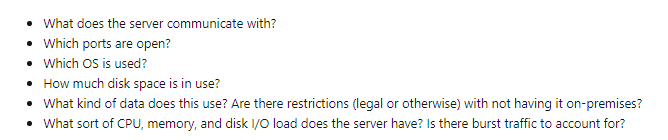
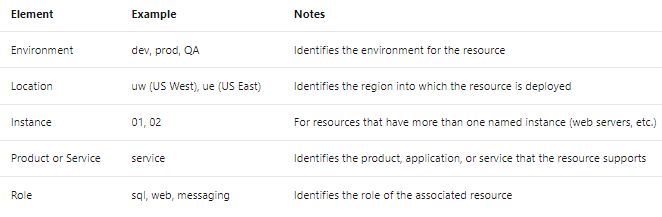
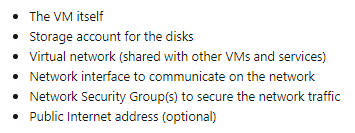
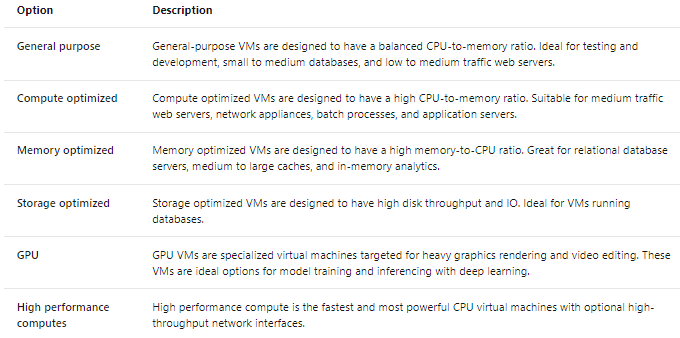
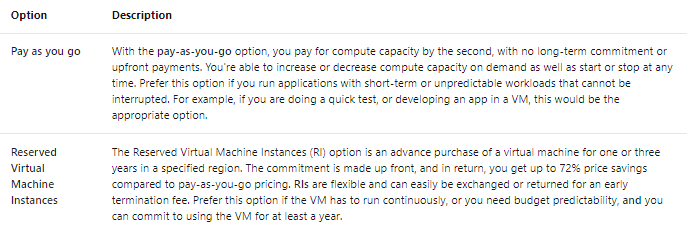
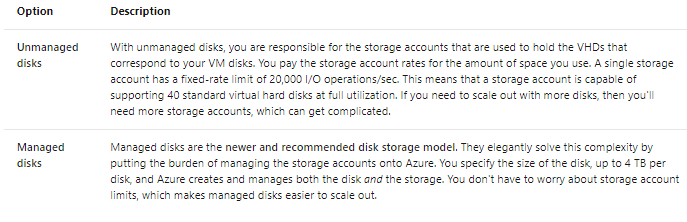
**Introduction to Azure Virtual Machines**

1. Start with the network
   1. The first thing you should think about isn't the virtual machine at all - it's the network
   2. Virtual networks (VNets) are used in Azure to provide private connectivity between Azure Virtual Machines and other Azure services
   3. When you set up a virtual network, you specify the available address spaces, subnets, and security
2. Segregate your network
   1. By default, there is no security boundary between subnets
   2. NSGs act as software firewalls
3. Plan each VM deployment
4. Name the VM
   1. The VM name is used as the computer name, which is configured as part of the operating system
   2. This name also defines a manageable Azure resource
   3. Good convention is to include the following information in the name:
   4. For example, devusc-webvm01
5. What is an Azure resource?
   1. An Azure resource is a manageable item in Azure



1. Decide the location for the VM
   1. Azure has datacenters all over the world filled with servers and disks
   2. Regions ('West US', 'North Europe', 'Southeast Asia', etc.) provide redundancy and availability
   3. When you create and deploy a virtual machine, you must select a region where you want the resources (CPU, storage, etc.) to be allocated
2. Determine the size of the VM
   1. Once you have the name and location set, you need to decide on the size of your VM
   2. Workload options are classified as follows on Azure:
3. What if my size needs change?
   1. You can **upgrade** or **downgrade** the VM - as long as your current hardware configuration is allowed in the new size
   2. The command line tools will report an error if you attempt to resize a VM to an unavailable size
   3. Be careful about resizing production VMs - they will be rebooted automatically which can cause a temporary outage
4. Understanding the pricing model
   1. There are two separate costs the subscription will be charged for every VM: compute and storage
   2. **Compute:** Compute expenses are priced on a per-hour basis but billed on a per-minute basis. For example, you are only charged for 55 minutes of usage if the VM is deployed for 55 minutes. You are not charged for compute capacity if you stop and deallocate the VM since this releases the hardware
   3. **Storage:** You are charged separately for the storage the VM uses. Even if the VM is **stopped**/**deallocated** and you aren’t billed for the running VM, **YOU** **WILL** be charged for the storage used by the disks
   4. You're able to choose from two payment options for compute costs:
5. Storage for the VMs
   1. Best practice is that all Azure virtual machines will have at least two virtual hard disks (VHDs)
   2. The first disk stores the operating system, and the second is used as temporary storage
   3. You can add additional disks
   4. Maximum number is determined by the VM size selection
   5. The data for each VHD is held in Azure Storage as page blobs
6. What is Azure Storage?
   1. Azure Storage is Microsoft's cloud-based data storage solution
   2. Provides security, redundancy, and scalable access to the stored data
   3. Virtual disks can be backed by either Standard or Premium Storage accounts
   4. Azure Premium Storage leverages **solid**-**state** **drives** (**SSDs**) to enable high performance and low latency
   5. You can choose either **unmanaged** disks or **managed** disks:
7. Select an operating system
   1. Azure provides a variety of OS images that you can install into the VM, including several versions of Windows and flavours of Linux
   2. You can search the Azure Marketplace for more sophisticated install images
   3. Finally, if you can't find a suitable OS image, you can create your disk image with what you need