### Objective: Manage Azure identities and governance (15-20%)

Manage Azure AD objects

[What is Azure Active Directory?](https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-whatis?WT.mc_id=thomasmaurer-blog-thmaure)

* Create users and groups
  + [Add or delete users using Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/add-users-azure-active-directory?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Creating a new user in Azure AD](https://docs.microsoft.com/en-us/powershell/azure/active-directory/new-user-sample?WT.mc_id=thomasmaurer-blog-thmaure)
  + [New-AzureADUser](https://docs.microsoft.com/en-us/powershell/module/azuread/new-azureaduser?WT.mc_id=thomasmaurer-blog-thmaure)
* Create administrative units
  + [Administrative units in Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/roles/administrative-units)
  + [Manage administrative units in Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/roles/admin-units-manage)
* Manage user and group properties
  + [Add or update a user’s profile information using Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-users-profile-azure-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Edit your group information using Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/fundamentals/active-directory-groups-settings-azure-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage device settings
  + [Manage device identities using the Azure portal](https://docs.microsoft.com/en-us/azure/active-directory/devices/device-management-azure-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [How To: Manage stale devices in Azure AD](https://docs.microsoft.com/en-us/azure/active-directory/devices/manage-stale-devices?WT.mc_id=thomasmaurer-blog-thmaure)
* Perform bulk user updates
  + [Bulk import group members (preview) in Azure Active Directory](https://docs.microsoft.com/en-us/azure/active-directory/users-groups-roles/groups-bulk-import-members?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage guest accounts
  + [What is guest user access in Azure Active Directory B2B?](https://docs.microsoft.com/en-us/azure/active-directory/b2b/what-is-b2b?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Manage guest access with Azure AD access reviews](https://docs.microsoft.com/en-us/azure/active-directory/governance/manage-guest-access-with-access-reviews?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Add guest users to your directory in the Azure portal](https://docs.microsoft.com/en-us/azure/active-directory/b2b/b2b-quickstart-add-guest-users-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Azure AD Join
  + [How to: Plan your Azure AD join implementation](https://docs.microsoft.com/en-us/azure/active-directory/devices/azureadjoin-plan?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Configure hybrid Azure Active Directory join for managed domains](https://docs.microsoft.com/en-us/azure/active-directory/devices/hybrid-azuread-join-managed-domains?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure self-service password reset
  + [Plan an Azure Active Directory self-service password reset](https://docs.microsoft.com/en-us/azure/active-directory/authentication/howto-sspr-deployment?WT.mc_id=thomasmaurer-blog-thmaure)
  + [How it works: Azure AD self-service password reset](https://docs.microsoft.com/en-us/azure/active-directory/authentication/concept-sspr-howitworks?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Licensing requirements for Azure AD self-service password reset](https://docs.microsoft.com/en-us/azure/active-directory/authentication/concept-sspr-licensing?WT.mc_id=thomasmaurer-blog-thmaure)

Manage role-based access control (RBAC)

[What is role-based access control (RBAC) for Azure resources?](https://docs.microsoft.com/en-us/azure/role-based-access-control/overview?WT.mc_id=thomasmaurer-blog-thmaure)

* Create a custom role
  + [Tutorial: Create a custom role for Azure resources using Azure PowerShell](https://docs.microsoft.com/en-us/azure/role-based-access-control/tutorial-custom-role-powershell?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Create a custom role for Azure resources using Azure CLI](https://docs.microsoft.com/en-us/azure/role-based-access-control/tutorial-custom-role-cli?WT.mc_id=thomasmaurer-blog-thmaure)
* Provide access to Azure resources by assigning roles
  + [Add or remove role assignments using Azure RBAC and the Azure portal](https://docs.microsoft.com/en-us/azure/role-based-access-control/role-assignments-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Interpret access assignments
  + [List role assignments using Azure RBAC and the Azure portal](https://docs.microsoft.com/en-us/azure/role-based-access-control/role-assignments-list-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Understand deny assignments for Azure resources](https://docs.microsoft.com/en-us/azure/role-based-access-control/deny-assignments?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage multiple directories
  + [Understand how multiple Azure Active Directory tenants interact](https://docs.microsoft.com/en-us/azure/active-directory/users-groups-roles/licensing-directory-independence?WT.mc_id=thomasmaurer-blog-thmaure)

Manage subscriptions and governance

[Overview of Management services in Azure](https://docs.microsoft.com/en-us/azure/governance/azure-management)

* Configure Azure policies
  + [What is Azure Policy?](https://docs.microsoft.com/en-us/azure/governance/policy/overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Create a policy assignment to identify non-compliant resources](https://docs.microsoft.com/en-us/azure/governance/policy/assign-policy-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Create and manage policies to enforce compliance](https://docs.microsoft.com/en-us/azure/governance/policy/tutorials/create-and-manage?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure resource locks
  + [Lock resources to prevent unexpected changes](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/lock-resources?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Prevent Azure Resources from unexpected deletion using Locks](https://www.thomasmaurer.ch/2020/02/prevent-azure-resources-from-unexpected-deletion-using-locks/) (Thomas Maurer)
* Apply and manage tags on resources
  + [Use tags to organize your Azure resources](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/tag-resources?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Use Azure Tags to organize Resources](https://www.thomasmaurer.ch/2020/02/use-azure-tags-to-organize-resources/) (Thomas Maurer)
* Manage resource groups
  + [Manage Azure Resource Manager resource groups by using the Azure portal](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/manage-resource-groups-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Manage Azure resource groups by using Azure PowerShell](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/manage-resources-powershell?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Delete resource groups](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/manage-resource-groups-portal?WT.mc_id=thomasmaurer-blog-thmaure#delete-resource-groups)
  + [Move resources to a new resource group or subscription](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/move-resource-group-and-subscription?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage subscriptions
  + [Create an additional Azure subscription](https://docs.microsoft.com/en-us/azure/cost-management-billing/manage/create-subscription?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Change your Azure subscription to a different offer](https://docs.microsoft.com/en-us/azure/cost-management-billing/manage/switch-azure-offer?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage costs
  + [What is Azure Cost Management and Billing?](https://docs.microsoft.com/en-us/azure/cost-management-billing/cost-management-billing-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Explore and analyze costs with cost analysis](https://docs.microsoft.com/en-us/azure/cost-management-billing/costs/quick-acm-cost-analysis?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure management groups
  + [Create management groups for resource organization and management](https://docs.microsoft.com/en-us/azure/governance/management-groups/create?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Manage your resources with management groups](https://docs.microsoft.com/en-us/azure/governance/management-groups/manage?WT.mc_id=thomasmaurer-blog-thmaure)

### Objective: Implement and manage storage (15-20%)

Secure storage

[Introduction to Azure Storage](https://docs.microsoft.com/en-us/azure/storage/common/storage-introduction?WT.mc_id=thomasmaurer-blog-thmaure)

* Configure network access to storage accounts
  + [Configure Azure Storage firewalls and virtual networks](https://docs.microsoft.com/en-us/azure/storage/common/storage-network-security?WT.mc_id=thomasmaurer-blog-thmaure)
* Create and configure storage accounts
  + [Storage account overview](https://docs.microsoft.com/en-us/azure/storage/common/storage-account-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create an Azure Storage account](https://docs.microsoft.com/en-us/azure/storage/common/storage-account-create?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Upgrade to a general-purpose v2 storage account](https://docs.microsoft.com/en-us/azure/storage/common/storage-account-upgrade?WT.mc_id=thomasmaurer-blog-thmaure)
* Generate shared access signature (SAS) tokens
  + [Delegate access with a shared access signature](https://docs.microsoft.com/en-us/rest/api/storageservices/delegate-access-with-shared-access-signature?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Grant limited access to Azure Storage resources using shared access signatures (SAS)](https://docs.microsoft.com/en-us/azure/storage/common/storage-sas-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage access keys
  + [Manage storage account access keys](https://docs.microsoft.com/en-us/azure/storage/common/storage-account-keys-manage?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Azure AD Authentication for a storage account
  + [Authorize access to blobs and queues using Azure Active Directory](https://docs.microsoft.com/en-us/azure/storage/common/storage-auth-aad?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure access to Azure Files
  + [On-premises Active Directory Domain Services authentication over SMB for Azure file shares](https://docs.microsoft.com/en-us/azure/storage/files/storage-files-identity-auth-active-directory-enable)
  + [Enable Azure Active Directory Domain Services authentication on Azure Files](https://docs.microsoft.com/en-us/azure/storage/files/storage-files-identity-auth-active-directory-domain-service-enable?tabs=azure-portal)
  + [Configuring Azure Files network endpoints](https://docs.microsoft.com/en-us/azure/storage/files/storage-files-networking-endpoints?tabs=azure-portal)

Manage storage

* Export from Azure job
  + [Use the Azure Import/Export service to export data from Azure Blob storage](https://docs.microsoft.com/en-us/azure/storage/common/storage-import-export-data-from-blobs?WT.mc_id=thomasmaurer-blog-thmaure)
* Import into Azure job
  + [Use the Azure Import/Export service to import data to Azure Blob Storage](https://docs.microsoft.com/en-us/azure/storage/common/storage-import-export-data-to-blobs?WT.mc_id=thomasmaurer-blog-thmaure)
* Install and use Azure Storage Explorer
  + [Get started with Storage Explorer](https://docs.microsoft.com/en-us/azure/vs-azure-tools-storage-manage-with-storage-explorer?WT.mc_id=thomasmaurer-blog-thmaure)
* Copy data by using AZCopy
  + [AzCopy Reference](https://docs.microsoft.com/en-us/azure/storage/common/storage-ref-azcopy)
  + [What is Azure CLI](https://docs.microsoft.com/en-us/cli/azure/what-is-azure-cli?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Get started with Azure CLI](https://docs.microsoft.com/en-us/cli/azure/get-started-with-azure-cli?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Install the Azure CLI](https://www.thomasmaurer.ch/2019/07/how-to-install-azure-cli-on-windows-one-liner/) (Thomas Maurer)
* Implement Azure Storage replication
  + [Change how a storage account is replicated](https://docs.microsoft.com/en-us/azure/storage/common/redundancy-migration?toc=%2Fazure%2Fstorage%2Fblobs%2Ftoc.json&tabs=portal)
  + [Use geo-redundancy to design highly available applications](https://docs.microsoft.com/en-us/azure/storage/common/geo-redundant-design?toc=%2Fazure%2Fstorage%2Fblobs%2Ftoc.json&tabs=current)
* Configure blob object replication
  + [Configure object replication for block blobs](https://docs.microsoft.com/en-us/azure/storage/blobs/object-replication-configure?tabs=portal)

Configure Azure files and Azure blob storage

[What is Azure? - Files](https://docs.microsoft.com/en-us/azure/storage/files/storage-files-introduction?WT.mc_id=thomasmaurer-blog-thmaure)

* Create an Azure file share
  + [Quickstart: Create and manage Azure file shares with the Azure portal](https://docs.microsoft.com/en-us/azure/storage/files/storage-how-to-use-files-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create an Azure file share](https://docs.microsoft.com/en-us/azure/storage/files/storage-how-to-create-file-share?WT.mc_id=thomasmaurer-blog-thmaure)
* Create and configure Azure File Sync service
  + [Planning for an Azure File Sync deployment](https://docs.microsoft.com/en-us/azure/storage/files/storage-sync-files-planning?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Extend Windows file servers with Azure File Sync](https://docs.microsoft.com/en-us/azure/storage/files/storage-sync-files-extend-servers?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Azure Blob Storage
  + [Quickstart: Upload, download, and list blobs with the Azure portal](https://docs.microsoft.com/en-us/azure/storage/blobs/storage-quickstart-blobs-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure storage tiers
  + [Azure Blob storage: hot, cool, and archive access tiers](https://docs.microsoft.com/en-us/azure/storage/blobs/storage-blob-storage-tiers?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure blob lifecycle management
  + [Optimize costs by automating Azure Blob Storage access tiers](https://docs.microsoft.com/en-us/azure/storage/blobs/storage-lifecycle-management-concepts?tabs=azure-portal)

### Objective: Deploy and manage Azure compute resources (20-25%)

Automate deployment and configuration of VMs

* Modify Azure Resource Manager (ARM) template
  + [Extend Azure Resource Manager template functionality](https://docs.microsoft.com/en-us/azure/architecture/building-blocks/extending-templates?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Azure Resource Manager templates overview](https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Create and deploy your first Azure Resource Manager template](https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/template-tutorial-create-first-template?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure a virtual hard disk (VHD) template
  + [Create a VM from a VHD by using the Azure portal](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/create-vm-specialized-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Deploy from template
  + [Quickstart: Create and deploy Azure Resource Manager templates by using the Azure portal](https://docs.microsoft.com/en-us/azure/azure-resource-manager/templates/quickstart-create-templates-use-the-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Save a deployment as an ARM template
  + [Download the template for a VM](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/download-template?WT.mc_id=thomasmaurer-blog-thmaure)
* Deploy virtual machine extensions
  + [Custom Script Extension for Windows](https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/custom-script-windows?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Use the Azure Custom Script Extension Version 2 with Linux virtual machines](https://docs.microsoft.com/en-us/azure/virtual-machines/extensions/custom-script-linux?WT.mc_id=thomasmaurer-blog-thmaure)

Configure VMs

* Configure Azure Disk Encryption
  + [Azure Disk Encryption for Linux VMs](https://docs.microsoft.com/en-us/azure/virtual-machines/linux/disk-encryption-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Azure Disk Encryption for Windows VMs](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/disk-encryption-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Move VMs from one resource group to another
  + [Move a Windows VM to another Azure subscription or resource group](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/move-vm?WT.mc_id=thomasmaurer-blog-thmaure)
* Manage VM sizes
  + [Resize a Windows VM](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/resize-vm?WT.mc_id=thomasmaurer-blog-thmaure)
* Add data discs
  + [Attach a managed data disk to a Windows VM by using the Azure portal](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/attach-managed-disk-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Attach a data disk to a Windows VM with PowerShell](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/attach-disk-ps?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure networking
  + [Common PowerShell commands for Azure Virtual Networks](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/ps-common-network-ref?WT.mc_id=thomasmaurer-blog-thmaure)
  + [How to open ports to a virtual machine with the Azure portal](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/nsg-quickstart-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create and manage a Windows virtual machine that has multiple NICs](https://docs.microsoft.com/en-us/azure/virtual-machines/windows/multiple-nics?WT.mc_id=thomasmaurer-blog-thmaure)
* Redeploy VMs
  + [Redeploy Windows virtual machine to new Azure node](https://docs.microsoft.com/en-us/azure/virtual-machines/troubleshooting/redeploy-to-new-node-windows?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure high availability
  + [Availability options for Azure Virtual Machines](https://docs.microsoft.com/en-us/azure/virtual-machines/availability)
* Deploy and configure scale sets
  + [Overview virtual machine scale sets](https://docs.microsoft.com/en-us/azure/virtual-machine-scale-sets/overview?context=/azure/virtual-machines/context/context)

Create and configure containers

* Create and configure Azure Kubernetes Service (AKS)
  + [Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/intro-kubernetes?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Deploy an Azure Kubernetes Service (AKS) cluster using the Azure portal](https://docs.microsoft.com/en-us/azure/aks/kubernetes-walkthrough-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Create and configure Azure Container Instances (ACI)
  + [What is Azure Container Instances?](https://docs.microsoft.com/en-us/azure/container-instances/container-instances-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Deploy a container instance in Azure using the Azure portal](https://docs.microsoft.com/en-us/azure/container-instances/container-instances-quickstart-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Deploy a container instance in Azure using the Azure CLI](https://docs.microsoft.com/en-us/azure/container-instances/container-instances-quickstart?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure storage for Azure Kubernetes Service (AKS)
  + [Best practices for storage and backups in Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/operator-best-practices-storage)
  + [Ephemeral OS on with AKS clusters](https://docs.microsoft.com/en-us/azure/aks/cluster-configuration#ephemeral-os)
* Configure scaling for AKS
  + [Scaling options for applications in Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/concepts-scale)
  + [Scale the node count in an Azure Kubernetes Service (AKS) cluster](https://docs.microsoft.com/en-us/azure/aks/scale-cluster)
* Configure network connections for AKS
  + [Use kubenet networking with your own IP address ranges in Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/configure-kubenet)
  + [Configure Azure Container Networking Interface (CNI) networking in Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/configure-azure-cni)
  + [Use an internal load balancer with AKS](https://docs.microsoft.com/en-us/azure/aks/internal-lb)
  + [Use a public Standard Load Balancer in AKS](https://docs.microsoft.com/en-us/azure/aks/load-balancer-standard)
  + [Create an ingress controller in AKS](https://docs.microsoft.com/en-us/azure/aks/ingress-basic)
  + [Control egress traffic for cluster nodes in AKS](https://docs.microsoft.com/en-us/azure/aks/limit-egress-traffic)
* Upgrade an AKS cluster
  + [Upgrade an Azure Kubernetes Service (AKS) cluster](https://docs.microsoft.com/en-us/azure/aks/upgrade-cluster)
  + [Tutorial: Upgrade Kubernetes in Azure Kubernetes Service (AKS)](https://docs.microsoft.com/en-us/azure/aks/tutorial-kubernetes-upgrade-cluster?tabs=azure-cli)

Create and configure Azure App Service

* Create an App Service plan
  + [Azure App Service plan overview](https://docs.microsoft.com/en-us/azure/app-service/overview-hosting-plans?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Manage an App Service plan in Azure](https://docs.microsoft.com/en-us/azure/app-service/app-service-plan-manage?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure scaling settings in an App Service plan
  + [Scale up an app in Azure App Service](https://docs.microsoft.com/en-us/azure/app-service/manage-scale-up)
* Create an App Service
  + [App Service overview](https://docs.microsoft.com/en-us/azure/app-service/overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create an ASP.NET Core web app in Azure](https://docs.microsoft.com/en-us/azure/app-service/app-service-web-get-started-dotnet?WT.mc_id=thomasmaurer-blog-thmaure)
* Secure an App Service
  + [Security in Azure App Service](https://docs.microsoft.com/en-us/azure/app-service/overview-security)
  + [Azure security baseline for App Service](https://docs.microsoft.com/en-us/security/benchmark/azure/baselines/app-service-security-baseline)
  + [Security recommendations for App Service](https://docs.microsoft.com/en-us/azure/app-service/security-recommendations)
  + [Azure Defender - Protect your web apps and APIs](https://docs.microsoft.com/en-us/azure/security-center/defender-for-app-service-introduction)
* Configure custom domain names
  + [Map an existing custom DNS name to Azure App Service](https://docs.microsoft.com/en-us/Azure/app-service/app-service-web-tutorial-custom-domain?tabs=cname)
* Configure backup for an App Service
  + [Back up your app in Azure](https://docs.microsoft.com/en-us/azure/app-service/manage-backup)
  + [Back up App Configuration stores automatically](https://docs.microsoft.com/en-us/azure/azure-app-configuration/howto-backup-config-store)
* Configure networking settings
  + [App Service networking features](https://docs.microsoft.com/en-us/azure/app-service/networking-features)
  + [Networking considerations for an App Service Environment](https://docs.microsoft.com/en-us/azure/app-service/environment/network-info)
* Configure deployment settings
  + [Set up staging environments in Azure App Service](https://docs.microsoft.com/en-us/azure/app-service/deploy-staging-slots)
  + [Continuous deployment to Azure App Service](https://docs.microsoft.com/en-us/azure/app-service/deploy-continuous-deployment)

### Objective: Configure and manage virtual networking (25-30%)

Implement and manage virtual networking

* Create and configure virtual networks, including peering
  + [What is Azure Virtual Network?](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Create a virtual network using the Azure portal](https://docs.microsoft.com/en-us/azure/virtual-network/quick-create-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Networking limits](https://docs.microsoft.com/en-us/azure/azure-resource-manager/management/azure-subscription-service-limits?WT.mc_id=thomasmaurer-blog-thmaure#networking-limits)
  + [Virtual network peering overview](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-peering-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Azure Virtual Network frequently asked questions (FAQ) VNet Peering](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-faq?WT.mc_id=thomasmaurer-blog-thmaure#vnet-peering)
  + [Tutorial: Connect virtual networks with virtual network peering using the Azure portal](https://docs.microsoft.com/en-us/azure/virtual-network/tutorial-connect-virtual-networks-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create a virtual network peering – different deployment models, same subscription](https://docs.microsoft.com/en-us/azure/virtual-network/create-peering-different-deployment-models?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create, change, or delete a virtual network peering](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-manage-peering#requirements-and-constraints?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure private and public IP addresses
  + [Add, change, or remove IP addresses for an Azure network interface](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface-addresses?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create, change, or delete a public IP address](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-public-ip-address?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Associate a public IP address to a virtual machine](https://docs.microsoft.com/en-us/azure/virtual-network/associate-public-ip-address-vm?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure user-defined network routes
  + [Virtual network traffic routing](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-udr-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Implement subnets
  + [Subnet extension](https://docs.microsoft.com/en-us/azure/virtual-network/subnet-extension?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Add, change, or delete a virtual network subnet](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-manage-subnet)
* Configure endpoints on subnets
  + [Virtual Network service endpoints](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-service-endpoints-overview)
  + [What is Azure Private Link?](https://docs.microsoft.com/en-us/azure/private-link/private-link-overview)
  + [Quickstart: Create a Private Endpoint](https://docs.microsoft.com/en-us/azure/private-link/create-private-endpoint-portal)
  + [Tutorial: Connect to a storage account using an Azure Private Endpoint](https://docs.microsoft.com/en-us/azure/private-link/tutorial-private-endpoint-storage-portal)
* Configure private endpoints
  + [What is Azure Private Link?](https://docs.microsoft.com/en-us/azure/private-link/private-link-overview)
  + [Quickstart: Create a Private Endpoint](https://docs.microsoft.com/en-us/azure/private-link/create-private-endpoint-portal)
  + [Tutorial: Connect to a storage account using an Azure Private Endpoint](https://docs.microsoft.com/en-us/azure/private-link/tutorial-private-endpoint-storage-portal)
* Configure Azure DNS, including custom DNS settings and private or public DNS zones
  + [What is Azure DNS?](https://docs.microsoft.com/en-us/azure/dns/dns-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [What is Azure Private DNS?](https://docs.microsoft.com/en-us/azure/dns/private-dns-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Name resolution for resources in Azure virtual networks](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-networks-name-resolution-for-vms-and-role-instances?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Use Azure DNS to provide custom domain settings for an Azure service](https://docs.microsoft.com/en-us/azure/dns/dns-custom-domain?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Host your domain in Azure DNS](https://docs.microsoft.com/en-us/azure/dns/dns-delegate-domain-azure-dns?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Create an Azure private DNS zone using the Azure portal](https://docs.microsoft.com/en-us/azure/dns/private-dns-getstarted-portal?WT.mc_id=thomasmaurer-blog-thmaure)

Secure access to virtual networks

* Create security rules
  + [Create, change, or delete a network security group](https://docs.microsoft.com/en-us/azure/virtual-network/manage-network-security-group?WT.mc_id=thomasmaurer-blog-thmaure)
* Associate an network security group (NSG) to a subnet or network interface
  + [Create, change, or delete a network security group](https://docs.microsoft.com/en-us/azure/virtual-network/manage-network-security-group?WT.mc_id=thomasmaurer-blog-thmaure)
* Evaluate effective security rules
  + [Create, change, or delete a network interface](https://docs.microsoft.com/en-us/azure/virtual-network/virtual-network-network-interface?WT.mc_id=thomasmaurer-blog-thmaure)
* Implement Azure Firewall
  + [Tutorial: Deploy and configure Azure Firewall using the Azure portal](https://docs.microsoft.com/en-us/azure/firewall/tutorial-firewall-deploy-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Implement Azure Bastion
  + [Create an Azure Bastion host](https://docs.microsoft.com/en-us/azure/bastion/bastion-create-host-portal?WT.mc_id=thomasmaurer-blog-thmaure)

Configure load balancing

* Configure Application Gateway
  + [Application Gateway configuration overview](https://docs.microsoft.com/en-us/azure/application-gateway/configuration-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure an internal or public load balancer
  + [Tutorial: Balance internal traffic load with a Basic load balancer in the Azure portal](https://docs.microsoft.com/en-us/azure/load-balancer/tutorial-load-balancer-basic-internal-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create an internal load balancer by using the Azure PowerShell module](https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-get-started-ilb-arm-ps?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Create a Load Balancer to load balance VMs using the Azure portal](https://docs.microsoft.com/en-us/azure/load-balancer/quickstart-load-balancer-standard-public-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Troubleshoot load balancing
  + [Troubleshoot Azure Load Balancer](https://docs.microsoft.com/en-us/azure/load-balancer/load-balancer-troubleshoot?WT.mc_id=thomasmaurer-blog-thmaure)

Monitor and troubleshoot virtual networking

* Monitor on-premises connectivity
  + [Diagnose on-premises connectivity via VPN gateways](https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-diagnose-on-premises-connectivity?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure and use Azure Monitor for Networks
  + [Network Connectivity Monitoring with Connection Monitor](https://docs.microsoft.com/en-us/azure/network-watcher/connection-monitor-overview)
  + [Azure Monitor Network Insights](https://docs.microsoft.com/en-us/azure/azure-monitor/insights/network-insights-overview)
* Use Azure Network Watcher
  + [What is Azure Network Watcher?](https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-monitoring-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Troubleshoot external networking
  + [Troubleshoot Virtual Network Gateway and Connections using Azure Network Watcher Azure CLI](https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-troubleshoot-manage-cli?WT.mc_id=thomasmaurer-blog-thmaure)
* Troubleshoot virtual network connectivity
  + [Troubleshoot connections with Azure Network Watcher using the Azure portal](https://docs.microsoft.com/en-us/azure/network-watcher/network-watcher-connectivity-portal?WT.mc_id=thomasmaurer-blog-thmaure)

Integrate an on-premises network with an Azure virtual network

* Create and configure Azure VPN Gateway
  + [Create a route-based VPN gateway using the Azure portal](https://docs.microsoft.com/en-us/azure/vpn-gateway/create-routebased-vpn-gateway-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create a Site-to-Site connection in the Azure portal](https://docs.microsoft.com/en-us/azure/vpn-gateway/vpn-gateway-howto-site-to-site-resource-manager-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Create and configure ExpressRoute
  + [ExpressRoute overview](https://docs.microsoft.com/en-us/azure/expressroute/expressroute-introduction?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Create and modify an ExpressRoute circuit](https://docs.microsoft.com/en-us/azure/expressroute/expressroute-howto-circuit-portal-resource-manager?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Azure Virtual WAN
  + [About Azure Virtual WAN](https://docs.microsoft.com/en-us/azure/virtual-wan/virtual-wan-about?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Tutorial: Create a Site-to-Site connection using Azure Virtual WAN](https://docs.microsoft.com/en-us/azure/virtual-wan/virtual-wan-site-to-site-portal?WT.mc_id=thomasmaurer-blog-thmaure)

### Objective: Monitor and back up Azure resources (10-15%)

Monitor resources by using Azure Monitor

* Configure and interpret metrics
  + [Metrics in Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/platform/data-platform-metrics?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Quickstart: Monitor an Azure resource with Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/learn/quick-monitor-azure-resource?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Azure Monitor logs
  + [What can you do with Azure Monitor Logs?](https://docs.microsoft.com/en-us/azure/azure-monitor/logs/data-platform-logs#what-can-you-do-with-azure-monitor-logs)
  + [Get started with Log Analytics in Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/log-query/get-started-portal?WT.mc_id=thomasmaurer-blog-thmaure)
* Query and analyze logs
  + [Overview of log queries in Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/log-query/log-query-overview?WT.mc_id=thomasmaurer-blog-thmaure)
* Set up alerts and actions
  + [Create, view, and manage metric alerts using Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/platform/alerts-metric?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Metric Alerts with Dynamic Thresholds in Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/platform/alerts-dynamic-thresholds?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Create Metric Alerts for Logs in Azure Monitor](https://docs.microsoft.com/en-us/azure/azure-monitor/platform/alerts-metric-logs?WT.mc_id=thomasmaurer-blog-thmaure)
* Configure Application Insights
  + [Manage Application Insights resources using PowerShell](https://docs.microsoft.com/en-us/azure/azure-monitor/app/powershell?WT.mc_id=thomasmaurer-blog-thmaure)

Implement backup and recovery

* Configure and review backup reports
  + [Configure Azure Backup reports](https://docs.microsoft.com/en-us/azure/backup/configure-reports?WT.mc_id=thomasmaurer-blog-thmaure)
* Perform backup and restore operations by using Azure Backup
  + [Back up a virtual machine in Azure](https://docs.microsoft.com/en-us/azure/backup/quick-backup-vm-portal?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Restore a disk and create a recovered VM in Azure](https://docs.microsoft.com/en-us/azure/backup/tutorial-restore-disk?WT.mc_id=thomasmaurer-blog-thmaure)
* Create a Recovery Services Vault
  + [Create a Recovery Services vault](https://docs.microsoft.com/en-us/azure/backup/backup-create-rs-vault?WT.mc_id=thomasmaurer-blog-thmaure)
* Use soft delete to recover Azure VMs
  + [Soft delete for virtual machines](https://docs.microsoft.com/en-us/azure/backup/soft-delete-virtual-machines?WT.mc_id=thomasmaurer-blog-thmaure)
* Create and configure backup policy
  + [Manage Azure VM backups with Azure Backup service](https://docs.microsoft.com/en-us/azure/backup/backup-azure-manage-vms?WT.mc_id=thomasmaurer-blog-thmaure)
* Perform site-to-site recovery by using Azure Site Recovery
  + [About Site Recovery](https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-overview?WT.mc_id=thomasmaurer-blog-thmaure)
  + [Set up disaster recovery of on-premises VMware virtual machines or physical servers to a secondary site](https://docs.microsoft.com/en-us/azure/site-recovery/vmware-physical-secondary-disaster-recovery?WT.mc_id=thomasmaurer-blog-thmaure)

## On-Demand Training from Microsoft Learn

New to the cloud? Azure fundamentals is a six-part series that teaches you basic cloud concepts, provides a streamlined overview of many Azure services, and guides you with hands-on exercises to deploy your very first services for free.

* [Azure Fundamentals part 1: Describe core Azure Concepts](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-cloud-concepts/)
* [Azure Fundamentals part 2: Describe core Azure Services](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-core-azure-services/)
* [Azure Fundamentals part 3: Describe core solutions and management tools on Azure](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-core-solutions-management-tools-azure/)
* [Azure Fundamentals part 4: Describe general security and network security features](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-general-security-network-security-features/)
* [Azure Fundamentals part 5: Describe identity, governance, privacy, and compliance features](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-identity-governance-privacy-compliance-features/)
* [Azure Fundamentals part 6: Describe Azure cost management and service level agreements](https://docs.microsoft.com/en-us/learn/paths/az-900-describe-azure-cost-management-service-level-agreements/)
* [Prerequisites for Azure administrators](https://docs.microsoft.com/en-us/learn/paths/az-104-administrator-prerequisites/)
* [Manage identities and governance in Azure](https://docs.microsoft.com/en-us/learn/paths/az-104-manage-identities-governance/)
* [Implement and manage storage in Azure](https://docs.microsoft.com/en-us/learn/paths/az-104-manage-storage/)
* [Deploy and manage Azure compute resources](https://docs.microsoft.com/en-us/learn/paths/az-104-manage-compute-resources/)
* [Configure and manage virtual networks for Azure administrators](https://docs.microsoft.com/en-us/learn/paths/az-104-manage-virtual-networks/)
* [Monitor and back up Azure resources](https://docs.microsoft.com/en-us/learn/paths/az-104-monitor-backup-resources/)

Helpful Links:

<https://build5nines.com/free-oss-exam-self-assessment-tool/>

<https://github.com/MicrosoftLearning/AZ-104-MicrosoftAzureAdministrator>

<https://docs.microsoft.com/en-us/learn/certifications/exams/az-104>

<https://azure.microsoft.com/en-us/resources/templates/>

<https://docs.microsoft.com/en-us/azure/azure-government/compliance/azure-services-in-fedramp-auditscope>

Practice Exam:

<https://www.measureup.com/az-104-microsoft-azure-administrator.html>

<https://www.whizlabs.com/microsoft-azure-certification-az-104/>