SQL

Implement security for data at rest and data in transit

- Implement transparent data encryption (TDE)
- Implement object-level encryption
- Configure server- and database-level firewall rules
- Implement Always Encrypted
- Configure secure access
- Configure Transport Layer Security (TLS)

Implement compliance controls for sensitive data

- Apply a data classification strategy
- Configure server and database audits
- Implement data change tracking
- Implement dynamic data masking
- Manage database resources by using Azure Purview
- Implement database ledger in Azure SQL
- Implement row-level security
- Configure Microsoft Defender for SQL

Monitor, configure, and optimize database resources (20–25%)

Monitor resource activity and performance

- Prepare an operational performance baseline

- Determine sources for performance metrics
- Interpret performance metrics
- Configure and monitor activity and performance
- Monitor by using SQL Insights
- Monitor by using Extended Events

Monitor and optimize query performance

- Configure Query Store
- Monitor by using Query Store
- Identify sessions that cause blocking
- Identify performance issues using dynamic management views (DMVs)
- Identify and implement index changes for queries
- Recommend query construct modifications based on resource usage
- Assess the use of query hints for query performance
- Review execution plans
- Monitor by using Intelligent Insights

Configure database solutions for optimal performance

- Implement index maintenance tasks
- Implement statistics maintenance tasks
- Implement database integrity checks
- Configure database automatic tuning
- Configure server settings for performance
- Configure Resource Governor for performance
- Implement database-scoped configuration
- Configure compute and storage resources for scaling

- Configure intelligent query processing (IQP)

Configure and manage automation of tasks (15–20%)

Create and manage SQL Server Agent jobs

- Manage schedules for regular maintenance jobs
- Configure job alerts and notifications
- Troubleshoot SQL Server Agent jobs

Automate deployment of database resources

- Automate deployment by using Azure Resource Manager templates (ARM templates) and Bicep
- Automate deployment by using PowerShell
- Automate deployment by using Azure CLI
- Monitor and troubleshoot deployments

Create and manage database tasks in Azure

- Create and configure elastic jobs
- Create and configure database tasks by using automation
- Configure alerts and notifications on database tasks
- Troubleshoot automated database tasks

Plan and configure a high availability and disaster recovery (HA/DR) environment (20–25%)

Recommend an HA/DR strategy for database solutions

- Recommend HA/DR strategy based on Recovery Point Objective/Recovery Time Objective (RPO/RTO) requirements
- Evaluate HA/DR for hybrid deployments

- Evaluate Azure-specific HA/DR solutions
- Recommend a testing procedure for an HA/DR solution

Plan and perform backup and restore of a database

- Recommend a database backup and restore strategy
- Perform a database backup by using database tools
- Perform a database restore by using database tools
- Perform a database restore to a point in time
- Configure long-term backup retention
- Backup and restore a database by using T-SQL
- Backup and restore to and from cloud storage

Configure HA/DR for database solutions

- Configure active geo-replication
- Configure an Always On availability group on Azure virtual machines
- Configure failover groups
- Configure quorum options for a Windows Server Failover Cluster
- Configure Always On Failover Cluster Instances on Azure virtual machines
- Configure log shipping
- Monitor an HA/DR solution
- Troubleshoot an HA/DR solution

Study Guide for Exam DP-420: Designing and Implementing Cloud- Native Applications Using Microsoft Azure Cosmos DB

Article • 09/24/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 24, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise designing, implementing, and monitoring cloud-native applications that store and manage data.

Your responsibilities for this role include:

- Designing and implementing data models and data distribution.
- Loading data into an Azure Cosmos DB database.
- Optimizing and maintaining the solution.

As a professional in this role, you integrate the solution with other Azure services. You also design, implement, and monitor solutions that consider security, availability, resilience, and performance requirements.

As a candidate for this exam, you must have solid knowledge and experience with:

- Developing apps for Azure.
- Working with Azure Cosmos DB database technologies.
- Creating server-side objects with JavaScript.

You should be proficient at developing applications that use the Azure Cosmos DB for NoSQL API. You should be able to:

- Write efficient SQL queries for the API.
- Create appropriate indexing policies.
- Interpret JSON.
- Read C# or Java code.
- Use PowerShell.

Additionally, you should be familiar with provisioning and managing resources in Azure.

Skills at a glance

- Design and implement data models (35–40%)
- Design and implement data distribution (5–10%)
- Integrate an Azure Cosmos DB solution (5–10%)
- Optimize an Azure Cosmos DB solution (15–20%)
- Maintain an Azure Cosmos DB solution (25–30%)

Design and implement data models (35–40%)

Design and implement a non-relational data model for Azure Cosmos DB for NoSQL

- Develop a design by storing multiple entity types in the same container
- Develop a design by storing multiple related entities in the same document
- Develop a model that denormalizes data across documents
- Develop a design by referencing between documents
- Identify primary and unique keys
- Identify data and associated access patterns
- Specify a default time to live (TTL) on a container for a transactional store

- Develop a design for versioning documents
- Develop a design for document schema versioning

Design a data partitioning strategy for Azure Cosmos DB for NoSQL

- Choose a partitioning strategy based on a specific workload
- Choose a partition key
- Plan for transactions when choosing a partition key
- Evaluate the cost of using a cross-partition query
- Calculate and evaluate data distribution based on partition key selection
- Calculate and evaluate throughput distribution based on partition key selection
- Construct and implement a synthetic partition key
- Design and implement a hierarchical partition key
- Design partitioning for workloads that require multiple partition keys

Plan and implement sizing and scaling for a database created with Azure Cosmos DB

- Evaluate the throughput and data storage requirements for a specific workload
- Choose between serverless, provisioned and free models
- Choose when to use database-level provisioned throughput
- Design for granular scale units and resource governance
- Evaluate the cost of the global distribution of data
- Configure throughput for Azure Cosmos DB by using the Azure portal

Implement client connectivity options in the Azure Cosmos DB SDK

- Choose a connectivity mode (gateway versus direct)
- Implement a connectivity mode

- Create a connection to a database
- Enable offline development by using the Azure Cosmos DB emulator
- Handle connection errors
- Implement a singleton for the client
- Specify a region for global distribution
- Configure client-side threading and parallelism options
- Enable SDK logging

Implement data access by using the SQL language for Azure Cosmos DB for NoSQL

- Implement queries that use arrays, nested objects, aggregation, and ordering
- Implement a correlated subquery
- Implement queries that use array and type-checking functions
- Implement queries that use mathematical, string, and date functions
- Implement queries based on variable data

Implement data access by using Azure Cosmos DB for NoSQL SDKs

- Choose when to use a point operation versus a query operation
- Implement a point operation that creates, updates, and deletes documents
- Implement an update by using a patch operation
- Manage multi-document transactions using SDK Transactional Batch
- Perform a multi-document load using Bulk Support in the SDK
- Implement optimistic concurrency control using ETags
- Override default consistency by using query request options
- Implement session consistency by using session tokens
- Implement a query operation that includes pagination

- Implement a query operation by using a continuation token
- Handle transient errors and 429s
- Specify TTL for a document
- Retrieve and use query metrics

Implement server-side programming in Azure Cosmos DB for NoSQL by using JavaScript

- Write, deploy, and call a stored procedure
- Design stored procedures to work with multiple documents transactionally
- Implement and call triggers
- Implement a user-defined function

Design and implement data distribution (5–10%)

Design and implement a replication strategy for Azure Cosmos DB

- Choose when to distribute data
- Define automatic failover policies for regional failure for Azure Cosmos DB for NoSQL
- Perform manual failovers to move single master write regions
- Choose a consistency model
- Identify use cases for different consistency models
- Evaluate the impact of consistency model choices on availability and associated request unit (RU) cost
- Evaluate the impact of consistency model choices on performance and latency
- Specify application connections to replicated data

Design and implement multi-region write

- Choose when to use multi-region write

- Implement multi-region write
- Implement a custom conflict resolution policy for Azure Cosmos DB for NoSQL

Integrate an Azure Cosmos DB solution (5–10%)

Enable Azure Cosmos DB analytical workloads

- Enable Azure Synapse Link
- Choose between Azure Synapse Link and Spark Connector
- Enable the analytical store on a container
- Implement custom partitioning in Azure Synapse Link
- Enable a connection to an analytical store and query from Azure Synapse Spark or Azure Synapse SQL
- Perform a query against the transactional store from Spark
- Write data back to the transactional store from Spark
- Implement Change Data Capture in the Azure Cosmos DB analytical store
- Implement time travel in Azure Synapse Link for Azure Cosmos DB

Implement solutions across services

- Integrate events with other applications by using Azure Functions and Azure Event Hubs
- Denormalize data by using Change Feed and Azure Functions
- Enforce referential integrity by using Change Feed and Azure Functions
- Aggregate data by using Change Feed and Azure Functions, including reporting
- Archive data by using Change Feed and Azure Functions
- Implement Azure AI Search for an Azure Cosmos DB solution

Optimize an Azure Cosmos DB solution (15–20%)

Optimize query performance when using the API for Azure Cosmos DB for NoSQL

- Adjust indexes on the database
- Calculate the cost of the query
- Retrieve request unit cost of a point operation or query
- Implement Azure Cosmos DB integrated cache

Design and implement change feeds for Azure Cosmos DB for NoSQL

- Develop an Azure Functions trigger to process a change feed
- Consume a change feed from within an application by using the SDK
- Manage the number of change feed instances by using the change feed estimator
- Implement denormalization by using a change feed
- Implement referential enforcement by using a change feed
- Implement aggregation persistence by using a change feed
- Implement data archiving by using a change feed

Define and implement an indexing strategy for Azure Cosmos DB for NoSQL

- Choose when to use a read-heavy versus write-heavy index strategy
- Choose an appropriate index type
- Configure a custom indexing policy by using the Azure portal
- Implement a composite index
- Optimize index performance

Maintain an Azure Cosmos DB solution (25–30%)

Monitor and troubleshoot an Azure Cosmos DB solution

- Evaluate response status code and failure metrics
- Monitor metrics for normalized throughput usage by using Azure Monitor
- Monitor server-side latency metrics by using Azure Monitor
- Monitor data replication in relation to latency and availability
- Configure Azure Monitor alerts for Azure Cosmos DB
- Implement and query Azure Cosmos DB logs
- Monitor throughput across partitions
- Monitor distribution of data across partitions
- Monitor security by using logging and auditing

Implement backup and restore for an Azure Cosmos DB solution

- Choose between periodic and continuous backup
- Configure periodic backup
- Configure continuous backup and recovery
- Locate a recovery point for a point-in-time recovery
- Recover a database or container from a recovery point

Implement security for an Azure Cosmos DB solution

- Choose between service-managed and customer-managed encryption keys
- Configure network-level access control for Azure Cosmos DB
- Configure data encryption for Azure Cosmos DB
- Manage control plane access to Azure Cosmos DB by using Azure role-based access control (RBAC)
- Manage data plane access to Azure Cosmos DB by using keys
- Manage data plane access to Azure Cosmos DB by using Microsoft Entra ID
- Configure cross-origin resource sharing (CORS) settings
- Manage account keys by using Azure Key Vault

- Implement customer-managed keys for encryption
- Implement Always Encrypted

Implement data movement for an Azure Cosmos DB solution

- Choose a data movement strategy
- Move data by using client SDK bulk operations
- Move data by using Azure Data Factory and Azure Synapse pipelines
- Move data by using a Kafka connector
- Move data by using Azure Stream Analytics
- Move data by using the Azure Cosmos DB Spark Connector
- Configure Azure Cosmos DB as a custom endpoint for an Azure IoT Hub

Implement a DevOps process for an Azure Cosmos DB solution

- Choose when to use declarative versus imperative operations
- Provision and manage Azure Cosmos DB resources by using Azure Resource Manager templates
- Migrate between standard and autoscale throughput by using PowerShell or Azure CLI
- Initiate a regional failover by using PowerShell or Azure CLI
- Maintain indexing policies in production by using Azure Resource Manager templates

Study resources

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 Expand table

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Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to October 24, 2024	Skill area as of October 24, 2024	Change
Maintain an Azure Cosmos DB solution	Maintain an Azure Cosmos DB solution	No change
Implement security for an Azure Cosmos DB solution	Implement security for an Azure Cosmos DB solution	Minor

Study guide for Exam DP-600: Implementing Analytics Solutions Using Microsoft Fabric

Article • 06/24/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 22, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 22, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
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About the exam

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Note

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Skills measured as of July 22, 2024

Audience profile

As a candidate for this exam, you should have subject matter expertise in designing, creating, and deploying enterprise-scale data analytics solutions.

Your responsibilities for this role include transforming data into reusable analytics assets by using Microsoft Fabric components, such as:

- Lakehouses

- Data warehouses
- Notebooks
- Dataflows
- Data pipelines
- Semantic models
- Reports

You implement analytics best practices in Fabric, including version control and deployment.

To implement solutions as a Fabric analytics engineer, you partner with other roles, such as:

- Solution architects
- Data engineers
- Data scientists
- AI engineers
- Database administrators
- Power BI data analysts

In addition to in-depth work with the Fabric platform, you need experience with:

- Data modeling
- Data transformation
- Git-based source control
- Exploratory analytics
- Programming languages (including Structured Query Language (SQL), Data Analysis Expressions (DAX), and PySpark)

Skills at a glance

- Plan, implement, and manage a solution for data analytics (10–15%)
- Prepare and serve data (40–45%)

- Implement and manage semantic models (20–25%)
- Explore and analyze data (20–25%)

Plan, implement, and manage a solution for data analytics (10–15%)

Plan a data analytics environment

- Identify requirements for a solution, including components, features, performance, and capacity stock-keeping units (SKUs)
- Recommend settings in the Fabric admin portal
- Choose a data gateway type
- Create a custom Power BI report theme

Implement and manage a data analytics environment

- Implement workspace and item-level access controls for Fabric items
- Implement data sharing for workspaces, warehouses, and lakehouses
- Manage sensitivity labels in semantic models and lakehouses
- Configure Fabric-enabled workspace settings
- Manage Fabric capacity and configure capacity settings

Manage the analytics development lifecycle

- Implement version control for a workspace
- Create and manage a Power BI Desktop project (.pbip)
- Plan and implement deployment solutions
- Perform impact analysis of downstream dependencies from lakehouses, data warehouses, dataflows, and semantic models
- Deploy and manage semantic models by using the XMLA endpoint
- Create and update reusable assets, including Power BI template (.pbit) files, Power BI data source (.pbids) files, and shared semantic models

Prepare and serve data (40–45%)

Create objects in a lakehouse or warehouse

- Ingest data by using a data pipeline, dataflow, or notebook
- Create and manage shortcuts
- Implement file partitioning for analytics workloads in a lakehouse
- Create views, functions, and stored procedures
- Enrich data by adding new columns or tables

Copy data

- Choose an appropriate method for copying data from a Fabric data source to a lakehouse or warehouse
- Copy data by using a data pipeline, dataflow, or notebook
- Implement Fast Copy when using dataflows
- Add stored procedures, notebooks, and dataflows to a data pipeline
- Schedule data pipelines
- Schedule dataflows and notebooks

Transform data

- Implement a data cleansing process
- Implement a star schema for a lakehouse or warehouse, including Type 1 and Type 2 slowly changing dimensions
- Implement bridge tables for a lakehouse or a warehouse
- Denormalize data
- Aggregate or de-aggregate data
- Merge or join data
- Identify and resolve duplicate data, missing data, or null values

- Convert data types by using SQL or PySpark
- Filter data

Optimize performance

- Identify and resolve data loading performance bottlenecks in dataflows, notebooks, and SQL queries
- Implement performance improvements in dataflows, notebooks, and SQL queries
- Identify and resolve issues with the structure or size of Delta table files (including v-order and optimized writes)

Implement and manage semantic models (20–25%)

Design and build semantic models

- Choose a storage mode, including Direct Lake
- Identify use cases for DAX Studio and Tabular Editor 2
- Implement a star schema for a semantic model
- Implement relationships, such as bridge tables and many-to-many relationships
- Write calculations that use DAX variables and functions, such as iterators, table filtering, windowing, and information functions
- Implement calculation groups, dynamic strings, and field parameters
- Design and build a large format dataset
- Design and build composite models that include aggregations
- Implement dynamic row-level security and object-level security
- Validate row-level security and object-level security

Optimize enterprise-scale semantic models

- Implement performance improvements in queries and report visuals
- Improve DAX performance by using DAX Studio

- Optimize a semantic model by using Tabular Editor 2
- Implement incremental refresh

Explore and analyze data (20–25%)

Perform exploratory analytics

- Implement descriptive and diagnostic analytics
- Integrate prescriptive and predictive analytics into a visual or report
- Profile data

Query data by using SQL

- Query a lakehouse in Fabric by using SQL queries or the visual query editor
- Query a warehouse in Fabric by using SQL queries or the visual query editor
- Connect to and query datasets by using the XMLA endpoint

Study resources

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[+] Expand table

Study resources	Links to learning and documentation
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Find documentation	Microsoft Fabric What is a lakehouse? What is data warehousing? Data warehousing and analytics
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Analytics on Azure - Microsoft Tech Community ↗ Microsoft Fabric Blog ↗

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[\[+\] Expand table](#)

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Audience profile		Minor
Plan, implement and manage a solution for data analytics	Plan, implement and manage a solution for data analytics	No change
Plan a data analytics environment	Plan a data analytics environment	No change
Implement and manage a data analytics environment	Implement and manage a data analytics environment	Minor
Manage the analytics development lifecycle	Manage the analytics development lifecycle	No change
Prepare and serve data	Prepare and serve data	No change
Create objects in a lakehouse or warehouse	Create objects in a lakehouse or warehouse	No change
Copy data	Copy data	Minor
Transform data	Transform data	No change
Optimize performance	Optimize performance	Minor
Implement and manage semantic	Implement and manage semantic	No

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
models	models	change
Design and build semantic models	Design and build semantic models	No change
Optimize enterprise-scale semantic models	Optimize enterprise-scale semantic models	No change
Explore and analyze data	Explore and analyze data	No change
Perform exploratory analytics	Perform exploratory analytics	No change
Query data by using SQL	Query data by using SQL	No change

Skills measured prior to July 22, 2024

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- Prepare and serve data (40–45%)
- Implement and manage semantic models (20–25%)
- Explore and analyze data (20–25%)

Plan, implement, and manage a solution for data analytics (10–15%)

Plan a data analytics environment

- Identify requirements for a solution, including components, features, performance, and capacity stock-keeping units (SKUs)

- Recommend settings in the Fabric admin portal
- Choose a data gateway type
- Create a custom Power BI report theme

Implement and manage a data analytics environment

- Implement workspace and item-level access controls for Fabric items
- Implement data sharing for workspaces, warehouses, and lakehouses
- Manage sensitivity labels in semantic models and lakehouses
- Configure Fabric-enabled workspace settings
- Manage Fabric capacity

Manage the analytics development lifecycle

- Implement version control for a workspace
- Create and manage a Power BI Desktop project (.pbip)
- Plan and implement deployment solutions
- Perform impact analysis of downstream dependencies from lakehouses, data warehouses, dataflows, and semantic models
- Deploy and manage semantic models by using the XMLA endpoint
- Create and update reusable assets, including Power BI template (.pbit) files, Power BI data source (.pbids) files, and shared semantic models

Prepare and serve data (40–45%)

Create objects in a lakehouse or warehouse

- Ingest data by using a data pipeline, dataflow, or notebook
- Create and manage shortcuts
- Implement file partitioning for analytics workloads in a lakehouse
- Create views, functions, and stored procedures

- Enrich data by adding new columns or tables

Copy data

- Choose an appropriate method for copying data from a Fabric data source to a lakehouse or warehouse
- Copy data by using a data pipeline, dataflow, or notebook
- Add stored procedures, notebooks, and dataflows to a data pipeline
- Schedule data pipelines
- Schedule dataflows and notebooks

Transform data

- Implement a data cleansing process
- Implement a star schema for a lakehouse or warehouse, including Type 1 and Type 2 slowly changing dimensions
- Implement bridge tables for a lakehouse or a warehouse
- Denormalize data
- Aggregate or de-aggregate data
- Merge or join data
- Identify and resolve duplicate data, missing data, or null values
- Convert data types by using SQL or PySpark
- Filter data

Optimize performance

- Identify and resolve data loading performance bottlenecks in dataflows, notebooks, and SQL queries
- Implement performance improvements in dataflows, notebooks, and SQL queries
- Identify and resolve issues with Delta table file sizes

Implement and manage semantic models (20–25%)

Design and build semantic models

- Choose a storage mode, including Direct Lake
- Identify use cases for DAX Studio and Tabular Editor 2
- Implement a star schema for a semantic model
- Implement relationships, such as bridge tables and many-to-many relationships
- Write calculations that use DAX variables and functions, such as iterators, table filtering, windowing, and information functions
- Implement calculation groups, dynamic strings, and field parameters
- Design and build a large format dataset
- Design and build composite models that include aggregations
- Implement dynamic row-level security and object-level security
- Validate row-level security and object-level security

Optimize enterprise-scale semantic models

- Implement performance improvements in queries and report visuals
- Improve DAX performance by using DAX Studio
- Optimize a semantic model by using Tabular Editor 2
- Implement incremental refresh

Explore and analyze data (20–25%)

Perform exploratory analytics

- Implement descriptive and diagnostic analytics
- Integrate prescriptive and predictive analytics into a visual or report
- Profile data

Query data by using SQL

- Query a lakehouse in Fabric by using SQL queries or the visual query editor
- Query a warehouse in Fabric by using SQL queries or the visual query editor
- Connect to and query datasets by using the XMLA endpoint

Study Guide for Exam DP-700: Implementing Data Engineering Solutions Using Microsoft Fabric

Article • 09/24/2024

Purpose of this document

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[] Expand table

Useful links	Description
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

About the exam

Languages

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Note

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Skills measured

Audience profile

As a candidate for this exam, you should have subject matter expertise with data loading patterns, data architectures, and orchestration processes. Your responsibilities for this role include:

- Ingesting and transforming data.
- Securing and managing an analytics solution.
- Monitoring and optimizing an analytics solution.

You work closely with analytics engineers, architects, analysts, and administrators to design and deploy data engineering solutions for analytics.

You should be skilled at manipulating and transforming data by using Structured Query Language (SQL), PySpark, and Kusto Query Language (KQL).

Skills at a glance

- Implement and manage an analytics solution (30–35%)
- Ingest and transform data (30–35%)
- Monitor and optimize an analytics solution (30–35%)

Implement and manage an analytics solution (30–35%)

Configure Microsoft Fabric workspace settings

- Configure Spark workspace settings

- Configure domain workspace settings
- Configure OneLake workspace settings
- Configure data workflow workspace settings

Implement lifecycle management in Fabric

- Configure version control
- Implement database projects
- Create and configure deployment pipelines

Configure security and governance

- Implement workspace-level access controls
- Implement item-level access controls
- Implement row-level, column-level, object-level, and file-level access controls
- Implement dynamic data masking
- Apply sensitivity labels to items
- Endorse items

Orchestrate processes

- Choose between a pipeline and a notebook
- Design and implement schedules and event-based triggers
- Implement orchestration patterns with notebooks and pipelines, including parameters and dynamic expressions

Ingest and transform data (30–35%)

Design and implement loading patterns

- Design and implement full and incremental data loads
- Prepare data for loading into a dimensional model

- Design and implement a loading pattern for streaming data

Ingest and transform batch data

- Choose an appropriate data store
- Choose between dataflows, notebooks, and T-SQL for data transformation
- Create and manage shortcuts to data
- Implement mirroring
- Ingest data by using pipelines
- Transform data by using PySpark, SQL, and KQL
- Denormalize data
- Group and aggregate data
- Handle duplicate, missing, and late-arriving data

Ingest and transform streaming data

- Choose an appropriate streaming engine
- Process data by using eventstreams
- Process data by using Spark structured streaming
- Process data by using KQL
- Create windowing functions

Monitor and optimize an analytics solution (30–35%)

Monitor Fabric items

- Monitor data ingestion
- Monitor data transformation
- Monitor semantic model refresh
- Configure alerts

Identify and resolve errors

- Identify and resolve pipeline errors
- Identify and resolve dataflow errors
- Identify and resolve notebook errors
- Identify and resolve eventhouse errors
- Identify and resolve eventstream errors
- Identify and resolve T-SQL errors

Optimize performance

- Optimize a lakehouse table
- Optimize a pipeline
- Optimize a data warehouse
- Optimize eventstreams and eventhouses
- Optimize Spark performance
- Optimize query performance

Study resources

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[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Fabric What is Data engineering in Microsoft Fabric?
Ask a question	Microsoft Q&A Microsoft Docs

Study resources	Links to learning and documentation
Get community support	Analytics on Azure - Microsoft Tech Community ↗ Microsoft Fabric Blog ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Data Exposed Browse other Microsoft Learn shows

Study guide for Exam DP-900: Microsoft Azure Data Fundamentals

Article • 11/26/2023

Purpose of this document

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Useful links	Description
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Note

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Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of February 1, 2024

Audience profile

This exam is an opportunity to demonstrate your knowledge of core data concepts and related Microsoft Azure data services. As a candidate for this exam, you should have familiarity with Exam DP-900's self-paced or instructor-led learning material.

This exam is intended for you, if you're a candidate beginning to work with data in the cloud.

You should be familiar with:

- The concepts of relational and non-relational data.
- Different types of data workloads such as transactional or analytical.

You can use Azure Data Fundamentals to prepare for other Azure role-based certifications like Azure Database Administrator Associate or Azure Data Engineer Associate, but it is not a prerequisite for any of them.

Skills at a glance

- Describe core data concepts (25–30%)
- Identify considerations for relational data on Azure (20–25%)
- Describe considerations for working with non-relational data on Azure (15–20%)
- Describe an analytics workload on Azure (25–30%)

Describe core data concepts (25–30%)

Describe ways to represent data

- Describe features of structured data
- Describe features of semi-structured
- Describe features of unstructured data

Identify options for data storage

- Describe common formats for data files
- Describe types of databases

Describe common data workloads

- Describe features of transactional workloads
- Describe features of analytical workloads

Identify roles and responsibilities for data workloads

- Describe responsibilities for database administrators
- Describe responsibilities for data engineers
- Describe responsibilities for data analysts

Identify considerations for relational data on Azure (20–25%)

Describe relational concepts

- Identify features of relational data
- Describe normalization and why it is used
- Identify common structured query language (SQL) statements
- Identify common database objects

Describe relational Azure data services

- Describe the Azure SQL family of products including Azure SQL Database, Azure SQL Managed Instance, and SQL Server on Azure Virtual Machines
- Identify Azure database services for open-source database systems

Describe considerations for working with non-relational data on Azure (15–20%)

Describe capabilities of Azure storage

- Describe Azure Blob storage
- Describe Azure File storage
- Describe Azure Table storage

Describe capabilities and features of Azure Cosmos DB

- Identify use cases for Azure Cosmos DB
- Describe Azure Cosmos DB APIs

Describe an analytics workload on Azure (25–30%)

Describe common elements of large-scale analytics

- Describe considerations for data ingestion and processing
- Describe options for analytical data stores
- Describe Azure services for data warehousing, including Azure Synapse Analytics, Azure Databricks, Microsoft Fabric, Azure HDInsight, and Azure Data Factory

Describe consideration for real-time data analytics

- Describe the difference between batch and streaming data
- Identify Microsoft cloud services for real-time analytics

Describe data visualization in Microsoft Power BI

- Identify capabilities of Power BI
- Describe features of data models in Power BI
- Identify appropriate visualizations for data

Study resources

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Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Azure SQL documentation - Azure SQL SQL Server technical documentation - SQL Server Azure Blob Storage documentation Azure Table storage documentation Azure Storage documentation Azure Cosmos DB Azure Synapse Analytics Azure Databricks Data Factory Power BI documentation - Power BI

Study resources	Links to learning and documentation
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Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to February 1, 2024	Skill area as of February 1, 2024	Change
Audience profile		No change
Describe core data concepts	Describe core data concepts	No change
Describe ways to represent data	Describe ways to represent data	No change
Identify options for data storage	Identify options for data storage	No change
Describe common data workloads	Describe common data workloads	No change
Identify roles and responsibilities for data workloads	Identify roles and responsibilities for data workloads	No change
Identify considerations for relational data on Azure	Identify considerations for relational data on Azure	No change

Skill area prior to February 1, 2024	Skill area as of February 1, 2024	Change
Describe relational concepts	Describe relational concepts	No change
Describe relational Azure data services	Describe relational Azure data services	Minor
Describe considerations for working with non-relational data on Azure	Describe considerations for working with non-relational data on Azure	No change
Describe capabilities of Azure storage	Describe capabilities of Azure storage	No change
Describe capabilities and features of Azure Cosmos DB	Describe capabilities and features of Azure Cosmos DB	No change
Describe an analytics workload on Azure	Describe an analytics workload on Azure	No change
Describe common elements of large-scale analytics	Describe common elements of large-scale analytics	Minor
Describe consideration for real-time data analytics	Describe consideration for real-time data analytics	Minor
Describe data visualization in Microsoft Power BI	Describe data visualization in Microsoft Power BI	No change

Skills measured prior to February 1, 2024

Audience profile

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This exam is intended for candidates beginning to work with data in the cloud.

Candidates should be familiar with the concepts of relational and non-relational data, and different types of data workloads such as transactional or analytical.

Azure Data Fundamentals can be used to prepare for other Azure role-based certifications like Azure Database Administrator Associate or Azure Data Engineer Associate, but it is not a prerequisite for any of them.

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Describe common elements of large-scale analytics

- Describe considerations for data ingestion and processing
- Describe options for analytical data stores
- Describe Azure services for data warehousing, including Azure Synapse Analytics, Azure Databricks, Azure HDInsight, and Azure Data Factory

Describe consideration for real-time data analytics

- Describe the difference between batch and streaming data
- Describe technologies for real-time analytics including Azure Stream Analytics, Azure Synapse Data Explorer, and Spark Structured Streaming

Describe data visualization in Microsoft Power BI

- Identify capabilities of Power BI
- Describe features of data models in Power BI
- Identify appropriate visualizations for data

Study guide for Exam MB-210: Microsoft Dynamics 365 Sales Functional Consultant

Article • 03/22/2024

Purpose of this document

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Skills measured as of April 19, 2024

Audience profile

As a candidate for this exam, you're a Microsoft Dynamics 365 functional consultant with sales expertise. You're responsible for implementing solutions that meet the business requirements of an organization, large or small. You're also responsible for identifying potential process efficiencies and improvements that could be achieved by using Dynamics 365 Sales and wider Microsoft Power Platform features. This may include supporting a sales lifecycle to run effectively and assisting the sales team to:

- Achieve revenue targets.
- Execute business strategies.
- Meet an organization's objectives.

You're responsible for configuring and expanding the core sales application functionality to create scalable customer solutions which support, automate, and accelerate the company's sales process. You'll use your knowledge of Microsoft Power Platform and the common customer engagement capabilities in Dynamics 365 to inform the solution design where the following are required:

- Integrations
- Business process flows
- Visualizations
- Custom applications

As a candidate, you should:

- Have strong business knowledge of sales processes for business-to-customer and business-to-business scenarios.
- Understand the sales process of the customer as well as the core functionality of Dynamics 365 Sales to identify where the two align and differ.
- Be proficient in configuring Microsoft Power Platform, primarily model-driven apps.
- Have knowledge of Microsoft 365 services and their interactions with Microsoft Dataverse.

Skills at a glance

- Configure Dynamics 365 Sales (35–40%)
- Manage core sales features (30–35%)
- Configure additional tools and services (25–30%)

Configure Dynamics 365 Sales (35–40%)

Configure user interfaces

- Configure model-driven apps
- Create and configure forms
- Create and configure views
- Create email, Excel, and Word templates
- Configure the timeline control
- Describe Microsoft Dataverse security concepts
- Configure column mappings on table relationships

Configure sales settings

- Configure sales territories and hierarchical sales territories
- Configure auto number settings for quotes, orders, and invoices
- Configure currencies and fiscal years
- Describe sales security roles
- Manage sales literature
- Configure hierarchy security
- Configure and utilize the assistant
- Configure the business card scanner control
- Enable the Kanban control
- Describe goal management

Configure processes

- Configure duplicate detection rules
- Configure sales business process flows
- Import data by using the Data Import wizard and export data to Excel

Configure sales visualizations

- Implement Power BI apps for Sales

- Configure sales dashboards
- Describe options for sales reports
- Configure the opportunity pipeline view

Configure sales engagement

- Configure and utilize the Sales accelerator
- Configure the workspace
- Create and manage sequences
- Create and manage segments
- Configure lead and opportunity assignment rules for routing
- Configure the Up Next widget

Evaluate Sales licensing

- Compare and contrast Sales Professional and Enterprise configuration
- Describe use cases for Team member licensing
- Describe the upgrade pathway from Sales Professional to Enterprise

Manage core sales features (30–35%)

Create and manage accounts and contacts

- Create and manage accounts
- Create and manage contacts
- Describe use cases for auto capture
- Describe use cases for email engagement
- Describe relationship intelligence
- Describe use cases for notes analysis
- Describe SMS message engagement with customers

Create and manage leads and opportunities

- Create and manage leads
- Perform lead qualification and disqualification
- Configure lead qualification
- Manage opportunities
- Track stakeholders, sales team members, and competitors
- Manage product line items on opportunities
- Customize the Opportunity Close form
- Configure and utilize predictive lead and opportunity scoring
- Manage the sales pipeline by using the work list
- Configure duplicate lead detection

Create and manage quotes, orders, and invoices

- Add quotes to opportunities
- Edit quotes in various stages
- Send quotes and invoices to customers
- Convert quotes to orders
- Manage orders and invoices

Create and manage the product catalog

- Create and manage products, product bundles, and product families
- Describe the product lifecycle
- Create and manage price lists
- Create and manage unit groups

Create and manage forecasts

- Configure and utilize forecasts

- Describe the forecast templates
- Configure and utilize premium forecasting

Manage in-app campaigns

- Create and manage marketing lists
- Create quick campaigns

Configure additional tools and services (25–30%)

Integrate sales applications

- Integrate with LinkedIn Sales Navigator and Insights
- Describe Dynamics 365 Sales mobile app capabilities
- Create push notifications for the Dynamics 365 Sales mobile app

Integrate with Microsoft 365 services

- Configure mailboxes
- Describe Server-Side Synchronization
- Configure document management
- Deploy the Dynamics 365 App for Outlook
- Configure the Dynamics 365 App for Outlook
- Configure auto capture and email engagement
- Configure SharePoint integration
- Describe Microsoft Teams calling and conversation intelligence
- Describe Microsoft Teams collaboration

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[+] Expand table

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Audience profile		No change
Configure Dynamics 365 Sales	Configure Dynamics 365 Sales	No % change
Configure the user interfaces of the Sales apps	Configure user interfaces	No change
Configure sales settings	Configure sales settings	No change
Configure processes	Configure processes	Minor
Configure sales visualizations	Configure sales visualizations	No change
Configure the sales accelerator	Configure sales engagement	Minor
Evaluate Sales licensing	Evaluate Sales licensing	No change

Skill area prior to April 19, 2024	Skill area as of April 19, 2024	Change
Manage core sales tables	Manage core sales features	No % change
Create and manage accounts and contacts	Create and manage accounts and contacts	No change
Create and manage leads and opportunities	Create and manage leads and opportunities	No change
Create and manage quotes, orders, and invoices	Create and manage quotes, orders, and invoices	No change
Create and manage the product catalog	Create and manage the product catalog	No change
Create and manage forecasts	Create and manage forecasts	No change
Manage in-app campaigns	Manage in-app campaigns	No change
Configure additional tools and services	Configure additional tools and services	No % change
Integrate sales applications	Integrate sales applications	No change
Integrate with Microsoft 365 services	Integrate with Microsoft 365 services	No change

Skills measured prior to April 19, 2024

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Configure Dynamics 365 Sales (35–40%)

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- Enable the Kanban control
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Configure processes

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- Create and manage playbooks
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Configure sales visualizations

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Work with the sales accelerator

- Configure and utilize the sales accelerator
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- Describe use cases for email engagement
- Describe relationship intelligence
- Describe use cases for notes analysis
- Describe SMS message engagement with customers

Create and manage leads and opportunities

- Create and manage leads
- Perform lead qualification and disqualification

- Configure lead qualification
- Manage opportunities
- Track stakeholders, sales team members, and competitors
- Manage product line items on opportunities
- Customize the Opportunity Close form
- Configure and utilize predictive lead and opportunity scoring
- Manage the sales pipeline by using the work list
- Configure duplicate lead detection

Create and manage quotes, orders, and invoices

- Add quotes to opportunities
- Edit quotes in various stages
- Send quotes and invoices to customers
- Convert quotes to orders
- Manage orders and invoices

Create and manage the product catalog

- Create and manage products, product bundles, and product families
- Describe the product lifecycle
- Create and manage price lists
- Create and manage unit groups

Create and manage forecasts

- Configure and utilize forecasts
- Describe the forecast templates
- Configure and utilize premium forecasting

Manage in-app campaigns

- Create and manage marketing lists
- Create quick campaigns

Configure additional tools and services (25–30%)

Integrate sales applications

- Integrate with LinkedIn Sales Navigator and Insights
- Describe Dynamics 365 Sales mobile app capabilities
- Create push notifications for the Dynamics 365 Sales mobile app

Integrate with Microsoft 365 services

- Configure mailboxes
- Describe Server-Side Synchronization
- Configure document management
- Deploy the Dynamics 365 App for Outlook
- Configure the Dynamics 365 App for Outlook
- Configure auto capture and email engagement
- Configure SharePoint integration
- Describe Microsoft Teams calling and conversation intelligence
- Describe Microsoft Teams collaboration

Study guide for Exam MB-220: Microsoft Dynamics 365 Customer Insights (Journeys) Functional Consultant

Article • 02/20/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[+] Expand table

Useful links	Description
Review the skills measured as of March 20, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to March 20, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.

Useful links	Description
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of March 20, 2024

Audience profile

As a candidate for this exam, you're a Microsoft Dynamics 365 Customer Insights - Journeys functional consultant.

You're responsible for implementing solutions that:

- Engage with and convert leads.
- Orchestrate marketing experiences.
- Personalize marketing messaging.
- Deliver marketing insights.

You're responsible for:

- Configuring the core marketing application to include segmentation, email and text message marketing, and interactive journeys.
- Lead nurturing with personalized experiences, events, surveys, lead scoring, and analytics.
- Maintaining compliance and consent policies.

As a candidate, you should have some knowledge of marketing principles and the Dynamics 365 Customer Insights - Journeys application's role in relationship to the Dynamics 365 suite of applications, including interoperability with:

- Dynamics 365 Customer Insights - Data
- Microsoft Power Platform
- Dynamics 365 Customer Voice
- Dynamics 365 Sales
- Microsoft Teams

You should understand:

- Industry terminology
- Industry processes
- Best practices

Skills at a glance

- Configure Dynamics 365 Customer Insights – Journeys (10–15%)
- Manage segments and preferences (15–20%)
- Manage leads, contacts, and accounts (1–5%)

- Manage marketing channels (25–30%)
- Manage journeys (20–25%)
- Manage events and webinars (10–15%)

Configure Dynamics 365 Customer Insights - Journeys (10–15%)

Configure the Customer Insights - Journeys app

- Configure forms, including adding columns to forms and changing form layouts
- Configure views, including adding columns to views
- Configure the model-driven app
- Create and configure columns in tables

Configure organization settings

- Configure domain authentication
- Configure SMS providers, including Microsoft Azure Communication Services

Configure and manage marketing settings

- Configure form matching strategies
- Configure compliance profiles
- Configure brand profiles
- Configure UTM tracking
- Configure audiences
- Configure frequency capping

Manage segments and preferences (15–20%)

Create and manage segments

- Create and manage segments
- Create segments by using Copilot Query Assist
- Combine segments by using union, exclude, or intersect logic
- Create a segment within a customer journey
- Describe table relationships
- Describe Customer Insights - Data tables

Manage preference centers

- Create and manage preference centers
- Describe how consent is managed and enforced for email and text messages
- Configure opt-in and double opt-in
- Describe consent purposes and topics
- Import consent records
- Describe multi-brand preference centers

Manage leads, contacts, and accounts (1–5%)

Manage leads

- Create leads
- Manage the leads lifecycle
- Create and manage lead scoring models

Create and manage accounts and contacts

- Create and manage accounts
- Create and manage contacts
- Create and manage activities and activity templates

Manage marketing channels (25–30%)

Create marketing emails

- Create a marketing email
- Describe the HTML editor feature in a marketing email
- Create and use reusable content blocks
- Define mandatory fields for email
- Add dynamic content to email
- Add conditional content to email
- Validate email content for compliance by using the Accessibility Checker
- Check spam scores for email content by using Spam checker
- Personalize email content
- Describe the content ideas copilot
- Use specialized links
- Include iCalendar files and documents from the asset library

Distribute marketing emails

- Define message requirements
- Validate and publish email messages
- Send emails without building a journey
- Prevent duplicate sends

Create and manage other channels

- Create outbound text messages
- Add SMS keywords to a text message
- Personalize text messages
- Manage SMS keywords
- Configure push notifications

- Include Customer Voice surveys in messages

Create and manage forms

- Manage form templates
- Create and manage forms
- Embed forms in external websites
- Implement form capture for externally managed forms
- Review form submissions
- Describe form hosting options
- Describe use cases for extending forms by using JavaScript
- Configure form validation rules

Manage journeys (20–25%)

Configure journey orchestration

- Create a journey by using a segment
- Configure a journey by using a trigger
- Configure A/B testing and review test results
- Configure a business goal and measure progress
- Add journey reminders
- Define journey exit conditions
- Add channel optimization to a journey

Manage journey triggers

- Describe trigger types
- Describe custom triggers
- Create a trigger for a Dataverse record change

- Use a custom trigger to run a Power Automate flow
- Use conditions in triggers
- Move custom triggers between environments

Explore insights and analytics

- Analyze marketing outcomes
- Track campaigns by using UTM codes

Manage events and webinars (10–15%)

Create and configure events and webinars

- Create an event
- Configure an event as a Microsoft Teams webinar
- Configure an event as a Microsoft Teams Live event
- Configure event agenda, including sessions and tracks
- Manage speakers and event team members
- Create and manage event forms

Manage events

- Manage event registrations, including attendee check-in and cancellations
- Manage registration, waitlists, and attendees
- Configure event capacity and passes
- Describe the event management dashboard and event analytics

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Dynamics 365 Customer Insights - Journeys documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to March 20, 2024	Skill area as of March 20, 2024	Changes
Audience profile		Major
Configure marketing applications	Configure Dynamics 365 Customer Insights - Journeys	% of exam decreased
Configure the Dynamics 365 Customer Insights - Journeys app	Configure the Customer Insights - Journeys app	Major
Configure organization settings	Configure organization settings	Major
Configure and manage marketing settings	Configure and manage marketing settings	Major
Manage insights		Removed
Manage segments and lists	Manage segments and preferences	% of exam increased
Create and manage segments	Create and manage segments	Major

Skill area prior to March 20, 2024	Skill area as of March 20, 2024	Changes
Create and manage subscription centers and lists	Manage preference centers	Major
Create and manage marketing forms and pages		Removed
Create and manage marketing forms		Removed
Create and manage marketing pages		Removed
Manage leads, contacts, and accounts	Manage leads, contacts, and accounts	% of exam decreased
Manage leads	Manage leads	Minor
Create and manage accounts and contacts	Create and manage accounts and contacts	Minor
Create and manage marketing email messages	Manage marketing channels	% of exam increased
Create email messages	Create marketing emails	Major
Manage email messages	Distribute marketing emails	Major
	Create and manage other channels	Added
	Create and manage forms	Added
Manage customer journeys	Manage journeys	No % change
Create automated campaigns by using outbound customer journeys		Removed
Publish and manage customer journeys		Removed
Configure and manage real-time journey orchestration	Configure journey orchestration	Major
	Manage journey triggers	Added
	Explore insights and analytics	Added
Manage events and webinars	Manage events and webinars	No % change
Create and configure events and webinars	Create and configure events and webinars	Major
Manage events	Manage events	Major
Configure Dynamics 365 Customer Voice		Removed

Skill area prior to March 20, 2024	Skill area as of March 20, 2024	Changes
Create surveys		Removed
Manage surveys		Removed

Skills measured prior to March 20, 2024

Audience profile

As a candidate for this exam you're a Microsoft Dynamics 365 Customer Insights - Journeys functional consultant. You're responsible for implementing solutions that:

- Attract and convert leads.
- Build brand awareness.
- Standardize omnichannel messaging.
- Deliver marketing insights.

You're responsible for:

- Configuring the core marketing application to include segmentation, email marketing, interactive customer journeys, and real-time journeys.
- Lead nurturing with personalized experiences, events, surveys, lead scoring, and analytics.
- Maintaining compliance with data privacy and security regulations.

As a candidate, you should have some knowledge of marketing principles and the Dynamics 365 Customer Insights - Journeys application's role in relationship to the Dynamics 365 suite of applications, including integration of:

- The Microsoft Power Platform
- Other Dynamics 365 customer engagement apps
- Dynamics 365 Customer Insights - Data
- Dynamics 365 Customer Voice
- Microsoft Teams
- Other Microsoft 365 applications

You should understand:

- Industry terminology
- Priorities
- Common initiatives
- Standards
- Methodologies
- Best practices

Skills at a glance

- Configure marketing applications (15–20%)
- Manage segments and lists (10–15%)
- Create and manage marketing forms and pages (5–10%)
- Manage leads, contacts, and accounts (5–10%)
- Create and manage marketing email messages (10–15%)
- Manage customer journeys (20–25%)
- Manage events and webinars (10–15%)
- Configure Dynamics 365 Customer Voice (5–10%)

Configure marketing applications (15–20%)

Configure the Dynamics 365 Customer Insights - Journeys app

- Create and configure forms
- Create and configure views
- Create and configure charts
- Create and configure dashboards
- Configure site maps

Configure organization settings

- Configure data sources for synchronization
- Create and manage templates
- Configure integration with the marketing portal
- Configure landing page settings
- Configure domain authentication
- Configure social media accounts
- Configure webinar providers
- Configure LinkedIn Lead Gen
- Configure the Customer Insights connector
- Configure SMS providers
- Configure push notifications
- Describe Teams integration

Configure and manage marketing settings

- Configure matching strategies
- Configure marketing email settings
- Configure customer journey settings
- Configure opt-in settings
- Configure lead scoring settings
- Configure required options for publishing journeys
- Create and configure marketing calendars
- Configure content settings
- Configure compliance settings
- Manage marketing content libraries

Manage insights

- Analyze contact insights
- Analyze lead insights
- Analyze segment insights
- Analyze customer journey insights
- Analyze email insights
- Analyze lead scoring model insights
- Analyze marketing page insights
- Analyze marketing form insights
- Analyze website insights
- Analyze redirect URL insights
- Analyze event insights

Manage segments and lists (10–15%)

Create and manage segments

- Determine segment type
- Create and manage marketing segments
- Create and manage templates
- Create segments using Natural Language Query
- Configure dynamic segments using the Designer
- Combine segments using union, exclude, or intersect logic
- Create segments from external sources by using Dynamics 365 Customer Insights - Data
- Describe use cases for blocks including behavioral blocks and query blocks

Create and manage subscription centers and lists

- Create a subscription list
- Add a subscription list or lists to a form
- Create a segment based on a subscription list
- Describe use cases for subscription centers
- Create and manage a subscription center
- Describe when to use marketing lists and subscription lists
- Describe use cases for suppression lists

Create and manage marketing forms and pages (5–10%)

Create and manage marketing forms

- Determine which marketing form type to use
- Identify form requirements and limitations
- Create a marketing form by using a template
- Manage form templates
- Create and manage marketing forms
- Configure marketing form fields
- Embed forms in external websites
- Implement form capture for externally managed forms

Create and manage marketing pages

- Create and configure marketing pages and templates
- Create and configure real-time marketing forms
- Add outbound content blocks to marketing pages
- Add marketing forms to marketing pages
- Apply a style to marketing pages
- Integrate marketing pages with marketing emails

- Preview and validate marketing pages
- Publish marketing pages
- Monitor visitors to marketing pages
- Describe personalized marketing pages

Manage leads, contacts, and accounts (5–10%)

Manage leads

- Create leads
- Manage the leads lifecycle
- Synchronize leads from LinkedIn Campaign Manager by using LinkedIn Lead Gen
- Create and manage lead scoring models

Create and manage accounts and contacts

- Create and manage accounts
- Create and manage contacts
- Manage marketing consent settings
- Create and manage activities and activity templates

Create and manage marketing email messages (10–15%)

Create email messages

- Create and manage marketing email and templates
- Describe the HTML editor feature in a marketing email
- Create and use reusable outbound content blocks
- Define mandatory fields for email messages
- Add dynamic content to email messages
- Add conditional content to email messages

- Validate email content for compliance by using the Accessibility Checker
- Check spam scores for messages by using Spam checker
- Personalize using predefined tokens

Manage email messages

- Define message requirements
- Preview messages by using basic, inbox, Litmus features
- Configure A/B testing and review test results
- Validate and publish email messages
- Send emails without building a journey

Manage customer journeys (20–25%)

Create automated campaigns by using outbound customer journeys

- Create and manage customer journey templates
- Determine when to use an inbound or outbound customer journey
- Determine content types required for a customer journey
- Create a customer journey by using a template
- Set the target audiences
- Configure Smart Scheduler
- Describe business unit scoping for segments and customer journeys
- Add segments and suppression lists to a customer journey
- Configure recurring journeys

Publish and manage customer journeys

- Configure required options for publishing journeys

- Check customer journeys for errors
- Publish a customer journey

Configure and manage real-time journey orchestration

- Determine whether to use real-time or outbound journey orchestration
- Describe the real-time marketing asset library
- Enable real-time customer journey orchestration
- Create a real-time journey
- Configure real-time journey triggers
- Configure real-time email templates
- Configure automated SMS keyword flows
- Configure push notifications
- Measure campaign effectiveness with built-in analytics
- Create content blocks in real-time marketing
- Move custom triggers between environments

Manage events and webinars (10–15%)

Create and configure events and webinars

- Create an event
- Configure an event as a Microsoft Teams webinar
- Configure an event as a Microsoft Teams Live event
- Configure buildings, rooms, and layouts for events
- Set up sessions including internal and external tracks
- Set up speakers
- Configure event websites
- Create and manage event forms

- Configure event agenda
- Describe the event business process flow

Manage events

- Create event invitations, banners, and social media posts
- Manage event registrations (including attendee check-in) and cancellations
- Manage speakers, registration, waitlists, and attendees
- Manage sponsors, vendors, logistics, and accommodations
- Record and view financial information for events
- Configure event capacity and passes

Configure Dynamics 365 Customer Voice (5–10%)

Create surveys

- Create and manage Customer Voice surveys
- Apply design elements to a survey
- Define satisfaction metrics

Manage surveys

- Embed surveys in marketing email messages
- Add surveys to a webpage
- Add surveys to customer journeys
- View survey responses in Customer Voice
- Create a segment from survey responses

Study guide for Exam MB-230: Microsoft Dynamics 365 Customer Service Functional Consultant

Article • 09/19/2024

Purpose of this document

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[] Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
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Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 30, 2024

Audience profile

As a candidate for this exam, you're a functional consultant with customer service expertise. You're responsible for implementing solutions that focus upon:

- Customer service
- Quality
- Reliability
- Efficiency
- Customer satisfaction

You design and implement service management processes and automation in collaboration with solution architects and developers. You coordinate with customer engagement administrators to implement and upgrade customer service components including:

- Dynamics 365 Contact Center
- Microsoft Copilot in Customer Service

- Collaboration
- Knowledge management
- Customer feedback

You must have strong applied knowledge of customer service, including in-depth understanding of cases, knowledge management, queues, service scheduling, service-level agreements (SLAs), Microsoft Copilot Studio, Customer Service applications, Customer Voice, basic and unified routing, and Contact Center.

As a functional consultant, your knowledge should include:

- Comprehensive understanding of the customer service application's role in relationship to the Dynamics 365 suite of apps.
- Basic understanding of the solution architecture.

Skills at a glance

- Manage cases, Knowledge Management, and feedback (40–45%)
- Implement scheduling and routing (10–15%)
- Implement Dynamics 365 Contact Center (20–25%)
- Manage analytics, visualizations, and insights (10–15%)
- Extend Customer Service by using Microsoft Power Platform (15–20%)
- Implement Connected Customer Service (1–5%)
- Implement routing (10–15%)

Manage cases, Knowledge Management, and feedback (40–45%)

Create and manage cases

- Create and manage cases, including using Copilot to assist with management
- Perform case resolution, including managing case resolution activities
- Manage related cases, including parent/child cases and merging cases

Define and configure foundational Customer Service components

- Implement Advanced Similarity rules
- Implement record creation and update rules
- Configure and modify the Case Resolution dialogue
- Configure business process flows
- Configure and manage security roles and personas
- Configure enhanced case forms and views
- Configure the records displayed in the case timeline
- Configure connectors with the timeline
- Configure the timeline and cards on custom forms
- Enable AI suggestions for similar cases

Create and administer Knowledge Management

- Configure internal Knowledge Search capabilities
- Configure tables for Knowledge Management
- Translate Knowledge articles
- Integrate and search external Knowledge sources
- Enable AI-suggested descriptions and keywords

Capture customer feedback by using Customer Voice

- Trigger distribution of a survey
- Personalize a survey
- Populate survey results against cases and conversations

Manage collaboration

- Configure Microsoft Teams chat
- Configure Join a Teams call for specific users

- Configure suggested contacts in Microsoft Teams, including by using AI and rules-based suggestions
- Configure Teams collaboration experience

Manage Copilot features

- Plan and configure Copilot in Customer Service for agents
- Enable Ask a Question in Copilot in Customer Service, including filtering content
- Configure case and conversation summaries in Copilot in Customer Service

Create and manage SLAs for cases

- Configure SLA settings
- Implement actions by using Power Automate
- Apply SLAs
- Create and manage SLA items including key performance indicators (KPIs), warning actions, success actions, and applicability
- Configure a timer control on a form
- Create SLA KPIs

Implement scheduling and routing (10–15%)

Configure service scheduling

- Configure resource categories and characteristics
- Define services
- Configure fulfillment preferences

Configure routing

- Configure work classification and assignments, including rules
- Configure Routing Rulesets

- Configure skills-based routing and Skills Finder
- Configure queues
- Implement Basic Case Routing rules

Implement Dynamics 365 Contact Center (20–25%)

Deploy Contact Center

- Configure workstreams
- Configure user settings
- Manage capacity profiles

Manage channels

- Configure a chat widget
- Configure proactive chat
- Configure the voice channel for Azure Communication Services
- Configure the chat channel
- Configure the record-based channel
- Configure digital channels

Configure agent productivity features

- Configure agent scripts, including slugs
- Create macros
- Enable Smart Assist

Configure agent workspaces

- Configure notification templates
- Configure session templates
- Create agent experience profiles

- Configure the Agent Inbox, including creating custom views
- Configure application tab templates

Extend Customer Service by using Microsoft Power Platform (15–20%)

Configure model-driven apps for Customer Service

- Create and configure forms
- Create and configure views
- Configure model-driven app components
- Create and configure columns
- Configure alerts and in-app notifications

Create custom apps for Customer Service

- Create task-specific canvas apps and custom pages
- Configure Microsoft Power Pages websites by using the Customer Service templates

Implement Copilot Studio for Customer Service scenarios

- Integrate copilots with Customer Service
- Create and manage copilots, including copilots for chat and voice
- Implement Copilot Studio as a post-call survey

Study resources

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Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Microsoft Dynamics 365 Customer Service documentation Dynamics 365 Customer Voice documentation Dynamics 365 Customer Insights documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Change log

Key to understanding the table: The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to September 30, 2024	Skill area as of September 30, 2024	Change
Audience profile		Major
Manage cases and Knowledge Management	Manage cases, Knowledge Management, and feedback	% of exam increased
Create and manage cases	Create and manage cases	Major
Define and configure foundational Customer Service components	Define and configure foundational Customer Service components	Major
Create and administer Knowledge Management	Create and administer Knowledge Management	Major
Capture customer feedback by using Customer Voice	Capture customer feedback by using Customer Voice	Major
	Manage collaboration	Added

Skill area prior to September 30, 2024	Skill area as of September 30, 2024	Change
	Manage Copilot features	Added
	Create and manage SLAs for cases	Added
Manage entitlements and SLAs		Removed
Implement scheduling	Implement scheduling and routing	No % change
Configure service scheduling	Configure service scheduling	Major
Implement schedule boards		Removed
Manage schedule boards		Removed
Implement Universal Resource Scheduling (URS)		Removed
	Configure routing	Added
Implement multi-session experiences for Customer Service	Implement Dynamics 365 Contact Center	% of exam decreased
Deploy Omnichannel for Customer Service	Deploy Contact Center	Minor
Manage channels	Manage channels	Major
Configure agent productivity tools	Configure agent productivity features	Major
Configure agent workspaces	Configure agent workspaces	Minor
Configure agent productivity AI capabilities		Removed
Manage analytics, visualizations, and insights		Removed
Implement Microsoft Power Platform	Extend Customer Service by using Microsoft Power Platform	% of exam increased
Configure model-driven apps	Configure model-driven apps for Customer Service	Major
Create custom apps	Create custom apps for Customer Service	Minor
Implement Microsoft Copilot Studio for Customer Service	Implement Copilot for Customer Service scenarios	Minor

Skill area prior to September 30, 2024	Skill area as of September 30, 2024	Change
Implement Connected Customer Service		Removed
Implement routing		Removed

Study Guide for Exam MB-240: Microsoft Dynamics 365 Field Service Functional Consultant

Article • 09/19/2024

Purpose of this document

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 Expand table

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 30, 2024

Audience profile

As a candidate for this exam, you're a Microsoft Dynamics 365 Field Service functional consultant. You're responsible for implementing solutions that:

- Schedule resources to meet customer requirements.
- Optimize resources by matching skills, locations, and availability.
- Equip frontline workers with the information and tools to deliver great service.
- Build a service history of customer assets.

You're responsible for:

- Configuring the default administration areas of the Field Service application.
- Configuring resources and scheduling.
- Configuring service agreements and booking setups.
- Managing work orders, incident types, and bookings.

- Managing customer assets.
- Installing and configuring the Field Service mobile app.
- Enhancing Field Service based on customer requirements.

As a candidate, you should have a basic understanding of field service principles and the role the Field Service app plays in relationship to the Dynamics 365 suite of applications, including integration of:

- Microsoft Power Platform
- Dynamics 365 Customer Service
- Microsoft 365 apps
- Dynamics 365 Remote Assist
- Dynamics 365 Guides

You should understand:

- Industry terminology
- Field service processes
- Work order lifecycle
- Uses for Copilot in Field Service
- Best practices

Skills at a glance

- Configure field service applications (20–25%)
- Manage work orders and customer assets (25–30%)
- Schedule and dispatch work orders (15–20%)
- Manage the Field Service mobile app (5–10%)
- Manage inventory and purchasing by using the built-in inventory management system (5–10%)
- Implement Microsoft Power Platform (5–10%)

Configure field service applications (20–25%)

Configure core Field Service components

- Configure key required security roles
- Configure territories, postal codes, and organizational units
- Configure characteristics and proficiency models
- Implement resource roles and categories
- Modify default Field Service settings
- Configure trades and trade coverages
- Configure not-to-exceed values
- Configure Copilot summary

Configure product and service pricing

- Create and configure required product and service types
- Configure minimum charge amounts and durations
- Determine how pricing rules affect the price that is applied to a product on a work order
- Associate products and services with price lists

Configure bookable resources

- Create and manage bookable resources, including frontline workers
- Configure start and end locations for resources
- Configure pay types and rates
- Configure working hours and working hour templates
- Manage time off requests
- Enable technician time tracking
- Configure facilities and equipment

Configure scheduling of multiple resources

- Configure and apply Requirement group templates
- Set up resource pools and crews
- Schedule and visualize pools, crews, and Requirement groups on the schedule board

Integrate other tools with Field Service

- Implement Dynamics 365 Remote Assist for use with Field Service
- Set up and use Dynamics 365 Remote Assist one-time call
- Use Dynamics 365 Guides with work orders

Manage work orders and customer assets (25–30%)

Configure the work order lifecycle

- Configure work order types and work order resolutions
- Configure booking status and work order sub-status values

Create and manage work orders

- Create a work order
- Add status and sub-status information to a work order
- Organize work orders and resources by geography
- Associate a work order with a price list, service-level agreement, and entitlement
- Close a work order, including attaching a work order resolution
- Create a work order by using Copilot in Microsoft Outlook

Manage incidents

- Configure incident types and suggestions
- Assign requirement group templates to incident types

- Add service tasks to incidents
- Add products and services to incidents

Create and manage agreements

- Configure agreements
- Configure automatic generation of work orders
- Configure agreement bookings
- Configure agreement invoicing
- Create entitlements for agreements

Manage inspections

- Create inspections
- Associate inspections with work orders and customer assets
- Create inspection templates
- Create inspections without work orders

Configure customer assets

- Create and manage customer assets
- Configure products to enable automatic creation of customer assets
- Create child assets
- Configure 3D asset models
- Create and manage functional locations
- Configure properties and property templates

Schedule and dispatch work orders (15–20%)

Manage scheduling options

- Schedule work orders by using the schedule board and schedule assistant

- Configure fulfillment preferences
- Configure quick scheduling (“quick book”)
- Configure resource requirements for multi-day scheduling

Configure, customize, and manage schedule boards

- Configure the Requirements panel
- Configure the integrated map feature
- Manually schedule work orders
- Configure and manage schedule boards, including customizing views
- Customize a schedule board

Configure the schedule assistant

- Configure schedule assistant settings
- Apply filtering constraints
- Troubleshoot the schedule assistant

Configure Universal Resource Scheduling

- Enable scheduling for a table, including configuring the metadata
- Configure geocoding for a custom table
- Manage work hours calendar for requirements
- Configure booking timestamps, booking journals, and actuals

Manage the Field Service mobile app (5–10%)

Deliver work orders by using the mobile app

- Complete work orders, including tasks, booking statuses, follow-up work orders, signatures, images, and Field Service technician reports
- Service and maintain customer assets, including IoT devices

- Perform inspections, including adding ad hoc inspections
- Manage working offline
- Perform time entry
- Launch related apps, including Dynamics 365 Remote Assist and Guides

Set up the mobile app

- Configure security roles
- Customize the mobile app including forms, views, pages, and navigation
- Enable and configure location tracking and geofencing
- Configure offline profiles and synchronization features
- Configure push notifications
- Configure barcode features
- Install the mobile app
- Configure technician service reports

Manage inventory and purchasing by using the built-in inventory management system (5–10%)

Manage inventory and warehouses

- Set up inventory and warehouses
- View product inventory
- Adjust inventory levels
- Transfer inventory between warehouses
- Manually update inventory by using inventory journals

Manage purchasing and product returns

- Create purchase orders

- Create a list of receivable products for a purchase order
- Create return merchandise authorizations
- Create return to vendor transactions
- Finalize returns

Implement Microsoft Power Platform (5–10%)

Configure model-driven apps

- Create and configure forms
- Create and configure views
- Configure navigation

Create custom apps and automations

- Create task-specific canvas apps and custom pages
- Embed apps in Field Service
- Use Power Automate cloud flows to automate tasks and enhance Field Service

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules User guide for Dynamics 365 Field Service (contains video)
Ask a question	Microsoft Q&A Microsoft Docs

Study resources	Links to learning and documentation
Get community support	Microsoft Dynamics Community
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community

Change log

Key to understanding the table: The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to September 30, 2024	Skill area as of September 30, 2024	Change
Audience profile		Minor
Configure field service applications	Configure field service applications	No % change
Define and configure core Field Service components	Configure core Field Service components	Major
Configure product and service pricing	Configure product and service pricing	Minor
Configure bookable resources	Configure bookable resources	Major
Configure scheduling of multiple resources	Configure scheduling of multiple resources	Major
Manage work orders	Manage work orders and customer assets	% of exam increased
Configure the work order lifecycle	Configure the work order lifecycle	Major
Create and manage work orders	Create and manage work orders	Minor
Create and manage agreements	Create and manage agreements	Minor
Manage inspections	Manage inspections	Minor
	Configure customer assets	Added (moved from deleted FG)

Skill area prior to September 30, 2024	Skill area as of September 30, 2024	Change
Schedule and dispatch work orders	Schedule and dispatch work orders	% of exam decreased
Manage scheduling options	Manage scheduling options	Minor
Implement schedule boards	Configure, customize, and manage schedule boards	Major
Manage schedule boards		Merged with above
Implement the schedule assistant	Configure the schedule assistant	Major
Configure Universal Resource Scheduling	Configure Universal Resource Scheduling	Minor
Manage the Field Service mobile app	Manage the Field Service mobile app	No % change
Set up the mobile app	Set up the mobile app	Minor
Manage inventory and purchasing by using the built-in inventory management system	Manage inventory and purchasing by using the built-in inventory management system	No % change
Manage purchasing and product returns	Manage purchasing and product returns	Minor
Manage Connected Field Service and customer assets		Removed
Implement Microsoft Power Platform	Implement Microsoft Power Platform	No % change
Create custom apps and automations	Create custom apps and automations	Minor

Study guide for Exam MB-260: Microsoft Dynamics 365 Customer Insights (Data) Specialist

Article • 03/18/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of April 15, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to April 15, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions on this schedule, there may be times when localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of April 15, 2024

Audience profile

As a candidate for this exam, you implement solutions that provide insights into customer profiles and that track engagement activities to help improve customer experiences.

You should have firsthand experience with:

- Dynamics 365 Customer Insights - Data

- Microsoft Power Query
- Microsoft Dataverse
- Microsoft Azure Data Lake Storage
- Azure Data Factory pipelines

You should also have direct experience with practices related to:

- Privacy, compliance, and consent
- Security
- Responsible AI

As a candidate for this exam, you need experience with data processes related to:

- Preparation
- Matching
- Segmentation
- Enhancement
- Deduplication

You should have a general understanding of:

- Azure Machine Learning
- Azure Synapse Analytics
- Azure architecture

Skills at a glance

- Describe Dynamics 365 Customer Insights – Data (5–10%)
- Ingest data (10–15%)
- Create customer profiles through data unification (35–40%)
- Implement AI predictions (5–10%)
- Configure measures and segments (15–20%)
- Configure third-party connections (5–10%)

- Administer Customer Insights – Data (5–10%)

Describe Dynamics 365 Customer Insights - Data (5–10%)

Describe Customer Insights - Data functionality

- Describe Customer Insights - Data components
- Describe support for near real-time updates
- Describe the differences between individual consumer and business account profiles
- Describe support for Microsoft Fabric
- Describe the tables and relationships in Customer Insights - Data
- Describe real-time ingestion capabilities and limitations
- Describe benefits of pre-unification data enrichment
- Identify when to use the managed data lake or an organization's own data lake

Describe use cases for Customer Insights - Data

- Describe use cases for Customer Insights - Data
- Describe use cases for Customer Insights - Data APIs
- Describe the integration between Customers Insights - Data and Customer Insights - Journeys
- Describe use cases for machine learning

Ingest data (10–15%)

Connect to data sources

- Attach to Microsoft Dataverse
- Attach to Azure Data Lake Storage
- Ingest and transform data by using Power Query

- Attach to Azure Synapse Analytics
- Update Unified Customer Profile fields in near real-time
- Troubleshoot common ingestion errors
- Attach to data stored in Delta Lake format
- Configure incremental refresh

Transform, cleanse, and load data

- Select tables and columns
- Resolve data inconsistencies, unexpected or null values, and data quality issues
- Evaluate and transform column data types
- Transform data from Dataverse

Create customer profiles through data unification (35–40%)

Select source fields

- Select Customer Insights tables and attributes for unification
- Describe attribute types
- Describe the requirements for a primary key

Remove duplicate records

- Deduplicate enriched tables
- Define deduplication rules, including exceptions, winner, and alternate records
- Manage merged preferences

Match conditions

- Specify a match order for tables
- Define match rules

- Define exceptions
- Include enriched tables in matching
- Configure normalization options
- Differentiate between basic and custom precision methods
- Configure custom match conditions

Unify customer fields

- Specify the order of fields for merged tables
- Combine fields into a merged field
- Combine a group of fields
- Separate fields from a merged field
- Exclude fields from a merge
- Change the order of fields
- Rename fields
- Group profiles into Clusters
- Configure customer ID generation
- Describe B2B unification

Implement business data separation

- Describe business unit separation prerequisites
- Access business data in Dataverse
- Implement Customer Insights - Data business unit integrations

Review data unification

- Review and create customer profiles
- View the results of data unification
- Verify output tables from data unification

- Update the unification settings

Configure relationships and activities

- Create and manage relationships
- Create and manage activities
- Combine customer profiles with activity data from unknown users
- Describe how to use customer consent
- Describe how to use web data for personalization
- Describe relationship paths
- Set the B2B account relationship with contacts

Configure search and filter indexes

- Define which fields should be searchable
- Define filter options for fields
- Define indexed fields

Implement AI predictions (5–10%)

Configure built-in prediction models

- Configure and evaluate the customer churn models, including the transactional churn and subscription churn models
- Configure and evaluate the product recommendation model
- Configure and evaluate the customer lifetime value model
- Configure and manage sentiment analysis

Implement machine learning models

- Describe prerequisites for using custom Azure Machine Learning models in Customer Insights - Data

- Create and manage workflows that consume machine learning models
- Describe prerequisites for using custom models from Azure Synapse Analytics in Customer Insights - Data

Configure measures and segments (15–20%)

Create and manage measures

- Create and manage tags
- Describe the different types of measures
- Create a measure
- Configure measure calculations
- Modify dimensions
- Schedule measures

Create and manage segments

- Describe methods for creating segments, including segment builder and quick segments
- Create a segment from customer profiles or measures
- Create a segment based on a prediction model
- Describe projected attributes
- Schedule segments

Find suggested segments

- Describe how the system suggests segments for use
- Create a suggested segment based on a measure
- Create a suggested segment based on activity

Create segment insights

- Configure overlap segments
- Configure differentiated segments
- Review the overlap or differentiator analysis
- Find similar customers by using AI

Configure third-party connections (5–10%)

Configure connections and exports

- Configure a connection for exporting data
- Create a data export
- Define types of exports
- Configure on demand and scheduled data exports
- Define the limitations of segment exports

Implement data enrichment

- Enrich customer profiles
- Configure and manage enrichments
- Enrich data sources before unification

Administer Customer Insights - Data (5–10%)

Create and configure environments

- Identify who can create environments
- Differentiate between trial, sandbox, and production environments
- Connect Customer Insights - Data to Dataverse
- Connect Customer Insights - Data with Azure Data Lake Storage Account
- Manage environments
- Assign user permissions

- Create an environment in Customer Insights - Data
- Manage keys in Azure key vault

Manage system refreshes

- Differentiate between system refreshes and data source refreshes
- Describe the system refresh process
- Configure a system refresh schedule
- Monitor and troubleshoot refreshes

Study resources

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[] Expand table

Study resources	Links to learning and documentation
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Find documentation	Dynamics 365 documentation and learning modules Dynamics 365 Customer Insights documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to April 15, 2024	Skill area as of April 15, 2024	Changes
Audience profile		Major
Design Dynamics 365 Customer Insights - Data solutions	Describe Dynamics 365 Customer Insights - Data	No % change
Describe Customer Insights - Data	Describe Customer Insights - Data functionality	Major
Describe use cases for Customer Insights - Data	Describe use cases for Customer Insights - Data	Major
Ingest data into Customer Insights - Data	Ingest data	No % change
Connect to data sources	Connect to data sources	Major
Transform, cleanse, and load data by using Power Query	Transform, cleanse, and load data	Minor
Configure incremental refreshes for data sources		Removed
Create customer profiles through data unification	Create customer profiles through data unification	% of exam increased
Select source fields	Select source fields	Minor
Remove duplicate records	Remove duplicate records	Minor
Match conditions	Match conditions	Minor
Unify customer fields	Unify customer fields	Major
Implement business data separation	Implement business data separation	Minor
Review data unification	Review data unification	No change
Configure relationships and activities	Configure relationships and activities	Major
Create a unified contact profile for B2B accounts		Removed
Configure search and filter indexes	Configure search and filter indexes	Minor
Implement AI predictions in Customer Insights - Data	Implement AI predictions	No % change

Skill area prior to April 15, 2024	Skill area as of April 15, 2024	Changes
Use Copilot in Customer Insights - Data		Removed
Configure prediction models	Configure built-in prediction models	Minor
Implement machine learning models	Implement machine learning models	Major
Configure measures and segments	Configure measures and segments	% of exam increased
Create and manage measures	Create and manage measures	Minor
Create and manage segments	Create and manage segments	Major
Find suggested segments	Find suggested segments	Minor
Create segment insights	Create segment insights	Minor
Configure third-party connections	Configure third-party connections	% of exam decreased
Configure connections and exports	Configure connections and exports	No change
Export data to Dynamics 365 Customer Insights - Journeys or Dynamics 365 Sales		Removed
Display Customer Insights - Data data from within Dynamics 365 apps		Removed
Implement Data Enrichment	Implement data enrichment	Minor
Use Customer Consent data		Removed
Use Customer Insights data across Power Platform and M365 applications		Removed
Administer Customer Insights - Data	Administer Customer Insights - Data	No % change
Create and configure environments	Create and configure environments	Major
Manage system refreshes	Manage system refreshes	Minor
Create and manage connections		Removed

Skills measured prior to April 15, 2024

Audience profile

As a candidate for this exam, you implement solutions that provide insights into customer profiles and that track engagement activities to help:

- Improve customer experiences.
- Increase customer retention.

You should have firsthand experience with:

- Dynamics 365 Customer Insights - Data and one or more additional Dynamics 365 apps
- Microsoft Power Query
- Microsoft Dataverse
- Common Data Model
- Microsoft Power Platform

You should also have direct experience with practices related to:

- Privacy
- Compliance
- Consent
- Security
- Responsible AI
- Data retention policy

As a candidate for this exam, you need experience with processes related to key performance indicators (KPIs), data retention, validation, visualization, preparation, matching, fragmentation, segmentation, and enhancement. You should have a general understanding of:

- Azure Machine Learning
- Azure Synapse Analytics
- Azure Data Factory

Skills at a glance

- Design Dynamics 365 Customer Insights - Data solutions (5–10%)
- Ingest data into Customer Insights - Data (10–15%)
- Create customer profiles through data unification (30–35%)
- Implement AI predictions in Customer Insights - Data (5–10%)
- Configure measures and segments (10–15%)
- Configure third-party connections (10–15%)
- Administer Customer Insights - Data (5–10%)

Design Dynamics 365 Customer Insights - Data solutions (5–10%)

Describe Customer Insights - Data

- Describe Dynamics 365 Customer Insights - Data components, including tables, relationships, enrichments, activities, measures, and segments
- Describe the first run experience (FRE) in D365 Customer Insights - Data
- Describe support for near real-time updates
- Describe support for enrichment
- Describe the differences between individual consumer and business account profiles.

Describe use cases for Customer Insights - Data

- Describe use cases for Dynamics 365 Customer Insights - Data
- Describe use cases for extending Customer Insights - Data by using Microsoft Power Platform components
- Describe use cases for Customer Insights - Data APIs
- Describe use cases for working with business accounts

Ingest data into Customer Insights - Data (10–15%)

Connect to data sources

- Determine which data sources to use
- Determine whether to use the managed data lake or an organization's data lake
- Attach to a Microsoft Dataverse data lake
- Attach to Azure Data Lake Storage
- Ingest and transform data using Power Query connectors
- Attach to Azure Synapse Analytics
- Describe real-time ingestion capabilities and limitations
- Describe benefits of pre-unification data enrichment
- Ingest data in real-time
- Update Unified Customer Profile fields in real-time
- Understand common ingestion errors

Transform, cleanse, and load data by using Power Query

- Select tables and columns
- Resolve data inconsistencies, unexpected or null values, and data quality issues
- Evaluate and transform column data types

Configure incremental refreshes for data sources

- Identify data sources that support incremental updates
- Configure incremental refresh
- Identify capabilities and limitations for scheduled refreshes
- Configure scheduled refreshes and on-demand refreshes

Create customer profiles through data unification (30-35%)

Select source fields

- Select Customer Insights tables and attributes for unification
- Select attribute types
- Select the primary key

Remove duplicate records

- Deduplicate enriched tables
- Define deduplication rules
- Review deduplication results

Match conditions

- Specify a match order for tables
- Define match rules
- Define exceptions
- Include enriched tables in matching
- Configure normalization options
- Differentiate between basic and custom precision methods

Unify customer fields

- Specify the order of fields for merged tables
- Combine fields into a merged field
- Combine a group of fields
- Separate fields from a merged field
- Exclude fields from a merge

- Change the order of fields
- Rename fields
- Group profiles into Clusters

Implement business data separation

- Understand business unit separation prerequisites
- Access business data in Dataverse
- Implement Customer Insights - Data business unit integrations

Review data unification

- Review and create customer profiles
- View the results of data unification
- Verify output tables from data unification
- Update the unification settings

Configure relationships and activities

- Create and manage relationships
- Create activities by using a new or existing relationship
- Create activities in real-time
- Manage activities
- Combine customer profiles with activity data from unknown users
- Display Customer Insights - Data Activities in D365 Activity Timeline

Create a unified contact profile for B2B accounts

- Create unified contact profile
- Set the relationship between contacts and accounts
- Define the semantic fields

- Review contact unification
- Verify output tables from data unification

Configure search and filter indexes

- Define which fields should be searchable
- Define filter options for fields
- Define indexes

Implement AI predictions in Customer Insights - Data (5–10%)

Use Copilot in Customer Insights - Data

- Understand key Discovery page components

Configure prediction models

- Configure and evaluate the customer churn models, including the transactional churn and subscription churn models
- Configure and evaluate the product recommendation model
- Configure and evaluate the customer lifetime value model
- Create a customer segment based on prediction model
- Configure and manage sentiment analysis

Implement machine learning models

- Describe prerequisites for using custom Azure Machine Learning models in Customer Insights - Data
- Use a wizard to bring custom prediction models to Customer Insights - Data
- Implement workflows that consume machine learning models
- Manage workflows for custom machine learning models

Configure measures and segments (10–15%)

Create and manage measures

- Create and manage tags
- Describe the different types of measures
- Create a measure
- Create a measure by using a template
- Configure measure calculations
- Modify dimensions
- Schedule Measures

Create and manage segments

- Create and manage tags
- Describe methods for creating segments, including segment builder and quick segments
- Create a segment from customer profiles, measures, or AI predictions
- Create a segment based on a prediction model
- Find similar customers
- Project attributes
- Track usage of segments
- Export segments

Find suggested segments

- Describe how the system suggests segments for use
- Create a segment from a suggestion
- Create a suggested segment based on activity
- Configure refreshes for suggestions

Create segment insights

- Configure overlap segments
- Configure differentiated segments
- Analyze insights
- Find similar segments with AI

Configure third-party connections (10–15%)

Configure connections and exports

- Configure a connection for exporting data
- Create a data export
- Define types of exports
- Configure on demand and scheduled data exports
- Define the limitations of segment exports

Export data to Dynamics 365 Customer Insights – Journeys or Dynamics 365 Sales

- Identify prerequisites for exporting data from Dynamics 365 Customer Insights - Data
- Create connections between Dynamics 365 Customer Insights - Data and Dynamics 365 apps
- Define which segments to export
- Export a Dynamics 365 Customer Insights - Data segment into Dynamics 365 Customer Insights - Journeys as a marketing segment
- Use Dynamics 365 Customer Insights - Data profiles and segments with real-time marketing
- Export a Dynamics 365 Customer Insights - Data profile into Dynamics 365 Customer Insights - Journeys for customer journey orchestration

- Export a Dynamics 365 Customer Insights - Data segment into Dynamics 365 Sales as a marketing list
- Display Customer Insights - Data data from within Dynamics 365 apps
Identify what data from Dynamics 365 Customer Insights - Data can be displayed within Dynamics 365 apps
Configure the Customer Card add-in for Dynamics 365 apps
- Identify permissions required to implement the Customer Card Add-in for Dynamics 365 apps

Implement Data Enrichment

- Enrich customer profiles
- Configure and manage enrichments
- Enrich data sources before unification
- View enrichment results

Use Customer Consent data

- Add Consent Data to Customer Insights - Data
- Use Consent Data

Use Customer Insights - Data data across Power Platform and M365 applications

- Use D365 Customer Insights - Data chatbot for Microsoft Teams
- Connect Power Apps and Dynamics 365 Customer Insights - Data
- Use the Power Automate Connector for Dynamics 365 Customer Insights - Data
- Configure the Dynamics 365 Customer Insights connector for Power BI - Data

Administer Customer Insights - Data (5–10%)

Create and configure environments

- Identify who can create environments

- Differentiate between trial and production environments
- Connect Customer Insights - Data to Microsoft Dataverse
- Connect Customer Insights - Data with Azure Data Lake Storage Account Manage existing environments
- Change or claim ownership of the environment
- Reset an existing environment
- Delete an existing environment
- Configure user permissions
- Describe available user permissions
- Export diagnostic logs

Manage system refreshes

- Differentiate between system refreshes and data source refreshes
- Describe refresh policies
- Configure a system refresh schedule
- Monitor and troubleshoot refreshes

Create and manage connections

- Describe when connections are used
- Configure and manage connections

Study guide for Exam MB-280: Microsoft Dynamics 365 Customer Experience Analyst

Article • 08/08/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

About the exam

Languages

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured

Audience profile

As a candidate for this exam, you're a Microsoft Dynamics 365 customer experience analyst who has:

- Participated in or plans to participate in Dynamics 365 Sales implementations.
- An understanding of an organization's sales process.
- An understanding of the seller's perspective (user experience).
- The ability to demonstrate Dynamics 365 Customer Insights - Data and Customer Insights - Journeys capabilities.

You're responsible for configuring, customizing, and expanding the functionality of Dynamics 365 Sales to create business solutions that support, automate, and accelerate the company's sales process. You use your knowledge of customer experience capabilities in Dynamics 365 Sales and Microsoft Power Platform to inform the following design and implementation tasks:

- Configure Dynamics 365 Sales standard and premium features.
- Implement collaboration features.
- Configure the security model.
- Perform Dynamics 365 Sales customizations.
- Extend Dynamics 365 Sales with Microsoft Power Platform.
- Deploy the Dynamics 365 App for Outlook.

As a candidate, you need:

- Experience configuring model-driven apps in Microsoft Power Apps.

- An understanding of accounts, contacts, and activities.
- An understanding of leads and opportunities.
- An understanding of the components of model-driven apps, including forms, views, charts, and dashboards.
- An understanding of model-driven app personal settings.
- Experience working with Dataverse solutions.
- An understanding of Dataverse, including tables, columns, and relationships.
- Familiarity with Power Automate cloud flow concepts, such as connectors, triggers, and actions.
- An understanding of the Dataverse security model and features, including business units, security roles, and row ownership and sharing.

Skills at a glance

- Implement Dynamics 365 Sales (25–30%)
- Configure and customize Dataverse and model-driven apps (25–30%)
- Implement the Dynamics 365 App for Outlook (10–15%)
- Implement security and customizations in Dynamics 365 Sales (10–15%)
- Demonstrate Dynamics 365 Customer Insights capabilities (10–15%)
- Extend and enhance Dynamics 365 Sales capabilities (5–10%)

Implement Dynamics 365 Sales (25–30%)

Configure core functionality of Dynamics 365 Sales

- Evaluate predictive lead and opportunity scoring model performance
- Configure predictive lead and opportunity scoring models
- Enable and configure predictive lead and opportunity scoring
- Configure the lead qualification experience
- Configure the opportunity pipeline view

- Interpret the Sales Pipeline chart
- Interpret the opportunity pipeline view
- Configure and deploy the Sales mobile app
- Enable email validation

Set up the product catalog

- Configure product catalog settings
- Differentiate the product catalog components
- Manage the product lifecycle, including creating, revising, cloning, and retiring
- Customize the enhanced experience for adding products
- Create product bundles
- Configure product families
- Build price lists and product pricing
- Evaluate product pricing
- Configure multiple currencies and evaluate currency calculations

Configure goals and forecasting

- Create and edit goals
- Configure rollup queries
- Manage forecasts
- Build forecasts from templates
- Configure security for and access to forecasts

Configure and use Sales intelligence features

- Configure and use the assistant
- Configure and manage custom insight cards
- Differentiate standard and premium Sales Insights features

- Interpret relationship analytics and improve relationship health
- Configure Copilot in Sales

Configure sales engagement

- Personalize the Sales accelerator
- Customize the workspace
- Manage the sales pipeline by using the work list
- Configure the Sales accelerator record types and security roles
- Create and manage sequences
- Create and manage assignment rules
- Configure lead and opportunity segments
- Configure work assignment
- Connect sequences to records

Configure and customize Dataverse and model-driven apps (25–30%)

Modify model-driven apps

- Configure an app for offline work
- Configure model-driven apps

Perform configuration and setup with native tools

- Create and manage email templates
- Build Word templates
- Build Excel templates
- Share templates
- Configure duplicate detection

- Configure bulk deletion
- Configure Dataverse search

Configure Dataverse table settings

- Configure relationship behaviors
- Configure auditing of data
- Configure connections and connection roles

Implement business logic

- Configure business rules
- Configure formula columns
- Maintain classic workflows in Dataverse
- Configure calculated and rollup columns
- Implement business process flows
- Evaluate low-code business logic options
- Use the Dataverse connector in a cloud flow

Customize the user experience

- Differentiate form types
- Differentiate view types
- Configure the timeline control
- Configure focused view
- Embed Power BI dashboard, reports, and tiles

Implement the Dynamics 365 App for Outlook (10–15%)

Manage Sales data and interactions in Outlook

- Differentiate the Dynamics 365 App for Outlook features

- Perform common tasks
- Deploy the Dynamics 365 App for Outlook to users

Configure mailboxes and server-side sync

- Configure mailboxes
- Configure server-side sync
- Configure folder-level tracking
- Configure email settings

Implement security and customizations in Dynamics 365 Sales (10–15%)

Manage security for Dynamics 365 Sales

- Implement hierarchy security
- Manage security roles for Sales
- Create and manage teams
- Share a model-driven app
- Evaluate security privileges by using access checker
- Associate Microsoft Entra groups with environments
- Diagnose user access issues

Customize Dynamics 365 Sales

- Configure relationship mappings on Sales tables
- Configure lead and opportunity status reasons
- Configure opportunity close
- Configure automatic creation rules for leads

Demonstrate Dynamics 365 Customer Insights capabilities (10–15%)

Create unified customer profiles and use the profiles in other apps

- Share customer profiles and segments in Dataverse
- Enhance the sales process by using Customer Insights - Data
- Create measures and segments in Customer Insights - Data
- Perform data unification
- Ingest data

Create journeys by using real-time marketing

- Create emails by using templates
- Create a segment-based journey
- Create a trigger-based journey
- Configure lead scoring models in Customer Insights - Journeys
- Capture information by using forms

Extend and enhance Dynamics 365 Sales capabilities (5–10%)

Manage Copilot for Sales in Dynamics 365 Sales

- Deploy Copilot for Sales
- Customize Copilot for Sales forms and fields

Implement collaboration features

- Configure document management
- Configure Teams calling
- Configure text messages

- Configure Teams collaboration

Study resources

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[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Dynamics 365 App for Outlook documentation Dynamics 365 Sales documentation Dynamics 365 Customer Insights documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Study guide for Exam MB-310: Microsoft Dynamics 365 Finance Functional Consultant

Article • 07/22/2024

Purpose of this document

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[] Expand table

Useful links	Description
Review the skills measured as of September 20, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to September 20, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can

Useful links	Description
	request an accommodation.
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Note

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Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 20, 2024

Audience profile

As a candidate for this exam, you analyze business requirements and translate them into fully realized business processes and solutions that implement industry-recommended practices. You have a fundamental understanding of accounting principles and financial operations as they relate to:

- Core tasks in the finance and operations apps

- Manufacturing
- Retail
- Supply chain management operations

As a candidate for this exam, you specialize in one or more feature sets of Dynamics 365 Finance including:

- General ledger
- Accounts payable
- Accounts receivable
- Credit and collections
- Cash and bank management
- Budgeting
- Fixed assets
- Asset leasing
- Tax
- Expense management
- Subscription billing
- Cost accounting
- Cost management
- Consolidation and elimination

Skills at a glance

- Implement financial management (40–45%)
- Implement accounts receivable, credit, collections, and subscription billing (15–20%)
- Implement and manage accounts payable and expenses (10–15%)
- Manage budgeting (10–15%)

- Manage fixed assets (10–15%)

Implement financial management (40–45%)

Design and configure the chart of accounts

- Design and configure financial dimensions
- Design and configure the chart of accounts and main accounts
- Configure main accounts categories, ledger account aliases, and balance control accounts
- Configure legal entity overrides for financial dimensions and main accounts
- Configure and manage account structures and advanced rules
- Design and configure financial tags
- Configure derived dimensions and financial dimension default templates

Configure ledgers and currencies

- Configure batch transfer rules
- Configure currency exchange types and rates
- Configure a currency revaluation posting profile
- Configure and import exchange rates by using the exchange rate provider
- Configure accounting and reporting currencies

Implement and manage journals

- Configure journal names and vouchers
- Configure journal controls and posting restriction rules
- Implement journal workflow approvals
- Configure and use periodic journals
- Configure and apply accrual schemes
- Configure intercompany accounting

- Create templates to edit journals in Microsoft Excel
- Reverse financial transaction entries
- Configure default descriptions
- Create and use journal entries, including validation and posting
- Configure batch processing of journals

Implement and manage cash and bank

- Create and manage bank groups and bank accounts
- Configure payment formats
- Configure bank reconciliations, including advanced bank reconciliations
- Configure the cash flow forecast setup, including automation setup
- Perform bank foreign currency revaluation
- Process manual and advanced bank reconciliations
- Configure shared payment setup for customers and vendors

Perform periodic processes

- Design and configure periodic closing processes and end-of-year processes, including main accounts and templates
- Perform financial consolidation and elimination processes by using Consolidation online
- Create and manage financial reports, including modifying row, column, and report definitions, and reporting trees
- Design and configure financial period workspaces and closing schedules
- Design and configure legal entity for consolidation and elimination by using Consolidation online
- Design consolidation and elimination by using financial reports
- Configure and process ledger settlements
- Perform general ledger foreign currency revaluation

- Manage the ledger calendar

Configure, collect, and report taxes

- Configure tax groups, tax codes, settlement periods, and authorities
- Configure tax ledger posting groups
- Settle and post sales tax
- Configure withholding tax groups, tax codes, and authorities

Implement accounts receivable, credit, collections, and subscription billing (15–20%)

Implement and manage accounts receivable

- Configure customers and customer groups, including configuring shared customers
- Configure and process free text invoices, including recurring free text invoices
- Process sales order invoices and credit memos
- Configure customer payment methods
- Configure accounts receivable charges and apply changes to an invoice
- Manage customer holds
- Configure customer posting profiles
- Process customer payments
- Configure customer change approvals
- Perform accounts receivable foreign currency revaluation
- Configure and use billing classification
- Configure batch processing of free text and sales order invoicing
- Configure bank accounts for customers

Manage credit and collections

- Configure credit management processes
- Configure collections management processes, including collection activities
- Manage delinquent customers
- Prepare and send customer account statements
- Configure and process collection letters
- Configure aging definitions and process aged balances
- Process and manage credit holds
- Configure and use customer write-offs
- Configure and process interest notes

Configure and manage subscription billing

- Generate sales documents by using billing schedules
- Manage billing schedules, including price update and hold termination
- Configure contract billing, including billing schedule group, item group, and milestone setup
- Configure and use revenue deferrals and recognition, including for charges, deferral defaults, and items deferred by default
- Configure and use expense deferrals and recognition
- Process and manage revenue and expense recognition schedules

Implement and manage accounts payable and expenses (10–15%)

Implement and manage accounts payable

- Configure invoice validation policies and invoice matching setup
- Configure vendor groups, vendors, and vendor posting profiles, including configuring shared vendors
- Process purchase order invoices and credit memos, including prepayments

- Configure vendor payment methods
- Configure accounts payable charges, and apply changes to an invoice
- Configure bank accounts and bank account approvals for vendors
- Configure vendor change approvals
- Perform accounts payable foreign currency revaluation
- Configure vendor invoice automation
- Process the vendor invoice journal including voyage cost
- Configure and use recurring vendor invoices
- Process and generate vendor payments, centralized payments, and prepayments
- Manage vendor holds and inactivation

Configure and use expense management

- Configure expense management including categories, per diem options, mileage expenses, intercompany expenses, and personal expenses
- Create and manage expense reports

Manage budgeting (10–15%)

Implement basic budgeting

- Configure budgeting components, including budget models, codes, allocation terms, and transfer rules
- Create and manage budget register entries
- Compare budgeted values with actual values

Configure and manage budget controls

- Configure budget controls including budget parameters, budget fund availability options, budget control rules and groups, and over-budget permissions
- Perform budget checks on documents and journals

- Configure budget cycle time spans
- Activate or deactivate budget control configurations

Manage fixed assets (10–15%)

Implement and manage fixed assets

- Create and manage fixed asset groups and other fixed asset attributes
- Configure fixed asset posting profiles
- Configure fixed asset parameters
- Configure fixed asset books
- Configure depreciation profiles
- Create and manage fixed asset
- Configure mapping for fixed asset groups and books

Process fixed asset transactions

- Process fixed asset disposal (sales) by using free text invoices
- Process fixed asset acquisitions by using purchase orders, journals, inventory journals, and projects
- Create fixed asset budgets and transfer the budgets to the budgeting module
- Process fixed asset depreciation
- Process fixed asset disposals and other transactions by using the fixed asset journal
- Process fixed asset split, reclassification, and transfer
- Process acquisition and depreciation for derived books

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Finance
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to September 20, 2024	Skill area as of September 20, 2024	Change
Audience profile		Minor
Set up and configure financial management	Implement financial management	No % change
Define and configure the chart of accounts	Design and configure the chart of accounts	Major
Configure ledgers and currencies	Configure ledgers and currencies	Major
Implement and manage journals	Implement and manage journals	Major
Implement and manage cash and bank	Implement and manage cash and bank	Major
Implement cost accounting and cost management		Removed
Perform periodic processes	Perform periodic processes	Major

Skill area prior to September 20, 2024	Skill area as of September 20, 2024	Change
Configure, collect, and report taxes	Configure, collect, and report taxes	Minor
Implement accounts receivable, credit, collections, and revenue recognition	Implement accounts receivable, credit, collections, and subscription billing	No % change
Implement and manage accounts receivable	Implement and manage accounts receivable	Major
Manage credit and collections	Manage credit and collections	Major
Configure revenue recognition		Removed
	Configure and manage subscription billing	Added
Implement and manage accounts payable and expenses	Implement and manage accounts payable and expenses	% of exam decreased
Implement and manage accounts payable	Implement and manage accounts payable	Major
Configure and use expense management	Configure and use expense management	Major
Manage budgeting	Manage budgeting	% of exam increased
Implement basic budgeting	Implement basic budgeting	Minor
Configure and manage budget controls	Configure and manage budget controls	Minor
Configure and process budget plans		Removed
Manage fixed assets	Manage fixed assets	No % change
Implement and manage fixed assets	Implement and manage fixed assets	Minor
Process fixed asset transactions	Process fixed asset transactions	Minor
Implement asset leasing		Removed

Skills measured prior to September 20, 2024

Audience profile

As a candidate for this exam, you analyze business requirements and translate them into fully realized business processes and solutions that implement industry-recommended practices. You have a fundamental understanding of accounting principles and a deeper understanding of financial operations as they relate to:

- Core finance
- Manufacturing
- Retail
- Supply chain management operations

As a candidate for this exam, you specialize in one or more feature sets of Dynamics 365 Finance including core finance, general ledger, tax, cost accounting, cost management, fixed assets, asset leasing, budgeting, revenue recognition, consolidation and elimination, credit and collections, cash and bank management, and expense management. You understand the relationships between:

- Finance and manufacturing
- Retail
- Supply chain management

Skills at a glance

- Set up and configure financial management (40–45%)
- Implement accounts receivable, credit, collections, and revenue recognition (15–20%)
- Implement and manage accounts payable and expenses (15–20%)
- Manage budgeting (5–10%)
- Manage fixed assets (10–15%)

Set up and configure financial management (40–45%)

Define and configure the chart of accounts

- Describe use cases for financial dimensions
- Define and configure the chart of accounts and main accounts

- Describe use cases for main accounts categories, ledger account aliases, and balance control accounts
- Configure financial dimensions and dimension sets
- Configure legal entity overrides for financial dimensions and main accounts
- Create and configure account structures and advanced rules
- Configure financial tags
- Configure derived dimensions and financial dimension default templates
- Configure accounts for automatic transactions

Configure ledgers and currencies

- Configure and manage fiscal calendars, years, and periods
- Configure the ledger
- Describe and configure batch transfer rules
- Set up currencies and conversions for a legal entity
- Configure currency exchange types and rates

Implement and manage journals

- Describe options for implementing voucher numbers in journals
- Configure journal names
- Set up journal controls and posting restriction rules
- Describe and configure journal workflow approvals
- Create voucher templates
- Describe use cases for periodic journals and deferrals
- Configure and apply accrual schemes
- Set up intercompany accounting
- Create templates to edit journals in Microsoft Excel
- Perform reversing entries

Implement and manage cash and bank

- Create and maintain bank groups and bank accounts
- Describe electronic payment formats
- Configure and process bank reconciliations including advanced bank reconciliations
- Configure the cash flow forecast setup
- Configure the cash flow automation setup
- Enable and configure summarized bank transactions for vendor and customer payments

Implement cost accounting and cost management

- Describe cost accounting processes and terms
- Describe and configure the costing sheet including indirect costs
- Configure cost groups
- Implement inventory costing versions
- Differentiate between inventory costing methodologies
- Configure item model groups
- Configure item groups and inventory posting profiles
- Perform inventory closing and adjustment processes
- Configure cost categories
- Set up inventory value reports

Perform periodic processes

- Define and demonstrate periodic closing processes and end-of-year processes
- Perform financial consolidation and elimination processes
- Describe use cases and options for performing allocations
- Implement foreign currency revaluation processes

- Create and manage financial reports including modifying row, column, report definitions, and reporting tree

Configure, collect, and report taxes

- Configure tax groups, tax codes, settlement periods, and jurisdiction
- Configure tax ledger posting groups
- Settle and post sales tax
- Configure withholding tax groups, tax codes, and authorities

Implement accounts receivable, credit, collections, and revenue recognition (15–20%)

Implement and manage accounts receivable

- Set up customers and customer groups
- Configure and process free text invoices
- Process sales order invoices and credit memos
- Configure customer payment setup
- Configure accounts receivable charges
- Manage customer holds
- Set up customer posting profiles
- Process customer payments
- Enable and configure customer change approvals
- Perform foreign currency revaluation

Manage credit and collections

- Configure credit management processes
- Configure collections management processes
- Manage delinquent customers

- Prepare and send customer account statements
- Manage customer credit limits and credit holds
- Set up and process collection letters and interest notes
- Configure aging definitions
- Process aged balances

Configure revenue recognition

- Configure journals and parameters for revenue recognition
- Configure and implement revenue schedules
- Enter and process revenue recognition transactions
- Configure and use bundles

Implement and manage accounts payable and expenses (15–20%)

Implement and manage accounts payable

- Configure invoice validation policies and invoice matching setup
- Set up vendor groups, vendors and vendor posting profiles
- Process purchase order invoices and credit memos
- Configure vendor payments including payment terms, method of payments, and payment calendars
- Configure accounts payable charges and apply changes to an invoice
- Configure bank accounts and bank account approvals for vendors
- Enable and configure vendor change approvals
- Perform foreign currency revaluation
- Configure vendor invoices and payment automation
- Process the vendor invoice journal including voyage cost

Configure and use expense management

- Configure expense management including categories, per diem options, mileage expenses, intercompany expenses, and personal expenses
- Configure workflows for expense management
- Describe use cases for expense management policies and the audit workbench
- Describe and configure credit card processing
- Create and manage expense reports
- Configure and manage cash advance settings
- Create and manage travel requisitions

Manage budgeting (5–10%)

Implement basic budgeting

- Configure budgeting components including budget models, codes, allocation terms, and transfer rules
- Create and configure budget register entries
- Compare budgeted values with actual values
- Implement budget register entry workflows

Configure and manage budget controls

- Configure budget controls including budget parameters, budget fund availability options, budget control rules and groups, and over-budget permissions
- Perform budget checks on documents and journals
- Configure budget cycle time spans
- Activate or deactivate budget control configurations

Configure and process budget plans

- Define a budget planning process

- Create or generate a budget plan
- Configure budget planning by using scenarios, stages, allocation stages, stage allocations, and templates
- Create a budget plan template
- Configure and manage a budget planning workflow

Manage fixed assets (10–15%)

Implement and manage fixed assets

- Create fixed asset groups and other fixes asset attributes
- Configure fixed asset posting profiles
- Configure fixed asset parameters
- Describe the fixed asset lifecycle
- Configure fixed asset books
- Configure depreciation profiles
- Create and manage fixed asset
- Manage fixed asset groups and books mapping

Process fixed asset transactions

- Process fixed asset disposal by using free text invoices
- Process fixed asset acquisitions by using purchase orders, journals, and projects
- Create fixed asset budgets and transfer the budgets to the budgeting module
- Process fixed asset depreciation
- Process fixed asset disposals and other transactions by using the fixed asset journal
- Process fixed asset split, reclassification, and transfer

Implement asset leasing

- Configure asset leasing

- Manage asset leases
- Analyze asset lease reports

Study guide for Exam MB-330: Microsoft Dynamics 365 Supply Chain Management Functional Consultant

Article • 05/21/2024

Purpose of this document

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[] Expand table

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Note

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Note

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Skills measured as of June 21, 2024

Audience profile

As a candidate for this exam, you're a supply chain management functional consultant who designs and configures Dynamics 365 Supply Chain Management and related tools and technologies to meet the requirements for a customer. You analyze business requirements and translate them into fully realized business processes and solutions that implement industry-recommended practices.

You deliver solutions that meet or exceed the needs of your customers by partnering with:

- Architects
- Developers
- Consultants
- Other stakeholders

You are familiar with the concept of supply chain processes and/or implementing Supply Chain Management, including:

- Product information management
- Sales processes
- Procurement processes
- Inventory management
- Warehouse management
- Master planning
- Asset management
- Transportation management
- Landed cost
- Vendor collaboration

Skills at a glance

- Implement product information management (20–25%)
- Implement inventory and asset management (25–30%)
- Implement and manage supply chain processes (15–20%)
- Implement warehouse management and transportation management (15–20%)
- Implement master planning (10–15%)

Implement product information management (20–25%)

Create and manage products

- Create and release products and product variants
- Create and apply product templates
- Create bills of materials (BOMs) and BOM versions
- Create and configure category hierarchies
- Create and manage product states during the lifecycle of a product
- Create product attributes
- Assign variant-specific item sales tax groups for product variants

Configure prerequisites for products

- Configure inventory dimensions, including storage, tracking, and product dimension groups
- Configure item model groups
- Configure reservation hierarchies
- Configure unit sequence groups

Configure additional product details

- Create and assign bar codes and Global Trade Item Number (GTIN) codes
- Configure product unit conversions
- Configure default order settings
- Configure product filter codes for warehouse operations

Manage inventory pricing and costing

- Configure and maintain costing versions for standard and planned costs
- Configure price groups
- Configure items with standard costs

- Configure default item prices, purchase and sales prices, and discounts in trade agreements

Implement inventory and asset management (25–30%)

Configure inventory management

- Configure inventory management parameters
- Configure inventory reports
- Configure ABC classifications
- Configure the cost basis type and pricing template for commodity pricing

Manage and process inventory activities

- Create and process journals, including BOMs, item arrival, output order, transfer, movement, inventory adjustment, and counting journals
- Create and process transfer orders
- Manage the inventory closing and adjustment process
- Configure and perform inventory closings and adjustments
- Apply inventory blocking manually
- Create batch disposition codes

Manage quality

- Configure and process nonconformances
- Configure quality associations
- Configure components for the quality control process
- Process quality orders
- Process quarantine orders
- Configure inventory blocking by using a quality order

Configure asset management

- Create and manage work orders
- Create and configure assets
- View and manage capacity for work orders
- Configure work order settings
- Schedule preventive maintenance and reactive maintenance
- Manage and configure asset loans

Implement asset management

- Configure maintenance plans
- Configure functional locations
- Manage maintenance requests
- Manage work orders consumption
- Manage work order scheduling

Implement and manage supply chain processes (15–20%)

Implement procurement and sourcing

- Create and maintain vendors
- Create and manage purchase requisitions, requests for quotation (RFQs), and purchase orders (POs)
- Create purchase agreements and vendor rebates
- Configure and process consignment inventory
- Manage over and under deliveries and delivery schedules
- Configure procurement categories, charge codes, and purchasing policies
- Configure vendor collaboration features
- Create and process vendor returns

- Manage registration and product receipt
- Configure procurement workflows

Implement landed cost

- Configure landed cost parameters and voyage statuses
- Create and process voyage with purchase orders or transfer orders
- Configure cost estimations, tracking control center, over/under tolerance setup, and journey templates
- Configure cost type codes and auto-costs

Implement common sales and marketing features

- Create and maintain customers
- Configure sales agreements
- Configure and process sales quotations, sales orders, reservations, and sales returns
- Configure sales groups and commissions
- Configure and process intercompany orders
- Configure customer rebates
- Configure and manage delivery schedule, available-to-promise (ATP), and capable-to-promise (CTP)

Implement warehouse management and transportation management (15–20%)

Configure warehouse management

- Create sites, warehouses, locations, location formats, location profiles, location types, and zones
- Create and manage warehouse workers
- Configure work policies and work breaks

- Implement location directives
- Configure wave, load, and work templates
- Configure mobile device menus, menu items, and display settings
- Create and print labels, including product, wave, GS1 label segments, and license plate labels
- Configure packing dimensions

Perform warehouse management processes

- Configure and process replenishment
- Manage load planning workbench
- Configure and process inventory movements for advanced warehousing
- Create cycle counting work and perform cycle counting
- Process inbound and outbound orders by using the mobile app
- Configure containerization and packaging options
- Configure and process cross docking

Implement transportation management

- Configure shipping carriers and carrier groups
- Perform planning and executing of loads and shipments
- Configure and generate freight bills and invoices
- Configure route plans and guides
- Configure route and rate engines
- Configure and use dock appointment scheduling
- Reconcile freight by using manual or automatic processes

Implement master planning (10–15%)

Configure master planning

- Set up coverage groups and item coverage
- Configure and maintain master planning parameters and master plans
- Define positive and negative days
- Define action messages, delay messages, and time fences
- Configure period templates

Manage master plans

- Run master planning and analyze the results
- Evaluate and process planned purchase and transfer orders
- Set up and use the Supply Schedule form
- Configure safety margins
- Configure and process safety stock journals

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Supply Chain Management home page
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone on Learn Shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to June 21, 2024	Skill area as of June 21, 2024	Change
Audience profile		Major
Implement product information management	Implement product information management	No % change
Create and manage products	Create and manage products	Minor
Configure prerequisites for products	Configure prerequisites for products	Minor
Configure additional product details	Configure additional product details	No change
Manage inventory pricing and costing	Manage inventory pricing and costing	Minor
Implement inventory and asset management	Implement inventory and asset management	No % change
Configure inventory management	Configure inventory management	Major
Manage and process inventory activities	Manage and process inventory activities	Minor
Manage quality	Manage quality	Minor
Configure asset management	Configure asset management	Minor
	Implement asset management	Added
Implement and manage supply chain processes	Implement and manage supply chain processes	No % change
Implement procurement and sourcing	Implement procurement and sourcing	Major
Implement landed cost	Implement landed cost	Major
Implement common sales and marketing features	Implement common sales and marketing features	Major
Implement warehouse management and transportation management	Implement warehouse management and transportation management	No % change

Skill area prior to June 21, 2024	Skill area as of June 21, 2024	Change
Configure warehouse management	Configure warehouse management	Major
Perform warehouse management processes	Perform warehouse management processes	Major
Implement transportation management	Implement transportation management	No change
Implement master planning	Implement master planning	No % change
Configure master planning and forecasting	Configure master planning	Major
Manage master plans	Manage master plans	Minor

Skills measured prior to June 21, 2024

Audience profile

Candidates for this exam are supply chain management functional consultants who design and configure Dynamics 365 Supply Chain Management and related tools and technologies to meet the requirements for a customer. They analyze business requirements and translate those requirements into fully realized business processes and solutions that implement industry-recommended practices. Candidates partner with architects, developers, consultants, and other stakeholders to deliver solutions that meet or exceed the needs of their customers.

Candidates implement product information management, sales and procurement processes, inventory and warehouse management, master planning, asset management, and transportation management.

Skills at a glance

- Implement product information management (20–25%)
- Implement inventory and asset management (25–30%)
- Implement and manage supply chain processes (15–20%)
- Implement warehouse management and transportation management (15–20%)
- Implement master planning (10–15%)

Implement product information management (20–25%)

Create and manage products

- Create and release products and product variants
- Create and apply product templates
- Create BOMs and BOM versions
- Create and configure category hierarchies
- Create and manage product states during the life cycle of a product
- Create product attributes

Configure prerequisites for products

- Configure storage, tracking, and product dimension groups
- Create item model groups
- Describe use cases for item groups
- Configure reservation hierarchies
- Configure unit sequence groups

Configure additional product details

- Create and assign bar codes and Global Trade Item Number (GTIN) codes
- Configure product unit conversions
- Configure default order settings
- Configure product filter codes for warehouse operations

Manage inventory pricing and costing

- Describe costing versions for standard and planned costs
- Describe how price groups constrain pricing
- Configure items with standard costs

- Configure default item prices, purchase prices, and discounts in trade agreements

Implement inventory and asset management (25–30%)

Configure inventory management

- Create and manage inventory dimensions
- Configure Inventory management parameters and journals
- Configure inventory value reports
- Configure ABC classifications

Manage and process inventory activities

- Create and process journals, including bill of materials, item arrival, transfer, movement, inventory adjustment, and counting, journals
- Create and process transfer orders
- Describe the inventory closing and adjustment process
- Configure and perform inventory closings and adjustments
- Apply inventory blocking manually
- Create batch disposition codes

Manage quality

- Configure and process nonconformances
- Configure quality associations
- Configure components for the quality control process
- Process quality orders
- Process quarantine orders
- Describe use cases for inventory blocking using a quality order

Configure asset management

- Create and manage work orders
- Create and configure assets
- View and manage capacity for work orders
- Configure work order settings
- Schedule preventive maintenance and reactive maintenance

Implement and manage supply chain processes (15–20%)

Implement procurement and sourcing

- Create and maintain vendors
- Describe use cases for procurement workflows
- Create and manage purchase requisitions, requests for quotation (RFQs), and purchase orders (POs)
- Create purchase agreements and vendor rebates
- Configure and process consignment inventory
- Manage over and under deliveries and delivery schedules
- Configure procurement categories, charge codes, and purchasing policies
- Configure vendor collaboration features
- Create and process vendor returns

Implement landed cost

- Describe landed cost concepts and terminology
- Identify use cases for transportation management module and landed cost modules

Implement common sales and marketing features

- Create and maintain customers
- Describe sales order reservations and order promising

- Configure sales agreements
- Configure and process sales quotations, sales orders, and sales returns
- Configure sales groups, commissions
- Configure and manage discounts and price groups
- Configure and process intercompany orders
- Configure customer rebates

Implement warehouse management and transportation management (15–20%)

Configure warehouse management

- Create sites, warehouses, locations, location formats, location profiles, location types, and zones
- Create and manage warehouse workers
- Configure work policies and work breaks
- Implement location directives
- Configure inventory statuses
- Configure wave, load, and work templates
- Configure mobile device menus, menu items, and display settings
- Create and print labels, including product, wave, and license plate labels

Perform warehouse management processes

- Describe the replenishment process and cross-docking
- Describe the capabilities of the load planning workbench
- Configure and process inventory movements
- Create cycle counting work and perform cycle counting
- Process inbound and outbound orders

- Update inventory statuses
- Configure containerization and packaging options

Implement transportation management

- Configure shipping carriers and carrier groups
- Perform planning and executing of loads and shipments
- Configure and generate freight bills and invoices
- Configure route plans and guides
- Configure route and rate engines
- Configure and use dock appointment scheduling
- Reconcile freight by using manual or automatic processes

Implement master planning (10–15%)

Configure master planning and forecasting

- Describe the various types of forecasting available
- Configure Planning Optimization Add-in for Microsoft Dynamics 365 Supply Chain Management
- Describe planning optimization fit analysis results
- Set up coverage groups and item coverage
- Configure and maintain master planning parameters, master plans, and forecast plans
- Define positive and negative days
- Define action messages, delay messages, and time fences
- Configure period templates

Manage master plans

- Run master planning

- View and process planned orders
- Set up and use the Supply Schedule form
- Configure safety margins
- Configure and process safety stock journals

Study guide for Exam MB-335: Microsoft Dynamics 365 Supply Chain Management Functional Consultant Expert

Article • 09/16/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
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How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.

Useful links	Description
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 12, 2024

Audience profile

As a candidate for this exam, you're an expert or senior supply chain functional consultant who implements and configures advanced features of Dynamics 365 Supply Chain Management to meet the requirements of a business. You have an advanced knowledge of supply chain management operations including:

- Production
- Logistics
- Master planning and planning optimization
- Mixed reality and use of Microsoft Copilot features for Dynamics 365 Supply Chain Management
- Advanced supply chain management, including rebate and service management

As a candidate, you:

- Analyze business requirements.
- Translate the requirements into fully realized business processes and solutions.
- Apply industry-recommended practices to implementations.

You demonstrate expertise in one or more of the following manufacturing methods:

- Discrete
- Process
- Lean

You implement solutions that meet or exceed the needs of your customers by partnering with:

- Architects
- Developers
- Consultants
- Other stakeholders

Skills at a glance

- Configure products (15–20%)
- Configure production prerequisites (20–25%)
- Implement production methods (15–20%)
- Configure production control (20–25%)

- Implement additional supply chain management features (10–15%)

Configure products (15–20%)

Implement product information for production

- Configure planning items, co-products, and by-products
- Configure catch weight handling policies
- Configure inventory batches, batch attributes, and lot inheritance
- Manage product compliance including regulated and restricted items
- Create and implement configuration groups and routes for dimension-based products
- Manage products with dimension-based, constraint-based, and predefined variants
- Configure advanced export control functionality, excluding Power Fx formulas
- Manage hazardous materials

Implement product configuration features

- Create and manage product configuration model components and subcomponents
- Create calculations for product configuration models, including configuration using tables and/or expressions
- Configure BOM lines and route operations for a product configuration model
- Configure and manage pricing for configuration models
- Validate, approve, and test product configuration models

Implement engineering change management

- Design an engineering product lifecycle
- Configure engineering categories
- Configure product readiness policies and product release policies

- Create an engineering product with engineering attributes
- Review and accept released products to a local company
- Add engineering products to a sales order, purchase orders and production orders
- Schedule and implement engineering change requests and change orders

Configure production prerequisites (20–25%)

Configure resources, routes, and calendars

- Implement and manage work calendars and working time
- Create and configure resource capabilities
- Implement and manage resources and resource groups
- Create and manage operations and routes, including routes to manage scrap

Configure production settings and processes

- Create production units, production groups, production pools, and production journal names
- Manage reservations in production process, including partial reservations and re-reservations
- Configure warehouse processes for raw materials picking and finished goods put away
- Design a unified (mixed mode) manufacturing process
- Configure production control parameters
- Configure and update inventory status
- Process inbound and outbound warehouse transactions by using the mobile app

Implement costing

- Configure costing sheets and indirect costs
- Configure and manage cost groups, costing versions, and cost categories

- Configure cost allocations for co-products and burden allocation for by-products
- Configure and perform BOM/formula calculations
- Activate item prices
- Configure production posting profiles
- Analyze common sources of production variances
- View and analyze production and inventory costs

Implement production methods (15–20%)

Implement discrete manufacturing

- Create and process production orders
- Create and process picking list journals
- Create and process job card and route card journals
- Create and process reports as finished journals
- Reset the status of a production order
- Configure and manage production-related reservations
- Configure bills of material (BOM) and BOM versions
- Manage production order statuses

Implement process manufacturing

- Configure batch reservations and release to warehouse process
- Configure consolidated batch order processes
- Manage batch balancing and batch order sequencing
- Configure formulas features
- Create and process report as finished journals with co-products and by-products
- Create and process batch orders and a rework batch order
- Configure formulas and formula versions

- Manage batch order statuses

Implement lean manufacturing

- Create value streams and production flows
- Configure production flow costing
- Create kanban rules
- Process and manage kanban orders by using kanban boards
- Create and manage fixed, scheduled, and event kanbans

Configure production control (20–25%)

Implement subcontracting

- Implement subcontracting processes
- Implement activity-based subcontracting
- Configure BOM and formula lines, resources, and routes for subcontracting items
- Create service items for subcontracting
- Create and process subcontracting purchase orders

Implement manufacturing execution

- Configure time and attendance prerequisites and activate workers for time registration
- Configure manufacturing execution features
- Process production and batch orders by using manufacturing execution processes
- Configure production floor execution interface and job card terminals
- Calculate and approve time registrations

Implement advanced master planning scenarios

- Evaluate and process planned production and kanban orders

- Configure intercompany master planning
- Configure forecast models, plans, and parameters
- Run demand forecasting and adjust as appropriate
- Execute explosion and validate results
- Configure supply chain calendars
- Configure Demand Driven Material Requirements Planning (DDMRP)
- Configure the Planning Optimization Add-in for Microsoft Dynamics 365 Supply Chain Management
- Analyze Planning Optimization fit analysis results
- Create and manage forecasting

Implement production scheduling and capacity planning

- Configure scheduling parameters
- View, monitor, and update production schedules
- Configure capacity for production resources including machines, labor, and tooling
- Configure infinite and finite scheduling and capacity
- Set up and run operations and job scheduling

Implement additional supply chain management features (10–15%)

Integrate Copilot and mixed reality technologies with Supply Chain Management

- Integrate mixed reality Dynamics 365 Guides with manufacturing processes
- Integrate mixed reality Dynamics 365 Guides with asset management
- Configure Copilot features to confirm purchase orders with changes workspace

Implement Rebate management

- Configure Rebate management parameters
- Manage rebate reduction principles
- Process, review, and post rebates

Implement Service management

- Set up service agreements, tasks, objects, and subscriptions
- Create and manage service orders
- Set up repair management
- Manage customer inquiries and returns
- Manage indexes and subscription accrual

Study resources

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 Expand table

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Find documentation	Dynamics 365 documentation and learning modules Supply Chain Management documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 12, 2024	Skill area as of July 12, 2024	Change
Audience profile		Minor
Configure products	Configure products	No % change
Implement product information for production	Implement product information for production	Major
Implement Product Configurator for Dynamics 365	Implement product configuration features	Major
Implement Engineering Change Management	Implement engineering change management	No change
Configure production prerequisites	Configure production prerequisites	No % change
Configure resources, routes, and calendars	Configure resources, routes, and calendars	Minor
Configure production settings and processes	Configure production settings and processes	Major
Implement costing	Implement costing	Minor
Implement production methods	Implement production methods	No % change
Implement discrete manufacturing	Implement discrete manufacturing	Major
Implement process manufacturing	Implement process manufacturing	Minor
Implement lean manufacturing	Implement lean manufacturing	Minor
Configure production control	Configure production control	No % change
Implement subcontracting	Implement subcontracting	Minor
Implement manufacturing execution	Implement manufacturing execution	Minor

Skill area prior to July 12, 2024	Skill area as of July 12, 2024	Change
Implement advanced master planning scenarios	Implement advanced master planning scenarios	Major
Implement production scheduling and capacity planning	Implement production scheduling and capacity planning	Minor
Describe and implement additional supply chain management features	Implement additional supply chain management features	No % change
Describe cloud and edge scale units		Removed
Describe use cases for integrating mixed reality technologies with Supply Chain Management	Integrate Copilot and mixed reality technologies with Supply Chain Management	Major
Implement Asset Management		Removed
	Implement Rebate management	Added
	Implement Service management	Added

Skills measured prior to July 12, 2024

Audience profile

Candidates for this exam are expert or senior supply chain functional consultants who implement and configure advanced features of Dynamics 365 Supply Chain Management to meet the requirements of a business. They have an advanced knowledge of supply chain management operations including production, logistics, master planning, and asset management. The candidate will identify use cases for applying mixed reality.

Candidates analyze business requirements and translate those requirements into fully realized business processes and solutions and applies industry-recommended practices to implementations.

Candidates demonstrate expertise in one or more of the following manufacturing methods: discrete, process, and lean. The candidate partners with architects, developers, consultants, and other stakeholders to implement solutions that meet or exceed the needs of their customers.

Skills at a glance

- Configure products (15–20%)
- Configure production prerequisites (20–25%)
- Implement production methods (15–20%)
- Configure production control (20–25%)
- Describe and implement additional supply chain management features (10–15%)

Configure products (15–20%)

Implement product information for production

- Configure planning items, co-products, and by-products for batch orders
- Configure catch weight handling policies
- Configure inventory batches, batch attributes, and lot inheritance
- Manage product compliance including regulated and restricted items
- Define configuration groups and routes for dimension-based products
- Manage products with dimension-based, constraint-based, and pre-defined variants
- Configure bills of materials (BOMs), formulas, and routes to manage scrap

Implement Product Configurator for Dynamics 365

- Create and manage product configuration model components and subcomponents
- Create calculations for product configuration models
- Differentiate between table and expression constraints
- Configure BOM lines and route operations for a product configuration model
- Configure and manage pricing for configuration models
- Describe the purpose and capabilities of the product configurator
- Validate, approve, and test product configuration models

Implement Engineering Change Management

- Design an engineering product lifecycle
- Configure engineering categories
- Configure product readiness policies and product release policies
- Create an engineering product with engineering attributes
- Review and accept released products to a local company
- Add engineering products to a sales order, purchase orders and production orders
- Schedule and implement engineering change requests and change orders

Configure production prerequisites (20–25%)

Configure resources, routes, and calendars

- Implement and manage work calendars and working time
- Create and configure resource capabilities
- Implement and manage resources and resource groups
- Create and manage operations and routes

Configure production settings and processes

- Create production units, production groups, production pools, and production journal names
- Describe integration between general ledger and production control modules
- Manage reservations in production process, including partial reservations and re-reservations
- Configure warehouse processes for raw materials picking and finished goods put away
- Describe unified (mixed mode) manufacturing
- Configure production control parameters
- Describe production and batch order process statuses

Implement costing

- Configure costing sheets and indirect costs
- Configure and manage cost groups, costing versions, and cost categories
- Configure cost allocations for co-products and burden allocation for by-products
- Configure and perform BOM/formula calculations
- Activate item prices
- Describe production posting profiles
- Describe common sources of production variances
- View and analyze production and inventory costs

Implement production methods (15–20%)

Implement discrete manufacturing

- Create BOM and item configurations
- Create and process production orders
- Create and process picking list journals
- Create and process job card and route card journals
- Create and process reports as finished journals
- Reset the status of a production order
- Describe use cases and configure production-related reservations

Implement process manufacturing

- Configure batch reservations and release to warehouse process
- Configure consolidated batch order processes
- Manage batch balancing and batch order sequencing
- Configure formulas features
- Create and process report as finished journals with co-products and by-products

- Create and process batch orders and a rework batch order
- Create formulas and formula versions

Implement lean manufacturing

- Create value streams and production flows
- Configure production flow costing
- Create kanban rules
- Process kanban orders by using kanban boards
- Create and manage fixed, scheduled, and event kanbans

Configure production control (20–25%)

Implement subcontracting

- Describe use cases for subcontracting processes
- Implement activity-based subcontracting
- Configure BOM and formula lines, resources, and routes for subcontracting items
- Create service items for subcontracting
- Create and process subcontracting purchase orders

Implement manufacturing execution

- Configure time and attendance prerequisites and activate workers for time registration
- Identify the capabilities of manufacturing execution
- Process production and batch orders by using manufacturing execution processes
- Configure production floor execution interface and job card terminals
- Calculate and approve time registrations

Implement advanced master planning scenarios

- Process and view planned orders
- Configure intercompany master planning
- Configure forecast models and parameters
- Run demand forecasting and adjust as appropriate
- Execute explosion and validate results
- Describe how supply chain calendars affect master planning

Implement production scheduling and capacity planning

- Define scheduling parameters
- View, monitor, and update production schedules
- Configure capacity for production resources including machines, labor, and tooling
- Describe infinite and finite scheduling and capacity
- Describe differences between operations and job scheduling

Describe and implement additional supply chain management features (10–15%)

Describe cloud and edge scale units

- Describe the value proposition for scale units for warehouse workloads
- Describe warehouse management processes that can run on a scale unit
- Describe manufacturing processes that can run on a scale unit

Describe use cases for integrating mixed reality technologies with Dynamics 365 Supply Chain Management

- Describe use cases for Dynamics 365 Guides
- Describe the process for integrating mixed reality Dynamics 365 Guides with manufacturing processes
- Describe the process for integrating mixed reality Dynamics 365 Guides with asset management

Implement Asset Management

- Configure maintenance plans
- Configure functional locations
- Manage maintenance requests
- Manage work orders consumption
- Manage work order scheduling

Study guide for Exam MB-500: Microsoft Dynamics 365: Finance and Operations Apps Developer

Article • 06/10/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of July 8, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
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Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
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Useful links	Description
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

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Skills measured as of July 8, 2024

Audience profile

As a candidate for this exam, you're a developer who works with finance and operations apps in Microsoft Dynamics 365 to implement and extend applications that meet the requirements of a business. You provide fully realized solutions by using:

- Standardized application coding patterns
- Extensible features

- External integrations

As a candidate for this exam, you do the following:

- Develop business logic by using X++.
- Create and modify finance and operations app reports and workspaces.
- Customize the UI.
- Provide endpoints and APIs to support Microsoft Power Platform apps and external systems.
- Perform testing.
- Monitor performance.
- Analyze and manipulate data.
- Manage implementations by using application lifecycle management (ALM).

You also create technical designs and implementation details, and implement permission policies and security requirements.

You should have a deep knowledge and experience using the underlying framework, data structures, and objects associated with the finance and operations solutions.

You should have experience with products and services that include Microsoft Visual Studio, Azure, Dataverse, Power Platform Admin Center, Power Apps, Power Automate, Azure DevOps, Lifecycle Services tools, Postman, GitHub, Microsoft 365, reporting tools (for example, SQL Server Reporting Services [SSRS], Power BI), and SQL Server Management Studio.

Skills at a glance

- Plan the architecture and solution design (5–10%)
- Apply developer tools (10–15%)
- Design and develop AOT elements (15–20%)
- Develop and test code (15–20%)
- Implement reporting (10–15%)
- Integrate and manage data solutions (15–20%)

- Implement security and optimize performance (10–15%)

Plan the architecture and solution design (5–10%)

Plan for the major components of finance and operations apps

- Differentiate between the cloud and on-premises versions of finance and operations apps
- Reference the key models of the application stack

Implement application lifecycle management (ALM) and Lifecycle Services

- Manage environments by using Lifecycle Services tools and components
- Research and resolve issues by using Issue Search
- Perform activities that require asset libraries
- Prepare deployment packages and deploy packages between environments
- Manage the code upgrade process from previous versions

Apply developer tools (10–15%)

Customize finance and operations apps by using Visual Studio

- Create and manage extension models
- Design and build projects
- Manage metadata using Application Explorer
- Synchronize data dictionary changes with the application database
- Create elements by using element designers
- Perform debugging activities

Manage source code and artifacts by using Microsoft Azure DevOps version control

- Create, check out, and check in code and artifacts and review code
- Branch and merge code
- Compare code and resolve version conflicts
- Choose a version control system
- Implement continuous integration and continuous delivery (CI/CD)

Design and develop AOT elements (15–20%)

Create and extend UI elements

- Add a new form to a project and apply a pattern
- Configure a data source for the form
- Add a grid and grid fields, groups, and other controls to a form
- Create and extend menus and menu items
- Add a form extension to a project for selected standard forms
- Create and use label files

Create and extend the data model

- Create and extend tables
- Add table fields and field properties to a table
- Add field groups, relations, delete actions, methods, and indices
- Create and extend views, queries, and maps
- Create and extend data entities

Create classes and extend AOT elements

- Create a new class or class extension and add new methods
- Add event handler methods to a class
- Add attributes or modifiers to a class

Develop and test code (15–20%)

Develop X++ code

- Implement common structured programming constructs of X++
- Create, read, update, and delete (CRUD) data
- Implement global functions in X++
- Resolve best practice warnings

Develop object-oriented code

- Implement X++ variable scoping
- Implement inheritance and abstraction concept
- Implement query objects and the QueryBuilder class
- Implement attribute classes
- Implement Chain of Command (CoC)
- Implement event handler classes and delegates

Implement finance and operations app framework functionality

- Implement the SysOperation framework
- Implement the workflow framework
- Implement the SysExtensionSerializer framework

Perform testing

- Create unit testing using the SysTest framework and Task recorder
- Run unit tests in Test Explorer

Implement reporting (10–15%)

Select reporting tools in finance and operations apps

- Create and modify report data sources and supporting classes
- Implement reporting security requirements
- Deploy or publish reports
- Differentiate between using Entity store and Bring your own database (BYOD) or Azure Data Lake as reporting data stores

Design, create, and revise Dynamics 365 reports

- Determine when to use a specific reporting tool or platform
- Create and modify reports in finance and operations apps by using SSRS
- Create and modify finance and operations apps reports by using Power BI
- Create and modify finance and operations apps reports by using Microsoft Excel
- Create and modify finance and operations apps reports by using Electronic Reporting (ER)

Design, create, and revise Dynamics 365 workspaces

- Design and implement key performance indicators (KPIs)
- Create drill-through workspace elements
- Implement built-in charts, Power BI embedded visualizations, aggregate measurements, aggregate dimensions, and other reporting components

Integrate and manage data solutions (15–20%)

Evaluate data integration patterns and scenarios

- Contrast data integration patterns
- Select an appropriate data integration API
- Differentiate between synchronous and asynchronous patterns

Implement data integration concepts and solutions

- Consume external web services by using RESTful APIs and Simple Object Access Protocol (SOAP)
- Implement electronic reporting integrations
- Implement custom services and Batch OData API

Implement data management

- Import and export data using entities between finance and operations apps and other systems
- Import and export data using composite and aggregate data entities
- Monitor the status and availability of entities
- Enable change tracking for entities
- Set up a data project and recurring data jobs
- Design entity sequencing
- Generate and modify field mapping between source, staging, and target
- Develop data transformations

Integrate with Microsoft Power Platform, Microsoft 365, and Azure

- Integrate Power Automate and Power Apps with finance and operations apps
- Integrate Microsoft Dataverse with finance and operations apps by using dual-write
- Integrate Microsoft Dataverse with finance and operations apps by using virtual entities
- Integrate finance and operations apps with Microsoft Excel by using OData
- Implement business events
- Implement Azure Key Vault

Implement security and optimize performance (10–15%)

Implement security policies and requirements

- Create or modify duties, privileges, permissions, and roles
- Enforce permissions policies
- Implement Extensible Data Security (XDS) policies
- Enforce Microsoft Entra ID authentication

Apply fundamental performance optimization techniques

- Apply caching mechanisms for forms and tables
- Implement the global cache and singleton
- Create or modify temporary tables for optimization purposes
- Assess when to use set-based queries and row-based queries
- Modify queries to optimize performance
- Modify variable scope to optimize performance
- Analyze and optimize concurrency

Optimize performance

- Capture traces by using TraceParser and analyze traces
- Optimize performance for data entities, data source queries, batch processes, and reports
- Implement the Async and Sandbox frameworks
- Create or modify indexes for tables and views

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Finance home page
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 8, 2024	Skill area after July 8, 2024	Change
Audience profile		Minor
Plan the architecture and solution design	Plan the architecture and solution design	No change in % of exam
Identify the major components of finance and operations apps	Plan for the major components of finance and operations apps	Major
Design and implement a UI		Removed
Implement application lifecycle management (ALM) and Microsoft Dynamics 365 Lifecycle Services	Implement application lifecycle management (ALM) and Lifecycle Services	Major
Apply developer tools	Apply developer tools	% of exam increased
Customize finance and operations apps by using Visual Studio	Customize finance and operations apps by using Visual Studio	Minor

Skill area prior to July 8, 2024	Skill area after July 8, 2024	Change
Manage source code and artifacts by using Microsoft Azure DevOps version control	Manage source code and artifacts by using Microsoft Azure DevOps version control	Major
Design and develop AOT elements	Design and develop AOT elements	No change in % of exam
Create and extend UI elements	Create and extend UI elements	Minor
Create and extend the data model	Create and extend the data model	Minor
Create Extended Data Types (EDTs) and enumerations		Removed
Create classes and extend AOT elements	Create classes and extend AOT elements	Major
Develop and test code	Develop and test code	% of exam decreased
Develop X++ code	Develop X++ code	Major
Develop object-oriented code	Develop object-oriented code	Minor
Implement finance and operations app framework functionality	Implement finance and operations app framework functionality	Minor
Perform testing	Perform testing	Major
Implement reporting	Implement reporting	No change in % of exam
Describe the capabilities and limitations of reporting tools in finance and operations apps	Select reporting tools in finance and operations apps	Minor
Design, create, and revise Dynamics 365 reports	Design, create, and revise Dynamics 365 reports	Major
Design, create, and revise Dynamics 365 workspaces	Design, create, and revise Dynamics 365 workspaces	No change
Integrate and manage data solutions	Integrate and manage data solutions	No change in % of exam
Identify data integration patterns and scenarios	Evaluate data integration patterns and scenarios	Minor
Implement data integration concepts and solutions	Implement data integration concepts and solutions	Major

Skill area prior to July 8, 2024	Skill area after July 8, 2024	Change
Implement data management	Implement data management	Major
Integrate with Microsoft Power Platform, Microsoft 365, and Azure	Integrate with Microsoft Power Platform, Microsoft 365, and Azure	Minor
Implement security and optimize performance	Implement security and optimize performance	No change in % of exam
Implement security policies and requirements	Implement security policies and requirements	No change
Apply fundamental performance optimization techniques	Apply fundamental performance optimization techniques	Minor
Optimize performance	Optimize performance	Major

Skills measured prior to July 8, 2024

Audience profile

As a candidate for this exam, you're a developer who works with finance and operations apps in Microsoft Dynamics 365 to implement and extend applications that meet the requirements of a business. You provide fully realized solutions by using:

- Standardized application coding patterns
- Extensible features
- External integrations

As a candidate for this exam, you do the following:

- Develop business logic by using X++.
- Create and modify finance and operations app reports and workspaces.
- Customize the UI.
- Provide endpoints and APIs to support Microsoft Power Platform apps and external systems.
- Perform testing.
- Monitor performance.

- Analyze and manipulate data.

You also create technical designs and implementation details, and implement permission policies and security requirements.

You should have a deep knowledge and experience using the underlying framework, data structures, and objects associated with the finance and operations solutions.

You should have experience with products and services that include Microsoft Visual Studio, Azure, Power Apps, Power Automate, Azure DevOps, Lifecycle Services tools, Postman, GitHub, Microsoft 365, reporting tools [for example, SQL Server Reporting Services (SSRS), Power BI], and SQL Server Management Studio.

Skills at a glance

- Plan the architecture and solution design (5–10%)
- Apply developer tools (5–10%)
- Design and develop AOT elements (15–20%)
- Develop and test code (20–25%)
- Implement reporting (10–15%)
- Integrate and manage data solutions (15–20%)
- Implement security and optimize performance (5–10%)

Plan the architecture and solution design (5–10%)

Identify the major components of finance and operations apps

- Identify finance and operations app modules required for a solution based on business requirements
- Identify architectural differences between the cloud and on-premises versions of finance and operations apps
- Identify components of the application stack
- Differentiate the purposes and interrelationships between packages, projects, models, and elements

Design and implement a UI

- Describe the finance and operations UI layouts and components
- Design workspaces
- Design and personalize UI elements including forms and saved views
- Define navigation elements including menus and menu items
- Configure filtering and sorting options

Implement application lifecycle management (ALM) and Microsoft Dynamics 365 Lifecycle Services

- Describe the capabilities of the Environment Monitoring Tool within Lifecycle Services
- Select the purpose and appropriate uses of Lifecycle Services tools and components
- Research and resolve issues by using Issue Search
- Identify activities that require asset libraries
- Prepare deployment packages and deploy packages between environments

Apply developer tools (5–10%)

Customize finance and operations apps by using Visual Studio

- Create extension models
- Design and build projects
- Manage metadata using Application Explorer
- Synchronize data dictionary changes with the application database
- Create elements by using element designers
- Perform debugging activities

Manage source code and artifacts by using Microsoft Azure DevOps version control

- Create, check out, and check in code and artifacts
- Branch and merge code
- Compare code and resolve version conflicts

Design and develop AOT elements (15–20%)

Create and extend UI elements

- Add a new form to a project and apply a pattern (template)
- Configure a data source for the form
- Add a grid and grid fields, groups, and other controls to a form
- Create and extend menus and menu items
- Test form functionality and data connections
- Add a form extension to a project for selected standard forms
- Create and use label files

Create and extend the data model

- Create and extend tables
- Add table fields and field properties to a table
- Add field groups, relations, delete actions, methods, and indices
- Create and extend views, queries, and maps

Create Extended Data Types (EDTs) and enumerations

- Add an EDT to a project and populate EDT properties
- Add an enumeration to a project
- Add or update enumeration elements and enumeration element properties
- Add an extension of EDTs and enumerations

Create classes and extend AOT elements

- Add a new class to a project
- Create a new class extension and add new methods
- Add event handler methods to a class
- Add attributes to a class

Develop and test code (20–25%)

Develop X++ code

- Identify and implement base types and operators
- Implement common structured programming constructs of X++
- Create, read, update, and delete (CRUD) data
- Identify and implement global functions in X++
- Implement table and form methods

Develop object-oriented code

- Implement X++ variable scoping
- Implement inheritance and abstraction concept
- Implement query objects and the QueryBuilder class
- Implement attribute classes
- Implement Chain of Command (CoC) and wrapper classes
- Implement event handler classes and delegates

Implement finance and operations app framework functionality

- Implement the SysOperation framework
- Implement the workflow framework
- Implement the batch framework
- Implement the SysExtensionSerializer

Perform testing

- Implement the Regression suite automation tool (RSAT)
- Perform unit/component testing using SysTest framework and Task recorder
- Perform testing using Acceptance Test Library (ATL) tool

Implement reporting (10–15%)

Describe the capabilities and limitations of reporting tools in finance and operations apps

- Create and modify report data sources and supporting classes
- Implement reporting security requirements
- Describe the report publishing process
- Describe the differences between using Entity store and Bring your own database (BYOD) or Azure Data Lake as reporting data stores

Design, create, and revise Dynamics 365 reports

- Create and modify reports in finance and operations apps that use SSRS
- Create and modify finance and operations apps reports by using Power BI
- Create and modify finance and operations apps reports by using Microsoft Excel
- Implement Business document management

Design, create, and revise Dynamics 365 workspaces

- Design and implement key performance indicators (KPIs)
- Create drill-through workspace elements
- Implement built-in charts, Power BI embedded visualizations, aggregate measurements, aggregate dimensions, and other reporting components

Integrate and manage data solutions (15–20%)

Identify data integration patterns and scenarios

- Identify data integration patterns
- Select an appropriate data integration API
- Identify differences between synchronous and asynchronous patterns

Implement data integration concepts and solutions

- Develop a data entity by using Visual Studio
- Develop, import, and export composite and aggregate data entities.
- Consume external web services by using RESTful APIs and Simple Object Access Protocol (SOAP)
- Implement electronic reporting
- Implement custom services and Batch OData API

Implement data management

- Import and export data using entities between finance and operations apps and other systems
- Monitor the status and availability of entities
- Enable change tracking for entities
- Set up a data project and recurring data jobs
- Design entity sequencing
- Generate field mapping between source and target data structures
- Develop data transformations

Integrate with Microsoft Power Platform, Microsoft 365, and Azure

- Integrate Power Automate and Power Apps with finance and operations apps
- Integrate Microsoft Dataverse with finance and operations apps by using dual-write

- Integrate Microsoft Dataverse with finance and operations apps by using virtual entities
- Integrate finance and operations apps with Microsoft Excel by using OData
- Implement business events

Implement security and optimize performance (5–10%)

Implement security policies and requirements

- Create or modify duties, privileges, permissions, and roles
- Enforce permissions policies
- Implement Extensible Data Security (XDS) policies
- Enforce Microsoft Entra ID authentication

Apply fundamental performance optimization techniques

- Identify and apply caching mechanisms for forms and tables
- Implement the global cache and singleton
- Create or modify temporary tables for optimization purposes
- Determine when to use set-based queries and row-based queries
- Modify queries to optimize performance
- Modify variable scope to optimize performance
- Analyze and optimize concurrency

Optimize performance

- Capture traces by using TraceParser and analyze traces
- Diagnose and optimize client performance by using browser-based tools
- Diagnose and optimize client performance by using Performance Timer
- Optimize performance for data entities, data source queries, batch processes, and reports

- Implement Async and Sandbox framework

Study guide for Exam MB-700: Microsoft Dynamics 365: Finance and Operations Apps Solution Architect

Article • 09/19/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of September 17, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
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Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can

Useful links	Description
	request an accommodation.
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 17, 2024

Audience profile

Candidates for this exam are Microsoft Dynamics 365 professionals who advise stakeholders and translate business requirements into secure, scalable, and reliable solutions.

Candidates should have knowledge of the Dynamics 365 ecosystem and Microsoft Power Platform. They must have deep understanding of Dynamics 365 apps and copilots

and AI used in Dynamics 365 apps. In addition, they must have extensive domain knowledge in one or more industry verticals. This role requires understanding how decisions affect the overall solution.

Skills at a glance

- Architect solutions (20–25%)
- Define solution strategies (40–45%)
- Manage implementations (15–20%)
- Manage testing (10–15%)

Architect solutions (20–25%)

Gather requirements

- Identify operational and organizational challenges that may affect a business
- Identify existing business processes and opportunities to optimize business processes
- Gather data migration requirements and expected data migration volumes
- Categorize business requirements and perform gap fit analyses
- Review and validate business requirements throughout the solution lifecycle

Define the solution architecture

- Map business requirements to functional components and business process catalog
- Evaluate whether to build versus buy for selected business requirements
- Identify solution components including other Microsoft and independent software vendor (ISV) technologies based on customer requirements
- Describe the Success by Design framework
- Create overall solution architecture diagrams

Describe and document the solution blueprint

- Review an organization including company information, locations, and organizational hierarchy in Dynamics 365
- Document the implementation timeline including roll-out strategies
- Define the business process catalog and document solution gaps
- Define instances, environments, and solution components
- Identify required security strategy

Define solution strategies (40–45%)

Select a deployment strategy

- Review a process to manage solution code and deployment
- Select a deployment model and identify instances and environments required for the selected deployment model
- Plan the One Version strategy and release process for service updates
- Segment solution development and delivery into logical phases
- Provide alternative methodologies and approaches for deploying modifications
- Determine solution maintenance cadence and timelines
- Identify upgrade scenarios and select appropriate tools

Define an application lifecycle management (ALM) strategy

- Define a code management and data flow strategy
- Define a Microsoft Power Platform solution management strategy
- Determine which build automation capabilities to implement
- Define a roll-back strategy for solution code and data

Determine a data management strategy

- Differentiate between transactional, historical, and master data
- Define data quality and data validation process

- Define data cleansing and transformation strategies
- Define data dependencies
- Develop a data migration strategy for master, transactional, reference, parameter, and document data entities
- Develop data cut-over, verification and data retention plans

Define the security architecture

- Differentiate between Azure, Dynamics 365, and infrastructure security
- Describe Azure and infrastructure security-related elements
- Review security design and performance implications of record-level in Dynamics 365
- Review security design and license implications of custom and standard role-based security in Dynamics 365
- Identify use cases for segregation of duties

Define the integration architecture

- Select an integration pattern including OData, Microsoft Power Platform, Batch Data API, custom services, external web services, office integrations, business events, Synapse Link, and dual-write with Microsoft Dynamics 365 apps
- Identify required integration and interface details
- Design integrations
- Define an integration testing strategy
- Define error handling and troubleshooting strategy for integrations
- Define use cases for integration requirements with Microsoft Power Platform and Dynamics 365 Finance and Operations

Define the business intelligence and reporting architecture

- Define data sources required to meet business intelligence and reporting requirements

- Select appropriate business intelligence and reporting tools including Power BI, organizational workspaces, financial reports, SQL Server Reporting Services (SSRS), and the Electronic Reporting tool
- Define printing requirements including, Document Routing Agent (DRA), modern report design layout templates, check printing, and label printing

Manage implementations (15–20%)

Manage interactions with FastTrack

- Identify the requirements for FastTrack eligibility
- Identify FastTrack engagement types and personnel roles
- Describe typical types of FastTrack workshops and the inputs for each workshop across the phases
- Describe go-live checklist elements
- Utilize Dynamics 365 Implementation Portal

Determine support options

- Develop a support plan and strategy
- Define post-go-live support plans including response times and service-level agreements (SLAs)
- Describe use cases and capabilities for the Power Platform Admin Center Support tool

Determine licensing requirements

- Determine the types of licenses required
- Estimate the number of licenses required by using the License Sizing estimator
- Describe the process for estimating ongoing software licensing costs

Manage testing (10–15%)

Define a testing strategy

- Define a testing strategy that includes all required types of testing
- Define a regression testing strategy
- Identify opportunities for automated testing
- Review use cases and test coverage for business scenarios
- Determine when to use RSAT, SysTest, Postman, ATL, Azure DevOps Test Plans, Leapworks, and other tools

Define a performance testing strategy

- Define performance goals and requirements
- Identify performance monitoring and testing tools
- Define performance benchmarks and success criteria
- Design a performance and load testing strategy
- Troubleshoot performance issues

Study resources

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[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Finance home page
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Study resources	Links to learning and documentation
Find a video	Exam Readiness Zone

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to September 17, 2024	Skill area as of September 17, 2024	Change
Audience profile		Minor
Architect solutions	Architect solutions	% decrease
Gather requirements	Gather requirements	Minor
Define the solution architecture	Define the solution architecture	Minor
Define and document the solution blueprint	Define and document the solution blueprint	Minor
Define solution strategies	Define solution strategies	No % change
Select a deployment strategy	Select a deployment strategy	Minor
Define an application lifecycle management (ALM) strategy	Define an application lifecycle management (ALM) strategy	No change
Determine a data management strategy	Determine a data management strategy	Minor
Define the security architecture	Define the security architecture	Major
Define the integration architecture	Define the integration architecture	Major
Define the business intelligence and reporting architecture	Define the business intelligence and reporting architecture	Minor
Manage implementations	Manage implementations	No % change
Describe Lifecycle Services (LCS) tools		Removed
Manage interactions with FastTrack	Manage interactions with FastTrack	Minor

Skill area prior to September 17, 2024	Skill area as of September 17, 2024	Change
Determine support options	Determine support options	Minor
Determine licensing requirements	Determine licensing requirements	No change
Manage testing	Manage training and testing	No % change
Define a testing strategy	Define a testing strategy	Minor
Define a performance testing strategy	Define a performance testing strategy	No change

Skills measured prior to September 17, 2024

Audience profile

Candidates for this exam are Microsoft Dynamics 365 professionals who advise stakeholders and translate business requirements into secure, scalable, and reliable solutions.

Candidates should have knowledge of the Dynamics 365 ecosystem and Microsoft Power Platform. They must have deep understanding of Dynamics 365 Finance, Dynamics 365 Supply Chain Management, Dynamics 365 Commerce, and Dynamics 365 Project Operations. In addition, they must have extensive domain knowledge in one or more industry verticals. This role requires understanding how decisions affect the overall solution.

Skills at a glance

- Architect solutions (20–25%)
- Define solution strategies (35–40%)
- Manage implementations (20–25%)
- Manage testing (10–15%)

Architect solutions (20–25%)

Gather requirements

- Identify operational and organizational challenges that may affect a business

- Identify existing business processes and opportunities to optimize business processes
- Gather information about expected transaction volume
- Categorize business requirements and perform gap fit analyses
- Review and validate business requirements throughout the solution lifecycle

Define the solution architecture

- Map business requirements to functional components
- Evaluate whether to build versus buy for selected business requirements
- Identify opportunities to implement supplemental Microsoft technologies
- Use the appropriate implementation tools including Lifecycle Services (LCS) and Azure DevOps
- Describe the Success by Design framework
- Create solution architecture diagrams

Define and document the solution blueprint

- Define an organization including company information, locations, and structure
- Document the implementation timeline including roll-out strategies
- Define the business process catalog and document solution gaps
- Define instances, environments, and solution components
- Identify required security roles

Define solution strategies (35–40%)

Select a deployment strategy

- Develop a process to manage solution code and deployment
- Select a deployment model and identify instances and environments required for the selected deployment model

- Describe the One Version strategy for Dynamics 365 and the effects of One Version on solutions
- Segment solution development and delivery into logical phases
- Provide alternative methodologies and approaches for deploying modifications
- Determine solution maintenance cadence and timelines
- Identify upgrade scenarios and select appropriate tools

Define an application lifecycle management (ALM) strategy

- Define a code management and data flow strategy
- Define a Microsoft Power Platform solution management strategy
- Determine which build automation capabilities to implement
- Define a roll-back strategy for solution code and data

Determine a data management strategy

- Differentiate between transactional and historical data
- Define data quality and data validation process
- Define data cleansing and transformation strategies
- Define data dependencies
- Develop a data migration strategy for master, transactional, reference, parameter, and document data entities
- Develop data cut-over, verification and data retention plans

Define the security architecture

- Differentiate between Azure, Dynamics 365, and infrastructure security
- Describe Azure and infrastructure security-related elements
- Describe use cases for and capabilities of record-level and role-based security in Dynamics 365

Define the integration architecture

- Select an integration pattern including OData, Microsoft Power Platform integration, Batch Data API, customer service, external web services, and office integrations
- Identify required integration and interface details
- Design integrations
- Define an integration testing strategy

Define the business intelligence and reporting architecture

- Gather business intelligence and reporting requirements
- Define data sources required to meet business intelligence and reporting requirements
- Select appropriate business intelligence and reporting tools including Power BI, organizational workspaces, financial reports, SQL Server Reporting Services (SSRS), and the Electronic Reporting tool
- Define printing requirements including, Document Routing Agent (DRA), modern report design layout templates, check printing, and label printing

Manage implementations (20–25%)

Describe Lifecycle Services (LCS) tools

- Understand the use cases and capabilities of different LCS tools
- Understand the use cases and capabilities of Business Process Modeler (BPM)
- Understand the use cases and capabilities of LCS Methodologies
- Create a usage profile to describe current or projected usage

Manage interactions with FastTrack

- Identify the value proposition for FastTrack
- Identify FastTrack engagement types and personnel roles

- Describe typical types of FastTrack workshops and the inputs for each workshop
- Describe go-live checklist elements

Determine support options

- Develop a support plan and strategy
- Define post-go-live support plans including response times and service-level agreements (SLAs)
- Describe use cases and capabilities for the LCS Support tool

Determine licensing requirements

- Determine the types of licenses required
- Estimate the number of licenses required by using the License Sizing estimator
- Describe the process for estimating ongoing software licensing costs

Manage testing (10–15%)

Define a testing strategy

- Define a testing strategy that includes all required types of testing
- Define a regression testing strategy
- Identify opportunities for automated testing
- Review use cases and test coverage for business scenarios
- Determine when to use RSAT, SysTest, Postman, ATL, Azure DevOps Test Plans, and other tools

Define a performance testing strategy

- Define performance goals and requirements
- Identify performance monitoring and testing tools
- Define performance benchmarks and success criteria

- Design a performance and load testing strategy
- Troubleshoot performance issues

Study guide for Exam MB-800: Microsoft Dynamics 365 Business Central Functional Consultant

Article • 02/23/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of March 25, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to March 25, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request

Useful links	Description
	an accommodation.
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

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Skills measured as of March 25, 2024

Audience profile

As a candidate for this exam, you're a functional consultant who implements core application setup processes for small and medium businesses. You configure the application in collaboration with the implementation team to provide the business with manageability and ease of use.

You implement and configure Microsoft Dynamics 365 Business Central including:

- Setting up core functionality and modules, including:
 - Financial management
 - Sales
 - Purchasing
 - Inventory
- Migrating data to Business Central.

You have applied knowledge of meeting business needs by specializing in one or more feature sets of Business Central.

As a candidate, you may configure role centers including adapting insights, cues, action tiles, reports, and charts. You also may expand functionality by using extensions.

You also understand how Business Central connects to:

- Microsoft 365
- Microsoft Power Platform
- Dynamics 365

Skills at a glance

- Set up Business Central (15–20%)
- Configure financials (30–35%)
- Configure sales and purchasing (15–20%)
- Perform Business Central operations (30–35%)

Set up Business Central (15–20%)

Create and configure a company

- Create a company in Business Central
- Create a company by using Assisted Setup
- Describe the use cases and capabilities of configuration packages

- Create a configuration worksheet
- Create and use a configuration package
- Create journal opening balances
- Migrate data

Manage security

- Create and manage user profiles
- Set up a new user
- Create and assign permission sets and permissions
- Apply security filters
- Manage user permissions by using security groups

Set up core functionality

- Set up company information
- Set up reports and configure report layouts
- Set up and use job queues
- Set up email accounts
- Set up number series

Set up dimensions

- Set up dimensions and dimension values
- Set up global dimensions and shortcut dimensions
- Set up default dimensions for master data
- Set up blocking combinations of dimensions and dimension values
- Describe the Dimension Correction Tool
- Set up default dimensions for account types
- Set up default dimension priorities

Manage approvals by using workflows

- Set up native workflows
- Set up a notification system
- Set up users for approval and workflow user groups

Describe Business Central integrations with other products

- Describe use cases for Microsoft 365 integration, including Microsoft Excel, OneDrive, Outlook, Teams, and Word
- Describe uses cases for Microsoft Power Platform integration

Configure financials (30–35%)

Set up Finance Management

- Configure General Ledger setup
- Configure accounting periods
- Set up payment terms

Manage the chart of accounts

- Set up general ledger account card
- Create account categories and subcategories
- Create financial reports based on the Account Categories field and statistical accounts

Set up posting groups

- Create specific posting groups including bank, customer, vendor, and inventory posting groups
- Create general posting groups
- Configure General Posting Setup
- Configure Inventory Posting Setup

Set up journals and bank accounts

- Set up bank accounts
- Create journal templates, including no. series
- Create batches
- Implement recurring journals

Set up accounts payables

- Create vendor accounts, including payment terms, vendor bank accounts, and related records
- Configure Purchases & Payables Setup
- Set up payment journals
- Describe the relationship between vendors, vendor ledger entries, and detailed vendor ledger entries

Set up accounts receivables

- Create customer accounts
- Configure Sales & Receivables Setup
- Set up cash receipt journals
- Set up payment registration
- Configure customer payment methods
- Describe the relationship between customers, customer ledger entries, and detailed customer ledger entries

Configure sales and purchasing (15–20%)

Set up inventory

- Configure inventory set up
- Manage items, including item categories, item attributes, and units of measure

- Create locations
- Describe the relationship between items, item ledger entries, and value entries
- Differentiate between costing methods

Configure master data for sales and purchasing

- Configure core customer settings including shipping agents, locations, and shipping addresses
- Configure core vendor settings including order address, lead time, and locations

Configure pricing and discounts

- Manage vendor purchase prices
- Manage purchase line and invoice discounts
- Manage customer sales prices
- Manage sales line and invoice discounts

Perform Business Central operations (30–35%)

Perform basic tasks in Business Central

- Differentiate between designing, customizing, and personalizing pages
- Customize pages
- Apply and save filters
- Find documents and related entries
- Use the Inspect pages and data feature
- Perform data updates by using the Edit in Excel feature
- Attach and share files by using Microsoft OneDrive
- Describe and analyze telemetry

Process purchases

- Manage quotations
- Create a purchase order
- Receive items for a purchase order
- Describe the over-receipt feature
- Undo a receipt
- Create a posted invoice from a purchase order
- Configure recurring purchase lines
- Manage blanket purchase orders

Process sales

- Manage quotations
- Convert a sales quote into a sales order or sales invoice
- Analyze item availability
- Ship items for a sales order
- Undo shipments
- Create a sales invoice from a sales order
- Configure recurring sales lines
- Manage blanket sales orders

Process financial documents

- Process purchase invoices
- Process purchase credit memos
- Process sales invoices
- Process sales credit memos
- Combine sales shipments into a single sales invoice
- Combine purchase receipts into a single purchase invoice

- Correct a posted purchase invoice
- Correct a posted sales invoice
- Release and reopen documents
- Process prepayment invoices for purchases and sales

Process payments and journals

- Process payments by using payment journals
- Process receipts by using the cash receipt journal
- Process payment registrations
- Apply ledger entries and undo applied entries
- Reverse posted journals

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Microsoft Dynamics 365 Business Central
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to March 25, 2024	Skill area as of March 25, 2024	Change
Audience profile		Minor
Set up Business Central	Set up Business Central	% of exam decreased
Create and configure a company	Create and configure a company	Minor
Manage security	Manage security	Minor
Set up core functionality	Set up core functionality	Minor
Set up dimensions	Set up dimensions	Major
Manage approvals by using workflows	Manage approvals by using workflows	Minor
	Describe Business Central integrations with other products	Added
Configure financials	Configure financials	No % change
Set up Finance Management	Set up Finance Management	Minor
Manage the chart of accounts	Manage the chart of accounts	Major
Set up posting groups	Set up posting groups	Minor
Set up journals and bank accounts	Set up journals and bank accounts	Minor
Set up accounts payables	Set up accounts payables	Minor
Set up accounts receivables	Set up accounts receivables	Minor
Configure sales and purchasing	Configure sales and purchasing	No % change
Set up inventory	Set up inventory	Minor
Configure master data for sales and purchasing	Configure master data for sales and purchasing	No change
Configure pricing and discounts	Configure pricing and discounts	No change

Skill area prior to March 25, 2024	Skill area as of March 25, 2024	Change
Perform Business Central operations	Perform Business Central operations	% of exam increased
Perform basic tasks in Business Central	Perform basic tasks in Business Central	Minor
Process purchases	Process purchases	Minor
Process sales	Process sales	Minor
Process financial documents	Process financial documents	No change
Process payments and journals	Process payments and journals	Minor

Skills measured prior to March 25, 2024

Audience profile

Candidates for this exam are functional consultants who implement core application setup processes for small and medium businesses. They configure the application in collaboration with the implementation team to provide the business with manageability and ease of use.

Candidates implement and configure Microsoft Dynamics 365 Business Central including setting up core functionality and modules and migrating data to Business Central. They have applied knowledge of meeting business needs by specializing in one or more feature sets of Business Central.

Candidates may configure role centers including adapting insights, cues, action tiles, reports, and charts. This includes a basic understanding of financial management, sales, purchasing, and inventory. They also understand how Business Central connects to Microsoft 365, Power Platform, and Dynamics 365.

- Set up Business Central (20–25%)
- Configure financials (30–35%)
- Configure sales and purchasing (15–20%)
- Perform Business Central operations (25–30%)

Set up Business Central (20–25%)

Create and configure a company

- Create a company in the on-premises and cloud-based versions of Business Central
- Create a company by using Assisted Setup to copy data from an existing company
- Describe the use cases and capabilities of RapidStart Services
- Create a configuration worksheet
- Create and use a configuration package
- Create journal opening balances

Manage security

- Create and manage user profiles
- Set up a new user and user groups
- Create and assign permission sets and permissions
- Apply security filters

Set up core functionality

- Set up company information
- Set up printers for on-premises and cloud-based installations
- Set up reports and custom report layouts
- Set up and use job queues
- Set up email accounts
- Set up number series

Set up dimensions

- Set up dimensions and dimension values
- Set up global dimensions and shortcut dimensions
- Set up dimensions to master data

- Set up blocking combinations of dimensions and dimension values
- Describe the Dimension Correction Tool

Manage approvals by using workflows

- Set up native workflows
- Set up a notification system
- Set up approvals

Configure financials (30–35%)

Set up Finance Management

- Configure General Ledger setup
- Configure accounting periods

Manage the chart of accounts

- Set up G/L Account Card
- Create account categories and subcategories
- Describe filtering on Chart of Accounts for finance reporting

Set up posting groups

- Create specific posting groups including bank, customer, vendor, and inventory posting groups
- Create general posting groups
- Configure General Posting Setup

Set up journals and bank accounts

- Set up bank accounts
- Create journal templates
- Create batches

- Implement recurring journals

Set up accounts payables

- Create vendor accounts including payment terms, vendor bank accounts, and related records
- Set up payment information for vendors
- Configure Purchases & Payables Setup
- Set up payment journals
- Describe the relationship between vendors, vendor ledger entries, and detailed vendor ledger entries

Set up accounts receivables

- Create customer accounts
- Configure Sales & Receivables Setup
- Set up cash receipt journals
- Set up payment registration
- Configure customer payment methods
- Describe the relationship between customers, customer ledger entries, and detailed customer ledger entries
- Consolidate customer and vendor balances

Configure sales and purchasing (15–20%)

Set up inventory

- Configure inventory set up
- Manage items
- Create locations
- Describe the relationship between items, item ledger entries, and value entries

- Differentiate between costing methods

Configure master data for sales and purchasing

- Configure core customer settings including shipping agents, locations, and shipping addresses
- Configure core vendor settings including order address, lead time, and locations

Configure pricing and discounts

- Manage vendor purchase prices
- Manage purchase line and invoice discounts
- Manage customer sales prices
- Manage sales line and invoice discounts

Perform Business Central operations (25–30%)

Perform basic tasks in Business Central

- Differentiate between designing, customizing, and personalizing pages
- Customize pages
- Apply and save filters
- Find documents and related entries
- Use the Inspect pages and data feature
- Perform data updates by using the Edit in Excel feature
- Attach and share files by using OneDrive

Process purchases

- Manage quotations
- Create a purchase order
- Receive items for a purchase order

- Describe the over-receipt feature
- Undo a receipt
- Create a posted invoice from a purchase order
- Configure recurring purchase lines

Process sales

- Manage quotation
- Convert a sales quote into a sales order or sales invoice
- Analyze item availability
- Ship items for a sales order
- Undo shipments
- Create a sales invoice from a sales order
- Configure recurring sales lines

Process financial documents

- Process purchase invoices
- Process purchase credit memos
- Process sales invoices
- Process sales credit memos
- Combine sales shipments into a single sales invoice
- Combine purchase receipts into a single purchase invoice
- Correct a posted purchase invoice
- Correct a posted sales invoice
- Release and reopen documents
- Process prepayment invoices for purchases and sales

Process payments and journals

- Process payments by using payment journals
- Process receipts by using the cash receipts journal
- Create bank deposits
- Process payment registrations
- Apply ledger entries and undo applied entries
- Reverse posted journals

Study guide for Exam MB-820: Microsoft Dynamics 365 Business Central Developer

Article • 09/18/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

About the exam

Languages

Some exams are localized into other languages. You can find these in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 18, 2024

Audience profile

As a Microsoft Dynamics 365 Business Central developer, you're responsible for designing, developing, testing, and maintaining solutions based on Dynamics 365 Business Central. In this role, you develop apps that extend Business Central, including customizing or adding extra functionality. You also integrate Business Central with other applications, such as Microsoft Power Platform products. Plus, you need to ensure that data remains current during an upgrade process.

As a Business Central developer, you're responsible for troubleshooting and debugging issues in the system. This may involve:

- Identifying the root cause of a problem.
- Fixing bugs.
- Testing the solution to ensure that it works as expected.

You may be required to optimize the performance of the system by:

- Identifying bottlenecks.
- Improving code quality.

You must have applied knowledge of Business Central and the application language (AL), the development environment, and other tools to develop extensions for it. You need some knowledge of how to install and upgrade the system. You should also understand:

- Industry terminology.
- The Business Central role in relationship to Microsoft 365 and Dynamics 365.

As a developer, you should have knowledge of:

- AppSource, Business Central–related technologies, frameworks, and services to build solutions.
- Technologies for application lifecycle management (ALM), including source control management (SCM) and continuous integration and continuous delivery (CI/CD).

Skills at a glance

- Describe Business Central (10–15%)
- Install, develop, and deploy for Business Central (10–15%)
- Develop by using AL objects (35–40%)
- Develop by using AL (15–20%)
- Work with development tools (10–15%)
- Integrate Business Central with other applications (10–15%)

Describe Business Central (10–15%)

Describe the Business Central architecture

- Describe the components and capabilities of Business Central
- Describe the core solution and extensions approach for Business Central
- Describe the update lifecycle for customizations of Business Central
- Differentiate Business Central online and Business Central on-premises features

Describe Business Central apps

- Differentiate between the base app and the system app
- Describe the functionality of apps
- Describe the process of bringing an app to AppSource

Install, develop, and deploy for Business Central (10–15%)

Install and configure a Business Central development environment

- Describe the development environment for Business Central
- Install and configure the development environment
- Manage JSON configuration files
- Manage multiple AL extensions in one workspace

Create, debug, and deploy an extension in Business Central

- Debug an extension with Visual Studio Code
- Deploy an extension
- Create or modify a Business Central extension in Visual Studio Code
- Manage multilanguage development
- Maintain extensions

Develop by using AL objects (35–40%)

Build and extend tables and pages in Business Central

- Develop Role Center pages
- Identify different page types
- Build and extend page objects
- Build and extend tables
- Build and extend enums

Build and extend reports

- Substitute a report
- Create a report layout
- Create document reports
- Design the data model of a report

- Implement multilanguage in reports
- Use report triggers, functions, and processing-only reports
- Develop the report request page

Design and create an XMLport

- Configure different XMLport properties
- Configure nodes and their properties
- Use XMLports in AL code

Develop codeunits

- Create and access codeunits
- Use events and triggers
- Implement interfaces
- Create installation and upgrade codeunits

Create entitlement and permission set objects

- Create and extend permission sets
- Override entitlements with inherent permissions
- Troubleshoot permission sets

Create queries in Business Central

- Link and join data items
- Apply filters in query objects
- Use queries instead of record variables
- Aggregate data in query objects
- Use a query to create a report

Develop by using AL (15–20%)

Customize the UI experience, and implement onboarding techniques

- Create profiles in AL
- Use and create views in AL
- Develop the UI by using the user assistance model
- Integrate assisted setup
- Create teaching tips and in-app tours to onboard users
- Create an onboarding checklist

Describe the essential development standards

- Implement the data process model in Business Central
- Define the different functional table types and characteristics
- Use document standards in Business Central
- Implement master data standards and design patterns

Use AL to extend Business Central

- Create custom procedures
- Use data types in code
- Manage files
- Manipulate data by using code
- Describe the basics of the AL
- Use the different types of expressions
- Use AL built-in functions and AL statements
- Work with variables and define them in AL code
- Manage errors
- Use access modifiers to limit access

Work with development tools (10–15%)

Implement semiautomated test processes, and run standard Business Central tests

- Test applications in Business Central
- Install and run the Test Toolkit
- Develop test codeunits and procedures

Manage and analyze telemetry

- Monitor and analyze telemetry
- Configure telemetry
- Create custom telemetry signals

Integrate Business Central with other applications (10–15%)

Access Representational State Transfer (REST) services from within Business Central

- Use the different HTTP classes and their functions
- Get data from and send data to an external REST service
- Use and read JSON

Implement APIs

- Create and work with APIs
- Manage UI interaction when working with web services
- Use Read Scale-Out to improve performance

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[+] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules AL for Business Central documentation Business Central documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill area prior to September 18, 2024	Skill area as of September 18, 2024	Change
Design and create an XMLport	Design and create an XMLport	Minor
Work with entitlement and permission set objects	Create entitlement and permission set objects	Minor
Use AL to extend Business Central	Use AL to extend Business Central	Minor

Study guide for Exam MB-910: Microsoft Dynamics 365 Fundamentals (CRM)

Article • 05/17/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of June 18, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to June 18, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of June 18, 2024

Audience profile

As a candidate for this exam, you aspire to understand how customer engagement apps for Dynamics 365 can be used to:

- Unify profiles and tailor targeted, personalized customer journeys by using Dynamics 365 Customer Insights apps.
- Efficiently assist users through the complete sales order lifecycle by using Dynamics 365 Sales.
- Assist agents with case management through the complete customer support lifecycle by using Dynamics 365 Customer Service.
- Schedule and complete work orders by using Dynamics 365 Field Service.

- Evaluate how Copilot can assist with each of these.

The exam is intended for you if you're seeking to start your journey using Dynamics 365 customer engagement solutions.

You can use this exam to prepare for role-based or specialty certifications, but it's not a prerequisite for any of them.

Skills at a glance

- Describe Dynamics 365 Customer Insights (15–20%)
- Describe Dynamics 365 Sales (20–25%)
- Describe Dynamics 365 Customer Service (20–25%)
- Describe Dynamics 365 Field Service (15–20%)
- Explore the core capabilities of customer engagement apps in Dynamics 365 (15–20%)

Describe Dynamics 365 Customer Insights (15–20%)

Explore Customer Insights - Journeys

- Describe use cases for Customer Insights - Journeys
- Describe lead generation and qualification
- Describe use cases for marketing forms
- Describe how to target customers by using segments
- Describe email marketing
- Describe customer journeys
- Describe event management features and capabilities
- Describe how to use Copilot with Customer Insights - Journeys

Describe Customer Insights - Data

- Describe use cases of and capabilities for Customer Insights – Data

- Describe unified customer profiles
- Describe measures, segments, and predictions

Describe Dynamics 365 Sales (20–25%)

Explore Sales

- Describe use cases for Sales
- Describe leads and the process for qualifying leads
- Describe the opportunity management process
- Describe the quote lifecycle
- Describe the order management and invoice management processes
- Describe use cases for guided selling including business process flows and assistant
- Describe the product catalog, prices list, and unit groups
- Describe Copilot in Sales
- Describe the Sales accelerator

Describe Sales capabilities and related apps

- Describe sales pipeline and forecasting concepts
- Describe use cases for and capabilities of Sales Insights features
- Describe use cases for and capabilities of LinkedIn Sales Insights
- Describe use cases for the Dynamics 365 Sales mobile app
- Describe Microsoft Copilot for Sales

Describe Dynamics 365 Customer Service (20–25%)

Explore Customer Service

- Describe use cases for Customer Service

- Describe the functionality for workload management, including cases, basic routing (basic queues), Unified Routing, and the inbox for agents
- Describe knowledge management in Customer Service
- Describe the case lifecycle including service-level agreements (SLAs) and entitlements
- Describe use cases for Copilot in Customer Service

Describe Customer Service capabilities and related apps

- Describe Omnichannel for Customer Service
- Describe reporting and data visualization options in Customer Service
- Describe use cases for agent productivity tools

Describe Dynamics 365 Field Service (15–20%)

Explore Field Service

- Describe use cases for Field Service
- Describe the work order lifecycle
- Describe inspections in Field Service
- Describe the Field Service mobile app
- Describe use cases of Copilot in Field Service

Describe capabilities related to Field Service

- Describe resource management and scheduling processes
- Describe asset management and customer assets
- Describe Connected Field Service for Dynamics 365

Explore the core capabilities of customer engagement apps in Dynamics 365 (15–20%)

Describe the foundations of customer engagement apps

- Describe customer engagement apps
- Describe Microsoft Power Platform as it relates to customer engagement apps
- Describe Microsoft Dataverse as the foundation for customer engagement apps
- Navigate to and within customer engagement apps
- Describe Copilot for Dynamics 365 apps

Describe shared activities and integration options in customer engagement apps

- Describe customers and activities
- Describe search options and filter criteria
- Describe reporting capabilities including dashboards, charts, and views
- Describe Microsoft Teams integration
- Describe Microsoft Outlook integration
- Describe Microsoft Excel and Word integration
- Describe Microsoft SharePoint integration

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Dynamics 365 documentation and learning modules Dynamics 365 Customer Insights - Journeys documentation Dynamics 365 Sales documentation

Study resources	Links to learning and documentation
	Microsoft Dynamics 365 Customer Service documentation User guide for Dynamics 365 Field Service (contains video)
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	What to expect on your Microsoft Fundamentals exam

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to June 18, 2024	Skill area as of June 18, 2024	Change
Audience profile		Minor
Describe Dynamics 365 Customer Insights	Describe Dynamics 365 Customer Insights	No % change
Explore Customer Insights - Journeys	Explore Customer Insights - Journeys	Minor
Describe Customer Insights - Data	Describe Customer Insights - Data	No change
Describe Dynamics 365 Sales	Describe Dynamics 365 Sales	No % change
Explore Sales	Explore Sales	Minor
Describe Sales capabilities and related apps	Describe Sales capabilities and related apps	Minor
Describe Dynamics 365 Customer Service	Describe Dynamics 365 Customer Service	No % change
Explore Customer Service	Explore Customer Service	Minor

Skill area prior to June 18, 2024	Skill area as of June 18, 2024	Change
Describe Customer Service capabilities and related apps	Describe Customer Service capabilities and related apps	Minor
Describe Dynamics 365 Field Service	Describe Dynamics 365 Field Service	No % change
Explore Field Service	Explore Field Service	Minor
Describe capabilities related to Field Service	Describe capabilities related to Field Service	Minor
Explore the core capabilities of customer engagement apps in Dynamics 365	Explore the core capabilities of customer engagement apps in Dynamics 365	No % change
Describe the foundations of customer engagement apps	Describe the foundations of customer engagement apps	Minor
Describe shared activities and integration options in customer engagement apps	Describe shared activities and integration options in customer engagement apps	Minor

Skills measured prior to June 18, 2024

Audience profile

As a candidate for this exam, you aspire to understand how customer engagement apps (CRM) for Dynamics 365 can be used to:

- Unify profiles and tailor targeted customer journeys by using Dynamics 365 Customer Insights apps.
- Efficiently assist users through the complete sales order lifecycle by using Dynamics 365 Sales.
- Assist agents with case management through the complete customer support lifecycle by using Dynamics 365 Customer Service.
- Schedule and complete work orders by using Dynamics 365 Field Service.
- Evaluate how Copilot can assist with each of these.

The exam is intended for you if you're seeking to start your journey using Dynamics 365 CRM solutions.

You can use this exam to prepare for role-based or specialty certifications, but it's not a prerequisite for any of them.

Skills at a glance

- Describe Dynamics 365 Customer Insights (15–20%)
- Describe Dynamics 365 Sales (20–25%)
- Describe Dynamics 365 Customer Service (20–25%)
- Describe Dynamics 365 Field Service (15–20%)
- Explore the core capabilities of customer engagement apps in Dynamics 365 (15–20%)

Describe Dynamics 365 Customer Insights (15–20%)

Explore Customer Insights - Journeys

- Describe use cases for Customer Insights - Journeys
- Describe lead generation and qualification
- Describe use cases for marketing forms
- Describe how to target customers by using segments and subscription lists
- Describe email marketing
- Describe customer journeys
- Describe event management features and capabilities
- Describe how to use Copilot with Customer Insights - Journeys

Describe Customer Insights - Data

- Describe use cases of and capabilities for Customer Insights – Data
- Describe unified customer profiles
- Describe measures, segments, and predictions

Describe Dynamics 365 Sales (20–25%)

Explore Sales

- Describe use cases for Dynamics 365 Sales
- Describe leads and the process for qualifying leads
- Describe the opportunity management process
- Describe the quote lifecycle
- Describe the order management and invoice management processes
- Describe use cases for business process flows
- Describe the product catalog, prices list, and unit groups
- Describe Copilot in Sales
- Describe Sales accelerator

Describe Sales capabilities and related apps

- Describe sales pipeline and forecasting concepts
- Describe use cases for and capabilities of Sales Insights
- Describe use cases for and capabilities of LinkedIn Sales Navigator
- Describe use cases for the Dynamics 365 Sales mobile app
- Describe Microsoft Sales Copilot

Describe Dynamics 365 Customer Service (20–25%)

Explore Customer Service

- Describe use cases for Dynamics 365 Customer Service
- Describe the functionality for workload management, including basic routing (basic queues), Unified Routing, and Agent Inbox
- Describe knowledge management in Dynamics 365 Customer Service

- Describe the case lifecycle including service-level agreements (SLAs) and entitlements
- Describe use cases for Copilot in Customer Service

Describe Customer Service capabilities and related apps

- Describe Omnichannel for Customer Service
- Describe reporting and data visualization options in Customer Service
- Describe use cases for agent productivity tools
- Describe the Omnichannel Supervisor experience

Describe Dynamics 365 Field Service (15–20%)

Explore Field Service

- Describe use cases for Field Service
- Describe the work order lifecycle
- Describe inspections in Field Service
- Describe the Field Service mobile app
- Describe use cases of Copilot in Field Service

Describe capabilities related to Field Service

- Describe resource and scheduling processes
- Describe asset management and customer assets
- Describe Connected Field Service for Dynamics 365

Explore the core capabilities of customer engagement apps in Dynamics 365 (15–20%)

Describe the foundations of customer engagement apps

- Describe customer engagement apps

- Describe Microsoft Power Platform as it relates to customer engagement apps
- Describe Microsoft Dataverse as the foundation for customer engagement apps
- Navigate to and within customer engagement apps
- Describe Copilot for Dynamics 365 CRM apps

Describe shared activities and integration options in customer engagement apps

- Describe customers and activities
- Describe search options and filter criteria
- Describe reporting capabilities including dashboards, charts, and views
- Describe Microsoft Teams integration
- Describe Microsoft Outlook integration
- Describe Microsoft Excel and Word integration
- Describe Microsoft SharePoint integration
- Describe use cases for and capabilities of Dynamics 365 Customer Voice

Study guide for Exam MB-920: Microsoft Dynamics 365 Fundamentals (ERP)

Article • 07/01/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of July 31, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 31, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
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Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 31, 2024

Audience profile

This exam covers the features and capabilities of Dynamics 365 Finance and Dynamics 365 Supply Chain Management.

As a candidate for this exam, you aspire to understand how Finance and Supply Chain Management can be used to:

- Support the core financial model of an organization and its associated processes.
- Support the business operations of an organization, including warehousing and manufacturing.
- Unify different business processes into one software solution.
- Manage multiple legal entities within one business application.

- Integrate with other applications within the Microsoft ecosystem.

This exam is intended for you if you're seeking to start your journey using Finance and Supply Chain Management solutions.

You can use this exam to prepare for role-based or specialty certifications, but it's not a prerequisite for any of them.

Skills at a glance

- Describe Dynamics 365 Supply Chain Management (35–40%)
- Describe Dynamics 365 Finance (30–35%)
- Describe the core capabilities of the finance and operations apps (25–30%)

Describe Dynamics 365 Supply Chain Management (35–40%)

Describe Supply Chain Management core capabilities

- Describe use cases of Supply Chain Management
- Describe products and released products
- Describe product master records, product variants, and product dimensions
- Describe pricing and discounts in relation to trade agreements
- Describe intercompany capabilities

Describe the manufacturing process

- Describe lean, discrete, and process manufacturing
- Describe manufacturing strategies
- Describe bills of materials (BOMs), routes, and operations as they relate to production orders
- Identify the production lifecycle stages
- Describe shop floor management
- Describe master planning and planning optimization

Describe inventory and warehousing capabilities

- Describe costing methods
- Describe on-hand inventory capabilities
- Identify types of inventory journals
- Describe quality management capabilities
- Describe use cases for Warehouse Management Systems (WMS)
- Describe use cases for Transportation Management Systems (TMS)
- Describe use cases for landed cost

Describe the sales and procurement processes

- Describe the order-to-cash process
- Describe the sales order creation process
- Describe the fulfillment process, including inventory reservations and picking and packing
- Describe the procure-to-pay process
- Describe purchase requisitions
- Describe the purchase order creation process
- Describe purchase order receipts

Describe Dynamics 365 Finance (30–35%)

Describe Finance core capabilities

- Describe use cases of Finance
- Describe organization and legal entities
- Describe reporting currency and accounting currency
- Describe tax capabilities
- Describe cost accounting concepts

Describe general ledgers

- Describe charts of accounts, including main accounts
- Describe the concept of a fiscal calendar
- Describe financial dimensions and dimension sets concepts
- Describe the accounting structure
- Describe journaling concepts
- Describe periodic financial processes

Describe accounts payables and accounts receivables

- Describe core accounts payable components, including vendors, purchase orders, and vendor invoices
- Describe vendor payments and settlements, including three-way matching concepts
- Describe core accounts receivable components, including customers, customer invoices, and free text invoices
- Describe credit management processes
- Describe the collection process
- Describe the concept of subscription billing

Describe expense management, fixed asset management, and budgeting

- Describe cash and bank management concepts
- Describe expense management capabilities
- Describe fixed asset management capabilities
- Describe budgeting capabilities

Describe the core capabilities of the finance and operations apps (25–30%)

Describe the finance and operations apps

- Describe enterprise resource planning (ERP)
- Describe the business value of Commerce
- Describe the business value of Human Resources
- Describe the business value of Project Operations
- Describe finance and operations apps use cases
- Explore the finance and operations user interface

Describe reporting and integration capabilities

- Describe built-in reporting capabilities, including workspaces
- Describe options for analyzing data by using Power BI
- Describe Microsoft Office 365 integration capabilities, including Microsoft Excel, SharePoint, and Teams
- Describe Microsoft Power Platform integration options

Describe common features

- Describe security capabilities
- Describe workflow capabilities
- Describe the concept of batch jobs

Study resources

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 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course

Study resources	Links to learning and documentation
Find documentation	Dynamics 365 documentation and learning modules Supply Chain Management Finance Commerce Human Resources Project Operations
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Dynamics Community
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone on Learn Shows

Change log

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[\[+\] Expand table](#)

Skill area prior to July 31, 2024	Skill area as of July 31, 2024	Change
Audience profile		Major
Describe Dynamics 365 Supply Chain Management	Describe Dynamics 365 Supply Chain Management	% of exam increased
Describe Supply Chain Management core capabilities	Describe Supply Chain Management core capabilities	Major
Describe manufacturing strategies	Describe the manufacturing process	Major
Describe inventory and warehousing capabilities	Describe inventory and warehousing capabilities	Major
	Describe the sales and procurement processes	Added
Describe Dynamics 365 Finance	Describe Dynamics 365 Finance	% of exam increased

Skill area prior to July 31, 2024	Skill area as of July 31, 2024	Change
Describe Finance core capabilities	Describe Finance core capabilities	Major
Describe general ledgers	Describe general ledgers	Major
Describe accounts payables and accounts receivables	Describe accounts payables and accounts receivables	Major
Describe expense management, fixed asset management, and budgeting	Describe expense management, fixed asset management, and budgeting	No change
Describe Dynamics 365 Commerce		Removed
Describe Commerce core capabilities		Removed
Describe Commerce clienteling and Dynamics 365 Fraud Protection		Removed
Describe Dynamics 365 Human Resources		Removed
Describe Human Resources core capabilities		Removed
Describe personnel management capabilities		Removed
Describe Dynamics 365 Project Operations		Removed
Describe Project Operations capabilities		Removed
Describe project planning and management capabilities		Removed
Describe the finance and operations core functionality	Describe the core capabilities of the finance and operations apps	% of exam increased
Describe the finance and operations apps	Describe the finance and operations apps	Major
Describe reporting and integration capabilities in finance and operations apps	Describe reporting and integration capabilities	Minor
	Describe common features	Added

Skills measured prior to July 31, 2024

Audience profile

This exam covers the features and capabilities of finance and operations apps.

As a candidate for this exam, you should have:

- General knowledge of or relevant working experience with an IT environment.
- A fundamental understanding of financial principles and business operations.

Skills at a glance

- Describe Dynamics 365 Supply Chain Management (20–25%)
- Describe Dynamics 365 Finance (20–25%)
- Describe Dynamics 365 Commerce (10–15%)
- Describe Dynamics 365 Human Resources (10–15%)
- Describe Dynamics 365 Project Operations (10–15%)
- Describe the finance and operations core functionality (15–20%)

Describe Dynamics 365 Supply Chain Management (20–25%)

Describe Supply Chain Management core capabilities

- Describe Supply Chain Management capabilities and features
- Describe the order-to-cash process
- Describe the procure-to-pay process
- Describe products and released products
- Describe product master records, product variants, and product dimensions
- Describe pricing and discounts in relation to trade agreements
- Describe picking, packing, and reserving inventory

Describe manufacturing strategies

- Describe lean, discrete, and process manufacturing
- Describe bills of materials (BOMs), routes, and operations as they relate to production orders
- Describe shop floor management
- Describe master planning

Describe inventory and warehousing capabilities

- Describe costing methods
- Describe on-hand inventory capabilities
- Describe inventory reservations, picking and packing, replenishment, and shipments
- Describe use cases for Warehouse Management Systems (WMS)
- Describe use cases for Transportation Management Systems (TMS)

Describe Dynamics 365 Finance (20–25%)

Describe Finance core capabilities

- Describe Finance capabilities and features
- Describe organization and legal entities
- Describe tax capabilities

Describe general ledgers

- Describe charts of accounts including main accounts, balance sheets, and income statements
- Describe journaling concepts
- Describe financial dimensions and dimension sets concepts
- Describe periodic financial processes

Describe accounts payables and accounts receivables

- Describe core accounts payable components including vendors, purchase orders, and vendor invoices
- Describe vendor payments and settlements including three-way matching concepts
- Describe core accounts receivable components including customers, customer invoices, and free text invoices
- Describe credit and collection processes

Describe expense management, fixed asset management, and budgeting

- Describe cash and bank management concepts
- Describe expense management capabilities
- Describe fixed asset management capabilities
- Describe budgeting capabilities

Describe Dynamics 365 Commerce (10–15%)

Describe Commerce core capabilities

- Describe Commerce channels
- Describe channel management concepts
- Describe product hierarchies and assortments
- Describe retail pricing and discounts
- Describe e-commerce capabilities, including business-to-business (B2B) and business-to-customer (B2C)

Describe Commerce clienteling and Dynamics 365 Fraud Protection

- Describe customer loyalty concepts
- Describe how to create personalized customer using clienteling
- Describe how Fraud Protection reduces fraudulent activities

Describe Dynamics 365 Human Resources (10–15%)

Describe Human Resources core capabilities

- Describe workers and positions
- Describe the hire-to-retire process
- Describe leave and absence capabilities
- Identify integration options between Human Resources and LinkedIn
- Describe compensation and benefits capabilities

Describe personnel management capabilities

- Describe self-service capabilities
- Describe employee training and certification features
- Describe performance management capabilities

Describe Dynamics 365 Project Operations (10–15%)

Describe Project Operations capabilities

- Describe project-based services and project types
- Describe project sales capabilities
- Describe project contract capabilities
- Describe project pricing capabilities
- Describe the project lifecycle including project invoicing and revenue recognition

Describe project planning and management capabilities

- Describe project planning, scheduling, and resourcing capabilities
- Describe work breakdown structures (WBS)
- Describe project cost tracking capabilities including time and expense costs

Describe the finance and operations core functionality (15–20%)

Describe the finance and operations apps

- Describe enterprise resource planning (ERP)
- Describe finance and operations apps use cases
- Explore the finance and operations user interface

Describe reporting and integration capabilities in finance and operations apps

- Describe built-in reporting capabilities including workspaces
- Describe options for analyzing data by using Power BI
- Describe Microsoft Office 365 integration capabilities, including Microsoft Excel, SharePoint, and Teams
- Describe Microsoft Power Platform integration options
- Describe Business Events integration capabilities

Study guide for Exam MD-102: Endpoint Administrator

Article • 07/15/2024

Purpose of this document

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Skills measured as of September 17, 2024

Audience profile

As a candidate for this exam, you have subject matter expertise managing devices and client applications in a Microsoft 365 tenant by using Microsoft Intune. You're responsible for:

- Implementing solutions for efficient deployment and management of endpoints on various operating systems, platforms, and device types.

- Implementing and managing endpoints at scale by using Microsoft Intune, Microsoft Intune Suite, Windows Autopilot, Microsoft Copilot for Security, Microsoft Defender for Endpoint, Microsoft Entra ID, Azure Virtual Desktop, and Windows 365.
- Implementing identity, security, access, policies, updates, and apps for endpoints.

As an endpoint administrator, you collaborate with architects, Microsoft 365 administrators, security administrators, and other workload administrators to plan and implement a modern workplace strategy that meets the business needs of an organization.

You must have experience with Microsoft Entra ID and Microsoft 365 technologies, including Intune, as well as strong skills and experience in deploying, configuring, and maintaining Windows client and non-Windows devices.

Skills at a glance

- Prepare infrastructure for devices (25–30%)
- Manage and maintain devices (30–35%)
- Manage applications (15–20%)
- Protect devices (15–20%)

Prepare infrastructure for devices (25–30%)

Add devices to Microsoft Entra ID

- Choose an appropriate device join type
- Join devices to Microsoft Entra ID
- Register devices to Microsoft Entra ID
- Plan and implement groups for devices in Microsoft Entra ID

Enroll devices to Microsoft Intune

- Configure enrollment settings
- Configure automatic enrollment for Windows and bulk enrollment for iOS and Android

- Configure enrollment profiles for Android devices, including fully managed, dedicated, corporate owned, and work profile

Implement identity and compliance

- Manage roles in Intune
- Implement compliance policies for all supported device platforms by using Intune
- Implement Conditional Access policies that require a compliance status
- Configure Windows Hello for Business
- Implement and manage Local Administrative Passwords Solution (LAPS) for Microsoft Entra ID
- Manage the membership of local groups on Windows devices by using Intune

Manage and maintain devices (30–35%)

Deploy and upgrade Windows clients by using cloud-based tools

- Choose between Windows Autopilot and provisioning packages
- Choose a Windows Autopilot deployment mode
- Apply a device name template
- Implement Windows client deployment by using Windows Autopilot
- Create an Enrollment Status Page (ESP)
- Plan and implement provisioning packages
- Plan and implement device upgrades for Windows 11
- Implement a Windows 365 cloud PC deployment

Plan and implement device configuration profiles

- Create device configuration profiles for Windows devices, including importing ADMX files
- Create device configuration profiles for Android devices

- Create device configuration profiles for iOS devices
- Create device configuration profiles for Mac OS devices
- Create device configuration profiles for Enterprise multi-session devices
- Target a profile by using filters

Implement Intune Suite add-on capabilities

- Configure Endpoint Privilege Management
- Manage applications by using the Enterprise App Catalog
- Implement Microsoft Intune Advanced Analytics
- Configure Microsoft Intune Remote Help
- Identify use cases for Cloud PKI
- Implement Microsoft Tunnel for MAM

Perform remote actions on devices

- Sync, restart, retire, or wipe devices
- Perform bulk remote actions
- Update Windows Defender security intelligence
- Rotate BitLocker recovery keys
- Run a device query by using KQL

Manage applications (15–20%)

Deploy and update apps

- Prepare applications for deployment by using Intune
- Deploy apps by using Intune
- Deploy Microsoft 365 Apps by using Intune
- Configure policies for Office apps

- Deploy Microsoft 365 Apps as part of a Windows Autopilot deployment by using the Microsoft Office Deployment Tool (ODT) or Office Customization Tool (OCT)
- Manage Microsoft 365 Apps by using the Microsoft 365 Apps admin center
- Deploy apps from platform-specific app stores by using Intune

Plan and implement app protection and app configuration policies

- Plan and implement app protection policies
- Implement Conditional Access policies for app protection policies
- Plan and implement app configuration policies for managed apps and managed devices

Protect devices (15–20%)

Configure endpoint security

- Create antivirus policies
- Create disk encryption policies
- Create firewall policies
- Configure Attack surface reduction policies
- Plan and implement security baselines
- Integrate Intune with Microsoft Defender for Endpoint
- Onboard devices into Microsoft Defender for Endpoint

Manage device updates by using Intune

- Plan for device updates
- Create and manage update rings by using Intune
- Create and manage update policies by using Intune, including iOS and Mac OS
- Manage Android updates by using configuration profiles or firmware-over-the-air (FOTA) deployments

- Configure Windows client delivery optimization by using Intune
- Monitor updates

Study resources

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[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Windows Documentation Windows client documentation for IT Pros Configure Windows client Windows client deployment resources and documentation Manage Windows client Windows security Windows Autopilot documentation Microsoft Intune documentation Microsoft Endpoint Manager documentation Windows application management
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Windows - Microsoft Tech Community
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

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[Expand table](#)

Skill area prior to September 17, 2024	Skill area as of September 17, 2024	Change
Audience profile		Major
Deploy Windows client		Deleted
Prepare for a Windows client deployment		Deleted
Plan and implement Windows client deployment by using Windows Autopilot		Removed
Configure remote management		Deleted
	Prepare infrastructure for devices	New
	Add devices to Microsoft Entra ID	New
	Enroll devices to Microsoft Intune	New
	Implement identity and compliance	Added
Manage identity and compliance		Deleted
Manage identity		Removed
Implement compliance policies for all supported device platforms by using Intune		Removed
	Manage and maintain devices	Added
	Deploy and upgrade Windows clients by using cloud-based tools	Added
	Plan and implement device configuration profiles	Added
	Implement Intune Suite add-on capabilities	New
	Perform remote actions on devices	New
Manage, maintain, and protect devices		Removed
Manage device lifecycle in Intune		Deleted
Manage device configuration for all supported device platforms by using Intune		Removed
Monitor devices		Deleted

Skill area prior to September 17, 2024	Skill area as of September 17, 2024	Change
Manage device updates for all supported device platforms by using Intune		Removed
Implement endpoint protection for all supported device platforms		Removed
	Manage applications	Added
	Deploy and update apps	Added
	Plan and implement app protection and app configuration policies	Added
Manage applications		Removed
Deploy and update apps for all supported device platforms		Removed
Plan and implement app protection and app configuration policies		Removed
	Protect devices	New
	Configure endpoint security	Added
	Manage device updates by using Intune	Added

Skills measured prior to September 17, 2024

Audience profile

As a candidate for this exam, you have subject matter expertise deploying, configuring, protecting, managing, and monitoring devices and client applications in a Microsoft 365 environment. You're responsible for:

- Managing identity, security, access, policies, updates, and apps for endpoints.
- Implementing solutions for efficient deployment and management of endpoints on various operating systems, platforms, and device types.
- Implementing and managing endpoints at scale by using Microsoft Intune, Windows 365, Windows Autopilot, Microsoft Defender for Endpoint, and Microsoft Entra ID.

As an endpoint administrator, you collaborate with architects, Microsoft 365 administrators, security administrators, and other workload administrators to plan and implement a modern workplace strategy that meets the business needs of an organization.

You must have experience with Microsoft Entra ID and Microsoft 365 technologies, including Intune, as well as strong skills and experience in deploying, configuring, and maintaining Windows client and non-Windows devices.

Skills at a glance

- Deploy Windows client (20–25%)
- Manage identity and compliance (15–20%)
- Manage, maintain, and protect devices (40–45%)
- Manage applications (15–20%)

Deploy Windows client (20–25%)

Prepare for a Windows client deployment

- Select a deployment tool based on requirements
- Choose between migrate and rebuild
- Choose an imaging and/or provisioning strategy
- Select a Windows edition based on requirements
- Implement subscription-based activation
- Deploy Windows 365

Plan and implement a Windows client deployment by using Windows Autopilot

- Configure device registration for Autopilot
- Create, validate, and assign deployment profiles
- Set up the Enrollment Status Page (ESP)

- Deploy Windows devices by using Autopilot
- Troubleshoot an Autopilot deployment

Configure remote management

- Configure Remote Help in Intune
- Configure Remote Desktop on a Windows client
- Configure the Windows Admin Center
- Configure PowerShell remoting and Windows Remote Management (WinRM)

Manage identity and compliance (15–20%)

Manage identity

- Implement user authentication on Windows devices, including Windows Hello for Business, passwordless, and tokens
- Manage role-based access control (RBAC) for Intune
- Register devices in and join devices to Microsoft Entra
- Implement the Intune Connector for Active Directory
- Manage the membership of local groups on Windows devices
- Implement and manage Local Administrative Passwords Solution (LAPS) for Microsoft Entra

Implement compliance policies for all supported device platforms by using Intune

- Specify compliance policies to meet requirements
- Implement compliance policies
- Implement Conditional Access policies that require a compliance status
- Manage notifications for compliance policies
- Monitor device compliance

- Troubleshoot compliance policies

Manage, maintain, and protect devices (40–45%)

Manage the device lifecycle in Intune

- Configure enrollment settings
- Configure automatic and bulk enrollment, including Windows, iOS, and Android
- Configure policy sets
- Restart, retire, or wipe devices

Manage device configuration for all supported device platforms by using Intune

- Specify configuration profiles to meet requirements
- Implement configuration profiles
- Monitor and troubleshoot configuration profiles
- Configure and implement Windows kiosk mode
- Configure and implement profiles on Android devices, including fully managed, dedicated, corporate owned, and work profile
- Plan and implement Microsoft Tunnel for Intune

Monitor devices

- Monitor devices by using Intune
- Monitor devices by using Azure Monitor
- Analyze and respond to issues identified in Endpoint analytics and Adoption Score

Manage device updates for all supported device platforms by using Intune

- Plan for device updates
- Create and manage update policies by using Intune

- Manage Android updates by using configuration profiles
- Monitor updates
- Troubleshoot updates in Intune
- Configure Windows client delivery optimization by using Intune
- Create and manage update rings by using Intune

Implement endpoint protection for all supported device platforms

- Implement and manage security baselines in Intune
- Create and manage configuration policies for Endpoint security including antivirus, encryption, firewall, endpoint detection and response (EDR), and attack surface reduction (ASR)
- Onboard devices to Microsoft Defender for Endpoint
- Implement automated response capabilities in Microsoft Defender for Endpoint
- Review and respond to device issues identified in the Microsoft Defender Vulnerability Management dashboard

Manage applications (15–20%)

Deploy and update apps for all supported device platforms

- Deploy apps by using Intune
- Configure Microsoft 365 Apps deployment by using the Microsoft Office Deployment Tool or Office Customization Tool (OCT)
- Manage Microsoft 365 Apps by using the Microsoft 365 Apps admin center
- Deploy Microsoft 365 Apps by using Intune
- Configure policies for Office apps by using Group Policy or Intune
- Deploy apps from platform-specific app stores by using Intune

Plan and implement app protection and app configuration policies

- Plan and implement app protection policies for iOS and Android

- Manage app protection policies
- Implement Conditional Access policies for app protection policies
- Plan and implement app configuration policies for managed apps and managed devices
- Manage app configuration policies

Study guide for Exam MS-102: Microsoft 365 Administrator

Article • 06/17/2024

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Useful links	Description
Assessment	exam.

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The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 15, 2024

Audience profile

If you're an administrator who deploys and manages Microsoft 365 and performs Microsoft 365 tenant-level implementation and administration of cloud and hybrid environments, this exam is designed for you.

As a Microsoft 365 administrator, you:

- Function as the integrating hub for all Microsoft 365 workloads.
- Coordinate across multiple Microsoft 365 workloads.

- Work with architects and other administrators responsible for workloads, infrastructure, identity, security, compliance, endpoints, and applications.

As a candidate for this exam, you have functional experience with all Microsoft 365 workloads and Microsoft Entra ID and have administered at least one of these. You should also have a working knowledge of the following:

- Networking
- Server administration
- DNS
- PowerShell

Skills at a glance

- Deploy and manage a Microsoft 365 tenant (15–20%)
- Implement and manage Microsoft Entra identity and access (25–30%)
- Manage security and threats by using Microsoft Defender XDR (35–40%)
- Manage compliance by using Microsoft Purview (15–20%)

Deploy and manage a Microsoft 365 tenant (15–20%)

Implement and manage a Microsoft 365 tenant

- Create a tenant
- Implement and manage domains
- Configure org settings, including Security & privacy and Organizational profile
- Identify and respond to service health issues
- Configure notifications in service health
- Configure and review Network connectivity insights
- Monitor adoption and usage
- Configure and manage Microsoft 365 Backup

Manage users and groups

- Create and manage users in Microsoft Entra, including external users and guests
- Create and manage contacts in the Microsoft 365 admin center
- Create and manage groups, including Microsoft 365 groups and shared mailboxes
- Manage and monitor Microsoft 365 licenses, including group-based licensing
- Perform bulk user management, including PowerShell

Manage roles and role groups

- Implement and manage built-in roles in Microsoft 365 and Microsoft Entra
- Implement and manage custom roles in Microsoft Entra admin center
- Manage role groups in Microsoft Defender XDR, Microsoft Purview, and Microsoft 365 workloads
- Manage delegation by using administrative units
- Manage roles in Microsoft Entra privileged identity management

Implement and manage Microsoft Entra identity and access (25–30%)

Implement and manage identity synchronization with Microsoft Entra tenant

- Prepare for identity synchronization by using IdFix
- Implement and manage directory synchronization by using Microsoft Entra Connect cloud sync
- Implement and manage directory synchronization by using Microsoft Entra Connect
- Monitor synchronization by using Microsoft Entra Connect Health
- Troubleshoot synchronization, including Microsoft Entra Connect and Microsoft Entra Connect cloud sync

Implement and manage authentication

- Implement and manage authentication methods
- Implement and manage self-service password reset (SSPR)
- Implement and manage Microsoft Entra Password Protection
- Investigate and resolve authentication issues

Implement and manage secure access

- Plan for identity protection
- Implement and manage Microsoft Entra ID Protection
- Plan Conditional Access policies
- Implement and manage Conditional Access policies
- Implement and manage multi-factor authentication (MFA) by using conditional access policies

Manage security and threats by using Microsoft Defender XDR (35–40%)

Review and respond to security reports and alerts generated by Microsoft Defender XDR

- Review and take actions to improve the Microsoft Secure Score
- Review and respond to security incidents and alerts
- Review and respond to issues identified in security and compliance reports
- Review and respond to threats identified in threat analytics

Implement and manage email and collaboration protection by using Microsoft Defender for Office 365

- Implement policies and rules in Defender for Office 365
- Review and respond to threats identified in Defender for Office 365, including threats and investigations

- Create and run campaigns, such as attack simulation
- Unblock users

Implement and manage endpoint protection by using Microsoft Defender for Endpoint

- Onboard devices to Defender for Endpoint
- Configure endpoint settings
- Review and respond to endpoint vulnerabilities
- Review and respond to risks identified in the Microsoft Defender Vulnerability Management dashboard

Implement, and manage Microsoft Defender for Cloud Apps

- Configure the app connector for Microsoft 365
- Configure Microsoft Defender for Cloud Apps policies
- Review and respond to Microsoft Defender for Cloud Apps alerts
- Interpret activity log
- Configure Cloud App Discovery
- Review and respond to issues identified in Cloud App Discovery

Manage compliance by using Microsoft Purview (15–20%)

Implement Microsoft Purview information protection and data lifecycle management

- Implement and manage sensitive information types by using keywords, keyword lists, or regular expressions
- Implement retention labels, retention label policies, and retention policies
- Implement sensitivity labels and sensitivity label policies
- Monitor label usage by using Content explorer, Activity explorer, and label reports

Implement Microsoft Purview data loss prevention (DLP)

- Configure DLP policies for Exchange, SharePoint, OneDrive, and Teams
- Configure Endpoint DLP
- Review and respond to DLP alerts, events, and reports

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[+] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft 365 documentation Microsoft 365 admin center help Tenant management for Microsoft 365 for enterprise Microsoft Entra ID documentation Microsoft Defender products and services Microsoft Endpoint Configuration Manager documentation Microsoft Purview compliance documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft 365 - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 15, 2024	Skill area as of July 15, 2024	Change
Audience profile		No change
Deploy and manage a Microsoft 365 tenants	Deploy and manage a Microsoft 365 tenant	% of the exam decreased
Implement and manage a Microsoft 365 tenant	Implement and manage a Microsoft 365 tenant	Major
Manage users and groups	Manage users and groups	Minor
Manage roles in Microsoft 365	Manage roles and role groups	Minor
Implement and manage Microsoft Entra identity and access	Implement and manage Microsoft Entra identity and access	No change
Implement and manage identity synchronization with Microsoft Entra tenant	Implement and manage identity synchronization with Microsoft Entra tenant	Minor
Implement and manage authentication	Implement and manage authentication	Minor
Implement and manage secure access	Implement and manage secure access	Minor
Manage security and threats by using Microsoft Defender XDR	Manage security and threats by using Microsoft Defender XDR	% of the exam increased
Manage security reports and alerts by using the Microsoft Defender portal	Manage security reports and alerts by using the Microsoft Defender portal	Minor
Implement and manage email and collaboration protection by using Microsoft Defender for Office 365	Implement and manage email and collaboration protection by using Microsoft Defender for Office 365	Minor
Implement and manage endpoint protection by using Microsoft Defender for Endpoint	Implement and manage endpoint protection by using Microsoft Defender for Endpoint	Minor
	Implement, and manage Microsoft Defender for Cloud Apps	New
Manage compliance by using Microsoft Purview	Manage compliance by using Microsoft Purview	No change
Implement Microsoft Purview Information Protection and Data Lifecycle Management	Implement Microsoft Purview information protection and data lifecycle management	Minor

Skill area prior to July 15, 2024	Skill area as of July 15, 2024	Change
Implement Microsoft Purview Data Loss Prevention (DLP)	Implement Microsoft Purview data loss prevention (DLP)	Minor

Skills measured prior to July 15, 2024

Audience profile

If you're an administrator who deploys and manages Microsoft 365 and performs Microsoft 365 tenant-level implementation and administration of cloud and hybrid environments, this exam is designed for you.

As a Microsoft 365 administrator, you:

- Function as the integrating hub for all Microsoft 365 workloads.
- Coordinate across multiple Microsoft 365 workloads.
- Work with architects and other administrators responsible for workloads, infrastructure, identity, security, compliance, endpoints, and applications.

As a candidate for this exam, you have functional experience with all Microsoft 365 workloads and Microsoft Entra ID and have administered at least one of these. You should also have a working knowledge of the following:

- Networking
- Server administration
- DNS
- PowerShell

Skills at a glance

- Deploy and manage a Microsoft 365 tenant (25–30%)
- Implement and manage Microsoft Entra identity and access (25–30%)
- Manage security and threats by using Microsoft Defender XDR (25–30%)
- Manage compliance by using Microsoft Purview (15–20%)

Deploy and manage a Microsoft 365 tenant (25–30%)

Implement and manage a Microsoft 365 tenant

- Create a tenant
- Implement and manage domains
- Configure organizational settings, including security, privacy, and profile
- Identify and respond to service health issues
- Configure notifications in service health
- Monitor adoption and usage

Manage users and groups

- Create and manage users
- Create and manage guest users
- Create and manage contacts
- Create and manage groups, including Microsoft 365 groups
- Manage and monitor Microsoft 365 license allocations
- Perform bulk user management, including PowerShell

Manage roles in Microsoft 365

- Manage roles in Microsoft 365 and Microsoft Entra
- Manage role groups for Microsoft Defender XDR, Microsoft Purview, and Microsoft 365 workloads
- Manage delegation by using administrative units
- Implement privileged identity management for Microsoft Entra roles

Implement and manage Microsoft Entra identity and access (25–30%)

Implement and manage identity synchronization with Microsoft Entra tenant

- Prepare for identity synchronization by using IdFix
- Implement and manage directory synchronization by using Microsoft Entra Connect cloud sync
- Implement and manage directory synchronization by using Microsoft Entra Connect
- Monitor synchronization by using Microsoft Entra Connect Health
- Troubleshoot synchronization, including Microsoft Entra Connect and Microsoft Entra Connect cloud sync

Implement and manage authentication

- Implement and manage authentication methods, including Windows Hello for Business, passwordless, tokens, and the Microsoft Authenticator app
- Implement and manage self-service password reset (SSPR)
- Implement and manage Microsoft Entra Password Protection
- Implement and manage multi-factor authentication (MFA)
- Investigate and resolve authentication issues

Implement and manage secure access

- Plan for identity protection
- Implement and manage Microsoft Entra ID Protection
- Plan Conditional Access policies
- Implement and manage Conditional Access policies

Manage security and threats by using Microsoft Defender XDR (25–30%)

Manage security reports and alerts by using the Microsoft Defender portal

- Review and take actions to improve the Microsoft Secure Score in the Microsoft Defender portal
- Review and respond to security incidents and alerts in Microsoft Defender XDR
- Review and respond to issues identified in security and compliance reports in Microsoft Defender XDR
- Review and respond to threats identified in threat analytics

Implement and manage email and collaboration protection by using Microsoft Defender for Office 365

- Implement policies and rules in Defender for Office 365
- Review and respond to threats identified in Defender for Office 365, including threats and investigations
- Create and run campaigns, such as attack simulation
- Unblock users

Implement and manage endpoint protection by using Microsoft Defender for Endpoint

- Onboard devices to Defender for Endpoint
- Configure Defender for Endpoint settings
- Review and respond to endpoint vulnerabilities
- Review and respond to risks identified in the Microsoft Defender Vulnerability Management dashboard

Manage compliance by using Microsoft Purview (15–20%)

Implement Microsoft Purview information protection and data lifecycle management

- Implement and manage sensitive info types by using keywords, keyword lists, or regular expressions
- Implement retention labels, retention label policies, and retention policies

- Implement sensitivity labels and sensitivity label policies

Implement Microsoft Purview data loss prevention (DLP)

- Implement DLP for workloads
- Implement Endpoint DLP
- Review and respond to DLP alerts, events, and reports

Study guide for Exam MS-700: Managing Microsoft Teams

Article • 03/05/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of April 26, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to April 26, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice	Test your skills with practice questions to help you prepare for the

Useful links	Description
Assessment	exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of April 26, 2024

Audience profile

As a Microsoft Teams administrator, you manage and maintain internal and external collaboration and communication solutions using Teams and Microsoft 365.

You're responsible for configuring and managing teams, channels, chat, apps, calling, meetings, and events. You manage:

- Phone numbers and services for Teams Phone.
- Operational aspects of Teams clients and devices.

You collaborate with owners of other areas, including:

- Networking
- Identity
- Licensing
- Information management
- User adoption
- Security
- Compliance

You work with collaboration and communication system engineers to implement Teams device scenarios. You plan and implement governance, security, and compliance for Teams.

As a candidate for this exam, you should have a working knowledge of Microsoft 365 services, including:

- Microsoft 365 groups
- Microsoft SharePoint
- OneDrive
- Microsoft Exchange
- Microsoft Defender XDR
- Microsoft Purview
- Microsoft Entra ID

You should understand the options for integrating and extending Teams with:

- Microsoft Copilot for Microsoft 365
- Microsoft Viva
- Power Platform
- Third-party apps
- Custom apps

Skills at a glance

- Configure and manage a Teams environment (40–45%)
- Manage teams, channels, chats, and apps (20–25%)
- Manage meetings and calling (15–20%)
- Monitor, report on, and troubleshoot Teams (15–20%)

Configure and manage a Teams environment (40–45%)

Plan and configure network settings for Teams

- Calculate network bandwidth capacity for Teams voice, video, meetings, and events
- Analyze network impact by using Network planner
- Specify network ports and protocols used by Teams
- Specify optimal network architecture for Teams, including Microsoft eCDN
- Assess network readiness and connectivity by using the Microsoft Teams Network Assessment Tool and Microsoft 365 network connectivity test tool

Manage security and compliance settings for Teams

- Identify licensing requirements for security and compliance features
- Specify security and compliance alert policies for Teams
- Choose appropriate Teams administrator roles
- Plan and configure Enhanced encryption policies
- Plan and configure threat policies in Microsoft Defender XDR
- Specify retention policies
- Specify sensitivity labels and policies, including Teams meeting policies
- Specify data loss prevention (DLP) policies
- Specify Conditional Access policies for Teams
- Specify information barrier (IB) policies

- Identify appropriate use cases for communication compliance and insider risk management

Plan and implement governance for Teams

- Identify licensing requirements for lifecycle management of teams
- Identify where Teams stores content
- Plan and manage update policies
- Create and manage policy packages in Teams
- Plan and configure policy assignment for users and groups
- Configure settings for Microsoft 365 group creation
- Configure an expiration policy for Microsoft 365 groups
- Configure a naming policy for Microsoft 365 groups, including blocked words
- Archive, delete, or unarchive one or more teams
- Restore or troubleshoot the deletion of a Microsoft 365 group
- Identify when to use Microsoft Entra Access reviews for teams and groups
- Perform operations for Teams by using PowerShell and Microsoft Graph

Configure and manage external collaboration

- Identify licensing requirements for external collaboration
- Configure SharePoint Online and OneDrive external sharing settings
- Configure External access in the Microsoft Teams admin center
- Configure External collaboration settings in Microsoft Entra ID for guest access
- Configure guest access and sharing in the Microsoft Teams admin center, Microsoft 365 admin center, Microsoft Entra admin center, or the SharePoint admin center
- Control guest access to a specific team by using Microsoft Purview and Microsoft Entra ID
- Remove guests from Teams, including from a team or a tenant

- Configure shared channels for external access
- Configure and manage B2B direct connect cross-tenant access settings in Microsoft Entra ID for shared channels

Manage Teams clients and devices

- Identify licensing requirements for Teams Phone accounts and resource accounts
- Identify licensing requirements for Teams devices
- Manage configuration profiles for Teams devices
- Configure accounts and systems for Microsoft Teams Rooms
- Manage device settings and firmware
- Manage Teams device tags
- Provision and configure remote sign-in for new devices

Plan and configure Teams for VDI

- Identify infrastructure requirements for Teams on VDI
- Identify performance requirements for Teams on VDI
- Choose between persistent and non-persistent modes
- Specify the deployment method for Teams on VDI
- Configure media optimization

Manage teams, channels, chats, and apps (20–25%)

Create and manage teams

- Plan for a Teams rollout by using Advisor for Teams
- Create a team by using the Microsoft Teams admin center, Teams client, the Teams PowerShell module, or Microsoft Graph
- Create a team from an existing Microsoft 365 group, SharePoint site, or team
- Create a team from a template

- Create and manage templates and template policies for teams
- Manage the membership and roles for a team
- Manage a team in the Microsoft Teams admin center
- Manage Teams environment settings
- Configure privacy and sensitivity settings for a team

Manage channels and chats

- Recommend channel types, including standard, private, and shared
- Add, edit, and remove channels
- Manage channel settings
- Create and manage channel policies
- Manage private and shared channel membership
- Create and manage messaging policies

Manage apps for Teams

- Manage Org-wide app settings in the Microsoft Teams admin center
- Create and manage app permission policies
- Create and manage app setup policies
- Manage permissions and consent for apps, including blocking apps
- Recommend appropriate extensibility options, including apps, connectors, tabs, meetings, and messaging extensions
- Manage purchasing of apps in the Teams app store
- Customize the appearance of the Teams app store
- Customize the branded experience of an app
- Upload an app to Teams
- Enable Loop experiences in Teams

Manage meetings and calling (15–20%)

Manage meetings and events

- Recommend an appropriate meeting type
- Enable intelligent meeting recap
- Configure meeting settings
- Create and manage meeting templates and template policies
- Create and manage meeting policies
- Create and manage meeting customization policies
- Configure and manage conference bridges
- Configure and manage audio conferencing policies
- Create and manage event settings and policies
- Manage immersive experiences in meetings

Manage phone numbers and services for Teams Phone

- Identify Public Switched Telephone Network (PSTN) requirements, including Calling Plan, Direct Routing, Operator Connect, and Teams Phone Mobile
- Identify device requirements, including Teams Rooms on Windows and Teams Rooms on Android
- Add, change, or remove an emergency address for an organization
- Provision and manage phone numbers for users, services, and conferencing bridges
- Assign, change, or remove a phone number for a user or a resource account
- Create and manage resource accounts in the Microsoft Teams admin center
- Manage voice settings and policies for users
- Create and manage voicemail policies
- Configure auto-attendants and call queues

- Create and manage calling policies

Monitor, report on, and troubleshoot Teams (15–20%)

Monitor and report on Teams

- Monitor and report on voice and meeting quality
- Configure reporting labels
- Configure alert rules
- Report on Teams usage, including team activity, app usage, active users, per-meeting metrics, and storage usage
- Monitor and report on the creation and deletion of teams
- Monitor and report on guest access
- Monitor the Microsoft 365 network connectivity test tool
- Manage feedback, including policies

Troubleshoot audio, video, and client issues

- Collect client-side logs
- Clear the Teams client cache
- Troubleshoot issues by using self-help diagnostics for Teams
- Troubleshoot Team client installation and update issues
- Troubleshoot sign-in issues to Teams

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft 365 documentation Microsoft Teams admin documentation Welcome to Microsoft Teams
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft 365 - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to April 26, 2024	Skill area as of April 26, 2024	Change
Audience profile		Minor
Configure and manage a Teams environment	Configure and manage a Teams environment	% of exam decreased
Plan and configure network settings for Teams	Plan and configure network settings for Teams	Minor
Manage security and compliance settings for Teams	Manage security and compliance settings for Teams	Minor
Plan and implement governance and lifecycle management	Plan and implement governance for Teams	Minor
Configure and manage external collaboration	Configure and manage external collaboration	Minor

Skill area prior to April 26, 2024	Skill area as of April 26, 2024	Change
Manage Teams clients and devices	Manage Teams clients and devices	Minor
	Plan and configure Teams for VDI	New
Manage chat, teams, channels, and apps	Manage teams, channels, chats, and apps	No change
Create and manage teams	Create and manage teams	Minor
Manage channels and chats	Manage channels and chats	Minor
Manage apps for Teams	Manage apps for Teams	Minor
Manage meetings and calling	Manage meetings and calling	No change
Manage meetings and events	Manage meetings and events	Major
Manage phone numbers and services for Teams Phone	Manage phone numbers and services for Teams Phone	Minor
Monitor, report on, and troubleshoot Teams	Monitor, report on, and troubleshoot Teams	% of exam increased
Monitor and report on Teams	Monitor and report on Teams	Major
Troubleshoot audio, video, and client issues	Troubleshoot audio, video, and client issues	No change

Skills measured prior to April 26, 2024

Audience profile

As a Microsoft Teams administrator, you manage and maintain internal and external collaboration and communication solutions using Teams and Microsoft 365.

You're responsible for configuring and managing teams, channels, chat, apps, calling, meetings, and events. You manage:

- Phone numbers and services for Teams Phone.
- Operational aspects of Teams clients and devices.

You collaborate with owners of other workloads, including:

- Networking

- Identity
- Licensing
- Information management
- User adoption

You work with collaboration and communication system engineers to implement advanced Teams Phone and Teams Rooms scenarios. You plan and implement governance, security, and compliance for Teams.

As a candidate for this exam, you should have a working knowledge of Microsoft 365 services, including:

- Microsoft 365 groups
- Microsoft SharePoint Online
- OneDrive
- Exchange
- Microsoft Entra ID

You should understand the options for integrating and extending Teams with other apps, including:

- Microsoft Viva
- Power Platform
- Third-party apps
- Custom apps

Skills at a glance

- Configure and manage a Teams environment (45–50%)
- Manage teams, channels, chats, and apps (20–25%)
- Manage meetings and calling (15–20%)
- Monitor, report on, and troubleshoot Teams (10–15%)

Configure and manage a Teams environment (45–50%)

Plan and configure network settings for Teams

- Calculate network bandwidth capacity for Teams voice, video, meetings, and live events
- Analyze network impact by using Network planner
- Specify network ports and protocols used by Teams
- Specify optimal network architecture for Teams
- Assess network readiness and connectivity by using the Microsoft Teams Network Assessment Tool and Microsoft 365 network connectivity test tool

Manage security and compliance settings for Teams

- Identify licensing requirements for security and compliance features
- Specify security and compliance alert policies for Teams
- Choose appropriate Teams administrator roles
- Plan and configure Enhanced encryption policies
- Plan and configure threat policies in Microsoft 365 Defender
- Plan and configure retention policies
- Plan and configure sensitivity labels and policies
- Plan and configure data loss prevention (DLP) policies
- Plan Conditional Access for Teams
- Plan and configure information barrier (IB) policies
- Identify appropriate use cases for communication compliance and insider risk management

Plan and implement governance and lifecycle management

- Identify licensing requirements for advanced lifecycle management of teams
- Identify where Teams stores content
- Plan and manage update policies, including Public Preview, Office Insider, and Targeted release

- Create and manage policy packages in Teams
- Plan and configure policy assignment for users and groups
- Configure settings for Microsoft 365 group creation
- Configure an expiration policy for Microsoft 365 groups
- Configure a naming policy for Microsoft 365 groups, including blocked words
- Archive, delete, or unarchive one or more teams
- Restore or troubleshoot the deletion of a Microsoft 365 group
- Identify when to use Microsoft Entra Access reviews for Teams and Groups.
- Perform operations for Teams by using PowerShell

Configure and manage external collaboration

- Identify licensing requirements for external collaboration
- Configure SharePoint Online and OneDrive external sharing settings
- Configure External access in the Microsoft Teams admin center
- Configure External collaboration settings in Microsoft Entra ID for guest access
- Configure guest access and sharing in the Microsoft Teams admin center, Microsoft 365 admin center, or Microsoft Entra admin center
- Control guest access to a specific team, including sensitivity labels and Microsoft Entra ID
- Remove guests from Teams, including from a team or a tenant
- Configure shared channels for external access
- Configure and manage cross-tenant access for B2B direct connect in Microsoft Entra ID for shared channels

Manage Teams clients and devices

- Identify licensing requirements for Teams Phone and resource accounts
- Identify licensing requirements for Teams devices

- Manage configuration profiles for Teams devices
- Configure Teams Rooms accounts and systems
- Manage device settings and firmware
- Manage Teams device tags
- Provision and configure remote sign-in for new devices

Manage teams, channels, chats, and apps (20–25%)

Create and manage teams

- Plan for a Microsoft Teams rollout by using Advisor for Teams
- Create a team by using the Microsoft Teams admin center, Teams client, or the Teams PowerShell module
- Create a team from an existing Microsoft 365 group, SharePoint site, or team
- Create a team from a template
- Create and manage Teams templates and template policies
- Manage the membership of a team
- Assign and modify user roles in a team
- Manage a team in the Microsoft Teams admin center
- Manage Teams environment settings in the Microsoft Teams admin center
- Configure privacy and sensitivity settings for Teams

Manage channels and chats

- Recommend channel types, including standard, private, and shared
- Add, edit, and remove channels
- Manage Teams channel settings
- Create and manage teams policies for channels
- Manage private and shared channel membership

- Create and manage messaging policies

Manage apps for Teams

- Manage Org-wide app settings in the Microsoft Teams admin center
- Create and manage app permission policies
- Create and manage app setup policies
- Manage permissions and consent for apps, including blocking apps
- Recommend appropriate extensibility options, including apps, connectors, tabs, meetings, and messaging extensions
- Manage purchasing of apps in the Teams app store
- Customize the appearance of the Teams app store
- Customize the branded experience of an app
- Upload an app to Teams

Manage meetings and calling (15–20%)

Manage meetings and events

- Recommend meeting types, including live events, webinars, and virtual appointments
- Enable enhanced meeting features for a user by assigning Microsoft Teams Premium licenses
- Configure meeting settings
- Create and manage meeting templates and template policies
- Create and manage meeting policies
- Create and manage conference bridges
- Create and manage audio conferencing policies
- Plan and configure live events settings and policies

Manage phone numbers and services for Teams Phone

- Evaluate Public Switched Telephone Network (PSTN) options, including Calling Plan, Direct Routing, Operator Connect, and Teams Phone Mobile
- Add, change, or remove an emergency address for an organization
- Provision and manage phone numbers for users, services, and conferencing bridges
- Assign, change, or remove a phone number for a user or a resource account
- Create and manage resource accounts in the Microsoft Teams admin center
- Manage voice settings and policies for users
- Create and manage voicemail policies
- Configure auto-attendants and call queues
- Create and manage calling policies

Monitor, report on, and troubleshoot Teams (10–15%)

Monitor and report on Teams

- Monitor and report on voice and meeting quality
- Report on Teams usage, including team activity, app usage, active users, per-meeting metrics, and storage usage
- Monitor and report on the creation and deletion of teams
- Monitor and report on guest access
- Monitor the Microsoft 365 network connectivity test tool
- Manage feedback policies

Troubleshoot audio, video, and client issues

- Collect client-side logs
- Clear the Teams client cache
- Troubleshoot issues by using self-help diagnostics for Teams

- Troubleshoot Team client installation and update issues
- Troubleshoot sign-in issues to Teams

Study guide for Exam MS-721: Collaboration Communications Systems Engineer

Article • 06/24/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 22, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 22, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 22, 2024

Audience profile

As a candidate for this exam, you're responsible for planning, deploying, configuring, maintaining, and troubleshooting collaboration communication systems that include:

- Microsoft Teams Phone
- Microsoft Teams meetings
- Microsoft Teams Premium

- Microsoft Copilot in Teams
- Microsoft Teams Rooms
- Other certified and supported devices

As a collaboration communications systems engineer, you have a fundamental understanding of networking, telecommunications, audio/visual and meeting room technologies, and identity and access management. You're proficient in managing collaboration and communications solutions by using:

- Microsoft Teams admin center
- Microsoft Teams Rooms Pro Management portal
- PowerShell
- Microsoft Call Quality Dashboard

You work with:

- Microsoft Teams administrators
- Microsoft identity and access administrators
- Microsoft 365 administrators
- Owners of other workloads, including facilities managers, network engineers, security engineers, device manufacturers, telephony providers, and Microsoft Certified solution providers

Skills at a glance

- Plan and design collaboration communications systems (30–35%)
- Configure and manage Teams meetings, webinars, and town halls (15–20%)
- Configure and manage Teams Phone (25–30%)
- Configure and manage Teams Rooms and devices (25–30%)

Plan and design collaboration communications systems (30–35%)

Plan and design Teams meetings

- Plan and design Teams meeting policies and settings
- Plan for PSTN audio conferencing
- Plan for Teams meetings, webinars, and town halls
- Recommend when to use Teams Premium
- Recommend when to use Microsoft Copilot for Microsoft 365 in Teams
- Recommend meeting types based on business requirements, including virtual appointments, webinars, town halls, and meetings
- Recommend methods for assigning policies
- Plan and design Teams policy packages

Plan and design Teams Phone and PSTN connectivity

- Identify licensing requirements to enable Teams Phone for users, shared devices, and Teams resource accounts
- Identify PSTN connectivity requirements
- Recommend when to use Teams Phone Mobile
- Plan for Operator Connect
- Recommend an appropriate billing method for communications consumption
- Plan for Shared Calling
- Plan usage scenarios for service and user phone numbers
- Plan for porting and/or acquiring phone numbers
- Recommend devices for Teams Phone
- Plan for and recommend analog devices, Session Initiation Protocol (SIP) handsets, and SIP devices
- Recommend when to use Survivable Branch Appliances (SBAs)
- Plan and design Direct Routing call flows
- Recommend a Session Border Controller (SBC) solution based on PSTN connectivity

- Identify an appropriate compliance recording solution
- Identify an appropriate certified contact center solution

Plan and design Teams-certified device solutions

- Recommend a room configuration based on the meeting space
- Recommend a room configuration based on customer and business requirements
- Choose between Teams Rooms Basic and Teams Rooms Pro
- Recommend a Teams Rooms device platform, including Windows and Android
- Recommend Teams-certified devices
- Recommend Teams Rooms certified components
- Recommend when to use Cloud Video Interop (CVI)
- Recommend when to use Direct Guest Join
- Recommend an update strategy for Teams Meeting Room devices
- Identify the requirements for a Microsoft Teams Rooms resource account
- Identify the enrollment requirements for Microsoft Intune
- Plan for advanced features on shared devices

Prepare the network for Teams

- Perform a network analysis by using the Microsoft Teams Network Assessment Tool
- Determine network readiness for Teams
- Recommend when to use Enterprise Content Delivery Network (eCDN)
- Specify the network configuration for certified devices
- Determine network requirements by using the Network planner for Teams
- Specify the optimal network architecture for Teams
- Specify Teams Quality of Service (QoS) requirements and policies
- Configure Teams for QoS

- Configure Media Bit Rate (MBR)
- Create and assign a network roaming policy
- Configure the network topology
- Configure tenant data upload for the Microsoft Call Quality Dashboard
- Configure reporting labels for Call Analytics

Configure and manage Teams meetings, webinars, and town halls (15–20%)

Configure and manage Teams meetings

- Create and manage meeting policies, including policy packages and group policy assignment
- Configure meeting settings
- Configure avatars for Teams meetings
- Configure Microsoft Mesh meetings in Microsoft Teams
- Configure and manage meeting features, including meeting apps, polls and forms, Q&A, breakout rooms, and Teams Premium features
- Create and manage Teams meeting templates and meeting template policies
- Configure controlled content meeting policies
- Configure Cloud Video Interop policies
- Configure meeting recording and transcription to support Copilot for Microsoft 365
- Configure virtual appointments, including advanced features

Configure and manage audio conferencing

- Configure audio conferencing for Teams
- Configure a default audio conferencing bridge
- Configure an audio conference bridge number

- Configure a toll-free conference bridge number
- Assign a specific audio conferencing number to a user
- Configure toll-free audio conferencing
- Configure the audio conferencing numbers included in meeting invitations

Configure and manage Teams webinars

- Configure webinar roles and presenter and attendee experience
- Manage access to scheduling Teams webinars
- Configure policies for Teams webinars
- Configure in-org vs public webinars
- Configure advanced webinar features
- Configure attendee interaction for webinars

Configure and manage Teams Town halls

- Configure Town Hall settings
- Configure a Microsoft eCDN for Town halls
- Configure advanced Town hall features
- Configure Town halls with Teams, Viva Engage, and Microsoft Stream

Configure and manage Teams Phone (25–30%)

Configure Teams Phone policies

- Configure dial plans
- Configure calling policies
- Configure call park policies
- Configure caller ID policies
- Configure IP Phone policies

- Configure mobility policies
- Configure voicemail policies
- Configure call hold policies
- Configure outbound call restrictions
- Configure inbound call blocking
- Configure routing of unassigned numbers
- Configure compliance recording policies

Configure auto attendants and call queues

- Design call flows for auto attendants and call queues
- Configure Teams Phone resource accounts
- Assign licenses to resource accounts
- Assign phone numbers to resource accounts, including toll-free phone numbers
- Assign a resource account to an auto attendant or call queue
- Choose an appropriate call queue routing method
- Configure holidays for auto attendants and call queues
- Configure custom Music on Hold (MoH)
- Assign a dynamic caller ID policy for call queues
- Configure voice applications policies for auto attendants and call queues

Configure dynamic emergency calling

- Design a solution for dynamic emergency calling
- Configure emergency calling locations
- Configure emergency call routing policies
- Configure emergency calling policies
- Configure networks and locations (Location Information Service (LIS))

- Validate emergency address and emergency calling from Teams clients
- Troubleshoot dynamic emergency address

Configure and manage users for Teams Phone

- Assign a Teams Phone Standard license
- Assign a Teams Calling Plan
- Assign user dial plans
- Assign phone numbers to users by using the Microsoft Teams admin center
- Assign phone number in bulk by using PowerShell
- Assign a verified emergency address location
- Assign a calling policy to a user
- Assign a Shared Calling policy to a user
- Assign a private line to a user
- Assign a voice routing policy to a Direct Routing user

Configure and manage calling features for Teams Phone

- Configure voicemail
- Configure group call pickup
- Configure Call Forwarding
- Configure Simultaneous Ring
- Configure call delegation
- Configure audio conferencing for a user
- Assign a Dial-out from meetings policy for a user
- Assign a call hold policy
- Configure Shared Calling

Configure and manage Direct Routing for Teams Phone

- Configure connectivity for Teams Phone to a SBC
- Create and configure a PSTN gateway
- Create PSTN usage records
- Create and configure voice routes
- Create and configure voice routing policies
- Validate Direct Routing SBC connectivity
- Troubleshoot Direct Routing by using the Teams admin center
- Design and configure Location-Based Routing (LBR)
- Design and configure Local Media Optimization (LMO)
- Configure trunk translation rules
- Configure on-network conferencing for Direct Routing
- Configure SBA policies
- Manage emergency call routing policies for Direct Routing

Configure and manage Teams Rooms and devices (25–30%)

Manage and maintain Teams Rooms and devices

- Configure device settings
- Configure local network settings
- Configure device updates
- Recommend Conditional Access Policy MFA exceptions for Resource accounts
- Configure meeting room settings by using the Microsoft Teams admin center or the local Teams application settings
- Manage Teams Rooms from the Microsoft Teams Rooms Pro Management portal
- Specify Intune configuration requirements for Teams devices
- Deploy common area phones, user phones, conference phones

- Create and manage Teams device tags
- Configure SIP Gateway and provision SIP devices
- Manage and monitor shared space rooms that include bring-your-own devices
- Monitor Teams device health
- Troubleshoot authentication issues
- Troubleshoot update issues
- Troubleshoot remote provisioning issues
- Troubleshoot Bluetooth beacons

Configure and manage Teams Android devices

- Configure IP phone policies
- Create and configure device configuration profiles for Android based devices
- Enable hotline for shared space devices
- Deploy Android devices remotely

Configure and manage Teams Windows devices

- Specify domain group policy exclusions for Teams Rooms on Windows
- Configure custom displays for Teams Rooms on Windows
- Customize meeting room settings by using XML files on Windows
- Configure settings for peripherals for Teams Room on Windows

Configure optional features for Teams Rooms and devices

- Configure HDMI ingest and options
- Configure a content camera
- Configure Teams casting
- Configure proximity join
- Configure room remote

- Configure Direct Guest Join
- Configure hot desking on Teams shared devices
- Configure AI-enabled voice and video capabilities for shared space devices

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Teams admin documentation Microsoft 365 documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft Teams ↗ Microsoft 365 - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[] [Expand table](#)

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Audience profile		Major

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Plan and design collaboration communications systems	Plan and design collaboration communications systems	% of the exam decreased
Plan and design Teams meetings	Plan and design Teams meetings	Minor
Plan and design Teams Phone and PSTN connectivity	Plan and design Teams Phone and PSTN connectivity	Major
Plan and design Teams-certified device solutions	Plan and design Teams certified device solutions	Major
Prepare the network for the deployment of Teams	Prepare the network for Teams	Major
Troubleshoot call failures and session quality		Deleted
Configure and manage Teams meetings, webinars and town halls	Configure and manage Teams meetings, Webinars, and Town halls	No change
Configure and manage Teams meetings	Configure and manage Teams meetings	Major
Configure and manage audio conferencing	Configure and manage audio conferencing	Minor
Configure and manage live events, webinars, and town halls	Configure and manage Teams webinars	Major
	Configure and manage Teams Town halls	New
Configure and manage Teams Phone	Configure and manage Teams Phone	No change
Configure Teams Phone policies	Configure Teams Phone policies	Major
Configure auto attendants and call queues	Configure auto attendants and call queues	Major
Configure dynamic emergency calling	Configure dynamic emergency calling	Major
Configure and manage users for Teams Phone	Configure and manage users for Teams Phone	Major
Configure and manage calling features for Teams Phone	Configure and manage calling features for Teams Phone	Minor
Configure and manage Direct Routing for Teams Phone	Configure and manage Direct Routing for Teams Phone	Major

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Configure and manage Teams Rooms and devices	Configure and manage Teams Rooms and devices	No change
Maintain Teams Rooms and devices	Manage and maintain Teams Rooms and devices	Minor
Configure and manage Teams Rooms on a Surface Hub or Windows	Configure and manage Teams Windows devices	Major
Configure optional features for Teams Rooms and devices	Configure optional features for Teams Rooms and devices	Major
	Configure and manage Teams Android devices	Added

Skills measured prior to July 22, 2024

Audience profile

As a candidate for this exam, you're responsible for planning, deploying, configuring, maintaining, and troubleshooting:

- Microsoft Teams Phone
- Meetings
- Personal and shared space devices, including Teams Rooms and Microsoft Surface Hub

As a collaboration communications systems engineer, you have a fundamental understanding of networking, telecommunications, audio/visual and meeting room technologies, and identity and access management. You're proficient in managing and monitoring Teams Phone, meetings, and certified devices by using:

- Microsoft Teams admin center
- PowerShell
- Microsoft Teams Rooms Pro Management portal
- Microsoft Call Quality Dashboard

You deploy and configure Teams Phone with Public Switched Telephone Network (PSTN) connectivity through:

- Teams Calling Plans
- Operator Connect
- Teams Phone Mobile
- Direct Routing

You work with:

- Teams administrators
- Microsoft identity and access administrators
- Microsoft 365 administrators
- Owners of other workloads, including facilities managers, network engineers, security engineers, device manufacturers, telephony providers, and Microsoft Certified solution providers

Skills at a glance

- Plan and design collaboration communications systems (25–30%)
- Configure and manage Teams meetings, webinars, and town halls (15–20%)
- Configure and manage Teams Phone (25–30%)
- Configure and manage Teams Rooms and devices (25–30%)

Plan and design collaboration communications systems (25–30%)

Plan and design Teams meetings

- Plan and design Teams meeting policies and settings
- Plan for PSTN audio conferencing
- Plan for Teams webinars, live events, and town halls
- Compare capabilities and features of Teams Core and Teams Premium
- Recommend meeting types based on business requirements (virtual appointments, webinars, live events, town halls and Teams meetings)

- Design Teams policy packages (includes meeting policies, calling policies, and live events policies)
- Recommend methods for assigning policies

Plan and design Teams Phone and PSTN connectivity

- Identify licensing requirements to enable Teams Phone for users, shared devices, and Teams resource accounts
- Identify PSTN connectivity requirements
- Plan for Teams Phone Mobile
- Plan for Operator Connect
- Plan for Communication Credits or pay-as-you-go calling subscriptions
- Plan for Shared Calling
- Plan usage scenarios for service and user phone numbers
- Choose between porting and acquiring phone numbers
- Plan a solution to acquire or port phone numbers based on PSTN connectivity method (DR, OC, TPM, Teams Calling Plans)
- Recommend Teams Phone devices
- Plan for and recommend analog devices, Session Initiation Protocol (SIP) handsets, and SIP devices
- Recommend when to use Survivable Branch Appliances (SBAs)
- Plan and design Direct Routing call flows
- Recommend a Session Border Controller (SBC) solution based on PSTN connectivity
- Identify an appropriate compliance recording solution
- Identify an appropriate certified contact center solution
- Plan for SBC and SBA updates

Plan and design Teams-certified device solutions

- Recommend a room configuration based on the meeting space
- Recommend a room configuration based on customer and business requirements
- Compare capabilities and features of Teams Rooms Basic and Teams Rooms Pro
- Recommend a Teams Rooms device platform (Android vs. Windows vs. Surface Hub)
- Recommend Teams-certified devices
- Recommend Teams Rooms certified components
- Recommend when to use coordinated meetings
- Recommend when to use Cloud Video Interop (CVI) or Direct Guest Join
- Recommend an update strategy for Teams Meeting Room devices
- Identify the requirements for a Microsoft Exchange Online resource account
- Identify the enrollment requirements for Microsoft Intune
- Plan for advanced features on shared devices

Prepare the network for the deployment of Teams

- Perform a network analysis by using the Microsoft Teams Network Assessment Tool
- Determine network readiness for Teams
- Determine Enterprise Content Delivery Network (eCDN) requirements for Teams live events and town halls.
- Specify the network configuration for certified devices
- Determine network requirements by using the Network planner for Teams
- Specify the optimal network architecture for Teams
- Specify Teams Quality of Service (QoS) requirements and policies
- Validate local internet breakout strategy for client media optimization
- Validate VPN split tunneling
- Validate DNS resolves to the nearest point of entry in Microsoft 365

- Configure Teams for QoS
- Configure Media Bit Rate (MBR)
- Create and assign a network roaming policy
- Configure the network topology
- Configure tenant data upload for the Microsoft Call Quality Dashboard
- Configure Microsoft Power BI reports for the Microsoft Call Quality Dashboard
- Configure reporting labels for Call Analytics

Troubleshoot call failures and session quality

- Troubleshoot a missing dial pad
- Troubleshoot voice & meeting issues by using self-help diagnostics in the Microsoft 365 admin center
- Troubleshoot Entra ID sign-in issues for Teams phones
- Interpret Teams media flows
- Troubleshoot tenant dial plans by using regular expressions and PowerShell
- Interpret E.164 normalization rules to resolve dialing issues
- Interpret reverse number lookup to resolve caller ID issues
- Diagnose call failures
- Troubleshoot dynamic emergency address by using client debug logs
- Troubleshoot Teams client media issues by using the Microsoft Remote Connectivity Analyzer for Teams
- Troubleshoot calls by using Advanced Call Analytics
- Troubleshoot calls by using the Microsoft Call Quality Dashboard
- Inspect PSTN usage reports for SIP call failures

Configure and manage Teams meetings, webinars, and town halls (15–20%)

Configure and manage Teams meetings

- Create and manage meeting policies
- Configure meeting settings
- Configure and manage Teams webinars
- Configure avatars for Teams meetings
- Configure immersive spaces for Teams meetings
- Configure and manage Teams Premium meeting features
- Create and manage Teams meeting templates and policies

Configure and manage audio conferencing

- Configure audio conferencing for Teams
- Configure a default audio conferencing bridge
- Configure an audio conference bridge number
- Configure a toll-free conference bridge number
- Assign a specific audio conferencing number to a user
- Configure toll-free audio conferencing
- Configure the audio conferencing numbers included in meeting invitations

Configure and manage live events, webinars, and town halls

- Configure the Live events settings
- Create and manage live events policies
- Configure meeting and event roles
- Configure live events and town halls with Teams, Viva Engage, and Microsoft Stream
- Configure in-org vs public town halls
- Configure town halls with Teams Premium

- Manage access to scheduling Teams webinars
- Configure policies for Teams webinars
- Configure in-org vs public webinars
- Configure webinars with Teams Premium
- Configure attendee interaction for webinars

Configure and manage Teams Phone (25–30%)

Configure Teams Phone policies

- Create a dial plan
- Configure calling policies
- Configure call park policies
- Configure caller ID policies
- Configure call hold policies for users
- Configure outbound call restrictions
- Configure inbound call blocking
- Configure routing of unassigned numbers
- Assign voice policies through policy packages
- Configure compliance recording policies

Configure auto attendants and call queues

- Design call flows for auto attendants and call queues
- Configure auto attendants and call queues
- Deploy channel-based call queues
- Configure resource accounts
- Assign licenses to resource accounts
- Assign phone number to resource accounts

- Assign a resource account to an auto attendant or call queue
- Configure Microsoft 365 groups for voicemail
- Interpret call queue conference mode
- Interpret call queue routing methods
- Configure holidays for auto attendants and call queues
- Configure custom Music on Hold (MoH)
- Assign a dynamic caller ID policy for call queues
- Configure voice applications policies for auto attendants and call queues

Configure dynamic emergency calling

- Design dynamic emergency calling scenarios
- Configure emergency calling locations
- Configure emergency calling policies
- Configure networks and locations (Location Information Service (LIS))
- Validate emergency address and emergency calling from Teams clients
- Enable external location lookup mode

Configure and manage users for Teams Phone

- Assign a Teams Phone Standard license
- Assign a Teams Calling Plan
- Assign user dial plans
- Assign phone numbers to users by using the Microsoft Teams admin center
- Assign phone number to users by using PowerShell
- Assign a verified emergency address location
- Assign a calling policy to a user
- Assign a voice routing policy to a Direct Routing user

Configure and manage calling features for Teams Phone

- Configure voicemail for users
- Configure group call pickup for users
- Configure Call Forwarding
- Configure Simultaneous Ring
- Configure call delegation for users
- Enable and configure audio conferencing for a user
- Assign a Dial-out from meetings policy for a user
- Assign a call hold policy for a user
- Configure Shared Calling

Configure and manage Direct Routing for Teams Phone

- Configure connectivity for Teams Phone to a SBC
- Create and configure an online PSTN gateway
- Create PSTN usage records
- Create and configure a voice route
- Create and configure voice routing policies
- Validate Direct Routing SBC connectivity
- Troubleshoot firewall issues for Direct Routing
- Troubleshoot certificate issues for Direct Routing
- Troubleshoot Direct Routing SBC connectivity
- Troubleshoot SIP option issues for Direct Routing
- Investigate and diagnose calling issues by using an SBC SIP trace
- Design and configure Location-Based Routing (LBR)
- Design and configure Local Media Optimization (LMO)
- Configure trunk translation rules

- Configure on-network conferencing for Direct Routing
- Configure an SBA
- Manage emergency call routing policies for Direct Routing

Configure and manage Teams Rooms and devices (25–30%)

Maintain Teams Rooms and devices

- Configure device settings
- Configure IP phone policies
- Configure local network settings
- Configure security and updates
- Configure Conditional Access Policy MFA exception for Resource accounts
- Configure meeting room settings by using the Microsoft Teams admin center or the local Teams application settings
- Create and configure device configuration profiles for Android based devices
- Manage Teams Rooms from the Microsoft Teams Rooms Pro Management portal
- Configure Intune policies for Teams devices
- Configure Intune Configuration profiles (for Windows MTRs)
- Enable advanced voice capabilities for shared space devices
- Enable hotline for shared space devices
- Configure Virtual frontdesk
- Deploy common area phones, user phones, conference phones
- Create and manage Teams device tags
- Deploy Android devices remotely
- Configure SIP Gateway
- Monitor Teams device health

- Troubleshoot authentication issues
- Troubleshoot update issues
- Troubleshoot remote provisioning issues
- Troubleshoot Bluetooth beacons

Configure and manage Teams Rooms on a Surface Hub or Windows

- Configure the authentication type during a Surface Hub out-of-box-experience (OOBE) setup
- Configure meeting room settings on a Surface Hub device
- Create and validate a Surface Hub provisioning package
- Assign a provisioning package to a Surface Hub
- Specify domain group policy exclusions for Teams Rooms on Windows
- Configure custom displays for Teams Rooms on Windows
- Customize meeting room settings by using XML files on Windows
- Configure settings for peripherals for Teams Room on Windows
- Monitor Surface Hub health with Azure Monitor
- Manage Surface Hub Updates via Update Rings

Configure optional features for Teams Rooms and devices

- Configure HDMI ingest and options
- Configure a content camera
- Configure Teams casting
- Auto accept a proximity join
- Allow room remote
- Configure an intelligent speaker
- Configure Direct Guest Join

- Configure hot desking on Teams shared devices
- Configure Hotline phones

Study guide for Exam MS-900: Microsoft 365 Fundamentals

Article • 02/18/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of April 15, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to April 15, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
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Updates to the exam

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of April 15, 2024

Audience profile

This exam is designed for you, if you're looking to demonstrate foundational-level knowledge of cloud-based solutions to facilitate productivity and collaboration among on-site, remote, and hybrid workers. As a candidate, you may:

- Have knowledge of cloud-based solutions.
- Be new to Microsoft 365.

You can use this exam to prepare for other Microsoft certifications, but it's not a prerequisite for the related ones.

As a candidate, you should be able to recommend Microsoft 365 solutions that address common organizational IT challenges. You should understand how Microsoft 365

solutions:

- Improve productivity
- Facilitate collaboration
- Optimize communications
- Help secure data
- Identity and facilitate compliance

You should be able to recommend solutions for:

- Endpoint and application management
- Desktop virtualization
- Automated operating system deployment
- Reporting and analytics

You should be familiar with Microsoft 365 licensing, deployment and migration assistance, and support options for organizations looking to maximize their investment in the cloud.

Skills at a glance

- Describe cloud concepts (5–10%)
- Describe Microsoft 365 apps and services (45–50%)
- Describe security, compliance, privacy, and trust in Microsoft 365 (25–30%)
- Describe Microsoft 365 pricing, licensing, and support (10–15%)

Describe cloud concepts (5–10%)

Describe the different types of cloud services available

- Describe Microsoft software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS) concepts and use cases
- Describe differences between Office 365 and Microsoft 365

Describe the benefits of and considerations for using cloud, hybrid, or on-premises services

- Describe public, private, and hybrid cloud models
- Compare costs and advantages of cloud, hybrid, and on-premises services
- Describe the concept of hybrid work and flexible work

Describe Microsoft 365 apps and services (45–50%)

Describe productivity solutions of Microsoft 365

- Describe the core productivity capabilities and benefits of Microsoft 365 including Microsoft Outlook and Microsoft Exchange, Microsoft 365 apps, and OneDrive
- Describe core Microsoft 365 Apps including Microsoft Word, Excel, PowerPoint, Outlook, and OneNote
- Describe work management capabilities of Microsoft 365 including Microsoft Project, Planner, Bookings, Forms, Lists, and To Do

Describe collaboration solutions of Microsoft 365

- Describe the collaboration benefits and capabilities of Microsoft 365 including Microsoft Exchange, Outlook, SharePoint, OneDrive, and Stream
- Describe the collaboration benefits and capabilities of Microsoft Teams and Teams Phone
- Describe the Microsoft Viva apps
- Describe the ways that you can extend Microsoft Teams by using collaborative apps

Describe endpoint modernization, management concepts, and deployment options in Microsoft 365

- Describe the endpoint management capabilities of Microsoft 365 including Microsoft Intune (Configuration Manager and co-management, Endpoint Analytics, and Windows Autopilot)
- Compare the differences between Windows 365 and Azure Virtual Desktop

- Describe the deployment and release models for Windows-as-a-Service (WaaS) including deployment rings
- Identify deployment and update channels for Microsoft 365 Apps

Describe analytics capabilities of Microsoft 365

- Describe the capabilities of Viva Insights
- Describe the capabilities of the Microsoft 365 Admin center and Microsoft 365 user portal
- Describe the reports available in the Microsoft 365 Admin center and other admin centers

Describe security, compliance, privacy, and trust in Microsoft 365 (25–30%)

Describe identity and access management solutions of Microsoft 365

- Describe the identity and access management capabilities of Microsoft Entra ID
- Describe cloud identity, on-premises identity, and hybrid identity concepts
- Describe how Microsoft uses methods such as multi-factor authentication (MFA), self-service password reset (SSPR), and conditional access, to keep identities, access, and data secure

Describe threat protection solutions of Microsoft 365

- Describe Microsoft Defender XDR, Defender for Endpoint, Defender for Office 365, Defender for Identity, Defender for Cloud Apps, and the Microsoft Defender Portal
- Describe Microsoft Secure Score benefits and capabilities
- Describe how Microsoft 365 addresses the most common types of threats against endpoints, applications, and identities

Describe trust, privacy, risk, and compliance solutions of Microsoft 365

- Describe the Zero Trust Model
- Describe Microsoft Purview compliance solutions such as insider risk, auditing, and eDiscovery
- Describe Microsoft Purview Information Protection features such as sensitivity labels and data loss prevention
- Describe how Microsoft supports data residency to ensure regulatory compliance
- Describe the capabilities and benefits of Microsoft Priva

Describe Microsoft 365 pricing, licensing, and support (10–15%)

Identify Microsoft 365 pricing and billing management options

- Describe the pricing model for Microsoft cloud services including enterprise agreements, cloud solution providers, and direct billing
- Describe available billing and bill management options including billing frequency and methods of payment

Identify licensing options available in Microsoft 365

- Describe license management
- Describe the differences between base licensing and add-on licensing

Identify support options for Microsoft 365 services

- Describe how to create a support request for Microsoft 365 services
- Describe support options for Microsoft 365 services
- Describe service-level agreements (SLAs) including service credits
- Determine service health status by using the Microsoft 365 admin center or the Microsoft Entra admin center

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[+] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft 365 documentation Microsoft Docs
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Microsoft 365 - Microsoft Tech Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill prior to April 15, 2024	Skill as of April 15, 2024	Change
Audience profile		Minor
Describe cloud concepts	Describe cloud concepts	No % change
Describe the different types of cloud services available	Describe the different types of cloud services available	No change
Describe the benefits of and considerations for using cloud, hybrid, or on-premises services	Describe the benefits of and considerations for using cloud, hybrid, or on-premises services	No change

Skill prior to April 15, 2024	Skill as of April 15, 2024	Change
Describe Microsoft 365 apps and services	Describe Microsoft 365 apps and services	No % change
Describe productivity solutions of Microsoft 365	Describe productivity solutions of Microsoft 365	No change
Describe collaboration solutions of Microsoft 365	Describe collaboration solutions of Microsoft 365	No change
Describe endpoint modernization, management concepts, and deployment options in Microsoft 365	Describe endpoint modernization, management concepts, and deployment options in Microsoft 365	Minor
Describe analytics capabilities of Microsoft 365	Describe analytics capabilities of Microsoft 365	No change
Describe security, compliance, privacy, and trust in Microsoft 365	Describe security, compliance, privacy, and trust in Microsoft 365	No % change
Describe identity and access management solutions of Microsoft 365	Describe identity and access management solutions of Microsoft 365	No change
Describe threat protection solutions of Microsoft 365	Describe threat protection solutions of Microsoft 365	Minor
Describe trust, privacy, and compliance solutions of Microsoft 365	Describe trust, privacy, and compliance solutions of Microsoft 365	No change
Describe Microsoft 365 pricing, licensing, and support	Describe Microsoft 365 pricing, licensing, and support	No % change
Identify Microsoft 365 pricing and billing management options	Identify Microsoft 365 pricing and billing management options	No change
Identify licensing options available in Microsoft 365	Identify licensing options available in Microsoft 365	No change
Identify support options for Microsoft 365 services	Identify support options for Microsoft 365 services	No change

Skills measured prior to April 15, 2024

Audience profile

This exam is designed for you, if you're looking to demonstrate foundational-level knowledge of cloud-based solutions to facilitate productivity and collaboration among

on-site, remote, and hybrid workers. As a candidate, you may:

- Have knowledge of cloud-based solutions.
- Be new to Microsoft 365.

You can use this exam to prepare for other Microsoft certifications, but it's not a prerequisite for the related ones.

As a candidate, you should be able to recommend Microsoft 365 solutions that address common organizational IT challenges. You should understand how Microsoft 365 solutions:

- Improve productivity
- Facilitate collaboration
- Optimize communications
- Help secure data
- Identity and facilitate compliance

You should be able to recommend solutions for:

- Endpoint and application management
- Desktop virtualization
- Automated operating system deployment
- Reporting and analytics

You should be familiar with Microsoft 365 licensing, deployment and migration assistance, and support options for organizations looking to maximize their investment in the cloud.

Skills at a glance

- Describe cloud concepts (5–10%)
- Describe Microsoft 365 apps and services (45–50%)
- Describe security, compliance, privacy, and trust in Microsoft 365 (25–30%)
- Describe Microsoft 365 pricing, licensing, and support (10–15%)

Describe cloud concepts (5–10%)

Describe the different types of cloud services available

- Describe Microsoft software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS) concepts and use cases
- Describe differences between Office 365 and Microsoft 365

Describe the benefits of and considerations for using cloud, hybrid, or on-premises services

- Describe public, private, and hybrid cloud models
- Compare costs and advantages of cloud, hybrid, and on-premises services
- Describe the concept of hybrid work and flexible work

Describe Microsoft 365 apps and services (45–50%)

Describe productivity solutions of Microsoft 365

- Describe the core productivity capabilities and benefits of Microsoft 365 including Microsoft Outlook and Microsoft Exchange, Microsoft 365 apps, and OneDrive
- Describe core Microsoft 365 Apps including Microsoft Word, Excel, PowerPoint, Outlook, and OneNote
- Describe work management capabilities of Microsoft 365 including Microsoft Project, Planner, Bookings, Forms, Lists, and To Do

Describe collaboration solutions of Microsoft 365

- Describe the collaboration benefits and capabilities of Microsoft 365 including Microsoft Exchange, Outlook, SharePoint, OneDrive, and Stream
- Describe the collaboration benefits and capabilities of Microsoft Teams and Teams Phone
- Describe the Microsoft Viva apps
- Describe the ways that you can extend Microsoft Teams by using collaborative apps

Describe endpoint modernization, management concepts, and deployment options in Microsoft 365

- Describe the endpoint management capabilities of Microsoft 365 including Microsoft Endpoint Manager (MEM), Intune, AutoPilot, and Configuration Manager with cloud attach
- Compare the differences between Windows 365 and Azure Virtual Desktop
- Describe the deployment and release models for Windows-as-a-Service (WaaS) including deployment rings
- Identify deployment and update channels for Microsoft 365 Apps

Describe analytics capabilities of Microsoft 365

- Describe the capabilities of Viva Insights
- Describe the capabilities of the Microsoft 365 Admin center and Microsoft 365 user portal
- Describe the reports available in the Microsoft 365 Admin center and other admin centers

Describe security, compliance, privacy, and trust in Microsoft 365 (25–30%)

Describe identity and access management solutions of Microsoft 365

- Describe the identity and access management capabilities of Microsoft Entra ID
- Describe cloud identity, on-premises identity, and hybrid identity concepts
- Describe how Microsoft uses methods such as multi-factor authentication (MFA), self-service password reset (SSPR), and conditional access, to keep identities, access, and data secure

Describe threat protection solutions of Microsoft 365

- Describe Microsoft 365 Defender, Defender for Endpoint, Defender for Office 365, Defender for Identity, Defender for Cloud Apps, and the Microsoft 365 Defender Portal

- Describe Microsoft Secure Score benefits and capabilities
- Describe how Microsoft 365 addresses the most common types of threats against endpoints, applications, and identities

Describe trust, privacy, risk, and compliance solutions of Microsoft 365

- Describe the Zero Trust Model
- Describe Microsoft Purview compliance solutions such as insider risk, auditing, and eDiscovery
- Describe Microsoft Purview Information Protection features such as sensitivity labels and data loss prevention
- Describe how Microsoft supports data residency to ensure regulatory compliance
- Describe the capabilities and benefits of Microsoft Priva

Describe Microsoft 365 pricing, licensing, and support (10–15%)

Identify Microsoft 365 pricing and billing management options

- Describe the pricing model for Microsoft cloud services including enterprise agreements, cloud solution providers, and direct billing
- Describe available billing and bill management options including billing frequency and methods of payment

Identify licensing options available in Microsoft 365

- Describe license management
- Describe the differences between base licensing and add-on licensing

Identify support options for Microsoft 365 services

- Describe how to create a support request for Microsoft 365 services
- Describe support options for Microsoft 365 services

- Describe service-level agreements (SLAs) including service credits
- Determine service health status by using the Microsoft 365 admin center or the Microsoft Entra admin center

Study guide for Exam PL-200: Microsoft Power Platform Functional Consultant

Article • 12/12/2023

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of January 12, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to January 12, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of January 12, 2024

Audience profile

As a candidate for this exam, you:

- Perform discovery.
- Capture requirements.
- Engage subject matter experts and stakeholders.

- Configure business solutions by using Microsoft Power Platform tools and components.

You create:

- Application enhancements
- Tailored user experiences
- Process automation

As a candidate, you implement the design provided by and in collaboration with a solution architect and the standards, branding, and artifacts established by user experience designers. You implement integrations with third-party applications and services. You generate training documentation, and you facilitate training and enablement.

You must interact and effectively communicate with members of a delivery team, stakeholders, and customer teams while championing for their success. You must have an understanding of application lifecycle management (ALM) practices for Microsoft Power Platform and quality assurance.

You should be familiar with using the following Microsoft Power Platform components:

- Microsoft Dataverse
- Microsoft Power Apps
- Microsoft Power Automate cloud flows
- Microsoft Power Pages
- Microsoft Power Platform environments

You should have proficiency in:

- Data modeling
- User experience design
- Requirements analysis

Skills at a glance

- Configure Microsoft Dataverse (25–30%)
- Create apps by using Microsoft Power Apps (25–30%)

- Create and manage logic and process automation (25–30%)
- Manage environments (15–20%)

Configure Microsoft Dataverse (25–30%)

Manage the data model

- Create or modify standard, activity, or virtual tables
- Create new tables or modify existing tables
- Determine which type of relationship to implement, including one-to-many and many-to-many
- Configure table relationships including behaviors and cascading rules
- Create new or modify existing columns, including calculated, rollup, and formula
- Configure table properties

Manage Dataverse

- Configure Dataverse search, and manage the search index
- Manage auditing
- Describe options for importing and exporting data
- Configure duplicate detection settings
- Configure bulk deletion

Configure security settings

- Manage business units
- Create and manage security roles
- Create and manage users and teams
- Create and manage column security
- Configure hierarchy security
- Configure Microsoft Entra ID group teams

Create apps by using Microsoft Power Apps (25–30%)

Create model-driven apps

- Create and configure multiple form types
- Use controls in the form designer
- Create and configure views
- Configure custom pages
- Configure modern commanding by using Power Fx
- Embed a canvas app in a model-driven app form
- Add Microsoft Power BI dashboards and reports in a model-driven app

Describe canvas apps

- Describe canvas app structure
- Describe form navigation, formulas, variables and collections, and error handling
- Describe how Microsoft Power Automate flows are called from a canvas app

Build Microsoft Power Pages

- Configure pages, forms, and navigation
- Describe advanced Power Pages features, including document management, search, multi-step forms, and Power BI
- Configure website security including web roles and page access
- Describe use cases for templates
- Describe authentication options

Create and manage logic and process automation (25–30%)

Create and manage cloud flows

- Describe types of flows, use cases, and flow components, including when to use a classic workflow
- Describe components of a connector
- Implement logic controls including branches, loops, conditions, error handling, and variables
- Implement dynamic content and expressions
- Work with the Dataverse connector
- Manage and troubleshoot flows

Create and manage business process flows

- Configure a business process flow
- Add stages, workflows, and flow steps to a business process flow
- Manage the business process flow table for a business process flow

Create and manage classic Dataverse workflows

- Configure a workflow
- Troubleshoot workflows
- Manage workflow logs

Implement low-code logic

- Configure low-code plug-ins
- Write and use Power Fx functions and formulas
- Create and configure business rules

Manage environments (15–20%)

Participate in application lifecycle management (ALM)

- Describe use cases for app checker and solution checker

- Create and manage Dataverse solutions
- Describe the difference between managed and unmanaged Dataverse solutions
- Manage Microsoft Power Platform environments for development
- Import and export Dataverse solutions

Manage interoperability with other services

- Configure email integration
- Configure Microsoft SharePoint integration
- Describe options for document management
- Work with Microsoft Word templates

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

 Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Power Platform documentation Power BI documentation Microsoft Power Apps documentation Power Automate documentation Microsoft Power Virtual Agents documentation AI Builder documentation
Find videos	Exam Readiness Zone #LessCodeMorePower Browse other Microsoft Learn shows
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Power Platform Community (microsoft.com) ↗

Study resources	Links to learning and documentation
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to January 12, 2024	Skill area as of January 12, 2024	Change
Audience profile		Major
Configure Microsoft Dataverse	Configure Microsoft Dataverse	% increased
Manage a data model	Manage the data model	Major
Configure Dataverse	Manage Dataverse	Minor
Configure security settings	Configure security settings	Major
Create apps by using Microsoft Power Apps	Create apps by using Microsoft Power Apps	% increased
Create model-driven apps	Create model-driven apps	Major
Define use cases for canvas apps	Describe canvas apps	Minor
Build Microsoft Power Pages	Build Microsoft Power Pages	Minor
Create and manage process automation	Create and manage logic and process automation	% increased
Create cloud flows	Create and manage cloud flows	Major
Create and manage business process flows	Create and manage business process flows	Minor
Create classic workflows	Create and manage classic Dataverse workflows	Minor
	Implement low-code logic	Added

Skill area prior to January 12, 2024	Skill area as of January 12, 2024	Change
Describe Microsoft Power Virtual Agents		Removed
Identify use cases for Power Virtual Agents		Removed
Identify components of Power Virtual Agents		Removed
Import and visualize data by using dataflows and Power BI		Removed
Consume Power BI in Power Platform		Removed
Create and use dataflows		Removed
Define an environment strategy	Manage environments	% increased
Participate in Application Lifecycle Management (ALM)	Participate in application lifecycle management (ALM)	Major
Describe interoperability with other services	Manage interoperability with other services	Major

Skills measured prior to January 12, 2024

Audience profile

As a candidate for this exam, you:

- Perform discovery.
- Capture requirements.
- Engage subject matter experts and stakeholders.
- Configure Microsoft Power Platform solutions and apps.

You create:

- Application enhancements
- Tailored user experiences
- Process automation
- Reporting

As a candidate, you implement the design provided by and in collaboration with a solution architect and the standards, branding, and artifacts established by user experience designers. You implement the integration points to connect to third-party applications and services. You generate training documentation and facilitate training and enablement.

You must interact and effectively communicate with members of a delivery team, stakeholders, and customer teams while championing for their success. You must have an understanding of application lifecycle management (ALM) practices for Microsoft Power Platform and quality assurance.

You should be familiar with using Microsoft Power Platform components to work with:

- Microsoft Teams
- Microsoft Excel
- Microsoft Word

You should have proficiency in:

- Data modeling
- User experience design
- Requirements analysis
- Process analysis

As a candidate, you should have two years' experience.

Skills at a glance

- Configure Microsoft Dataverse (20–25%)
- Create apps by using Microsoft Power Apps (15–20%)
- Create and manage process automation (20–25%)
- Describe Microsoft Power Virtual Agents (10–15%)
- Import and visualize data by using dataflows and Power BI (10–15%)
- Define an environment strategy (10–15%)

Configure Microsoft Dataverse (20–25%)

Manage a data model

- Create or modify standard, activity, or virtual tables
- Configure table ownership
- Create new tables or modify existing tables
- Determine which type of relationships to implement including 1:N and N:N
- Configure table relationship behaviors including cascading rules
- Create new relationships or modify existing relationships
- Create new columns or modify existing columns
- Create alternate keys for tables
- Configure table properties
- Configure connection roles

Configure Dataverse

- Configure Dataverse search
- Configure auditing
- Perform data management tasks including import, export, and bulk deletion
- Configure duplicate detection settings

Configure security settings

- Create and manage business units
- Create and manage security roles
- Create and manage users and teams
- Create and manage column security
- Configure hierarchy security
- Configure Microsoft Entra ID group teams
- Manage sharing

- Diagnose security issues

Create apps by using Microsoft Power Apps (15–20%)

Create model-driven apps

- Create and configure multiple form types
- Use specialized form components
- Create and configure views
- Determine which reporting options to use including embedding Microsoft Power BI or using Fetch-based reports
- Configure site maps and compose model-driven apps
- Share a model-driven app
- Configure custom pages
- Create and configure business rules
- Configure modern commanding

Define use cases for canvas apps

- Identify when to use a canvas app
- Describe canvas app structure
- Describe form navigation, formulas, variables and collections, and error handling
- Run Microsoft Power Automate flows based on actions that occur in a canvas app

Build Microsoft Power Pages

- Configure pages, forms, and navigation
- Configure advanced Power Pages features
- Configure website security including web roles and page access
- Describe use cases for templates
- Implement registration options

Create and manage process automation (20–25%)

Create cloud flows

- Describe types of flows, use cases, and flow components including when to use a classic workflow
- Describe common connectors, triggers, and actions
- Implement logic controls including branches, loops, conditions, error handling, and variables
- Implement dynamic content and expressions
- Test and troubleshoot flows

Create and manage business process flows

- Configure a business process flow
- Add stages, workflows, and action steps to a business process flow
- Manage the business process flow table for a business process flow
- Configure advanced logic

Create classic workflows

- Configure a workflow
- Troubleshoot workflows
- Manage workflow logs

Describe Microsoft Power Virtual Agents (10–15%)

Identify use cases for Power Virtual Agents

- Identify chatbot environments
- Describe chatbot skills and AI capabilities
- Identify options for security

Identify components of Power Virtual Agents

- Describe topics
- Describe entities
- Identify use cases for fallback topics

Import and visualize data by using dataflows and Power BI (10–15%)

Consume Power BI in Microsoft Power Platform

- Add Power BI tiles to model-driven apps and canvas apps
- Add canvas apps to a Power BI dashboard
- Trigger Power Automate flows from Power BI alerts
- Use Power BI in Power Pages

Create and use dataflows

- Import data to Dataverse using Power Query
- Schedule dataflow runs
- Describe Power Fx

Define an environment strategy (10–15%)

Participate in application lifecycle management (ALM)

- Describe use cases for App checker and Solution checker
- Create and manage solutions
- Describe the difference between managed and unmanaged solutions

Describe interoperability with other services

- Add apps to Microsoft Teams

- Create Teams channels
- Identify when to use the on-premises data gateway

Study guide for Exam PL-300: Microsoft Power BI Data Analyst

Article • 09/20/2024

Purpose of this document

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 Expand table

Useful links	Description
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Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
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the English version is updated. Although Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 21, 2024

Audience profile

As a candidate for this exam, you should deliver actionable insights by working with available data and applying domain expertise. You should:

- Provide meaningful business value through easy-to-comprehend data visualizations.
- Enable others to perform self-service analytics.

As a Power BI data analyst, you work closely with business stakeholders to identify business requirements. You collaborate with analytics engineers and data engineers to identify and acquire data. You use Power BI to:

- Prepare the data
- Model the data
- Visualize and analyze data
- Manage and secure Power BI

You should be proficient at using Power Query and Data Analysis Expressions (DAX).

Skills at a glance

- Prepare the data (25–30%)
- Model the data (25–30%)
- Visualize and analyze the data (25–30%)
- Manage and secure Power BI (15–20%)

Prepare the data (25–30%)

Get or connect to data

- Identify and connect to data sources or a shared semantic model
- Change data source settings, including credentials and privacy levels
- Choose between DirectQuery and Import
- Create and modify parameters

Profile and clean the data

- Evaluate data, including data statistics and column properties
- Resolve inconsistencies, unexpected or null values, and data quality issues
- Resolve data import errors

Transform and load the data

- Select appropriate column data types
- Create and transform columns
- Group and aggregate rows
- Pivot, unpivot, and transpose data
- Convert semi-structured data to a table
- Create fact tables and dimension tables
- Identify when to use reference or duplicate queries and the resulting impact

- Merge and append queries
- Identify and create appropriate keys for relationships
- Configure data loading for queries

Model the data (25–30%)

Design and implement a data model

- Configure table and column properties
- Implement role-playing dimensions
- Define a relationship's cardinality and cross-filter direction
- Create a common date table
- Identify use cases for calculated columns and calculated tables

Create model calculations by using DAX

- Create single aggregation measures
- Use the CALCULATE function
- Implement time intelligence measures
- Use basic statistical functions
- Create semi-additive measures
- Create a measure by using quick measures
- Create calculated tables or columns
- Create calculation groups

Optimize model performance

- Improve performance by identifying and removing unnecessary rows and columns
- Identify poorly performing measures, relationships, and visuals by using Performance Analyzer and DAX query view
- Improve performance by reducing granularity

Visualize and analyze the data (25–30%)

Create reports

- Select an appropriate visual
- Format and configure visuals
- Apply and customize a theme
- Apply conditional formatting
- Apply slicing and filtering
- Configure the report page
- Choose when to use a paginated report
- Create visual calculations by using DAX

Enhance reports for usability and storytelling

- Configure bookmarks
- Create custom tooltips
- Edit and configure interactions between visuals
- Configure navigation for a report
- Apply sorting to visuals
- Configure sync slicers
- Group and layer visuals by using the Selection pane
- Configure drillthrough navigation
- Configure export settings
- Design reports for mobile devices
- Enable personalized visuals in a report
- Design and configure Power BI reports for accessibility
- Configure automatic page refresh

Identify patterns and trends

- Use the Analyze feature in Power BI
- Use grouping, binning, and clustering
- Use AI visuals
- Use reference lines, error bars, and forecasting
- Detect outliers and anomalies

Manage and secure Power BI (15–20%)

Create and manage workspaces and assets

- Create and configure a workspace
- Configure and update a workspace app
- Publish, import, or update items in a workspace
- Create dashboards
- Choose a distribution method
- Configure subscriptions and data alerts
- Promote or certify Power BI content
- Identify when a gateway is required
- Configure a semantic model scheduled refresh

Secure and govern Power BI items

- Assign workspace roles
- Configure item-level access
- Configure access to semantic models
- Implement row-level security roles
- Configure row-level security group membership
- Apply sensitivity labels

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[+] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Power BI documentation Microsoft Power Apps documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Power Apps - Power Platform Community ↗ Power Query - Power Platform Community ↗ Building Power Apps - Power Platform Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Microsoft Learn #LessCodeMorePower Shows Browse other Microsoft Learn shows

Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill area prior to October 21, 2024	Skill area as of October 21, 2024	Change
Audience profile		Major
Prepare the data	Prepare the data	No change

Skill area prior to October 21, 2024	Skill area as of October 21, 2024	Change
Get data from data sources	Get or connect to data	Minor
Clean the data	Profile and clean the data	Minor
Transform and load the data	Transform and load the data	Major
Model the data	Model the data	No change
Design and implement a data model	Design and implement a data model	Major
Create model calculations by using DAX	Create model calculations by using DAX	Minor
Optimize model performance	Optimize model performance	Minor
Visualize and analyze the data	Visualize and analyze the data	No change
Create reports	Create reports	Major
Enhance reports for usability and storytelling	Enhance reports for usability and storytelling	Major
Identify patterns and trends	Identify patterns and trends	Major
Deploy and maintain items	Manage and secure Power BI	Minor
Create and manage workspaces and items	Create and manage workspaces and assets	Minor
Manage semantic models		Deleted
	Secure and govern Power BI items	New

Study guide for Exam PL-400: Microsoft Power Platform Developer

Article • 05/20/2024

Purpose of this document

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 Expand table

Useful links	Description
Review the skills measured as of June 20, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to June 20, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice	Test your skills with practice questions to help you prepare for the

Useful links	Description
Assessment	exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of June 20, 2024

Audience profile

As a candidate for this exam, you design, develop, test, and troubleshoot solution components that use the extension points of Microsoft Power Platform. You use traditional code to solve challenges not appropriate for low code. You implement the parts of a business solution that include:

- Custom user experiences
- Custom business logic

- System integrations
- Data conversions
- Custom process automation
- Complex Power Fx formulas
- Workflow expressions

You must have:

- A strong applied knowledge of Microsoft Power Platform services, including in-depth understanding of its capabilities, boundaries, and constraints
- An applied knowledge of authentication, security, and application lifecycle management (ALM) practices for the Microsoft Power Platform
- An applied knowledge of Microsoft Power Platform developer tools including Power Platform CLI as part of the developer workflow

As a candidate, you should have development experience that includes Microsoft Power Platform services, JavaScript, JSON, TypeScript, C#, HTML, RESTful Web APIs, Visual Studio, Visual Studio Code, and Microsoft Azure.

Skills at a glance

- Create a technical design (10–15%)
- Build Power Platform solutions (10–15%)
- Implement Power Apps improvements (5–10%)
- Extend the user experience (10–15%)
- Extend the platform (40–45%)
- Develop integrations (5–10%)

Create a technical design (10–15%)

Design technical architecture

- Design the technical architecture for a solution
- Design the authentication and authorization strategy

- Determine whether requirements can be met with out-of-the-box functionality
- Determine where to run business logic including cloud computing, client-side processing, business rules, plug-ins, and Power Automate
- Determine when to use standard tables, virtual tables, elastic tables, or connectors
- Determine the impact of security features of the Microsoft Power Platform including data loss prevention (DLP) policies, security roles, teams, business units, and row sharing on your business solution

Design solution components

- Design Power Apps reusable components including canvas components, code components, and client scripting
- Design custom connectors
- Design Dataverse code components including plug-ins and Custom APIs
- Design automations including Power Automate cloud flows
- Design inbound and outbound integrations using Dataverse and Azure

Build Power Platform solutions (10–15%)

Configure and troubleshoot Microsoft Power Platform

- Troubleshoot operational security issues found in testing
- Configure Dataverse security roles to support code components
- Manage Microsoft Power Platform environments for development

Implement application lifecycle management (ALM)

- Manage solution dependencies
- Create and use environment variables
- Determine when to use unmanaged and managed solutions
- Manage solution layers

Implement Power Apps improvements (5–10%)

Implement advanced canvas apps features

- Implement complex Power Fx formulas
- Build reusable component libraries
- Utilize Power Automate cloud flows to implement business logic from a canvas app

Optimize and troubleshoot apps

- Troubleshoot canvas and model-driven app issues by using Monitor and other browser-based debugging tools
- Optimize canvas app performance including pre-loading data and query delegation
- Optimize model-driven app performance including forms and views

Extend the user experience (10–15%)

Apply business logic in model-driven apps using client scripting

- Build JavaScript code that targets the Client API object model
- Determine event handler registration approach
- Create client scripting that targets the Dataverse Web API
- Configure commands and buttons using Power Fx
- Configure commands and buttons using JavaScript

Create a Power Apps component framework (PCF) code component

- Demonstrate the use of the different code component lifecycle events
- Initialize a new code component
- Configure a code component manifest
- Implement component interfaces

- Package, deploy, and consume a component
- Configure and use Device, Utility, and Web API features in component logic

Extend the platform (40–45%)

Create a Dataverse plug-in

- Demonstrate the use of the different event execution pipeline stages
- Develop a plug-in that uses the execution context
- Develop a plug-in that implements business logic
- Implement Pre Images and Post Images to support plug-in logic
- Perform operations in plug-ins by using the Organization service
- Optimize plug-in performance
- Configure a Dataverse custom API message
- Register plug-in components by using the Plug-in Registration Tool
- Develop a plug-in that implements a custom API
- Configure Dataverse business events

Create custom connectors

- Create an Open API definition for an existing REST API
- Implement authentication for custom connectors
- Configure policy templates to modify connector behavior at runtime
- Import definitions from existing APIs including Open API definitions, Azure services, and GitHub
- Create a custom connector for an Azure service
- Develop an Azure Function to be used in a custom connector
- Extend the Open API definition for a custom connector
- Develop code for a custom connector to transform data

Use platform APIs

- Perform operations with the Dataverse Web API
- Perform operations with the Organization service
- Implement API limit retry policies
- Optimize for performance, concurrency, transactions, and bulk operations
- Perform authentication by using OAuth

Process workloads by using Azure Functions

- Process long-running operations by using Azure Functions
- Configure scheduled and event-driven triggers in Azure Functions
- Authenticate to Microsoft Power Platform by using managed identities

Configure Power Automate cloud flows

- Implement flow steps to use Dataverse connector actions and triggers
- Implement complex expressions in flow steps
- Manage sensitive input and output parameters
- Implement Azure Key Vault and Microsoft Entra ID service principals
- Implement flow control actions including error handling
- Configure trigger filter and retry policies
- Develop reusable logic by using child flows

Develop integrations (5–10%)

Publish and consume Dataverse events

- Publish a Dataverse event by using the IServiceProviderNotificationService
- Publish a Dataverse event by using the Plug-in Registration Tool
- Register service endpoints including webhooks, Azure Service Bus, and Azure Event Hub

- Recommend options for listening to Dataverse events

Implement data synchronization with Dataverse

- Perform data synchronization by using change tracking
- Develop code that utilizes alternate keys
- Utilize the UpsertRequest message to synchronize data

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[\[+\] Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Developer learning catalog - Power Apps Planning a Power Apps project Canvas apps Model-driven apps Power Pages Microsoft Dataverse Tables and metadata Dataverse developer Model-driven apps developer Canvas apps developer Implement healthy ALM using solutions Use Microsoft Power Platform Build Tools
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Power Apps - Power Platform Community ↗ Microsoft Power Automate - Power Platform Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	#LessCodeMorePower Shows Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to June 20, 2024	Skill area as of June 20, 2024	Change
Audience profile		Major
Create a technical design	Create a technical design	No % change
Design technical architecture	Design technical architecture	Minor
Design solution components	Design solution components	Minor
Configure Microsoft Dataverse	Build Power Platform solutions	No % change
Configure Microsoft Power Platform to support development	Configure and troubleshoot Microsoft Power Platform	Minor
Configure tables		Removed
Implement application lifecycle management (ALM)	Implement application lifecycle management (ALM)	Major
Create and configure Power Apps	Implement Power Apps improvements	No % change
Create model-driven apps		Removed
Create canvas apps	Implement advanced canvas apps features	Major
Manage and troubleshoot apps	Optimize and troubleshoot apps	Minor
Extend the user experience	Extend the user experience	No % change
Apply business logic using client scripting	Apply business logic in model-driven apps using client scripting	Major
Create a Power Apps Component Framework (PCF) component	Create a Power Apps component framework (PCF) code component	Minor

Skill area prior to June 20, 2024	Skill area as of June 20, 2024	Change
Extend the platform	Extend the platform	No % change
Create a Dataverse plug-in	Create a Dataverse plug-in	Minor
Create custom connectors	Create custom connectors	Minor
Use platform APIs	Use platform APIs	Minor
Process workloads by using Azure Functions	Process workloads by using Azure Functions	No change
Configure Power Automate cloud flows	Configure Power Automate cloud flows	Major
Develop integrations	Develop integrations	No % change
Publish and consume Dataverse events	Publish and consume Dataverse events	Minor
Implement data synchronization with Dataverse	Implement data synchronization with Dataverse	Minor

Skills measured prior to June 20, 2024

Audience profile

As a candidate for this exam, you design, develop, test, secure, and troubleshoot Microsoft Power Platform solutions. You implement components of a solution that include:

- Application enhancements
- Custom user experiences
- System integrations
- Data conversions
- Custom process automation

You must have:

- A strong applied knowledge of Microsoft Power Platform services, including in-depth understanding of its capabilities, boundaries, and constraints.

- A basic understanding of authentication, security, and application lifecycle management (ALM) practices for the Microsoft Power Platform.

As a candidate, you should have development experience that includes Microsoft Power Platform services, JavaScript, JSON, TypeScript, C#, HTML, RESTful Web APIs, and Microsoft Azure.

Skills at a glance

- Create a technical design (10–15%)
- Configure Microsoft Dataverse (15–20%)
- Create and configure Power Apps (10–15%)
- Extend the user experience (10–15%)
- Extend the platform (35–40%)
- Develop integrations (5–10%)

Create a technical design (10–15%)

Design technical architecture

- Design the technical architecture for a solution
- Design authentication and authorization strategy
- Determine whether requirements can be met with out-of-the-box functionality
- Determine when to use Logic Apps versus Microsoft Power Automate cloud flows
- Determine when to use serverless computing, plug-ins, or Power Automate
- Determine when to use standard tables, virtual tables, or connectors
- Describe security capabilities of the Microsoft Power Platform including data loss prevention (DLP) policies, security roles, teams, business units and row sharing

Design solution components

- Design a Microsoft Dataverse data model

- Design Power Apps reusable components including canvas components, code components, and client scripting
- Design custom connectors
- Design Dataverse code components including plug-ins and Custom APIs
- Design automations including Power Automate cloud flows and real-time workflows
- Design Azure inbound and outbound integrations

Configure Microsoft Dataverse (15–20%)

Configure Microsoft Power Platform to support development

- Troubleshoot operational security issues found in testing
- Configure Dataverse security roles and column-level security profiles
- Configure business units and teams
- Manage Microsoft Power Platform environments for development

Configure tables

- Configure table options
- Configure columns
- Configure relationships
- Configure business rules

Implement application lifecycle management (ALM)

- Create solutions and manage solution components
- Import and export solutions
- Manage solution dependencies
- Create and use environment variables
- Describe the difference between unmanaged and managed solutions

- Manage solution layers

Create and configure Power Apps (10–15%)

Create model-driven apps

- Create and configure a model-driven app
- Configure forms
- Configure views
- Configure commands and buttons using Power Fx
- Configure commands and buttons using JavaScript

Create canvas apps

- Create and configure a canvas app or a custom page
- Implement complex Power Fx formulas
- Build reusable component libraries
- Test an app by using Power Apps Test Studio
- Utilize Power Automate cloud flows to implement business logic from a canvas app

Manage and troubleshoot apps

- Troubleshoot canvas and model-driven app issues by using Monitor and other browser-based debugging tools
- Identify and resolve connector and API errors
- Optimize canvas app performance including pre-loading data and query delegation
- Optimize model-driven app performance including forms and views

Extend the user experience (10–15%)

Apply business logic using client scripting

- Create JavaScript code that targets the Client API object model
- Describe event handler registration options
- Create client scripting that targets the Dataverse Web API
- Describe the client API object model
- Determine when to use business rules or client scripting

Create a Power Apps Component Framework (PCF) code component

- Describe the code component lifecycle
- Initialize a new code component
- Configure a code component manifest
- Implement component interfaces
- Package, deploy, and consume a component
- Configure and use Device, Utility, and Web API features in component logic

Extend the platform (35–40%)

Create a Dataverse plug-in

- Describe the plug-in execution pipeline
- Describe the plug-in execution context
- Develop a plug-in that implements business logic
- Implement Pre Images and Post Images to support plug-in logic
- Perform operations in plug-ins by using the Organization service
- Optimize plug-in performance
- Configure a Dataverse Custom API message
- Register custom assemblies by using the Plug-in Registration Tool
- Develop a plug-in that implements a Custom API

Create custom connectors

- Create an Open API definition for a REST API
- Configure API security
- Use policy templates to modify connector behavior at runtime
- Import definitions from existing APIs including Open API definitions, Azure services, and GitHub
- Create a custom connector for an Azure service
- Create an Azure Function to be used in a custom connector
- Extend an Open API definition for a custom connector

Use platform APIs

- Perform operations with the Dataverse Web API
- Perform operations with the Organization service
- Implement API limit retry policies
- Optimize for performance, concurrency, transactions, and batching
- Perform authentication by using OAuth

Process workloads by using Azure Functions

- Process long-running operations by using Azure Functions
- Configure scheduled and event-driven triggers in Azure Functions
- Authenticate to Microsoft Power Platform by using managed identities

Configure Power Automate cloud flows

- Create and manage cloud flows
- Configure flow steps to use Dataverse connector actions and triggers
- Implement complex expressions in flow steps
- Manage sensitive input and output parameters

- Implement Azure Key Vault and Microsoft Entra ID service principals
- Describe flow control actions including error handling
- Add a cloud flow step to a business process flow
- Configure trigger filter and retry policies

Develop integrations (5–10%)

Publish and consume Dataverse events

- Publish a Dataverse event by using the `IServiceEndpointNotificationService`
- Publish a Dataverse event by using the Plug-in Registration Tool
- Register service endpoints including webhooks, Azure Service Bus, and Azure Event Hub
- Describe options for listening to Dataverse events

Implement data synchronization with Dataverse

- Describe synchronizing data by using change tracking
- Read table change records by using platform APIs
- Create and use alternate keys
- Use the `UpsertRequest` message to synchronize data

Study guide for Exam PL-500: Microsoft Power Automate RPA Developer

Article • 06/10/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of July 8, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 8, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
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Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 8, 2024

Audience profile

Audience Profile

As a candidate for this exam, you automate Windows-based, browser-based, and terminal-based applications that are time-consuming or contain repetitive processes. You use a mix of automation approaches like:

- UI
- API

- Database

You analyze, design, and implement automations by using Power Automate desktop flows and cloud flows. As a robotic process automation (RPA) developer, you use actions for logic and work with:

- Data
- Applications
- Services

You work with business stakeholders to optimize business workflows. You partner with administrators to deploy and support solutions in other environments.

Additionally, as a candidate, you should have experience with:

- The Windows desktop environment
- Scripting languages such as VBScript and JavaScript
- .NET Framework for use in custom actions
- Microsoft Dataverse

Skills at a glance

- Design automations (25–30%)
- Develop automations (45–50%)
- Deploy and manage automations (20–25%)

Design automations (25–30%)

Design automations using Power Automate features and capabilities

- Leverage the Power Automate ecosystem
- Differentiate between cloud flows and desktop flows
- Design automations using desktop flows and cloud flows
- Differentiate trigger types for cloud flows

- Differentiate options for interacting with target applications and browsers
- Differentiate the different methods for running a desktop flow
- Assess the ability to run cloud and desktop flows concurrently
- Recommend running desktop flows attended versus unattended
- Differentiate HTTP actions in cloud and desktop flows
- Assess if work queues are applicable for the automation
- Design custom actions

Design automations using other Microsoft Power Platform features and capabilities

- Design automations that include canvas and model-driven apps
- Design automations using connectors, custom connectors, connection references, and connections for cloud flows
- Design automations that include Microsoft Dataverse

Design automations that analyze and enhance data and documents

- Differentiate Microsoft AI options for processing documents in desktop and cloud flows
- Differentiate Microsoft AI options for processing data in desktop and cloud flows
- Recommend optical character recognition (OCR) capabilities in desktop flows
- Recommend Document Automation Toolkit for use in automation design

Design automations using scripting languages in desktop flows

- Design automations using scripting languages including PowerShell and Visual Basic Script (VBScript)
- Recommend automation use cases that use JavaScript
- Design an automation that uses the document object model (DOM)

Develop automations (45–50%)

Develop cloud flows

- Develop a cloud flow that calls a desktop flow
- Develop and use child cloud flows including passing and returning data
- Perform actions in cloud flows by calling external APIs
- Implement trigger conditions and concurrency in cloud flows
- Implement timeout and retry policies in cloud flows
- Implement data objects and data operations in cloud flows
- Perform text parsing including JSON, XML, and CSV in cloud flows

Develop desktop flows

- Implement UI options
- Implement datatables, lists, and custom objects in desktop flows
- Implement subflows in desktop flows
- Perform actions in desktop flows by calling external APIs
- Implement timeout and retry in desktop flows
- Implement data objects and data operations in desktop flows
- Perform text parsing including JSON, XML, and CSV in desktop flows
- Implement custom actions in desktop flows

Implement logic in cloud and desktop flows

- Implement flow control in cloud and desktop flows including loops
- Implement expressions in cloud flows
- Implement variable actions for cloud and desktop flows
- Implement secure input and output data in actions in cloud flows
- Implement secure variables in desktop flows
- Implement priority for desktop flows in a queue

- Implement exception handling blocks in cloud and desktop flows to handle system exceptions
- Implement error handling routines in cloud and desktop flows to handle business exceptions
- Implement work queues in cloud and desktop flows

Build custom connectors and implement connector configurations

- Build a custom connector
- Implement authentication for custom connectors
- Implement custom connector policy templates
- Develop code in a custom connector

Perform automation infrastructure management

- Recommend credential management practices
- Utilize on-premises data gateway to connect resources from cloud flows
- Build components in Microsoft Dataverse solutions

Test automations and finalize development efforts

- Test a cloud flow
- Test a desktop flow
- Utilize environment variables and configuration files to manage configurations
- Utilize debugging features in cloud and desktop flows

Deploy and manage automations (20–25%)

Perform target environment preparation

- Implement Microsoft Power Platform application lifecycle management (ALM)
- Differentiate credentials used for different environments

- Recommend how to deploy solution components to other environments
- Build virtual desktop environments for unattended desktop flow execution

Assess data loss prevention (DLP) policies for RPA execution

- Assess Microsoft Power Platform DLP policies
- Assess how DLP policies impact actions in cloud and desktop flows
- Assess how DLP policies apply to custom connectors

Implement access to RPA components

- Perform sharing of cloud and desktop flows
- Perform sharing of machines and machine groups
- Recommend security roles required to run and monitor cloud and desktop flows
- Implement service accounts and service principals

Implement machine groups and queues required for desktop flow automations

- Assess machine and machine group requirements
- Perform machine registration management
- Perform machine group management
- Implement load balancing of desktop flows by using machine groups and queues
- Perform operations on the run queue to manage desktop flows
- Analyze cloud and desktop flow run history from the Power Automate portal

Study resources

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Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Power Platform documentation Power Automate documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Power Platform Community (microsoft.com) ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone #LessCodeMorePower Shows

Change log

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[\[+\] Expand table](#)

Skill area prior to July 8, 2024	Skill area as of July 8, 2024	Change
Audience profile		Major
Design automations	Design automations	% decrease
Describe Power Automate features and capabilities	Design automations using Power Automate features and capabilities	Major
Work with other Microsoft Power Platform offerings	Design automations using other Microsoft Power Platform features and capabilities	Minor
Record and analyze processes		Removed
Identify how to analyze and enhance data and documents	Design automations that analyze and enhance data and documents	Minor
Identify use cases for scripting	Design automations using scripting	Minor

Skill area prior to July 8, 2024	Skill area as of July 8, 2024	Change
languages in desktop flows	languages in desktop flows	
Develop automations	Develop automations	% increase
Create and manage cloud flows	Develop cloud flows	Minor
Create and manage desktop flows	Develop desktop flows	Major
Implement logic in cloud and desktop flows	Implement logic in cloud and desktop flows	Minor
Create and configure custom connectors	Build custom connectors and implement connector configurations	Minor
Manage automation infrastructure	Perform automation infrastructure management	Minor
Test automations and finalize development efforts	Test automations and finalize development efforts	Minor
Deploy and manage automations	Deploy and manage automations	No % change
Prepare target environments	Perform target environment preparation	Minor
Evaluate data loss prevention (DLP) policies for RPA execution	Assess data loss prevention (DLP) policies for RPA execution	Minor
Manage access to RPA components	Implement access to RPA components	Minor
Configure machine groups and queues required for desktop flow automations	Implement machine groups and queues required for desktop flow automations	Minor

Skills measured prior to July 8, 2024

Audience profile

Candidates for this exam automate Windows-based, browser-based, and terminal-based applications that are time-consuming or contain repetitive processes. They use a mix of approaches like UI, API, and database automations.

Candidates analyze and design processes for automation and implement automations using Power Automate for desktop and Power Automate cloud flows. RPA developers use actions for logic and to work with data, applications, and services.

Candidates work with business stakeholders to optimize business workflows. They work with administrators to deploy solutions to other environments and support solutions.

Additionally, candidates should have experience with the Windows desktop environment, scripting languages, Power Automate cloud and desktop flows, AI Builder, Process Advisor, and Microsoft Dataverse.

- Design automations (30–35%)
- Develop automations (40–45%)
- Deploy and manage automations (20–25%)

Design automations (30–35%)

Describe Power Automate features and capabilities

- Identify the Power Automate ecosystem and offerings
- Identify the differences among cloud flows, and desktop flows, and business process flows
- Identify when to use a desktop flow or a cloud flow, and when to use them together
- Identify the different trigger types for cloud flows
- Identify options for interacting with target applications and browsers
- Identify the different methods for running a desktop flow
- Identify considerations for running cloud and desktop flows concurrently
- Identify considerations for running desktop flows attended versus unattended
- Differentiate HTTP actions in cloud and desktop flows

Work with other Microsoft Power Platform offerings

- Identify how canvas apps and model-driven apps work with automation
- Identify use cases for connectors, custom connectors, connection references, and connections for cloud flows
- Identify use cases for Microsoft Dataverse

Record and analyze processes

- Create processes in Process Advisor
- Identify the steps for Process mining
- Identify the steps for Task mining
- Identify the use cases for Process Advisor

Identify how to analyze and enhance data and documents

- Identify Microsoft AI options for processing documents in desktop and cloud flows
- Identify Microsoft AI options for processing data in desktop and cloud flows
- Identify optical character recognition (OCR) capabilities in desktop flows
- Identify use cases for the Document Automation Toolkit

Identify use cases for scripting languages in desktop flows

- Identify use cases for scripting languages including PowerShell and VBScript
- Identify use cases for application-specific macro languages including VBA in Microsoft Excel and Office Scripts
- Identify use cases for using JavaScript
- Identify how to use the document object model (DOM) in automation

Develop automations (40–45%)

Create and manage cloud flows

- Create a cloud flow
- Create a cloud flow that calls a desktop flow
- Create and use child cloud flows including how to pass data to a child cloud flow and return data back
- Perform actions in cloud flows by calling external APIs
- Configure filter conditions and concurrency in cloud flows

- Configure timeout and retry policies in cloud flows
- Implement data objects in cloud flows
- Identify common processes for parsing text including JSON, XML, and CSV in cloud flows
- Configure cloud flow action to run Microsoft Office Scripts

Create and manage desktop flows

- Create desktop flows to launch, connect to, and authenticate target application
- Configure user interface (UI) options
- Configure datatables, lists, and custom objects in desktop flows
- Implement subflows in desktop flows
- Add desktop actions to exit from target applications
- Perform actions in desktop flows by calling external APIs
- Configure timeout and retry in desktop flows
- Implement data objects in desktop flows
- Identify common processes for parsing text including JSON, XML, and CSV in desktop flows

Implement logic in cloud and desktop flows

- Configure flow control in cloud and desktop flows including loops
- Configure expressions in cloud flows
- Configure variable actions for cloud and desktop flows
- Configure secure input and output data in actions in cloud flows
- Configure secure variables in desktop flows
- Configure priority for desktop flows in a queue
- Create exception handling blocks in cloud and desktop flows to handle system exceptions

- Create error handling routines in cloud and desktop flows to handle business exceptions
- Configure document processing by using AI Builder

Create and configure custom connectors

- Create a custom connector
- Implement authentication for custom connectors
- Identify custom connector policy templates
- Write code in a custom connector

Manage automation infrastructure

- Configure credential management
- Connect cloud flows to on-premises data by using the on-premises data gateway
- Create and manage components in Microsoft Dataverse solutions

Test automations and finalize development efforts

- Run and test a cloud flow
- Run and test a desktop flow
- Manage configurations by using environment variables and configuration files
- Debug solutions by using Power Automate cloud and desktop flows debugging features

Deploy and manage automations (20–25%)

Prepare target environments

- Implement Microsoft Power Platform application lifecycle management (ALM)
- Differentiate credentials used for different environments
- Deploy RPA solutions to other environments

- Prepare virtual desktop environments for unattended desktop flow execution

Evaluate data loss prevention (DLP) policies for RPA execution

- Identify Microsoft Power Platform data loss prevention (DLP) policies
- Identify how DLP policies impact actions in cloud and desktop flows
- Identify how DLP policies apply to custom connectors

Manage access to RPA components

- Share a cloud flow
- Share a desktop flow
- Share machines and machine groups
- Identify security roles required to run and monitor cloud and desktop flows
- Create service accounts and service principals

Configure machine groups and queues required for desktop flow automations

- Identify use cases for and capabilities of machines and machine groups
- Manage machine registrations
- Create and manage machine groups
- Implement load balancing of desktop flows by using machine groups and queues
- Work with queues and queue operations for desktop flows
- Evaluate cloud and desktop flow run history from the Power Automate portal

Study guide for PL-600: Microsoft Power Platform Solution Architect

Article • 09/19/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of September 23, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to September 23, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of September 23, 2024

Audience profile

As a candidate for this exam, you should have solution architecture experience across functional and technical disciplines of Microsoft Power Platform. You should be able to facilitate design decisions based on recommended practices across development, configuration, integration, infrastructure, security, licensing, storage, and change management.

In this role, you are required to architect and ensure the successful implementation of appropriate end-to-end solutions to address business and technical needs of organizations.

You should have knowledge of:

- Microsoft Power Platform
- Dynamics 365 customer engagement apps
- Related Microsoft cloud solutions
- Other third-party technologies

Candidates should be aware of Power Platform Well-Architected framework and ideally have used it for implementation.

Skills at a glance

- Perform solution envisioning and requirement analysis (45–50%)
- Architect a solution (35–40%)
- Implement the solution (15–20%)

Perform solution envisioning and requirement analysis (45–50%)

Initiate solution planning

- Evaluate business requirements
- Identify Microsoft Power Platform solution components
- Identify and select components from existing apps, Microsoft Dynamics 365 apps, AppSource apps, Azure, third-party components, and independent software vendors (ISVs)
- Identify and estimate migration and integration efforts and alternatives

Identify organization information and metrics

- Guide the process of collecting the current state business processes

- Assess an organization's risk factors
- Review key success criteria

Identify existing solutions and systems

- Evaluate an organization's enterprise architecture
- Identify data sources needed for a solution
- Define use cases and quality standards for existing data

Capture requirements

- Refine high-level requirements
- Identify functional requirements
- Identify non-functional requirements
- Guide the process of designing and improving the future state business processes

Perform fit/gap analyses

- Determine the feasibility of meeting specific requirements
- Evaluate Dynamics 365 apps and AppSource options to solve requirements
- Address functional gaps through alternate solutions
- Determine the scope for a solution

Architect a solution (35–40%)

Lead the design process

- Design the solution topology
- Identify customization approach for existing apps
- Design and validate user experience prototypes
- Identify opportunities for component reuse
- Communicate system design visually

- Design a data migration strategy
- Design apps by grouping required features based on role or task
- Design a data visualization strategy
- Design an automation strategy
- Design environment strategy

Design the data model

- Design relationships and relationship behaviors
- Determine when to connect to external data versus import data
- Design data models to address complex sets of requirements

Design integrations

- Design collaboration suite integration including Microsoft Teams and SharePoint
- Design integrations between Microsoft Power Platform solutions and Dynamics 365 apps
- Design integrations with an organization's existing systems
- Design third-party integrations
- Design an authentication strategy
- Design a business continuity strategy
- Design robotic process automation (RPA)
- Assess possibilities of networking to support integrations

Design the security model

- Design the business unit and team structure
- Design security roles
- Design column and row level security
- Design security models to address complex sets of requirements

- Determine security model management policies and processes
- Identify Microsoft Entra ID groups and app registrations required to support a solution
- Identify data loss prevention (DLP) policies for a solution
- Determine how external users will access a solution

Implement the solution (15–20%)

Validate the solution design

- Evaluate detailed designs and implementation
- Review the security across the solution including business rules, user roles, Entra ID requirements and security boundaries
- Ensure that the solution conforms to API limits
- Assess the solution performance and impact on resources
- Resolve automation conflicts
- Resolve integration conflicts

Support go-live

- Identify and resolve potential and actual performance issues
- Escalate and provide options to resolve data migration issues
- Resolve any identified issues with deployment plans
- Identify factors that impact go-live readiness and remediate issues

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Power Platform documentation Center of Excellence (CoE) Starter kit Videos: Power Apps and Power Automate Architecture Series ↗ Real-world architecture examples Azure ExpressRoute with Power Platform
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Power Apps - Power Platform Community ↗ Microsoft Power Automate - Power Platform Community ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	#LessCodeMorePower Shows Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[+] Expand table

Skill area prior to September 23, 2024	Skill area as of September 23, 2024	Change
Audience profile		Minor
Perform solution envisioning and requirement analysis	Perform solution envisioning and requirement analysis	No % change
Initiate solution planning	Initiate solution planning	Minor
Identify organization information and metrics	Identify organization information and metrics	Minor
Identify existing solutions and systems	Identify existing solutions and systems	Minor
Capture requirements	Capture requirements	Minor
Perform fit/gap analyses	Perform fit/gap analyses	No change

Skill area prior to September 23, 2024	Skill area as of September 23, 2024	Change
Architect a solution	Architect a solution	No % change
Lead the design process	Lead the design process	Minor
Design the data model	Design the data model	Major
Design integrations	Design integrations	Minor
Design the security model	Design the security model	No change
Implement the solution	Implement the solution	No % change
Validate the solution design	Validate the solution design	Minor
Support go-live	Support go-live	Minor

Skills measured prior to September 23, 2024

Audience profile

As a candidate for this exam, you're a solution architect who:

- Leads successful implementations.
- Focuses on how solutions address the broader business and technical needs of organizations.

This role requires you to have the ability to identify opportunities to solve business problems.

You should have functional and technical knowledge of:

- Microsoft Power Platform
- Dynamics 365 customer engagement apps
- Related Microsoft cloud solutions
- Other third-party technologies

You apply knowledge and experience throughout an engagement. You perform proactive and preventative work to:

- Increase the value of the customer's investment.
- Promote organizational health.

As a candidate for this exam, you should have experience across functional and technical disciplines of Microsoft Power Platform. You should be able to facilitate design decisions across development, configuration, integration, infrastructure, security, licensing, availability, storage, and change management. In this role, you balance project's business needs while meeting functional and non-functional requirements.

Skills at a glance

- Perform solution envisioning and requirement analysis (35–40%)
- Architect a solution (40–45%)
- Implement the solution (15–20%)

Perform solution envisioning and requirement analysis (35–40%)

Initiate solution planning

- Evaluate business requirements
- Identify Microsoft Power Platform solution components
- Identify other components including existing apps, Microsoft Dynamics 365 apps, AppSource apps, third-party components, and components from independent software vendors (ISVs)
- Identify and estimate migration and integration efforts

Identify organization information and metrics

- Identify desired high-level organizational business processes
- Identify business process improvement opportunities
- Assess an organization's risk factors
- Review key success criteria

Identify existing solutions and systems

- Evaluate an organization's enterprise architecture
- Identify data sources needed for a solution
- Define use cases and quality standards for existing data
- Identify and document an organization's existing business processes

Capture requirements

- Refine high-level requirements
- Identify functional requirements
- Identify non-functional requirements
- Confirm that requirements meet an organization's goals
- Identify and document an organization's desired business processes

Perform fit/gap analyses

- Determine the feasibility of meeting specific requirements
- Evaluate Dynamics 365 apps and AppSource options to solve requirements
- Address functional gaps through alternate solutions
- Determine the scope for a solution

Architect a solution (40–45%)

Lead the design process

- Design the solution topology
- Design customizations for existing apps
- Design and validate user experience prototypes
- Identify opportunities for component reuse
- Communicate system design visually

- Design application lifecycle management (ALM) processes
- Design a data migration strategy
- Design apps by grouping required features based on role or task
- Design a data visualization strategy
- Design an automation strategy that uses Power Automate
- Design environment strategy

Design the data model

- Design tables and columns
- Design reference and configuration data
- Design relationships and relationship behaviors
- Determine when to connect to external data versus import data
- Design data models to address complex sets of requirements

Design integrations

- Design collaboration integrations
- Design integrations between Microsoft Power Platform solutions and Dynamics 365 apps
- Design integrations with an organization's existing systems
- Design third-party integrations
- Design an authentication strategy
- Design a business continuity strategy
- Identify opportunities to integrate and extend Microsoft Power Platform solutions by using Microsoft Azure
- Design robotic process automation (RPA)
- Design networking

Design the security model

- Design the business unit and team structure
- Design security roles
- Design column and row level security
- Design security models to address complex sets of requirements
- Determine security model management policies and processes
- Identify Microsoft Entra ID groups and app registrations required to support a solution
- Identify data loss prevention (DLP) policies for a solution
- Determine how external users will access a solution

Implement the solution (15–20%)

Validate the solution design

- Evaluate detail designs and implementation
- Validate security
- Ensure that the solution conforms to API limits
- Assess the solution performance and impact on resources
- Resolve automation conflicts
- Resolve integration conflicts

Support go-live

- Identify and resolve potential and actual performance issues
- Troubleshoot data migration
- Resolve any identified issues with deployment plans
- Identify factors that impact go-live readiness and remediate issues

Study guide for Exam PL-900: Microsoft Power Platform Fundamentals

Article • 06/24/2024

Purpose of this document

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Skills measured as of June 21, 2024

Audience profile

As a candidate for this exam, you aspire to understand how Microsoft Power Platform technologies can be used to:

- Develop tailored business solutions.
- Identify how Microsoft Dataverse supports the interoperability of Microsoft Power Platform.
- Accelerate business outcomes by using Microsoft Power Apps for low code/no code solutions.
- Improve processes by using Microsoft Power Automate and Process mining.
- Identify use cases for Microsoft Power Pages.

- Help make data-driven technology decisions by using Microsoft Power BI.
- Evaluate how Copilot can assist with each of these.

The exam is intended for you if you're seeking to start your journey building solutions with Microsoft Power Platform.

You can use this exam to prepare for role-based or specialty certifications, but it's not a prerequisite for any of them.

Skills at a glance

- Describe the business value of Microsoft Power Platform (20–25%)
- Identify foundational components of Microsoft Power Platform (10–15%)
- Demonstrate the capabilities of Power BI (10–15%)
- Demonstrate the capabilities of Power Apps (20–25%)
- Demonstrate the capabilities of Power Automate (10–15%)
- Demonstrate the capabilities of Power Pages (1–5%)
- Describe the AI authoring experience in Microsoft Power Platform (10–15%)

Describe the business value of Microsoft Power Platform (20–25%)

Describe the business value of Microsoft Power Platform services

- Describe the value of Microsoft Power Apps to build applications
- Describe the value of Microsoft Power Automate to automate processes
- Describe the value of Microsoft Power BI to gain insights into data
- Describe the value of Microsoft Power Pages to build websites
- Describe the value of connectors to integrate services and data
- Describe the value of Microsoft Dataverse to organize business data
- Describe the value of Copilots and generative AI features in Microsoft Power Platform

Describe the business value of extending business solutions by using Microsoft Power Platform

- Describe how Microsoft Power Platform apps work together with Microsoft Dynamics 365 apps
- Describe how Microsoft Power Platform business solutions work together with Microsoft 365 apps and services
- Describe how Microsoft Power Platform services work together
- Describe how Microsoft Power Platform works with Microsoft Teams

Describe Microsoft Power Platform administration and governance

- Describe the Microsoft Power Platform security model
- Describe environments
- Describe the different Microsoft Power Platform admin centers and portals
- Describe how Microsoft Power Platform supports data privacy and accessibility guidelines

Identify foundational components of Microsoft Power Platform (10–15%)

Describe Microsoft Dataverse

- Describe differences between traditional databases and Dataverse
- Describe tables, columns, and relationships in Dataverse
- Describe business logic in Dataverse

Describe connectors

- Describe the components of a connector
- Describe standard, premium, and custom connectors

Demonstrate the capabilities of Power BI (10–15%)

Identify basic Power BI components

- Describe Power BI Desktop and the Power BI service
- Compare and contrast dashboards, workspaces, reports, and paginated reports
- Describe how AI Insights helps identify anomalies and trends in data

Build a basic dashboard by using Power BI

- Create a Power BI report by adding visualizations
- Create a Power BI dashboard
- Add visualizations to dashboards by using Q&A
- Consume Power BI reports and dashboards

Demonstrate the capabilities of Power Apps (20–25%)

Identify basic Power Apps capabilities

- Describe the differences between canvas apps and model-driven apps
- Describe use cases for and capabilities of canvas apps
- Describe use cases for and capabilities of model-driven apps

Build a basic canvas app

- Connect to data sources by using connectors
- Create an app from data
- Add controls to canvas app screens
- Build responsive pages by dragging and dropping containers

Build a basic model-driven app

- Create a model-driven app from tables
- Modify forms
- Create and modify views

Demonstrate the capabilities of Power Automate (10–15%)

Identify basic Power Automate components

- Describe use cases for cloud and desktop flows
- Describe use cases for cloud flow templates
- Describe how Power Automate cloud flows use connector triggers and actions
- Describe Power Automate use cases for approvals, Microsoft Teams, Outlook, SharePoint, and Forms
- Describe the Power Automate apps including Power Automate for Desktop, Power Automate mobile, and the Power Automate portal
- Describe actions for Power Automate desktop flows
- Describe document processing in Power Automate
- Describe Process Mining and Task Mining

Build a basic Power Automate flow

- Create a cloud flow by using an instant, automated, or scheduled flow template
- Describe how to create cloud flows by using Copilot in Power Automate
- Modify a cloud flow
- Add flow steps to perform data operations
- Run a cloud flow
- Build a basic desktop flow by recording tasks

Demonstrate the capabilities of Power Pages (1–5%)

Describe the capabilities of Power Pages

- Describe use cases for Power Pages
- Describe use cases for templates
- Describe how to share data externally

- Describe use cases for creating sites by using Copilot in Power Pages

Describe the AI authoring experience in Microsoft Power Platform (10–15%)

Describe Copilot Studio

- Describe use cases for Copilot Studio
- Describe the purpose of topics, entities, and actions
- Create a topic by using Copilot Studio
- Describe the process of building bots by using Copilot Studio

Describe the capabilities of AI Builder

- Describe the business value of AI Builder
- Describe use cases for AI Builder
- Describe the lifecycle to create an AI Builder model

Study resources

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[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft Power Platform documentation Power BI documentation Microsoft Power Apps documentation Power Automate documentation Microsoft Power Virtual Agents documentation
Ask a question	Microsoft Q&A Microsoft Docs

Study resources	Links to learning and documentation
Get community support	Power Platform Community (microsoft.com) ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	#LessCodeMorePower Shows Browse other Microsoft Learn shows

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[\[+\] Expand table](#)

Skill area prior to June 21, 2024	Skill area as of June 21, 2024	Change
Audience profile		No change
Describe the business value of Microsoft Power Platform	Describe the business value of Microsoft Power Platform	No % change
Describe the business value of Microsoft Power Platform services	Describe the business value of Microsoft Power Platform services	No change
Describe the business value of extending business solutions by using Microsoft Power Platform	Describe the business value of extending business solutions by using Microsoft Power Platform	Minor
Describe Microsoft Power Platform administration and governance	Describe Microsoft Power Platform administration and governance	No change
Identify foundational components of Microsoft Power Platform	Identify foundational components of Microsoft Power Platform	No % change
Describe Microsoft Dataverse	Describe Microsoft Dataverse	No change
Describe connectors	Describe connectors	No change
Demonstrate the capabilities of Power	Demonstrate the capabilities of Power	No %

Skill area prior to June 21, 2024	Skill area as of June 21, 2024	Change
BI	BI	change
Identify basic Power BI components	Identify basic Power BI components	No change
Build a basic dashboard by using Power BI	Build a basic dashboard by using Power BI	No change
Demonstrate the capabilities of Power Apps	Demonstrate the capabilities of Power Apps	No % change
Identify basic Power Apps capabilities	Identify basic Power Apps capabilities	No change
Build a basic canvas app	Build a basic canvas app	No change
Build a basic model-driven app	Build a basic model-driven app	No change
Demonstrate the capabilities of Power Automate	Demonstrate the capabilities of Power Automate	No % change
Identify basic Power Automate components	Identify basic Power Automate components	No change
Build a basic Power Automate flow	Build a basic Power Automate flow	No change
Demonstrate the capabilities of Power Pages	Demonstrate the capabilities of Power Pages	No % change
Describe the capabilities of Power Pages	Describe the capabilities of Power Pages	No change
Describe the AI authoring experience in Microsoft Power Platform	Describe the AI authoring experience in Microsoft Power Platform	No % change
Describe Copilot Studio	Describe Copilot Studio	No change
Describe the capabilities of AI Builder	Describe the capabilities of AI Builder	No change

Skills measured prior to June 21, 2024

Audience profile

As a candidate for this exam, you aspire to understand how Microsoft Power Platform technologies can be used to:

- Develop tailored business solutions.
- Identify how Microsoft Dataverse supports the interoperability of Microsoft Power Platform.
- Accelerate business outcomes by using Microsoft Power Apps for low code/no code solutions.
- Improve processes by using Microsoft Power Automate and Process mining.
- Identify use cases for Microsoft Power Pages.
- Help make data-driven technology decisions by using Microsoft Power BI.
- Evaluate how Copilot can assist with each of these.

The exam is intended for you if you're seeking to start your journey building solutions with Microsoft Power Platform.

You can use this exam to prepare for role-based or specialty certifications, but it's not a prerequisite for any of them.

Skills at a glance

- Describe the business value of Microsoft Power Platform (20–25%)
- Identify foundational components of Microsoft Power Platform (10–15%)
- Demonstrate the capabilities of Power BI (5–10%)
- Demonstrate the capabilities of Power Apps (20–25%)
- Demonstrate the capabilities of Power Automate (10–15%)
- Demonstrate the capabilities of Power Pages (1–5%)
- Describe the AI authoring experience in Microsoft Power Platform (10–15%)

Describe the business value of Microsoft Power Platform (20–25%)

Describe the business value of Microsoft Power Platform services

- Describe the value of Microsoft Power Apps to build applications
- Describe the value of Microsoft Power Automate to automate processes
- Describe the value of Microsoft Power BI to gain insights into data
- Describe the value of Microsoft Power Pages to build websites
- Describe the value of connectors to integrate services and data
- Describe the value of Microsoft Dataverse to organize business data
- Describe the value of Copilots and generative AI features in Microsoft Power Platform

Describe the business value of extending business solutions by using Microsoft Power Platform

- Describe how Microsoft Power Platform apps work together with Microsoft Dynamics 365 apps
- Describe how Microsoft Power Platform business solutions work together with Microsoft 365 apps and services
- Describe how Microsoft Power Platform apps work together
- Describe how Microsoft Power Platform works with Microsoft Teams

Describe Microsoft Power Platform administration and governance

- Describe the Microsoft Power Platform security model
- Describe environments
- Describe the different Microsoft Power Platform admin centers and portals
- Describe how Microsoft Power Platform supports data privacy and accessibility guidelines

Identify foundational components of Microsoft Power Platform (10–15%)

Describe Microsoft Dataverse

- Describe differences between traditional databases and Dataverse
- Describe tables, columns, and relationships in Dataverse
- Describe business logic in Dataverse

Describe connectors

- Describe the components of a connector
- Describe standard, premium, and custom connectors

Demonstrate the capabilities of Power BI (10–15%)

Identify basic Power BI components

- Describe Power BI Desktop and the Power BI service
- Compare and contrast dashboards, workspaces, reports, and paginated reports
- Describe how AI Insights helps identify anomalies and trends in data

Build a basic dashboard by using Power BI

- Create a Power BI report by adding visualizations
- Create a Power BI dashboard
- Add visualizations to dashboards by using Q&A
- Consume Power BI reports and dashboards

Demonstrate the capabilities of Power Apps (20–25%)

Identify basic Power Apps capabilities

- Describe the differences between canvas apps and model-driven apps
- Describe use cases for and capabilities of canvas apps
- Describe use cases for and capabilities of model-driven apps

Build a basic canvas app

- Connect to data sources by using connectors
- Create an app from data
- Add controls to canvas app screens
- Build responsive pages by dragging and dropping containers

Build a basic model-driven app

- Create a model-driven app from tables
- Modify forms
- Create and modify views

Demonstrate the capabilities of Power Automate (10–15%)

Identify basic Power Automate components

- Describe use cases for cloud and desktop flows
- Describe use cases for cloud flow templates
- Describe how Power Automate cloud flows use connector triggers and actions
- Describe Power Automate use cases for approvals, Microsoft Teams, Outlook, SharePoint, and Forms
- Describe the Power Automate apps including Power Automate for Desktop, Power Automate mobile, and the Power Automate portal
- Describe actions for Power Automate desktop flows
- Describe document processing in Power Automate
- Describe Process Mining and Task Mining

Build a basic Power Automate flow

- Create a cloud flow by using an instant, automated, or scheduled flow template
- Describe how to create cloud flows by using Copilot in Power Automate
- Modify a cloud flow

- Add flow steps to perform data operations
- Run a cloud flow
- Build a basic desktop flow by recording tasks

Demonstrate the capabilities of Power Pages (1–5%)

Describe the capabilities of Power Pages

- Describe use cases for Power Pages
- Describe use cases for templates
- Describe how to share data externally
- Describe uses cases for creating sites by using Copilot in Power Pages

Describe the AI authoring experience in Microsoft Power Platform (10–15%)

Describe Copilot Studio

- Describe use cases for Copilot Studio
- Describe the purpose of topics, entities, and actions
- Create a topic by using Copilot Studio

Describe the process of building bots by using Copilot Studio

Describe the capabilities of AI Builder

- Describe the business value of AI Builder
- Describe use cases for AI Builder
- Describe the lifecycle to create an AI Builder model

Study guide for Exam SC-100: Microsoft Cybersecurity Architect

Article • 06/24/2024

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Useful links	Description
Assessment	exam.

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Skills measured as of July 22, 2024

Audience profile

As a Microsoft cybersecurity architect, you translate a cybersecurity strategy into capabilities that protect the assets, business, and operations of an organization. You design, guide the implementation of, and maintain security solutions that follow Zero Trust principles and best practices, including security strategies for identity, devices, data, AI, applications, network, infrastructure, and DevOps. Plus, you design solutions for Governance and Risk Compliance (GRC), security operations, and security posture management.

As a cybersecurity architect, you continuously collaborate with leaders and practitioners in security, privacy, engineering, and other roles across an organization to plan and implement a cybersecurity strategy that meets the business needs of an organization.

As a candidate for this exam, you have experience implementing or administering solutions in the following areas: identity and access, platform protection, security operations, data and AI security, application security, and hybrid and multicloud infrastructures. You should have expert skills in at least one of those areas, and you should have experience designing security solutions that include Microsoft security technologies.

Skills at a glance

- Design solutions that align with security best practices and priorities (20–25%)
- Design security operations, identity, and compliance capabilities (25–30%)
- Design security solutions for infrastructure (25–30%)
- Design security solutions for applications and data (20–25%)

Design solutions that align with security best practices and priorities (20–25%)

Design a resiliency strategy for ransomware and other attacks based on Microsoft Security Best Practices

- Design a security strategy to support business resiliency goals, including identifying and prioritizing threats to business-critical assets
- Design solutions for business continuity and disaster recovery (BCDR), including secure backup and restore for hybrid and multicloud environments
- Design solutions for mitigating ransomware attacks, including prioritization of BCDR and privileged access
- Evaluate solutions for security updates

Design solutions that align with the Microsoft Cybersecurity Reference Architectures (MCRA) and Microsoft cloud security benchmark (MCSB)

- Design solutions that align with best practices for cybersecurity capabilities and controls
- Design solutions that align with best practices for protecting against insider, external, and supply chain attacks
- Design solutions that align with best practices for Zero Trust security, including the Zero Trust Rapid Modernization Plan (RaMP)

Design solutions that align with the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework

- Design a new or evaluate an existing strategy for security and governance based on the Microsoft Cloud Adoption Framework (CAF) for Azure and the Microsoft Azure Well-Architected Framework
- Recommend solutions for security and governance based on the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework
- Design solutions for implementing and governing security by using Azure landing zones
- Design a DevSecOps process that aligns with best practices in the Microsoft Cloud Adoption Framework (CAF)

Design security operations, identity, and compliance capabilities (25–30%)

Design solutions for security operations

- Design a solution for detection and response that includes extended detection and response (XDR) and security information and event management (SIEM)
- Design a solution for centralized logging and auditing, including Microsoft Purview Audit
- Design monitoring to support hybrid and multicloud environments
- Design a solution for security orchestration automated response (SOAR), including Microsoft Sentinel and Microsoft Defender XDR

- Design and evaluate security workflows, including incident response, threat hunting, and incident management
- Design and evaluate threat detection coverage by using MITRE ATT&CK matrices, including Cloud, Enterprise, Mobile, and ICS

Design solutions for identity and access management

- Design a solution for access to software as a service (SaaS), platform as a service (PaaS), infrastructure as a service (IaaS), hybrid/on-premises, and multicloud resources, including identity, networking, and application controls
- Design a solution for Microsoft Entra ID, including hybrid and multi-cloud environments
- Design a solution for external identities, including business-to-business (B2B), business-to-customer (B2C), and decentralized identity
- Design a modern authentication and authorization strategy, including Conditional Access, continuous access evaluation, risk scoring, and protected actions
- Validate the alignment of Conditional Access policies with a Zero Trust strategy
- Specify requirements to harden Active Directory Domain Services (AD DS)
- Design a solution to manage secrets, keys, and certificates

Design solutions for securing privileged access

- Design a solution for assigning and delegating privileged roles by using the enterprise access model
- Evaluate the security and governance of Microsoft Entra ID, including Microsoft Entra Privileged Identity Management (PIM), entitlement management, and access reviews
- Evaluate the security and governance of on-premises Active Directory Domain Services (AD DS), including resilience to common attacks
- Design a solution for securing the administration of cloud tenants, including SaaS and multicloud infrastructure and platforms
- Design a solution for cloud infrastructure entitlement management that includes Microsoft Entra Permissions Management

- Evaluate an access review management solution that includes Microsoft Entra Permissions Management
- Design a solution for Privileged Access Workstation (PAW), including remote access

Design solutions for regulatory compliance

- Translate compliance requirements into security controls
- Design a solution to address compliance requirements by using Microsoft Purview
- Design a solution to address privacy requirements, including Microsoft Priva
- Design Azure Policy solutions to address security and compliance requirements
- Evaluate and validate alignment with regulatory standards and benchmarks by using Microsoft Defender for Cloud

Design security solutions for infrastructure (25–30%)

Design solutions for security posture management in hybrid and multicloud environments

- Evaluate security posture by using Microsoft Defender for Cloud, including the Microsoft cloud security benchmark (MCSB)
- Evaluate security posture by using Microsoft Secure Score
- Design integrated security posture management solutions that include Microsoft Defender for Cloud in hybrid and multi-cloud environments
- Select cloud workload protection solutions in Microsoft Defender for Cloud
- Design a solution for integrating hybrid and multicloud environments by using Azure Arc
- Design a solution for Microsoft Defender External Attack Surface Management (Defender EASM)
- Specify requirements and priorities for a posture management process that uses Exposure Management attack paths, attack surface reduction, security insights, and initiatives

Specify requirements for securing server and client endpoints

- Specify security requirements for servers, including multiple platforms and operating systems
- Specify security requirements for mobile devices and clients, including endpoint protection, hardening, and configuration
- Specify security requirements for IoT devices and embedded systems
- Evaluate solutions for securing operational technology (OT) and industrial control systems (ICS) by using Microsoft Defender for IoT
- Specify security baselines for server and client endpoints
- Evaluate Windows Local Admin Password Solution (LAPS) solutions

Specify requirements for securing SaaS, PaaS, and IaaS services

- Specify security baselines for SaaS, PaaS, and IaaS services
- Specify security requirements for IoT workloads
- Specify security requirements for web workloads
- Specify security requirements for containers
- Specify security requirements for container orchestration
- Evaluate solutions that include Azure AI Services Security

Evaluate solutions for network security and Security Service Edge (SSE)

- Evaluate network designs to align with security requirements and best practices
- Evaluate solutions that use Microsoft Entra Internet Access as a secure web gateway
- Evaluate solutions that use Microsoft Entra Internet Access to access Microsoft 365, including cross-tenant configurations
- Evaluate solutions that use Microsoft Entra Private Access

Design security solutions for applications and data (20–25%)

Evaluate solutions for securing Microsoft 365

- Evaluate security posture for productivity and collaboration workloads by using metrics, including Microsoft Secure Score
- Evaluate solutions that include Microsoft Defender for Office and Microsoft Defender for Cloud Apps
- Evaluate device management solutions that include Microsoft Intune
- Evaluate solutions for securing data in Microsoft 365 by using Microsoft Purview
- Evaluate data security and compliance controls in Microsoft Copilot for Microsoft 365 services

Design solutions for securing applications

- Evaluate the security posture of existing application portfolios
- Evaluate threats to business-critical applications by using threat modeling
- Design and implement a full lifecycle strategy for application security
- Design and implement standards and practices for securing the application development process
- Map technologies to application security requirements
- Design a solution for workload identity to authenticate and access Azure cloud resources
- Design a solution for API management and security
- Design solutions that secure applications by using Azure Web Application Firewall (WAF)

Design solutions for securing an organization's data

- Evaluate solutions for data discovery and classification
- Specify priorities for mitigating threats to data
- Evaluate solutions for encryption of data at rest and in transit, including Azure KeyVault and infrastructure encryption

- Design a security solution for data in Azure workloads, including Azure SQL, Azure Synapse Analytics, and Azure Cosmos DB
- Design a security solution for data in Azure Storage
- Design a security solution that includes Microsoft Defender for Storage and Microsoft Defender for Databases

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft security documentation Microsoft Cybersecurity Reference Architectures Microsoft Defender for Cloud documentation Zero Trust Guidance Center Governance, risk, and compliance in Azure
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Security, compliance, and identity community hub ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
Audience profile		Major
Design solutions that align with security best practices and priorities	Design solutions that align with security best practices and priorities	No change
Design a resiliency strategy for ransomware and other attacks based on Microsoft Security Best Practices	Design a resiliency strategy for ransomware and other attacks based on Microsoft Security Best Practices	Minor
Design solutions that align with the Microsoft Cybersecurity Reference Architectures (MCRA) and Microsoft cloud security benchmark (MCSB)	Design solutions that align with the Microsoft Cybersecurity Reference Architectures (MCRA) and Microsoft cloud security benchmark (MCSB)	Minor
Design solutions that align with the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework	Design solutions that align with the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework	Minor
Design security operations, identity, and compliance capabilities	Design security operations, identity, and compliance capabilities	% of the exam decreased
Design solutions for security operations	Design solutions for security operations	Minor
Design solutions for identity and access management	Design solutions for identity and access management	Minor
Design solutions for securing privileged access	Design solutions for securing privileged access	Major
Design solutions for regulatory compliance	Design solutions for regulatory compliance	Minor
Design security solutions for infrastructure	Design security solutions for infrastructure	No change
Design solutions for security posture management in hybrid and multicloud environments	Design solutions for security posture management in hybrid and multicloud environments	Major
Design solutions for securing server and client endpoints	Specify requirements for securing server and client endpoints	Minor
Specify requirements for securing SaaS, PaaS, and IaaS services	Specify requirements for securing SaaS, PaaS, and IaaS services	Minor

Skill area prior to July 22, 2024	Skill area as of July 22, 2024	Change
	Evaluate solutions for network security and Security Service Edge (SSE)	New
Design security solutions for applications and data	Design security solutions for applications and data	No change
Design solutions for securing Microsoft 365	Evaluate solutions for securing Microsoft 365	Major
Design solutions for securing applications	Design solutions for securing applications	Minor
Design solutions for securing an organization's data	Design solutions for securing an organization's data	Minor

Skills measured prior to July 22, 2024

Audience profile

As a Microsoft cybersecurity architect, you translate a cybersecurity strategy into capabilities that protect the assets, business, and operations of an organization. You design, guide the implementation of, and maintain security solutions that follow Zero Trust principles and best practices, including security strategies for:

- Identity
- Devices
- Data
- Applications
- Network
- Infrastructure
- DevOps

Plus, you design solutions for:

- Governance and Risk Compliance (GRC)
- Security operations
- Security posture management

As a cybersecurity architect, you continuously collaborate with leaders and practitioners in IT security, privacy, and other roles across an organization to plan and implement a cybersecurity strategy that meets the business needs of an organization.

As a candidate for this exam, you have experience implementing or administering solutions in the following areas:

- Identity and access
- Platform protection
- Security operations
- Data security
- Application security
- Hybrid and multicloud infrastructures

You should have expert skills in at least one of those areas, and you should have experience designing security solutions that include Microsoft security technologies.

Skills at a glance

- Design solutions that align with security best practices and priorities (20–25%)
- Design security operations, identity, and compliance capabilities (30–35%)
- Design security solutions for infrastructure (20–25%)
- Design security solutions for applications and data (20–25%)

Design solutions that align with security best practices and priorities (20–25%)

Design a resiliency strategy for ransomware and other attacks based on Microsoft Security Best Practices

- Design a security strategy to support business resiliency goals, including identifying and prioritizing threats to business-critical assets
- Design solutions that align with Microsoft ransomware best practices, including backup, restore, and privileged access

- Design configurations for secure backup and restore by using Azure Backup for hybrid and multicloud environments
- Design solutions for security updates

Design solutions that align with the Microsoft Cybersecurity Reference Architectures (MCRA) and Microsoft cloud security benchmark (MCSB)

- Design solutions that align with best practices for cybersecurity capabilities and controls
- Design solutions that align with best practices for protecting against insider and external attacks
- Design solutions that align with best practices for Zero Trust security, including the Zero Trust Rapid Modernization Plan (RaMP)

Design solutions that align with the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework

- Design a new or evaluate an existing strategy for security and governance based on the Microsoft Cloud Adoption Framework (CAF) for Azure and the Microsoft Azure Well-Architected Framework
- Recommend solutions for security and governance based on the Microsoft Cloud Adoption Framework for Azure and the Microsoft Azure Well-Architected Framework
- Design solutions for implementing and governing security by using Azure landing zones
- Design a DevSecOps process

Design security operations, identity, and compliance capabilities (30–35%)

Design solutions for security operations

- Develop security operations capabilities to support a hybrid or multicloud environment

- Design a solution for centralized logging and auditing
- Design a solution for security information and event management (SIEM), including Microsoft Sentinel
- Design a solution for detection and response that includes extended detection and response (XDR)
- Design a solution for security orchestration automated response (SOAR), including Microsoft Sentinel and Microsoft Defender XDR
- Design and evaluate security workflows, including incident response, threat hunting, incident management, and threat intelligence
- Design and evaluate threat detection coverage by using MITRE ATT&CK

Design solutions for identity and access management

- Design a solution for access to software as a service (SaaS), platform as a service (PaaS), infrastructure as a service (IaaS), hybrid/on-premises, and multicloud resources, including identity, networking, and application controls
- Design a solution for Microsoft Entra ID, including hybrid and multi-cloud environments
- Design a solution for external identities, including business-to-business (B2B), business-to-customer (B2C), and decentralized identity
- Design a modern authentication and authorization strategy, including Conditional Access, continuous access evaluation, threat intelligence integration, and risk scoring
- Validate the alignment of Conditional Access policies with a Zero Trust strategy
- Specify requirements to secure Active Directory Domain Services (AD DS)
- Design a solution to manage secrets, keys, and certificates

Design solutions for securing privileged access

- Design a solution for assigning and delegating privileged roles by using the enterprise access model
- Design an identity governance solution, including Microsoft Entra Privileged Identity Management (PIM), privileged access management, entitlement

management, and access reviews

- Design a solution for securing the administration of cloud tenants, including SaaS and multicloud infrastructure and platforms
- Design a solution for cloud infrastructure entitlement management that includes Microsoft Entra Permissions Management
- Design a solution for Privileged Access Workstation (PAW) and bastion services

Design solutions for regulatory compliance

- Translate compliance requirements into a security solution
- Design a solution to address compliance requirements by using Microsoft Purview risk and compliance solutions
- Design a solution to address privacy requirements, including Microsoft Priva
- Design Azure Policy solutions to address security and compliance requirements
- Evaluate infrastructure compliance by using Microsoft Defender for Cloud

Design security solutions for infrastructure (20–25%)

Design solutions for security posture management in hybrid and multicloud environments

- Evaluate security posture by using the Microsoft cloud security benchmark (MCSB)
- Evaluate security posture by using Microsoft Defender for Cloud
- Evaluate security posture by using Microsoft Secure Score
- Design integrated security posture management and workload protection solutions in hybrid and multi-cloud environments, including Microsoft Defender for Cloud
- Design cloud workload protection solutions that use Microsoft Defender for Cloud, such as Microsoft Defender for Servers, Microsoft Defender for App Service, and Microsoft Defender for SQL
- Design a solution for integrating hybrid and multicloud environments by using Azure Arc

- Design a solution for Microsoft Defender External Attack Surface Management (Defender EASM)

Design solutions for securing server and client endpoints

- Specify security requirements for servers, including multiple platforms and operating systems
- Specify security requirements for mobile devices and clients, including endpoint protection, hardening, and configuration
- Specify security requirements for IoT devices and embedded systems
- Design a solution for securing operational technology (OT) and industrial control systems (ICS) by using Microsoft Defender for IoT
- Specify security baselines for server and client endpoints
- Design a solution for secure remote access, including Microsoft Entra Global Secure Access

Specify requirements for securing SaaS, PaaS, and IaaS services

- Specify security baselines for SaaS, PaaS, and IaaS services
- Specify security requirements for IoT workloads
- Specify security requirements for web workloads, including Azure App Service
- Specify security requirements for containers
- Specify security requirements for container orchestration

Design security solutions for applications and data (20–25%)

Design solutions for securing Microsoft 365

- Evaluate security posture for productivity and collaboration workloads by using metrics, including Microsoft Secure Score and Microsoft Defender for Cloud secure score
- Design a Microsoft Defender XDR solution

- Design secure configurations and operational practices for Microsoft 365 workloads and data

Design solutions for securing applications

- Evaluate the security posture of existing application portfolios
- Evaluate threats to business-critical applications by using threat modeling
- Design and implement a full lifecycle strategy for application security
- Design and implement standards and practices for securing the application development process
- Map technologies to application security requirements
- Design a solution for workload identity to authenticate and access Azure cloud resources
- Design a solution for API management and security
- Design a solution for secure access to applications, including Azure Web Application Firewall (WAF) and Azure Front Door

Design solutions for securing an organization's data

- Design a solution for data discovery and classification by using Microsoft Purview data governance solutions
- Specify priorities for mitigating threats to data
- Design a solution for protection of data at rest, data in motion, and data in use
- Design a security solution for data in Azure workloads, including Azure SQL, Azure Synapse Analytics, and Azure Cosmos DB
- Design a security solution for data in Azure Storage
- Design a security solution that includes Microsoft Defender for Storage and Microsoft Defender for SQL

Study guide for Exam SC-200: Microsoft Security Operations Analyst

Article • 09/20/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after

the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of October 21, 2024

Audience profile

As a candidate for this exam, you're a Microsoft security operations analyst who reduces organizational risk by:

- Rapidly remediating active attacks in cloud and on-premises environments.
- Advising on improvements to threat protection practices.
- Identifying violations of organizational policies.

As a security operations analyst, you:

- Perform triage.
- Respond to incidents.
- Mitigate risk by using exposure management.
- Hunt for threats by using threat intelligence.
- Use KQL for reporting, detections, and investigations

You also monitor, identify, investigate, and respond to threats in cloud and on-premises environments by using:

- Microsoft Defender XDR
- Copilot for Security
- Microsoft Sentinel
- Microsoft Defender for Cloud workload protections
- Third-party security solutions

You collaborate with business and security leadership to define security standards for the organization. You work with other roles across the digital enterprise to implement the standards, to enhance the security posture of an organization, and to raise security awareness.

As a candidate, you should be familiar with:

- Microsoft 365
- Azure cloud services
- Windows, Linux, and mobile operating systems

Skills at a glance

- Manage a security operations environment (20–25%)
- Configure protections and detections (15–20%)
- Manage incident response (25–30%)
- Manage security threats (15–20%)

Manage a security operations environment

Configure settings in Microsoft Defender XDR

- Configure alert and vulnerability notification rules
- Configure Microsoft Defender for Endpoint advanced features
- Configure endpoint rules settings
- Manage automated investigation and response capabilities in Microsoft Defender XDR

- Configure automatic attack disruption in Microsoft Defender XDR

Manage assets and environments

- Configure and manage device groups, permissions, and automation levels in Microsoft Defender for Endpoint
- Identify unmanaged devices in Microsoft Defender for Endpoint
- Discover unprotected resources by using Defender for Cloud
- Identify and remediate devices at risk by using Microsoft Defender Vulnerability Management
- Mitigate risk by using Exposure Management in Microsoft Defender XDR

Design and configure a Microsoft Sentinel workspace

- Plan a Microsoft Sentinel workspace
- Configure Microsoft Sentinel roles
- Specify Azure RBAC roles for Microsoft Sentinel configuration
- Design and configure Microsoft Sentinel data storage, including log types and log retention

Ingest data sources in Microsoft Sentinel

- Identify data sources to be ingested for Microsoft Sentinel
- Implement and use Content hub solutions
- Configure and use Microsoft connectors for Azure resources, including Azure Policy and diagnostic settings
- Plan and configure Syslog and Common Event Format (CEF) event collections
- Plan and configure collection of Windows Security events by using data collection rules, including Windows Event Forwarding (WEF)
- Create custom log tables in the workspace to store ingested data
- Monitor and optimize data ingestion

Configure protections and detections

Configure protections in Microsoft Defender security technologies

- Configure policies for Microsoft Defender for Cloud Apps
- Configure policies for Microsoft Defender for Office 365
- Configure security policies for Microsoft Defender for Endpoints, including attack surface reduction (ASR) rules
- Configure cloud workload protections in Microsoft Defender for Cloud

Configure detections in Microsoft Defender XDR

- Configure and manage custom detection rules
- Manage alerts, including tuning, suppression, and correlation
- Configure deception rules in Microsoft Defender XDR

Configure detections in Microsoft Sentinel

- Classify and analyze data by using entities
- Configure and manage analytics rules
- Query Microsoft Sentinel data by using ASIM parsers
- Implement behavioral analytics

Manage incident response

Respond to alerts and incidents in the Microsoft Defender portal

- Investigate and remediate threats by using Microsoft Defender for Office 365
- Investigate and remediate ransomware and business email compromise incidents identified by automatic attack disruption
- Investigate and remediate compromised entities identified by Microsoft Purview data loss prevention (DLP) policies

- Investigate and remediate threats identified by Microsoft Purview insider risk policies
- Investigate and remediate alerts and incidents identified by Microsoft Defender for Cloud workload protections
- Investigate and remediate security risks identified by Microsoft Defender for Cloud Apps
- Investigate and remediate compromised identities that are identified by Microsoft Entra ID
- Investigate and remediate security alerts from Microsoft Defender for Identity

Respond to alerts and incidents identified by Microsoft Defender for Endpoint

- Investigate device timelines
- Perform actions on the device, including live response and collecting investigation packages
- Perform evidence and entity investigation

Investigate Microsoft 365 activities

- Investigate threats by using the unified audit log
- Investigate threats by using Content Search
- Investigate threats by using Microsoft Graph activity logs

Respond to incidents in Microsoft Sentinel

- Investigate and remediate incidents in Microsoft Sentinel
- Create and configure automation rules
- Create and configure Microsoft Sentinel playbooks
- Run playbooks on on-premises resources

Implement and use Copilot for Security

- Create and use promptbooks
- Manage sources for Copilot for Security, including plugins and files
- Integrate Copilot for Security by implementing connectors
- Manage permissions and roles in Copilot for Security
- Monitor Copilot for Security capacity and cost
- Identify threats and risks by using Copilot for Security
- Investigate incidents by using Copilot for Security

Manage security threats

Hunt for threats by using Microsoft Defender XDR

- Identify threats by using Kusto Query Language (KQL)
- Interpret threat analytics in the Microsoft Defender portal
- Create custom hunting queries by using KQL

Hunt for threats by using Microsoft Sentinel

- Analyze attack vector coverage by using the MITRE ATT&CK matrix
- Manage and use threat indicators
- Create and manage hunts
- Create and monitor hunting queries
- Use hunting bookmarks for data investigations
- Retrieve and manage archived log data
- Create and manage search jobs

Create and configure Microsoft Sentinel workbooks

- Activate and customize workbook templates
- Create custom workbooks that include KQL

- Configure visualizations

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft security documentation Microsoft 365 Defender documentation Microsoft Defender for Cloud documentation Microsoft Sentinel documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Security, compliance, and identity community hub
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

The table below summarizes the changes between the current and previous version of the skills measured. The functional groups are in bold typeface followed by the objectives within each group. The table is a comparison between the previous and current version of the exam skills measured and the third column describes the extent of the changes.

[Expand table](#)

Skill area prior to October 21, 2024	Skill area as of October 21, 2024	Change
Audience profile		No change

Skill area prior to October 21, 2024	Skill area as of October 21, 2024	Change
Manage a security operations environment	Manage a security operations environment	No change
Configure settings in Microsoft Defender XDR	Configure settings in Microsoft Defender XDR	Minor
Manage assets and environments	Manage assets and environments	Major
Design and configure a Microsoft Sentinel workspace	Design and configure a Microsoft Sentinel workspace	Minor
Ingest data sources in Microsoft Sentinel	Ingest data sources in Microsoft Sentinel	Major
Configure protections and detections	Configure protections and detections	No change
Configure protections in Microsoft Defender security technologies	Configure protections in Microsoft Defender security technologies	Minor
Configure detection in Microsoft Defender XDR	Configure detections in Microsoft Defender XDR	Minor
Configure detections in Microsoft Sentinel	Configure detections in Microsoft Sentinel	Major
Manage incident response	Manage incident response	% of the exam decreased
Respond to alerts and incidents in Microsoft Defender XDR	Respond to alerts and incidents in the Microsoft Defender portal	Major
Respond to alerts and incidents identified by Microsoft Defender for Endpoint	Respond to alerts and incidents identified by Microsoft Defender for Endpoint	Minor
Enrich investigations by using other Microsoft tools	Investigate Microsoft 365 activities	Major
Manage incidents in Microsoft Sentinel	Respond to incidents in Microsoft Sentinel	No change
Configure security orchestration, automation, and response (SOAR) in Microsoft Sentinel		Removed
	Implement and use Copilot for Security	New

Skill area prior to October 21, 2024	Skill area as of October 21, 2024	Change
Perform threat hunting	Manage security threats	% of the exam increased
Hunt for threats by using KQL	Hunt for threats by using Microsoft Defender XDR	Minor
Hunt for threats by using Microsoft Sentinel	Hunt for threats by using Microsoft Sentinel	Minor
Analyze and interpret data by using workbooks	Create and configure Microsoft Sentinel workbooks	Minor

Study guide for Exam SC-300: Microsoft Identity and Access Administrator

Article • 07/01/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

 Expand table

Useful links	Description
Review the skills measured as of July 30, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 30, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
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Take a free Practice	Test your skills with practice questions to help you prepare for the

Useful links	Description
Assessment	exam.

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Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 30, 2024

Audience profile

As a Microsoft identity and access administrator, you design, implement, and operate an organization's identity and access management by using Microsoft Entra. You configure and manage identities throughout their lifecycles for users, devices, Microsoft Azure resources, and applications. You are responsible for ensuring the application of Zero Trust principles for identity and access solutions.

As an identity and access administrator, you provide seamless experiences and self-service management capabilities for users. You plan and implement identity,

authentication, and authorization to enable access across applications and resources. You're also responsible for troubleshooting, monitoring, and reporting on identity and access.

You collaborate with many other roles in the organization to drive strategic identity projects, modernize identity solutions, implement hybrid identity solutions, and implement identity governance.

You should be familiar with Azure, Microsoft 365 services and workloads, and Active Directory Domain Services (AD DS). You should also be familiar with PowerShell and Kusto Query Language (KQL).

Skills at a glance

- Implement and manage user identities (20–25%)
- Implement authentication and access management (25–30%)
- Plan and implement workload identities (20–25%)
- Plan and automate identity governance (25–30%)

Implement and manage user identities (20–25%)

Configure and manage a Microsoft Entra tenant

- Configure and manage built-in and custom Microsoft Entra roles
- Recommend when to use administrative units
- Configure and manage administrative units
- Evaluate effective permissions for Microsoft Entra roles
- Configure and manage domains in Microsoft Entra ID and Microsoft 365
- Configure Company branding settings
- Configure tenant properties, user settings, group settings, and device settings

Create, configure, and manage Microsoft Entra identities

- Create, configure, and manage users

- Create, configure, and manage groups
- Manage custom security attributes
- Automate bulk operations by using the Microsoft Entra admin center and PowerShell
- Manage device join and device registration in Microsoft Entra ID
- Assign, modify, and report on licenses

Implement and manage identities for external users and tenants

- Manage External collaboration settings in Microsoft Entra ID
- Invite external users, individually or in bulk
- Manage external user accounts in Microsoft Entra ID
- Implement Cross-tenant access settings
- Implement and manage cross-tenant synchronization
- Configure external identity providers, including protocols such as SAML and WS-Fed

Implement and manage hybrid identity

- Implement and manage Microsoft Entra Connect Sync
- Implement and manage Microsoft Entra Cloud Sync
- Implement and manage password hash synchronization
- Implement and manage pass-through authentication
- Implement and manage seamless single sign-on (SSO)
- Migrate from AD FS to other authentication and authorization mechanisms
- Implement and manage Microsoft Entra Connect Health

Implement authentication and access management (25–30%)

Plan, implement, and manage Microsoft Entra user authentication

- Plan for authentication
- Implement and manage authentication methods, including certificate-based, temporary access pass, OAUTH tokens, Microsoft Authenticator, and FIDO2
- Implement and manage tenant-wide Multi-factor Authentication (MFA) settings
- Configure and deploy self-service password reset (SSPR)
- Implement and manage Windows Hello for Business
- Disable accounts and revoke user sessions
- Implement and manage Microsoft Entra password protection
- Enable Microsoft Entra Kerberos authentication for hybrid identities

Plan, implement, and manage Microsoft Entra Conditional Access

- Plan Conditional Access policies
- Implement Conditional Access policy assignments
- Implement Conditional Access policy controls
- Test and troubleshoot Conditional Access policies
- Implement session management
- Implement device-enforced restrictions
- Implement continuous access evaluation
- Configure authentication context
- Implement protected actions
- Create a Conditional Access policy from a template

Manage risk by using Microsoft Entra ID Protection

- Implement and manage user risk by using Identity Protection or Conditional Access policies

- Implement and manage sign-in risk by using Identity Protection or Conditional Access policies
- Implement and manage Multifactor authentication registration policies
- Monitor, investigate and remediate risky users and risky sign-ins
- Monitor, investigate, and remediate risky workload identities

Implement access management for Azure resources by using Azure roles

- Create custom Azure roles, including both control plane and data plane permissions
- Assign built-in and custom Azure roles
- Evaluate effective permissions for a set of Azure roles
- Assign Azure roles to enable Microsoft Entra ID login to Azure virtual machines
- Configure Azure Key Vault role-based access control (RBAC) and access policies

Implement Global Secure Access

- Deploy Global Secure Access clients
- Deploy Private Access
- Deploy Internet Access
- Deploy Internet Access for Microsoft 365

Plan and implement workload identities (20–25%)

Plan and implement identities for applications and Azure workloads

- Select appropriate identities for applications and Azure workloads, including managed identities, service principals, user accounts, and managed service accounts
- Create managed identities

- Assign a managed identity to an Azure resource
- Use a managed identity assigned to an Azure resource to access other Azure resources

Plan, implement, and monitor the integration of enterprise applications

- Plan and implement settings for enterprise applications, including application-level and tenant-level settings
- Assign appropriate Microsoft Entra roles to users to manage enterprise applications
- Design and implement integration for on-premises apps by using Microsoft Entra Application Proxy
- Design and implement integration for software as a service (SaaS) apps
- Assign, classify, and manage users, groups, and app roles for enterprise applications
- Configure and manage user and admin consent
- Create and manage application collections

Plan and implement app registrations

- Plan for app registrations
- Create app registrations
- Configure app authentication
- Configure API permissions
- Create app roles

Manage and monitor app access by using Microsoft Defender for Cloud Apps

- Configure and analyze cloud discovery results by using Defender for Cloud Apps
- Configure connected apps

- Implement application-enforced restrictions
- Configure Conditional Access app control
- Create access and session policies in Defender for Cloud Apps
- Implement and manage policies for OAuth apps
- Manage the Cloud app catalog

Plan and automate identity governance (25–30%)

Plan and implement entitlement management in Microsoft Entra

- Plan entitlements
- Create and configure catalogs
- Create and configure access packages
- Manage access requests
- Implement and manage terms of use (ToU)
- Manage the lifecycle of external users
- Configure and manage connected organizations

Plan, implement, and manage access reviews in Microsoft Entra

- Plan for access reviews
- Create and configure access reviews
- Monitor access review activity
- Manually respond to access review activity

Plan and implement privileged access

- Plan and manage Microsoft Entra roles in Microsoft Entra Privileged Identity Management (PIM), including settings and assignments
- Plan and manage Azure resources in PIM, including settings and assignments
- Plan and configure groups managed by PIM

- Manage the PIM request and approval process
- Analyze PIM audit history and reports
- Create and manage break-glass accounts

Monitor identity activity by using logs, workbooks, and reports

- Review and analyze sign-in, audit, and provisioning logs by using the Microsoft Entra admin center
- Configure diagnostic settings, including configuring destinations such as Log Analytics workspaces, storage accounts, and event hubs
- Monitor Microsoft Entra ID by using KQL queries in Log Analytics
- Analyze Microsoft Entra ID by using workbooks and reporting
- Monitor and improve the security posture by using Identity Secure Score

Plan and implement Microsoft Entra Permissions Management

- Onboard Azure subscriptions to Permissions Management
- Evaluate and remediate risks relating to Azure identities, resources, and tasks
- Evaluate and remediate risks relating to Azure highly privileged roles
- Evaluate and remediate risks relating to Permissions Creep Index (PCI) in Azure
- Configure activity alerts and triggers for Azure subscriptions

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] Expand table

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course

Study resources	Links to learning and documentation
Find documentation	Microsoft Entra ID documentation Azure Identity Management and access control security best practices Microsoft Entra External Identities documentation Azure AD Multi-Factor Authentication overview Microsoft Defender for Cloud documentation What is Microsoft Entra ID Governance? What is Privileged Identity Management? What is Azure Active Directory monitoring and health? Microsoft security documentation
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Security, compliance, and identity community hub ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[\[+\] Expand table](#)

Skill area prior to July 30, 2024	Skill area as of July 30, 2024	Change
Audience profile		Major
Implement and manage user identities	Implement and manage user identities	No change
Configure and manage a Microsoft Entra tenant	Configure and manage a Microsoft Entra tenant	Minor
Create, configure, and manage Microsoft Entra identities	Create, configure, and manage Microsoft Entra identities	Minor
Implement and manage identities for external users and tenants	Implement and manage identities for external users and tenants	Minor

Skill area prior to July 30, 2024	Skill area as of July 30, 2024	Change
Implement and manage hybrid identity	Implement and manage hybrid identity	Minor
Implement authentication and access management	Implement authentication and access management	No change
Plan, implement, and manage Microsoft Entra user authentication	Plan, implement, and manage Microsoft Entra user authentication	Minor
Plan, implement, and manage Microsoft Entra Conditional Access	Plan, implement, and manage Microsoft Entra Conditional Access	Major
Manage risk by using Microsoft Entra ID Protection	Manage risk by using Microsoft Entra ID Protection	Minor
Implement access management for Azure resources by using Azure roles	Implement access management for Azure resources by using Azure roles	Minor
	Implement Global Secure Access	New
Plan and implement workload identities	Plan and implement workload identities	No change
Plan and implement identities for applications and Azure workloads	Plan and implement identities for applications and Azure workloads	No change
Plan, implement, and monitor the integration of enterprise applications	Plan, implement, and monitor the integration of enterprise applications	No change
Plan and implement application registrations	Plan and implement app registrations	Minor
Manage and monitor app access by using Microsoft Defender for Cloud Apps	Manage and monitor app access by using Microsoft Defender for Cloud Apps	No change
Plan and implement identity governance	Plan and automate identity governance	% of the exam increased
Plan and implement entitlement management in Microsoft Entra	Plan and implement entitlement management in Microsoft Entra	No change
Plan, implement, and manage access reviews in Microsoft Entra	Plan, implement, and manage access reviews in Microsoft Entra	No change
Plan and implement privileged access	Plan and implement privileged access	No change
Monitor identity activity by using logs, workbooks, and reports	Monitor identity activity by using logs, workbooks, and reports	Minor

Skill area prior to July 30, 2024	Skill area as of July 30, 2024	Change
Plan and implement Microsoft Entra Permissions Management	Plan and implement Microsoft Entra Permissions Management	No change

Skills measured prior to July 30, 2024

Audience profile

As a Microsoft identity and access administrator, you design, implement, and operate an organization's identity and access management by using Microsoft Entra ID. You configure and manage the full cycle of identities for:

- Users
- Devices
- Microsoft Azure resources
- Applications

As an identity and access administrator, you provide seamless experiences and self-service management capabilities for users. You plan and implement identity, authorization, and access to connect applications and resources in Azure. You're also responsible for troubleshooting, monitoring, and reporting on identity and access. You collaborate with many other roles in the organization to:

- Drive strategic identity projects.
- Modernize identity solutions.
- Implement hybrid identity solutions.
- Implement identity governance.

You should be familiar with Azure, Microsoft 365 services and workloads, and Active Directory Domain Services (AD DS). You should have experience:

- Automating the management of Microsoft Entra ID using PowerShell.
- Analyzing events using Kusto Query Language (KQL).

Skills at a glance

- Implement and manage user identities (20–25%)
- Implement authentication and access management (25–30%)
- Plan and implement workload identities (20–25%)
- Plan and implement identity governance (20–25%)

Implement and manage user identities (20–25%)

Configure and manage a Microsoft Entra tenant

- Configure and manage built-in and custom Microsoft Entra roles
- Recommend when to use administrative units
- Configure and manage administrative units
- Evaluate effective permissions for Microsoft Entra roles
- Configure and manage custom domains
- Configure Company branding settings
- Configure tenant properties, user settings, group settings, and device settings

Create, configure, and manage Microsoft Entra identities

- Create, configure, and manage users
- Create, configure, and manage groups
- Manage custom security attributes
- Automate the management of users and groups by using PowerShell
- Assign, modify, and report on licenses

Implement and manage identities for external users and tenants

- Manage External collaboration settings in Microsoft Entra ID
- Invite external users, individually or in bulk
- Manage external user accounts in Microsoft Entra ID

- Implement Cross-tenant access settings
- Implement and manage cross-tenant synchronization
- Configure identity providers, including SAML and WS-Fed
- Create and manage a Microsoft Entra B2C tenant (Microsoft Entra External ID)

Implement and manage hybrid identity

- Implement and manage Microsoft Entra Connect
- Implement and manage Microsoft Entra Connect cloud sync
- Implement and manage password hash synchronization
- Implement and manage pass-through authentication
- Implement and manage seamless single sign-on (SSO)
- Implement and manage federation, excluding manual Active Directory Federation Services (AD FS) deployments
- Implement and manage Microsoft Entra Connect Health
- Troubleshoot synchronization errors

Implement authentication and access management (25–30%)

Plan, implement, and manage Microsoft Entra user authentication

- Plan for authentication
- Implement and manage authentication methods
- Implement and manage tenant-wide Multi-factor Authentication (MFA) settings
- Manage per-user MFA settings
- Configure and deploy self-service password reset (SSPR)
- Implement and manage Windows Hello for Business
- Disable accounts and revoke user sessions

- Implement and manage password protection and smart lockout
- Enable Microsoft Entra Kerberos authentication for hybrid identities
- Implement certificate-based authentication in Microsoft Entra

Plan, implement, and manage Microsoft Entra Conditional Access

- Plan Conditional Access policies
- Implement Conditional Access policy assignments
- Implement Conditional Access policy controls
- Test and troubleshoot Conditional Access policies
- Implement session management
- Implement device-enforced restrictions
- Implement continuous access evaluation
- Create a Conditional Access policy from a template

Manage risk by using Microsoft Entra ID Protection

- Implement and manage user risk policies
- Implement and manage sign-in risk policies
- Implement and manage MFA registration policies
- Monitor, investigate and remediate risky users
- Monitor, investigate, and remediate risky workload identities

Implement access management for Azure resources by using Azure roles

- Create custom Azure roles, including both control plane and data plane permissions
- Assign built-in and custom Azure roles
- Evaluate effective permissions for a set of Azure roles

- Assign Azure roles to enable Microsoft Entra ID login to Azure virtual machines
- Configure Azure Key Vault role-based access control (RBAC) and access policies

Plan and implement workload identities (20–25%)

Plan and implement identities for applications and Azure workloads

- Select appropriate identities for applications and Azure workloads, including managed identities, service principals, user accounts, and managed service accounts
- Create managed identities
- Assign a managed identity to an Azure resource
- Use a managed identity assigned to an Azure resource to access other Azure resources

Plan, implement, and monitor the integration of enterprise applications

- Configure and manage user and admin consent
- Discover apps by using AD FS application activity reports
- Plan and implement settings for enterprise applications, including application-level and tenant-level settings
- Assign appropriate Microsoft Entra roles to users to manage enterprise applications
- Monitor and audit activity in enterprise applications
- Design and implement integration for on-premises apps by using Microsoft Entra Application Proxy
- Design and implement integration for software as a service (SaaS) apps
- Assign, classify, and manage users, groups, and app roles for enterprise applications
- Create and manage application collections

Plan and implement app registrations

- Plan for app registrations
- Create app registrations
- Configure app authentication
- Configure API permissions
- Create app roles

Manage and monitor app access by using Microsoft Defender for Cloud Apps

- Configure and analyze cloud discovery results by using Defender for Cloud Apps
- Configure connected apps
- Implement application-enforced restrictions
- Configure Conditional Access app control
- Create access and session policies in Defender for Cloud Apps
- Implement and manage policies for OAuth apps
- Manage the Cloud app catalog

Plan and implement identity governance (20–25%)

Plan and implement entitlement management in Microsoft Entra

- Plan entitlements
- Create and configure catalogs
- Create and configure access packages
- Manage access requests
- Implement and manage terms of use (ToU)
- Manage the lifecycle of external users
- Configure and manage connected organizations

Plan, implement, and manage access reviews in Microsoft Entra

- Plan for access reviews
- Create and configure access reviews
- Monitor access review activity
- Manually respond to access review activity

Plan and implement privileged access

- Plan and manage Azure roles in Microsoft Entra Privileged Identity Management (PIM), including settings and assignments
- Plan and manage Azure resources in PIM, including settings and assignments
- Plan and configure privileged access groups
- Manage the PIM request and approval process
- Analyze PIM audit history and reports
- Create and manage break-glass accounts

Monitor identity activity by using logs, workbooks, and reports

- Design a strategy for monitoring Microsoft Entra
- Review and analyze sign-in, audit, and provisioning logs by using the Microsoft Entra admin center
- Configure diagnostic settings, including configuring destinations such as Log Analytics workspaces, storage accounts, and event hubs
- Monitor Microsoft Entra by using KQL queries in Log Analytics
- Analyze Microsoft Entra by using workbooks and reporting
- Monitor and improve the security posture by using Identity Secure Score

Plan and implement Microsoft Entra Permissions Management

- Onboard Azure subscriptions to Permissions Management
- Evaluate and remediate risks relating to Azure identities, resources, and tasks

- Evaluate and remediate risks relating to Azure highly privileged roles
- Evaluate and remediate risks relating to Permissions Creep Index (PCI) in Azure
- Configure activity alerts and triggers for Azure subscriptions

Study guide for Exam SC-400: Administering Information Protection and Compliance in Microsoft 365

Article • 09/19/2023

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

Useful links	Description
Review the skills measured as of August 22, 2023	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to August 22, 2023	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Certification renewal	Microsoft associate, expert, and specialty certifications expire annually. You can renew by passing a free online assessment on Microsoft Learn.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.

Useful links	Description
Take a practice test ↗	Are you ready to take the exam or do you need to study a bit more?

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of August 22, 2023

Audience profile

Candidates for this exam are information protection and compliance administrators who plan and implement risk and compliance controls in the Microsoft Purview compliance portal.

The information protection and compliance administrator translates an organization's risk and compliance requirements into technical implementation. They are responsible for implementing and managing solutions for content classification, data loss prevention

(DLP), information protection, data lifecycle management, records management, privacy, risk, and compliance.

The information protection and compliance administrator works with other roles that are responsible for governance, data, and security to evaluate and develop policies to address an organization's risk reduction and compliance goals. This role assists workload administrators, business application owners, human resources departments, and legal stakeholders to implement technology solutions that support the necessary policies and controls.

Candidates should have experience with Microsoft 365 services, including Microsoft 365 Apps, Microsoft Exchange Online, Microsoft SharePoint, Microsoft OneDrive, and Microsoft Teams. They should also be familiar with PowerShell.

- Implement information protection (25–30%)
- Implement DLP (15–20%)
- Implement data lifecycle and records management (10–15%)
- Monitor and investigate data and activities by using Microsoft Purview (15–20%)
- Manage insider and privacy risk in Microsoft 365 (15–20%)

Implement information protection (25–30%)

Create and manage sensitive info types

- Identify sensitive information requirements for an organization's data
- Translate sensitive information requirements into built-in or custom sensitive info types
- Create and manage custom sensitive info types
- Create and manage exact data match (EDM) classifiers
- Implement document fingerprinting

Create and manage trainable classifiers

- Identify when to use trainable classifiers
- Design and create a trainable classifier

- Test a trainable classifier
- Retrain a trainable classifier

Implement and manage sensitivity labels

- Implement roles and permissions for administering sensitivity labels
- Define and create sensitivity labels
- Configure and manage sensitivity label policies
- Configure auto-labeling policies for sensitivity labels
- Monitor data classification and label usage by using Content explorer, Activity explorer, and audit search
- Apply bulk classification to on-premises data by using the Microsoft Purview Information Protection scanner
- Manage protection settings and marking for applied sensitivity labels

Design and implement encryption for email messages

- Design an email encryption solution based on methods available in Microsoft 365
- Implement Microsoft Purview Message Encryption
- Implement Microsoft Purview Advanced Message Encryption

Implement DLP (15–20%)

Create and configure DLP policies

- Design DLP policies based on an organization's requirements
- Configure permissions for DLP
- Create and manage DLP policies
- Interpret policy and rule precedence in DLP
- Configure a Microsoft Defender for Cloud Apps file policy to use DLP policies

Implement and monitor Endpoint DLP

- Configure advanced DLP rules for devices in DLP policies
- Configure Endpoint DLP settings
- Recommend a deployment method for device onboarding
- Identify endpoint requirements for device onboarding
- Monitor endpoint activities
- Implement the Microsoft Purview Extension

Monitor and manage DLP activities

- Analyze DLP reports
- Analyze DLP activities by using Activity explorer
- Remediate DLP alerts in the Microsoft Purview compliance portal
- Remediate DLP alerts generated by Defender for Cloud Apps

Implement data lifecycle and records management (10–15%)

Retain and delete data by using retention labels

- Plan for information retention and disposition by using retention labels
- Create retention labels for data lifecycle management
- Configure and manage adaptive scopes
- Configure a retention label policy to publish labels
- Configure a retention label policy to auto-apply labels
- Interpret the results of policy precedence, including using Policy lookup

Manage data retention in Microsoft 365 workloads

- Create and apply retention policies for SharePoint and OneDrive

- Create and apply retention policies for Microsoft 365 groups
- Create and apply retention policies for Teams
- Create and apply retention policies for Yammer
- Create and apply retention policies for Exchange Online
- Apply mailbox holds in Exchange Online
- Implement Exchange Online archiving policies
- Configure preservation locks for retention policies and retention label policies
- Recover retained content in Microsoft 365

Implement Microsoft Purview records management

- Create and configure retention labels for records management
- Manage retention labels by using a file plan, including file plan descriptors
- Classify records by using retention labels and retention label policies
- Manage event-based retention
- Manage the disposition of content in records management
- Configure records management settings, including retention label settings and disposition settings

Monitor and investigate data and activities by using Microsoft Purview (15–20%)

Plan and manage regulatory requirements by using Microsoft Purview Compliance Manager

- Plan for regulatory compliance in Microsoft 365
- Create and manage assessments
- Create and modify custom templates
- Interpret and manage improvement actions
- Create and manage alert policies for assessments

Plan and manage eDiscovery and Content search

- Choose between eDiscovery (Standard) and eDiscovery (Premium) based on an organization's requirements
- Plan and implement eDiscovery
- Delegate permissions to use eDiscovery and Content search
- Perform searches and respond to results from eDiscovery
- Manage eDiscovery cases
- Perform searches by using Content search

Manage and analyze audit logs and reports in Microsoft Purview

- Choose between Audit (Standard) and Audit (Premium) based on an organization's requirements
- Plan for and configure auditing
- Investigate activities by using the unified audit log
- Review and interpret compliance reports and dashboards
- Configure alert policies
- Configure audit retention policies

Manage insider and privacy risk in Microsoft 365 (15–20%)

Implement and manage Microsoft Purview Communication Compliance

- Plan for communication compliance
- Create and manage communication compliance policies
- Investigate and remediate communication compliance alerts and reports

Implement and manage Microsoft Purview Insider Risk Management

- Plan for insider risk management
- Create and manage insider risk management policies
- Investigate and remediate insider risk activities, alerts, and reports
- Manage insider risk cases
- Manage forensic evidence settings
- Manage notice templates

Implement and manage Microsoft Purview Information Barriers (IBs)

- Plan for IBs
- Create and manage IB segments and policies
- Configure Teams, SharePoint, and OneDrive to enforce IBs, including setting barrier modes
- Investigate issues with IB policies

Implement and manage privacy requirements by using Microsoft Priva

- Configure and maintain privacy risk management
- Create and manage Privacy Risk Management policies
- Identify and monitor potential risks involving personal data
- Evaluate and remediate alerts and issues
- Implement and manage subject rights requests

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft 365 security documentation Microsoft 365 Zero Trust deployment plan Microsoft Purview compliance documentation Microsoft 365 Defender documentation Learn about data loss prevention (DLP) Microsoft 365 for enterprise documentation and resources
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Security, compliance, and identity community hub ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Browse other Microsoft Learn shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

Skill area prior to August 22, 2023	Skill area as of August 22, 2023	Changes
Audience profile		Minor
Implement information protection	Implement information protection	No change
Create and manage sensitive information types	Create and manage sensitive information types	No change
Create and manage trainable classifiers	Create and manage trainable classifiers	No change
Implement and manage sensitivity labels	Implement and manage sensitivity labels	No change
Design and implement encryption for email messages	Design and implement encryption for email messages	No change

Skill area prior to August 22, 2023	Skill area as of August 22, 2023	Changes
Implement DLP	Implement DLP	No change
Create and configure DLP policies	Create and configure DLP policies	No change
Implement and monitor Endpoint DLP	Implement and monitor Endpoint DLP	No change
Monitor and manage DLP activities	Monitor and manage DLP activities	No change
Implement data lifecycle and records management	Implement data lifecycle and records management	No change
Retain and delete data by using retention labels	Retain and delete data by using retention labels	No change
Manage data retention in Microsoft 365 workloads	Manage data retention in Microsoft 365 workloads	Minor
Implement Microsoft Purview Records Management	Implement Microsoft Purview Records Management	No change
Monitor and investigate data and activities by using Microsoft Purview	Monitor and investigate data and activities by using Microsoft Purview	No change
Plan and manage regulatory requirements by using Microsoft Purview Compliance Manager	Plan and manage regulatory requirements by using Microsoft Purview Compliance Manager	No change
Plan and manage eDiscovery and Content search	Plan and manage eDiscovery and Content search	No change
Manage and analyze audit logs and reports in Microsoft Purview	Manage and analyze audit logs and reports in Microsoft Purview	No change
Manage insider and privacy risk in Microsoft 365	Manage insider and privacy risk in Microsoft 365	No change
Implement and manage Microsoft Purview Communication Compliance	Implement and manage Microsoft Purview Communication Compliance	No change
Implement and manage Microsoft Purview Insider Risk Management	Implement and manage Microsoft Purview Insider Risk Management	No change
Implement and manage Microsoft Purview Information Barriers (IBs)	Implement and manage Microsoft Purview Information Barriers (IBs)	Minor

Skill area prior to August 22, 2023	Skill area as of August 22, 2023	Changes
Implement and manage privacy requirements by using Microsoft Priva	Implement and manage privacy requirements by using Microsoft Priva	No change

Skills measured prior to August 22, 2023

Audience profile

Candidates for this exam are information protection and compliance administrators who plan and implement risk and compliance controls in the Microsoft Purview compliance portal.

The information protection and compliance administrator translates an organization's risk and compliance requirements into technical implementation. They are responsible for implementing and managing solutions for content classification, data loss prevention (DLP), information protection, data lifecycle management, records management, privacy, risk, and compliance.

The information protection and compliance administrator works with other roles that are responsible for governance, data, and security to evaluate and develop policies to address an organization's risk reduction and compliance goals. This role assists workload administrators, business application owners, human resources departments, and legal stakeholders to implement technology solutions that support the necessary policies and controls.

Candidates should have experience with Microsoft 365 services, including Microsoft 365 Apps, Microsoft Exchange Online, Microsoft SharePoint Online, Microsoft OneDrive, and Microsoft Teams. They should also be familiar with PowerShell.

- Implement information protection (25–30%)
- Implement DLP (15–20%)
- Implement data lifecycle and records management (10–15%)
- Monitor and investigate data and activities by using Microsoft Purview (15–20%)
- Manage insider and privacy risk in Microsoft 365 (15–20%)

Implement information protection (25–30%)

Create and manage sensitive info types

- Identify sensitive information requirements for an organization's data
- Translate sensitive information requirements into built-in or custom sensitive info types
- Create and manage custom sensitive info types
- Create and manage exact data match (EDM) classifiers
- Implement document fingerprinting

Create and manage trainable classifiers

- Identify when to use trainable classifiers
- Design and create a trainable classifier
- Test a trainable classifier
- Retrain a trainable classifier

Implement and manage sensitivity labels

- Implement roles and permissions for administering sensitivity labels
- Define and create sensitivity labels
- Configure and manage sensitivity label policies
- Configure auto-labeling policies for sensitivity labels
- Monitor data classification and label usage by using Content explorer, Activity explorer, and audit search
- Apply bulk classification to on-premises data by using the Microsoft Purview Information Protection scanner
- Manage protection settings and marking for applied sensitivity labels

Design and implement encryption for email messages

- Design an email encryption solution based on methods available in Microsoft 365
- Implement Microsoft Purview Message Encryption

- Implement Microsoft Purview Advanced Message Encryption

Implement DLP (15–20%)

Create and configure DLP policies

- Design DLP policies based on an organization's requirements
- Configure permissions for DLP
- Create and manage DLP policies
- Interpret policy and rule precedence in DLP
- Configure a Microsoft Defender for Cloud Apps file policy to use DLP policies

Implement and monitor Endpoint DLP

- Configure advanced DLP rules for devices in DLP policies
- Configure Endpoint DLP settings
- Recommend a deployment method for device onboarding
- Identify endpoint requirements for device onboarding
- Monitor endpoint activities
- Implement the Microsoft Purview Extension

Monitor and manage DLP activities

- Analyze DLP reports
- Analyze DLP activities by using Activity explorer
- Remediate DLP alerts in the Microsoft Purview compliance portal
- Remediate DLP alerts generated by Defender for Cloud Apps

Implement data lifecycle and records management (10–15%)

Retain and delete data by using retention labels

- Plan for information retention and disposition by using retention labels
- Create retention labels for data lifecycle management
- Configure and manage adaptive scopes
- Configure a retention label policy to publish labels
- Configure a retention label policy to auto-apply labels
- Interpret the results of policy precedence, including using Policy lookup

Manage data retention in Microsoft 365 workloads

- Create and apply retention policies for SharePoint Online and OneDrive
- Create and apply retention policies for Microsoft 365 groups
- Create and apply retention policies for Teams
- Create and apply retention policies for Yammer
- Create and apply retention policies for Exchange Online
- Apply mailbox holds in Exchange Online
- Implement Exchange Online archiving policies
- Configure preservation locks for retention policies and retention label policies
- Recover retained content in Microsoft 365

Implement Microsoft Purview records management

- Create and configure retention labels for records management
- Manage retention labels by using a file plan, including file plan descriptors
- Classify records by using retention labels and retention label policies
- Manage event-based retention
- Manage the disposition of content in records management

- Configure records management settings, including retention label settings and disposition settings

Monitor and investigate data and activities by using Microsoft Purview (15–20%)

Plan and manage regulatory requirements by using Microsoft Purview Compliance Manager

- Plan for regulatory compliance in Microsoft 365
- Create and manage assessments
- Create and modify custom templates
- Interpret and manage improvement actions
- Create and manage alert policies for assessments

Plan and manage eDiscovery and Content search

- Choose between eDiscovery (Standard) and eDiscovery (Premium) based on an organization's requirements
- Plan and implement eDiscovery
- Delegate permissions to use eDiscovery and Content search
- Perform searches and respond to results from eDiscovery
- Manage eDiscovery cases
- Perform searches by using Content search

Manage and analyze audit logs and reports in Microsoft Purview

- Choose between Audit (Standard) and Audit (Premium) based on an organization's requirements
- Plan for and configure auditing
- Investigate activities by using the unified audit log
- Review and interpret compliance reports and dashboards

- Configure alert policies
- Configure audit retention policies

Manage insider and privacy risk in Microsoft 365 (15–20%)

Implement and manage Microsoft Purview Communication Compliance

- Plan for communication compliance
- Create and manage communication compliance policies
- Investigate and remediate communication compliance alerts and reports

Implement and manage Microsoft Purview Insider Risk Management

- Plan for insider risk management
- Create and manage insider risk management policies
- Investigate and remediate insider risk activities, alerts, and reports
- Manage insider risk cases
- Manage forensic evidence settings
- Manage notice templates

Implement and manage Microsoft Purview Information Barriers (IBs)

- Plan for IBs
- Create and manage IB segments and policies
- Configure Teams, SharePoint Online, and OneDrive to enforce IBs, including setting barrier modes
- Investigate issues with IB policies

Implement and manage privacy requirements by using Microsoft Priva

- Configure and maintain privacy risk management
- Create and manage Privacy Risk Management policies
- Identify and monitor potential risks involving personal data
- Evaluate and remediate alerts and issues
- Implement and manage subject rights requests

Study guide for Exam SC-900: Microsoft Security, Compliance, and Identity Fundamentals

Article • 05/30/2024

Purpose of this document

This study guide should help you understand what to expect on the exam and includes a summary of the topics the exam might cover and links to additional resources. The information and materials in this document should help you focus your studies as you prepare for the exam.

[] Expand table

Useful links	Description
Review the skills measured as of July 26, 2024	This list represents the skills measured AFTER the date provided. Study this list if you plan to take the exam AFTER that date.
Review the skills measured prior to July 26, 2024	Study this list of skills if you take your exam PRIOR to the date provided.
Change log	You can go directly to the change log if you want to see the changes that will be made on the date provided.
How to earn the certification	Some certifications only require passing one exam, while others require passing multiple exams.
Your Microsoft Learn profile	Connecting your certification profile to Microsoft Learn allows you to schedule and renew exams and share and print certificates.
Exam scoring and score reports	A score of 700 or greater is required to pass.
Exam sandbox ↗	You can explore the exam environment by visiting our exam sandbox.
Request accommodations	If you use assistive devices, require extra time, or need modification to any part of the exam experience, you can request an accommodation.
Take a free Practice Assessment	Test your skills with practice questions to help you prepare for the exam.

Updates to the exam

Our exams are updated periodically to reflect skills that are required to perform a role. We have included two versions of the Skills Measured objectives depending on when you are taking the exam.

We always update the English language version of the exam first. Some exams are localized into other languages, and those are updated approximately eight weeks after the English version is updated. While Microsoft makes every effort to update localized versions as noted, there may be times when the localized versions of an exam are not updated on this schedule. Other available languages are listed in the **Schedule Exam** section of the **Exam Details** webpage. If the exam isn't available in your preferred language, you can request an additional 30 minutes to complete the exam.

Note

The bullets that follow each of the skills measured are intended to illustrate how we are assessing that skill. Related topics may be covered in the exam.

Note

Most questions cover features that are general availability (GA). The exam may contain questions on Preview features if those features are commonly used.

Skills measured as of July 26, 2024

Audience profile

This exam is targeted to you, if you're looking to familiarize yourself with the fundamentals of security, compliance, and identity (SCI) across cloud-based and related Microsoft services.

If you have an interest in Microsoft SCI solutions, this exam is for you, whether you're a:

- Business stakeholder
- New or existing IT professional
- Student

You should be familiar with Microsoft Azure and Microsoft 365 and want to understand how Microsoft SCI solutions can span across these solution areas to provide a holistic

and end-to-end solution.

Skills at a glance

- Describe the concepts of security, compliance, and identity (10–15%)
- Describe the capabilities of Microsoft Entra (25–30%)
- Describe the capabilities of Microsoft security solutions (35–40%)
- Describe the capabilities of Microsoft compliance solutions (20–25%)

Describe the concepts of security, compliance, and identity (10–15%)

Describe security and compliance concepts

- Describe the shared responsibility model
- Describe defense-in-depth
- Describe the Zero Trust model
- Describe encryption and hashing
- Describe Governance, Risk, and Compliance (GRC) concepts

Define identity concepts

- Define identity as the primary security perimeter
- Define authentication
- Define authorization
- Describe identity providers
- Describe the concept of directory services and Active Directory
- Describe the concept of federation

Describe the capabilities of Microsoft Entra (25–30%)

Describe function and identity types of Microsoft Entra ID

- Describe Microsoft Entra ID
- Describe types of identities
- Describe hybrid identity

Describe authentication capabilities of Microsoft Entra ID

- Describe the authentication methods
- Describe multi-factor authentication (MFA)
- Describe password protection and management capabilities

Describe access management capabilities of Microsoft Entra ID

- Describe Conditional Access
- Describe Microsoft Entra roles and role-based access control (RBAC)

Describe identity protection and governance capabilities of Microsoft Entra

- Describe Microsoft Entra ID Governance
- Describe access reviews
- Describe the capabilities of Microsoft Entra Privileged Identity Management
- Describe Microsoft Entra ID Protection
- Describe Microsoft Entra Permissions Management

Describe the capabilities of Microsoft security solutions (35–40%)

Describe core infrastructure security services in Azure

- Describe Azure distributed denial-of-service (DDoS) Protection
- Describe Azure Firewall

- Describe Web Application Firewall (WAF)
- Describe network segmentation with Azure virtual networks
- Describe network security groups (NSGs)
- Describe Azure Bastion
- Describe Azure Key Vault

Describe security management capabilities of Azure

- Describe Microsoft Defender for Cloud
- Describe Cloud Security Posture Management (CSPM)
- Describe how security policies and initiatives improve the cloud security posture
- Describe enhanced security features provided by cloud workload protection

Describe capabilities of Microsoft Sentinel

- Define the concepts of security information and event management (SIEM) and security orchestration automated response (SOAR)
- Describe threat detection and mitigation capabilities in Microsoft Sentinel

Describe threat protection with Microsoft Defender XDR

- Describe Microsoft Defender XDR services
- Describe Microsoft Defender for Office 365
- Describe Microsoft Defender for Endpoint
- Describe Microsoft Defender for Cloud Apps
- Describe Microsoft Defender for Identity
- Describe Microsoft Defender Vulnerability Management
- Describe Microsoft Defender Threat Intelligence (Defender TI)
- Describe the Microsoft Defender portal

Describe the capabilities of Microsoft compliance solutions (20–25%)

Describe Microsoft Service Trust Portal and privacy principles

- Describe the Service Trust Portal offerings
- Describe the privacy principles of Microsoft
- Describe Microsoft Priva

Describe compliance management capabilities of Microsoft Purview

- Describe the Microsoft Purview compliance portal
- Describe Compliance Manager
- Describe the uses and benefits of compliance score

Describe information protection, data lifecycle management, and data governance capabilities of Microsoft Purview

- Describe the data classification capabilities
- Describe the benefits of Content explorer and Activity explorer
- Describe sensitivity labels and sensitivity label policies
- Describe data loss prevention (DLP)
- Describe records management
- Describe retention policies, retention labels, and retention label policies
- Describe unified data governance solutions in Microsoft Purview

Describe insider risk, eDiscovery, and audit capabilities in Microsoft Purview

- Describe insider risk management
- Describe eDiscovery solutions in Microsoft Purview

- Describe audit solutions in Microsoft Purview

Study resources

We recommend that you train and get hands-on experience before you take the exam. We offer self-study options and classroom training as well as links to documentation, community sites, and videos.

[] [Expand table](#)

Study resources	Links to learning and documentation
Get trained	Choose from self-paced learning paths and modules or take an instructor-led course
Find documentation	Microsoft security documentation Azure security documentation Microsoft Entra ID documentation Microsoft Sentinel documentation Microsoft 365 Defender documentation Microsoft Purview Get started with the Microsoft Service Trust Portal
Ask a question	Microsoft Q&A Microsoft Docs
Get community support	Security, compliance, and identity community hub ↗
Follow Microsoft Learn	Microsoft Learn - Microsoft Tech Community ↗
Find a video	Exam Readiness Zone Microsoft Learn Shows

Change log

Key to understanding the table: The topic groups (also known as functional groups) are in bold typeface followed by the objectives within each group. The table is a comparison between the two versions of the exam skills measured and the third column describes the extent of the changes.

[] [Expand table](#)

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Audience profile		No change
Describe the concepts of security, compliance, and identity	Describe the concepts of security, compliance, and identity	No change
Describe security and compliance concepts	Describe security and compliance concepts	No change
Define identity concepts	Define identity concepts	No change
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Describe identity protection and governance capabilities of Microsoft Entra	Describe identity protection and governance capabilities of Microsoft Entra	Minor
Describe the capabilities of Microsoft security solutions	Describe the capabilities of Microsoft security solutions	No change
Describe core infrastructure security services in Azure	Describe core infrastructure security services in Azure	No change
Describe security management capabilities of Azure	Describe security management capabilities of Azure	No change
Describe capabilities of Microsoft Sentinel	Describe capabilities of Microsoft Sentinel	No change
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Describe the capabilities of Microsoft compliance solutions	Describe the capabilities of Microsoft compliance solutions	No change
Describe Microsoft Service Trust Portal and privacy principles	Describe Microsoft Service Trust Portal and privacy principles	No change
Describe compliance management capabilities of Microsoft Purview	Describe compliance management capabilities of Microsoft Purview	No change

Skill area prior to July 26, 2024	Skill area as of July 26, 2024	Change
Describe information protection, data lifecycle management, and data governance capabilities in Microsoft Purview	Describe information protection, data lifecycle management, and data governance capabilities in Microsoft Purview	No change
Describe insider risk, eDiscovery, and audit capabilities in Microsoft Purview	Describe insider risk, eDiscovery, and audit capabilities in Microsoft Purview	No change

Skills measured prior to July 26, 2024

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- Describe audit solutions in Microsoft Purview

Study guide for the Applied Skills assessment lab: Configure secure access to your workloads using Azure networking

Article • 07/31/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure virtual networks

- Create a virtual network
- Configure subnets
- Configure virtual network peering

Supporting module (s):

- [Configure virtual networks](#)
- [Configure Azure Virtual Network peering](#)

Configure network routing

- Create and configure a route table
- Associate a route table to a subnet
- Create and configure a NAT gateway

Supporting module (s):

- [Manage and control traffic flow in your Azure deployment with routes](#)

Create DNS zones and configure DNS settings

- Create and configure a private DNS zone
- Create and configure DNS records
- Configure DNS settings on a virtual network

Supporting module (s):

- [Configure Azure DNS](#)

Create and configure network security groups (NSGs)

- Create an NSG
- Associate an NSG to a subnet or a network interface
- Create NSG security rules
- Create and use Application Security Groups (ASGs) in NSG security rules

Supporting module (s):

- [Configure network security groups](#)

Create and configure Azure Firewall

- Create an Azure Firewall
- Create and configure a firewall policy

Supporting module (s):

- [Introduction to Azure Firewall](#)

Study guide for the Applied Skills assessment lab: Secure storage for Azure Files and Azure Blob Storage

Article • 07/31/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure a storage account

- Configure the appropriate storage account performance (standard versus premium)
- Configure redundancy settings
- Configure secure transfer and TLS version
- Configure replication

Supporting module (s):

- [Create an Azure Storage account](#)

Create and configure Blob Storage

- Create a Blob Storage container
- Configure access level for Blob Storage
- Configure the Blob Storage tiers
- Configure lifecycle management
- Configure data protection for Blob Storage

Supporting module (s):

- [Configure Azure Blob Storage](#)

Create and configure Azure Files

- Create an Azure Files share
- Configure performance tiers
- Configure data protection for Azure Files

Supporting module (s):

- [Plan and implement security for storage](#)

Configure encryption

- Configure encryption for data at rest, including Microsoft managed keys and customer managed keys
- Configure encryption for data in transit

Supporting module (s):

- [Configure Azure Storage security](#)

Configure networking for storage

- Create and configure private endpoints
- Create and configure service endpoints
- Configure Azure Storage firewalls and virtual networks

Supporting module (s):

- [Secure and isolate access to Azure resources by using network security groups and service endpoints](#)

Study guide for the Applied Skills assessment lab: Deploy and configure Azure Monitor

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure a Log Analytics workspace

- Create a Log Analytics workspace
- Configure access to a Log Analytics workspace
- Configure data retention
- Configure Log Analytics health status alert

Supporting module (s):

- [Create and configure a Log Analytics workspace](#)

Configure change analysis

- Enable Azure Monitor Change Analysis for one of two (pre-deployed) web apps and its App Service plan
- Create a custom Change Analysis filter and pin it to the default dashboard in the Azure portal

Supporting module (s):

- [Configure monitoring for applications](#)

Configure monitoring for applications

- Create an Application Insights resource
- Configure data sampling rate
- Set daily telemetry volume cap
- Configure anomaly detection email notifications
- Configure SQL Insights
- Configure diagnostic logging

Supporting module (s):

- [Configure monitoring for applications](#)

Configure monitoring for virtual machines (VMs)

- Deploy Azure Monitor Agent to a virtual machine
- Configure data collection rules, including Windows event logs, syslog, IIS logs, and application-specific logs
- Enable VM Insights

Supporting module (s):

- [Configure monitoring for virtual machines](#)
- [Configure monitoring for virtual networks](#)

Configure monitoring for virtual networks

- Create and configure an Azure Network Watcher Connection Monitor
- Create and configure a flow log
- Enable Traffic Analytics
- Configure access to flow logs

Supporting module (s):

- [Configure monitoring for virtual networks](#)

Configure alerts and responses

- Create an action group

- Create an alert rule
- Create an alert processing rule to suppress notifications during a specific time window
- Configure automated responses to alerts, including notifications and runbooks

Supporting module (s):

- [Configure alerts and responses](#)

Study guide for the Applied Skills assessment lab: Deploy and administer Linux virtual machines on Microsoft Azure

Article • 08/20/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure a Linux VM

- Create a Linux VM
- Add data disks and configure partitions
- Configure a Linux VM
- Configure SSH access to a Linux VM
- Update Linux VM operating systems
- Install and run workload dependencies

Supporting module (s):

- [Introduction to Linux on Azure](#)
- [Provisioning a Linux virtual machine in Microsoft Azure](#)
- [Introduction to Bash](#)

Configure monitoring and backup of Linux VMs

- Configure VM insights

- Create an alert
- Configure Azure Backup

Supporting module (s):

- [Monitor your Azure virtual machines with Azure Monitor](#)
- [Protect your virtual machines by using Azure Backup](#)

Scale Linux VMs vertically

- Identify performance issues
- Resize a VM

Supporting module (s):

- [Configure virtual machines](#)

Configure identities and roles for Linux VMs

- Assign a managed identity
- Assign an Azure role

Supporting module (s):

- [Implement access management for Azure resources](#)

Access Azure Storage from a Linux VM

- Mount an SMB Azure file share on a Linux VM
- Transfer data to and from a Linux VM by using AzCopy

Supporting module (s):

- [Configure Azure Files and Azure File Sync](#)
- [Copy and move blobs from one container or storage account to another using the AzCopy command](#)

Study guide for the Applied Skills assessment lab: Administer Active Directory Domain Services

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Deploy and manage AD DS domain controllers

- Deploy domain controllers
- Transfer a Flexible Single Master Operations (FSMO) role

Supporting module(s):

- [Manage AD DS domain controllers and FSMO roles](#)

Configure Active Directory topology

- Raise the functional level of a domain or forest
- Create a new site and map it to a subnet
- Move domain controllers between sites

Supporting module(s):

- [Introduction to AD DS](#)

Deploy and manage AD DS domain controllers

- Deploy domain controllers

- Transfer a Flexible Single Master Operations (FSMO) role

Supporting module(s):

- [Manage AD DS domain controllers and FSMO roles](#)

Create and manage AD DS objects

- Create a user account
- Perform bulk management tasks for user accounts
- Manage disabled users accounts
- Reset user passwords
- Implement a group Managed Service Account (gMSA)
- Create groups
- Add users to groups, including privileged groups and the Protected Users group
- Create and manage organizational units
- Recover items from the AD DS recycle bin

Supporting module(s):

- [Introduction to AD DS](#)

Create and configure Group Policy Objects (GPOs) in AD DS

- Create and link a GPO
- Configure Group Policy settings
- Configure Group Policy scope and processing order

Supporting module(s):

- [Implement Group Policy Objects](#)

Manage security in AD DS

- Delegate permissions in AD DS
- Configure the domain password policy

- Configure and apply a fined-grained password policy
- Configure auditing, including advanced audit policy
- Configure user rights assignment by using Group Policy

Supporting module(s):

- [Implement Group Policy Objects](#)
- [Monitor and troubleshoot AD DS](#)

Study guide for the Applied Skills assessment lab: Deploy and manage Microsoft Azure Arc--enabled

Article • 06/27/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Onboard servers to Azure Arc

- Add a server to Azure Arc by using the interactive method
- Create a service principal
- Add a server to Azure Arc by using the at-scale method
- Register Windows Admin Center with Azure
- Add a server to Azure Arc by using Windows Admin Center

Supporting module (s):

- [Plan and deploy Azure Arc-enabled servers at scale](#)

Configure monitoring of Azure Arc--enabled Windows Server instances by using Azure Policy

- Create a Log Analytics workspace
- Create and configure a data collection rule
- Create a data collection endpoint
- Create an Azure Policy assignment

Supporting module (s):

- [Govern your hybrid and multicloud machines through Azure Arc-enabled servers](#)

Configure updates of Azure Arc--enabled servers by using Azure Update Manager

- Enable Windows Update service on the Azure Arc--enabled servers
- Configure periodic assessments for a single Arc--enabled server
- Configure periodic checking for missing system updates on multiple servers by using Azure Policy
- Configure patch orchestration for a single Arc--enabled server
- Install one-time updates
- Configure a maintenance schedule

Supporting module (s):

- [Organize and inventory hybrid and multicloud machines through Arc-enabled servers](#)

Configure Microsoft Defender for Cloud for Azure Arc--enabled servers

- Configure Microsoft Defender for Cloud workload protection for servers
- Configure Defender for Cloud workload protection for SQL Server
- Apply Defender for Cloud--based recommendations

Supporting module (s):

- [Secure your hybrid and multicloud machines by using Azure Arc-enabled servers](#)

Manage Azure Arc--enabled servers by using scripting

- Implement VM extensions in Azure Arc--enabled servers
- Perform maintenance by using the azcmagent CLI
- Perform management tasks by using Run Command on Azure Arc--enabled servers

Supporting module (s):

- [Manage hybrid workloads with Azure Arc](#)

Study guide for the Applied Skills assessment lab: Implement security through a pipeline using Azure DevOps

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Configure secure access to pipeline resources

- Configure pipeline access to agent pools
- Configure pipeline access to secret variables in variable groups
- Configure pipeline access to secure files
- Configure pipeline access to service connections
- Configure pipeline access to environments
- Configure pipeline access to repositories

Supporting module (s):

- [Configure secure access to pipeline resources](#)

Configure and validate permissions

- Configure and validate user permissions to the pipeline
- Configure and validate pipeline permissions
- Configure and validate approval and branch checks

Supporting module (s):

- [Configure and validate permissions](#)

Configure a project and repository structure to support secure pipelines

- Separate a project into another repository
- Separate a project into two projects

Supporting module (s):

- [Configure a project and repository structure to support secure pipelines](#)

Extend a pipeline to use multiple templates

- Create a nested template
- Rewrite the main deployment pipeline
- Configure the pipeline and the application to use tokenization
- Open application, create tokens, create YAML to remove plain text secrets
- Restrict agent logging
- Identify and conditionally remove script tasks from templates

Supporting module (s):

- [Extend a pipeline to use multiple templates](#)

Manage identity for projects, pipelines, and agents

- Configure a Microsoft-hosted pool
- Configure agents for projects
- Configure agent identities
- Configure the scope of a service connection
- Convert to a managed identity

Supporting module (s):

- [Manage identity for projects, pipelines, and agents](#)

Study guide for the Applied Skills assessment lab: Develop an ASP.NET Core web app that consumes an API

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Interact with an API

- Retrieve an API URI and call a specific REST endpoint
- Invoke a protected method by using an API key

Supporting module (s):

- [Interact with an ASP.NET Core minimal API](#)

Implement safe HTTP operations

- Implement a REST client
- Write a GET request
- Implement paging
- Implement filtering

Supporting module (s):

- [Implement HTTP operations in ASP.NET Razor Pages](#)

Implement unsafe HTTP operations

- Write a POST request

- Write a PUT request
- Write a DELETE request
- Write a PATCH request

Supporting module (s):

- [Implement HTTP operations in ASP.NET Razor Pages](#)

Render API responses by using Razor Pages

- Save user input by using the API
- Iterate through a result set to display data
- Render HTTP status responses in a Razor Page

Supporting module (s):

- [Render API responses in ASP.NET Core Razor Pages](#)

Deploy a project to Azure App Service

- Compile a project
- Deploy a build to Azure App Service

Supporting module (s):

- [Interact with an ASP.NET Core minimal API](#)

Study guide for the Applied Skills assessment lab: Deploy cloud-native apps using Azure Container Apps

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Configure a secure connection between an Azure Container Registry and an ACA

- Configure a managed identity
- Configure ACRpull permissions for the managed identity
- Configure private endpoints

Supporting module (s):

- [Configure Azure Container Registry for container app deployments](#)

Create and configure a container app in Azure Container Apps

- Create a container app environment
- Create a container app
- Add services to the environment
- Configure ingress for services
- Configure secrets and storage

Supporting module (s):

- [Configure a container app in Azure Container Apps](#)

Configure continuous integration by using Azure Pipelines

- Configure an Azure Container Apps deployment task
- Configure secrets in Azure Key Vault
- Configure environment variables

Supporting module (s):

- [Configure continuous deployment for container apps](#)

Scale a deployed app in Azure Container Apps

- Configure HTTP scale rules
- Configure TCP scale rules
- Configure custom scale rules

Supporting module (s):

- [Scale and manage deployed container apps](#)

Manage revisions in Azure Container Apps

- Set up a staging environment
- Choose a revision mode
- Create a new revision
- Configure traffic splitting

Supporting module (s):

- [Scale and manage deployed container apps](#)

Study guide for the Applied Skills assessment lab: Develop AI agents using Microsoft Azure OpenAI and Semantic Kernel

Article • 06/27/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Prepare the development environment

- Deploy an Azure OpenAI Service model
- Retrieve and store an endpoint and a key
- Create a new console application

Supporting module (s):

- [Build your kernel](#)

Run prompts with Semantic Kernel

- Create a Semantic Kernel object
- Create and run a prompt

Supporting module (s):

- [Create plugins for semantic kernel](#)

Improve the prompt

- Refine the prompt to be more specific, such as changing the output format or the style
- Define message roles in chat completion prompts
- Add variables to the prompt
- Add context to the prompt by using the ChatHistory object
- Configure few-shot prompting
- Save the prompt as a file

Supporting module (s):

- [Create plugins for semantic kernel](#)

Create native plug-ins for Semantic Kernel

- Create native plug-ins for Semantic Kernel
- Create and decorate a plug-in class
- Invoke native function manually
- Invoke native function automatically
- Combine prompts and functions

Supporting module (s):

- [Give your AI agent skills](#)

Implement nested functions

- Embed core plug-ins, including conversation summary and time
- Use the Handlebars template prompt
- Create and embed a custom nested function

Supporting module (s):

- [Combine Prompts and Functions](#)
- [Give your AI agent skills](#)

Improve automation by using planners

- Create a Handlebars planner

- Create and run a plan
- Save a plan
- Optimize a plan by modifying the template

Supporting module (s):

- [Use intelligent planners](#)
- [Guided project - Create an AI travel agent](#)

Study guide for the Applied Skills assessment lab: Develop custom copilots by using Microsoft Azure AI Studio

Article • 09/20/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Prepare the AI hub

- Create an Azure AI hub
- Create a new Azure AI project
- Add project users and assign roles

Supporting module (s):

- [Fundamentals of Azure AI services](#)

Configure connected resources

- Configure an Azure AI services or Azure OpenAI Service connection
- Configure an Azure AI Search connection
- Configure a storage connection

Supporting module (s):

- [Create and consume Azure AI services](#)

Deploy and test a model

- Select an appropriate model and version from the Azure AI model catalog and collections
- Configure deployment settings
- Deploy a model
- Edit a deployed model
- Test a deployed model

Supporting module (s):

- [Explore and deploy models from the model catalog in Azure AI Studio](#)

Create a copilot by using prompt flow

- Create a chat flow
- Configure a language model node, including parameters and prompts
- Configure a Python node
- Configure a prompt node
- Define inputs and outputs
- Run and test the chat flow

Supporting module (s):

- [Develop your own custom copilots with Azure AI Studio](#)

Implement a Retrieval Augmented Generation (RAG) pattern

- Create a data component
- Create an index
- Integrate the data component and the index into the flow
- Test the index
- Run the chat application

Supporting module (s):

- [Implement Retrieval Augmented Generation \(RAG\) with Azure OpenAI Service](#)

Configure responsible AI

- Create a custom content filter
- Create an input filter that includes a blocklist
- Create an output filter with protected material
- Apply a custom content filter to an existing deployment

Supporting module (s):

- [Responsible generative AI in AI Studio](#)

Assess and compare copilot performance

- Assess a copilot by using built-in performance and quality metrics
- Assess a copilot by using built-in risk and safety metrics
- Assess a copilot by using manual evaluations

Supporting module (s):

- [Evaluate the performance of your custom copilot in the Azure AI Studio](#)

Study guide for the Applied Skills assessment lab: Migrate SQL Server workloads to Azure SQL Database

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Assess and prepare databases for migration

- Install and run Azure SQL Migration extension for Azure Data Studio
- Identify and resolve issues that will block migration
- Identify and resolve compatibility issues
- Choose the correct purchasing model for an Azure SQL Database based on requirements

Supporting module (s):

- [Assess SQL Server databases for migration to Azure SQL](#)

Provision and configure an Azure SQL Database

- Specify the database name
- Create an Azure SQL server
- Configure compute and storage
- Select a backup storage redundancy option
- Configure a private endpoint

- Select database collation
- Configure an Microsoft Entra ID admin account

Supporting module (s):

- [Deploy PaaS solutions with Azure SQL](#)

Migrate a database to an Azure SQL Database

- Migrate a database
- Migrate set of tables

Supporting module (s):

- [Migrate SQL Server workloads to Azure SQL Database](#)

Configure disaster recovery

- Configure active geo-replication
- Select the correct server
- Set up user access to the secondary database
- Failover to a different region

Supporting module (s):

- [Perform post-migration tasks on Azure SQL](#)

Perform post-migration configuration

- Enable long-term backup support
- Configure health alerts
- Create alert rules for space used and CPU
- Enable and configure Azure SQL Auditing

Supporting module (s):

- [Perform post-migration tasks on Azure SQL](#)

Migrate instance-level dependencies

- Migrate users

- Migrate logins

Supporting module (s):

- [Perform post-migration tasks on Azure SQL](#)

Study guide for the Applied Skills assessment lab: Create an intelligent document processing solution with Azure AI Document Intelligence

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure resources

- Create a Document Intelligence resource
- Configure blob storage
- Sort documents by type
 - Supporting module (s):
 - [Plan an Azure AI Document Intelligence solution](#)

Configure model endpoints for document types

- Choose when to use invoice versus receipt versus OCR
- Get the endpoint and key for the resource from the portal
- Enter the endpoint URL

- Supporting module (s):
 - [Use prebuilt Form Recognizer models](#)

Extract key value pairs

- Manually analyze file by using the Document Intelligence Studio
- Remove key value pairs that have a confidence level below NN%

Supporting module (s):

- [Use prebuilt Form Recognizer models](#)

Create a template-based custom model

- Configure Document Intelligence Studio and connect it to the Azure resource
- Label key value pairs on documents by using Document Intelligence Studio
- Compose and test a model
- Deploy a model
- Create a custom Document Intelligence project

Supporting module (s):

- [Extract data from forms with Azure Document Intelligence](#)

Programmatically analyze data in form

- Retrieve the endpoint for a model
- Download a set of documents from a storage endpoint
- Send documents to a model
- Process results of a model to perform a calculation, such as a total
- Provide a list of all instances of a specific property in the set of documents
- Download a set of documents from a storage endpoint
- Send documents to the Read OCR model
- Send extracted text to Language service

Supporting module (s):

- [Extract data from forms with Azure Document Intelligence](#)

Study guide for the Applied Skills assessment lab: Build a natural language processing solution with Azure AI Language

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Deploy a language resource and use prebuilt models

- Create a language resource that includes custom features
- Select an appropriate pre-built model
- Specify the endpoint

Supporting module (s):

- [Analyze text with Azure AI Language](#)

Create a custom text classification solution

- Create a new text classification project
- Upload training data and a JSON file that defines labels
- Deploy a text classification solution and connect it to an existing application

Supporting module (s):

- [Create a custom text classification solution](#)

Create a custom Named Entity Recognition (NER) solution

- Create a new NER project
- Upload training data and label files
- Deploy an NER solution and connect it to an existing application

Supporting module (s):

- [Create a custom named entity extraction solution](#)

Create a conversational language understanding (CLU) solution

- Import a conversational language understanding project
- Define a custom data split
- Deploy a conversational language understanding solution and connect it to an existing application

Supporting module (s):

- [Build a conversational language understanding model](#)

Create a question answering solution

- Create a question answering project
- Upload a source file
- Deploy a question answering solution and connect it to an existing application

Supporting module (s):

- [Build a question answering solution](#)

Study guide for the Applied Skills assessment lab: Build an Azure AI Vision solution

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create a Computer Vision resource

- Develop a proof of concept from a built-in model
- Create a Computer Vision resource in Azure
- Upload files to Vision Studio

Supporting module (s):

- [Analyze images](#)

Analyze images

- Filter based on confidence scores
- Filter based on bounding boxes
- Configure client object in code
- Extract text from images

Supporting module (s):

- [Analyze images](#)

Create a custom image analysis model

- Prepare the dataset
- Import labels from a COCO file
- Add additional labels to dataset

Supporting module (s):

- [Classify images](#)

Train and evaluate the model

- Split training dataset
- Train and score dataset
- Compare models by analyzing metrics
- Publish model

Supporting module (s):

- [Classify images](#)

Consume a custom model

- Configure an app to use a key and endpoint
- Call model and get results
- Implement logic to process image attributes

Supporting module (s):

- [Classify images](#)

Analyze video

- Retrieve specific frames by using a search query
- Analyze frames

Supporting module (s):

- [Analyze video](#)

Study guide for the Applied Skills assessment lab: Develop generative AI solutions with Azure OpenAI Service

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Deploy an Azure OpenAI resource and an Azure OpenAI model

- Deploy an Azure OpenAI resource
- Deploy a model in Azure OpenAI studio
- Generate responses by using the chat playground

Supporting module (s):

- [Get started with Azure OpenAI Service](#)

Generate natural language responses by using Azure OpenAI

- Retrieve and use resource endpoint and key
- Configure an app to connect to an Azure Open AI model
- Define appropriate parameters
- Generate responses from the client

Supporting module (s):

- [Build natural language solutions with Azure OpenAI Service](#)

Apply prompt engineering techniques by using Azure OpenAI

- Customize prompts by using prompt engineering techniques
- Configure a detailed system message
- Improve responses by using few shot learning

Supporting module (s):

- [Apply prompt engineering with Azure OpenAI Service](#)

Generate and improve code by using Azure OpenAI

- Generate code from natural language query
- Fix bugs in existing code
- Write unit tests for existing functions
- Complete code from comments and function definition
- Generate code documentation
- Refactor code

Supporting module (s):

- [Generate code with Azure OpenAI Service](#)

Generate images with DALL-E in Azure OpenAI

- Define a required prompt for a given task
- Consume an image generation API
- Retrieve and process a response from a model

Supporting module (s):

- [Generate images with Azure OpenAI Service](#)

Use Azure OpenAI on your data

- Upload data and define a data source
- Configure an app to specify a data source

Supporting module (s):

- [Implement Retrieval Augmented Generation \(RAG\) with Azure OpenAI Service](#)

Study guide for the Applied Skills assessment lab: Train and manage a machine learning model with Azure Machine Learning

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Set up a development environment in Azure Machine Learning

- Create and configure an appropriate compute instance
- Clone git repositories in Azure ML
- Install appropriate libraries in notebooks
 - Supporting module (s):
 - [Work with compute targets in Azure Machine Learning](#)

Prepare data for model training

- Connect to a data asset by using the Azure ML SDK
- Identify and resolve data quality issues by using Python
- Perform feature engineering
- Manage versioning of a data asset

- Supporting module (s):
 - [Make data available in Azure Machine Learning](#)

Create and configure a model training script as a command job

- Create and configure an appropriate compute resource for the training
- Configure training parameters
- Submit a command job that trains a model

Supporting module (s):

- [Work with compute targets in Azure Machine Learning](#)
- [Run a training script as a command job in Azure Machine Learning](#)

Manage artifacts by using MLflow

- Log metrics, parameters, and artifacts by using MLflow
- Log a model by using MLflow
- Query MLflow logs by using the MLflow SDK

Supporting module (s):

- [Track model training with MLflow in jobs](#)

Deploy a model for real-time consumption

- Register a model
- Create and configure an online endpoint
- Deploy a model to an online endpoint
- Test a deployed model by invoking the endpoint

Supporting module (s):

- [Deploy a model to a managed online endpoint](#)
- [Register an MLflow model in Azure Machine Learning](#)

Study guide for the Applied Skills assessment lab: Implement a Real-Time Intelligence Solution with Microsoft Fabric

Article • 06/11/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Prepare a Real-Time Intelligence environment

- Create a KQL database
- Create lookup tables
- Enable data mirroring in OneLake
- Create an Eventhouse and add a KQL database

Supporting module (s):

- [Get started with Real-Time Intelligence in Microsoft Fabric](#)

Create and load data from external sources

- Load data from a storage account
- Create an external table
- Validate that data sources are loaded correctly by using a row count, a filtered count, and a group by count

Supporting module (s):

- [Use real time eventstreams in Microsoft Fabric](#)
- [Query data in a KQL database in Microsoft Fabric](#)

Load and process streaming data by using Eventstreams

- Connect a streaming dataset to an Eventstream
- Load data directly
- Configure event processing
- Load data by using windowing
- Send data to a KQL database

Supporting module (s):

- [Use real time eventstreams in Microsoft Fabric](#)

Explore the data

- Convert SQL to KQL
- Query data for min/max, median, and summary statistics
- Visualize data by using the render operator, including bar, line, column, and scatter charts
- Perform row-based calculations
- Create relationships between tables
- Process free text data by using the parse operator
 - [Query data in a KQL database in Microsoft Fabric](#)

Manipulate data

- Change data types by using a table variable
- Group or aggregate data by using the top-nested operator
- Perform data cleansing processes on the data, including time-series
- Create an update policy
- Create a materialized view

- Create a user-defined stored function

Supporting module (s):

- [Get started with Real-Time Intelligence in Microsoft Fabric](#)

Study guide for the Applied Skills assessment lab: Implement a lakehouse in Microsoft Fabric

Article • 06/18/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create a lakehouse

- Create a workspace and assign the workspace to a Fabric capacity
- Create and manage shortcuts to other lakehouse data in the same workspace
- Create tables, including managed and external

Supporting module (s):

- Introduction to end-to-end analytics using Microsoft Fabric
- [Get started with lakehouses in Microsoft Fabric](#)
- [Use Apache Spark in Microsoft Fabric](#)

Ingest data

- Upload files using the lakehouse explorer
- Ingest data by using a data pipeline, dataflow, or notebook
- Schedule data pipelines, dataflows, and notebooks

Supporting module (s):

- [Get started with lakehouses in Microsoft Fabric](#)

- [Ingest Data with Dataflows Gen2 in Microsoft Fabric](#)
- [Use Data Factory pipelines in Microsoft Fabric](#)

Transform data

- Implement a star schema, including Type 1 and Type 2 slowly-changing dimensions
- Transform columns
- Shape tables
- Implement data cleansing
- Implement file partitioning
- Load transformed data into a Delta table

Supporting module (s):

- [Organize a Fabric lakehouse using medallion architecture design](#)
- [Work with Delta Lake tables in Microsoft Fabric](#)

Perform exploratory analytics

- Query data by using the SQL analytics endpoint
- Create relationships between tables
- Analyze data by using the default semantic model

Supporting module (s):

- [Organize a Fabric lakehouse using medallion architecture design](#)

Study guide for the Applied Skills assessment lab: Implement a data warehouse in Microsoft Fabric

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create a data warehouse

- Create a workspace and assign the workspace to a Fabric capacity
- Provision a data warehouse
- Set data warehouse properties

Supporting module (s):

- [Get started with data warehouses in Microsoft Fabric](#)

Load data

- Load data by using a data pipeline
- Load data by using a dataflow
- Load data by using a cross-warehouse query
- Load data by using the COPY command

Supporting module (s):

- [Load data into a Microsoft Fabric data warehouse](#)

Transform data

- Choose columns
- Customize columns
- Transform rows, including filtering and group by
- Clean data
- Denormalize data

Supporting module (s):

- [Load data into a Microsoft Fabric data warehouse](#)

Model a star schema

- Create fact tables
- Create dimension tables and slowly changing dimensions
- Create relationships

Supporting module (s):

- [Load data into a Microsoft Fabric data warehouse](#)

Query and modify data

- Create views
- Create stored procedures
- Create functions

Supporting module (s):

- [Query a data warehouse in Microsoft Fabric](#)

Manage security

- Grant access by using workspace roles
- Configure object-level permissions
- Configure dynamic data masking rules
- Configure column-level security
- Configure row-level security

Supporting module (s):

- [Get started with data warehouses in Microsoft Fabric](#)

Study guide for the Applied Skills assessment lab: Implement a data science and machine learning solution with Microsoft Fabric

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Ingest and load data

- Ingest data in a Lakehouse
 - Load Lakehouse data into a notebook
 - Convert data to a dataframe
- Supporting module (s):
- [Explore data for data science with notebooks in Microsoft Fabric](#)

Explore data in a notebook

- Explore data by displaying a dataframe
 - Explore data by running statistics
 - Explore data by building a visualization
- Supporting module (s):
- [Explore data for data science with notebooks in Microsoft Fabric](#)

Prepare and transform data

- Aggregate data
- Identify and resolve missing data
- Identify and remove duplicate data
- Perform one-hot encoding
- Normalize and scale data

Supporting module (s):

- [Preprocess data with Data Wrangler in Microsoft Fabric](#)

Train and evaluate a model

- Split datasets into training, validation and test sets
- Train a model by using Scikit-learn
- Train a model by using SynapseML
- Evaluate regression and classification metrics for a model

Supporting module (s):

- [Train and track machine learning models with MLflow in Microsoft Fabric](#)

Track models and experiments

- Create an experiment
- Track model metrics, parameters, and artifacts by using MLflow
- Retrieve experiment runs and their metrics by using MLflow

Supporting module (s):

- [Train and track machine learning models with MLflow in Microsoft Fabric](#)

Generate predictions from a model

- Score a model by using the PREDICT function
- Write model prediction results to the Lakehouse
- Save and register an ML model in Microsoft Fabric by using MLflow

Supporting module (s):

- Generate batch predictions using a deployed model in Microsoft Fabric

Study guide for the Applied Skills assessment lab: Build AI-powered solutions by using Microsoft Azure Database for PostgreSQL

Article • 09/20/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Configure an Azure Database for PostgreSQL environment

- Import a sample database
- Connect to the database
- Configure the Azure OpenAI Service extension
- Create an Azure OpenAI deployment

Supporting module (s):

- [Get started with generative AI in Azure Database for PostgreSQL](#)

Generate document embeddings

- Create SQL tables for embeddings
- Choose an appropriate Azure OpenAI model to generate embeddings
- Generate embeddings from preexisting text
- Create a vector index on embeddings

Supporting module (s):

- [Enable semantic search in Azure Database for PostgreSQL](#)

Implement semantic search

- Convert a search string into a vector
- Query the vector
- Create a semantic search function

Supporting module (s):

- [Enable semantic search in Azure Database for PostgreSQL](#)

Apply RAG

- Define a pipeline
- Retrieve data from the database based on user input
- Augment user input with newly generated results
- Generate output based on aggregated data

Supporting module (s):

- [Enable semantic search in Azure Database for PostgreSQL](#)

Transform and analyze natural language

- Generate extractive summaries for data
- Generate a batch process to persist summary data in the database
- Detect language
- Translate text
- Perform a sentiment analysis on the dataset

Supporting module (s):

- [Perform sentiment analysis and opinion mining with Azure Database for PostgreSQL](#)

Study guide for the Applied Skills assessment lab: Configure SIEM security operations using Microsoft Sentinel

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure a Microsoft Sentinel workspace

- Create a Log Analytics workspace, including region option
- Deploy Microsoft Sentinel to the workspace
- Assign a Microsoft Sentinel role to a user
- Configure data retention

Supporting module (s):

- [Create and manage Microsoft Sentinel workspaces](#)

Deploy a Microsoft Sentinel Content Hub solution

- Install a Microsoft Sentinel Content Hub solution
- Set up data connectors
- Install and configure a Windows Security Events via AMA connector

Supporting module (s):

- [Connect Microsoft services to Microsoft Sentinel](#)

Configure analytics rules in Microsoft Sentinel

- Perform an attack
- Query Microsoft Sentinel logs to find the attack
- Create an analytic rule
- Test the analytic rule by performing another attack

Supporting module (s):

- [Threat detection with Microsoft Sentinel analytics](#)
- [Connect Windows hosts to Microsoft Sentinel](#)

Configure automation in Microsoft Sentinel

- Create and run a Microsoft Sentinel playbook
- Configure an analytic rule to run a playbook
- Configure an automation rule

Supporting module (s):

- [Automation in Microsoft Sentinel](#)

Study guide for the Applied Skills assessment lab: Secure Azure services and workloads with Microsoft Defender for Cloud regulatory compliance controls

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Configure Microsoft Defender for Cloud

- Upgrade a Microsoft Defender for Cloud subscription
- Install agents on an Azure VM
- Configure email notifications

Supporting module (s):

- [Set up Microsoft Defender for Cloud](#)

Implement just-in-time (JIT) virtual machine (VM) access

- Create an NSG
- Associate an NSG to a VM network adapter
- Enable JIT
- Configure JIT

Supporting module (s):

- Filter network traffic with a network security group using the Azure portal

Implement a Log Analytics workspace

- Create a Log Analytics workspace
- Connect a Log Analytics workspace to an Azure VM
- Upgrade a Log Analytics workspace
- Configure file integrity monitoring
- Configure adaptive network hardening rule

Supporting module (s):

- [Create a Log Analytics workspace for Microsoft Defender for Cloud](#)

Mitigate network security risks

- Enable a firewall on a Key vault
- Configure security on a network security group

Supporting module (s):

- [Configure Azure Key Vault networking settings](#)

Mitigate data protection risks

- Enable Azure Disk Encryption (ADE)
- Configure purge protection on Key vault

Supporting module (s):

- [Configure Azure Key Vault networking settings](#)

Mitigate endpoint security risks

- Enable a private endpoint
- Disable public access
- Add the Microsoft Defender for Endpoint extension to an Azure VM

Supporting module (s):

- [Connect an Azure SQL server using an Azure Private Endpoint using the Azure portal](#)

Mitigate posture and vulnerability management risks

- Configure auditing for an Azure VM
- Configure a guest configuration extension for an Azure VM
- Configure vulnerability assessment for an Azure VM

Supporting module (s):

- [Configure and integrate a Log Analytics agent and workspace in Defender for Cloud](#)

Study guide for the Applied Skills assessment lab: Implement information protection and data loss prevention by using Microsoft Purview

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create a custom sensitive information type

- Create a custom sensitive information type that uses a regular expression
- Create a custom sensitive information type that uses a keyword list or keyword dictionary
- Create a custom sensitive information type from a built-in sensitive information type
- Create a document fingerprint classifier

Supporting module (s):

- [Create and manage sensitive information types](#)

Create and publish a sensitivity label

- Create sensitivity labels
- Create a sub label
- Publish a sensitivity label
- Enable sensitivity labels for files in SharePoint and OneDrive

- Enable co-authoring for files encrypted with sensitivity labels

Supporting module (s):

- [Create and configure sensitivity labels with Microsoft Purview](#)

Create and assign an auto-labeling policy

- Choose or create sublabel for auto-labeling policy
- Choose location to apply the auto-labeling policy
- Create rule for auto-labeling policy
- Assign a sensitivity label to an auto-labeling policy

Supporting module (s):

- [Create and configure sensitivity labels with Microsoft Purview](#)

Create a data loss prevention (DLP) policy

- Choose policy locations
- Create an advanced DLP rule
- Configure a policy mode

Supporting module (s):

- [Prevent data loss in Microsoft Purview](#)

Configure Endpoint DLP

- Enable device onboarding
- Configure auditing and activity restrictions on devices
- Configure Endpoint settings for DLP

Supporting module (s):

- [Prevent data loss in Microsoft Purview](#)

Study guide for the Applied Skills assessment lab: Create and manage canvas apps with Power Apps

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create a canvas app from scratch

- Create a blank canvas app
- Choose an appropriate format
- Configure app settings

Supporting module (s):

- [Get started with Power Apps canvas apps](#)
- [Customize a canvas app in Power Apps](#)

Connect a canvas app to a data source

- Choose the appropriate data source type
- Add a new connection

Supporting module (s):

- [Work with external data in a Power Apps canvas app](#)

Configure a gallery

- Add a gallery control
- Connect a gallery to a data source
- Configure fields
- Configure navigation

Supporting module (s):

- [Customize a canvas app in Power Apps](#)

Configure a details screen

- Add a detail form
- Configure the layout of a form
- Select fields and configure display controls
- Configure navigation

Supporting module (s):

- [Customize a canvas app in Power Apps](#)
- [Write data in a Power Apps canvas app](#)

Configure an input screen

- Add an input form
- Select fields and configure edit controls
- Configure field validation
- Configure submit and cancel options
- Configure validation

Supporting module (s):

- [Write data in a Power Apps canvas app](#)

Save and publish a canvas app

- Save a canvas app

- Publish a canvas app

Supporting module (s):

- [Publish, share, and maintain a canvas app](#)

Study guide for the Applied Skills assessment lab: Create and manage automated processes by using Power Automate

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create triggers

- Design a cloud flow by using a template
- Select an appropriate type of trigger
- Upload a data source
- Create a timed trigger
- Create an automated trigger

Supporting module (s):

- [Build approval flows with Power Automate](#)
- [Get started with Power Automate](#)

Create and configure actions for notifications

- Create appropriate actions
- Configure actions

Supporting module (s):

- [Get started with Power Automate](#)

Implement conditional logic

- Configure conditions on when a trigger should run
- Configure conditions on when actions should run
- Configure run-after settings for an action
- Run a test execution for a cloud flow

Supporting module (s):

- [Integrate with cloud flows - Online workshop](#)

Study guide for the Applied Skills assessment lab: Create and manage model-driven apps with Power Apps and Dataverse

Article • 06/12/2024

Purpose of this document

This study guide provides a summary of the topics covered in the assessment lab, along with additional resources to help you prepare. Note that the learning path on the credential details page may include more modules than the "Tasks performed" to provide a cohesive learning experience.

Tasks at a glance

Create and configure Dataverse tables

- Create a Dataverse table
- Configure security roles for a table
- Add a lookup column
- Create columns

Supporting module (s):

- [Create tables in Dataverse](#)

Modify a Dataverse solution

- Add an existing table to a solution
- Create components in a solution
- Export a solution

Supporting module (s):

- [Manage solutions in Power Apps and Power Automate](#)

Modify Dataverse forms

- Add columns and configure column display properties
- Configure form structure with tabs and sections
- Add a Timeline control
- Add a read-only Subgrid component
- Configure access to forms

Supporting module (s):

- [Configure forms, charts, and dashboards in model-driven apps](#)

Modify Dataverse views

- Add columns to a view
- Set sort order in a view
- Modify filters in a view

Supporting module (s):

- [Configure forms, charts, and dashboards in model-driven apps](#)

Configure a model-driven app

- Add a table to the app
- Configure app navigation
- Manage available forms and views

Supporting module (s):

- [Get started with model-driven apps in Power Apps](#)