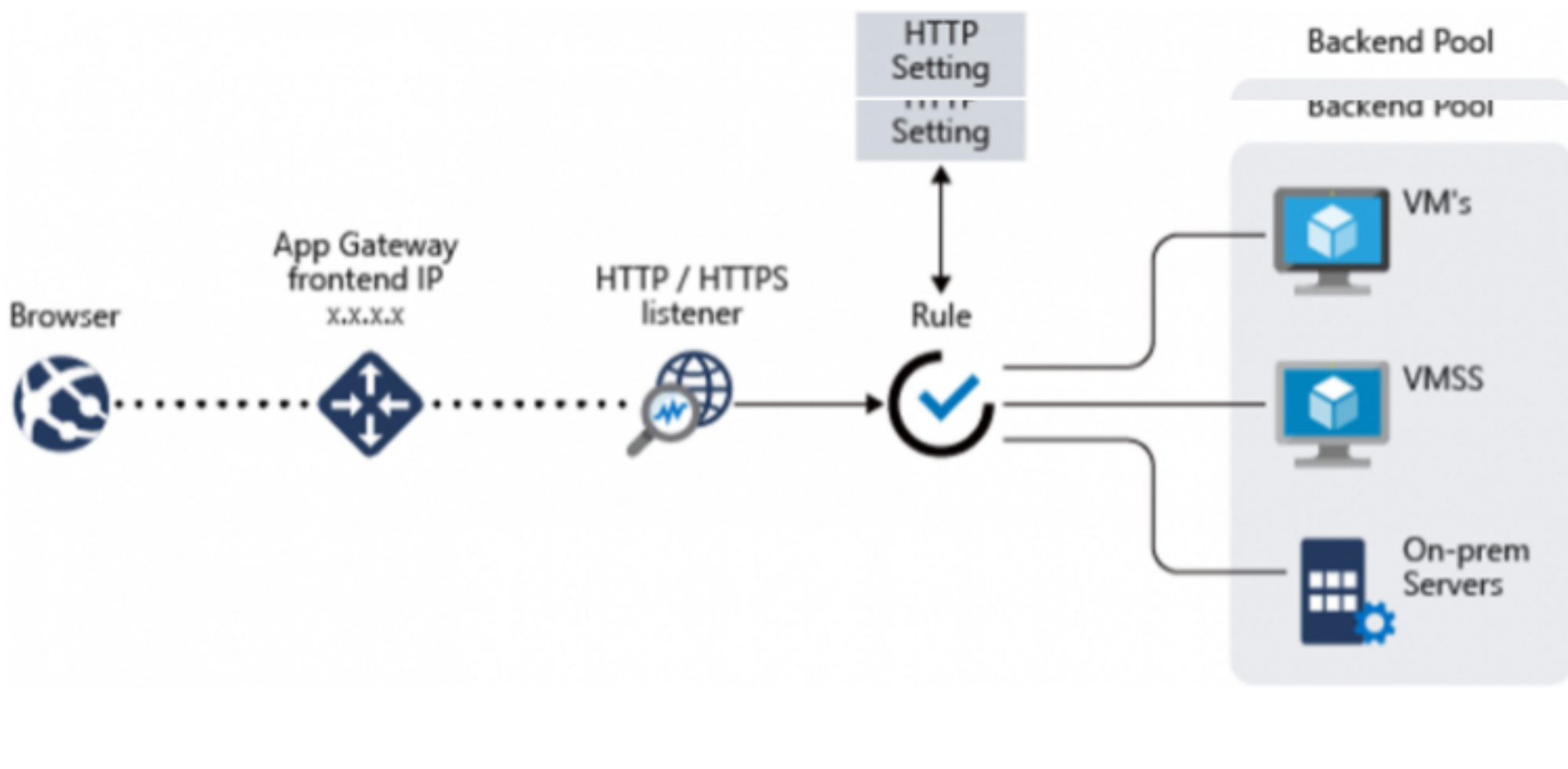


applications.

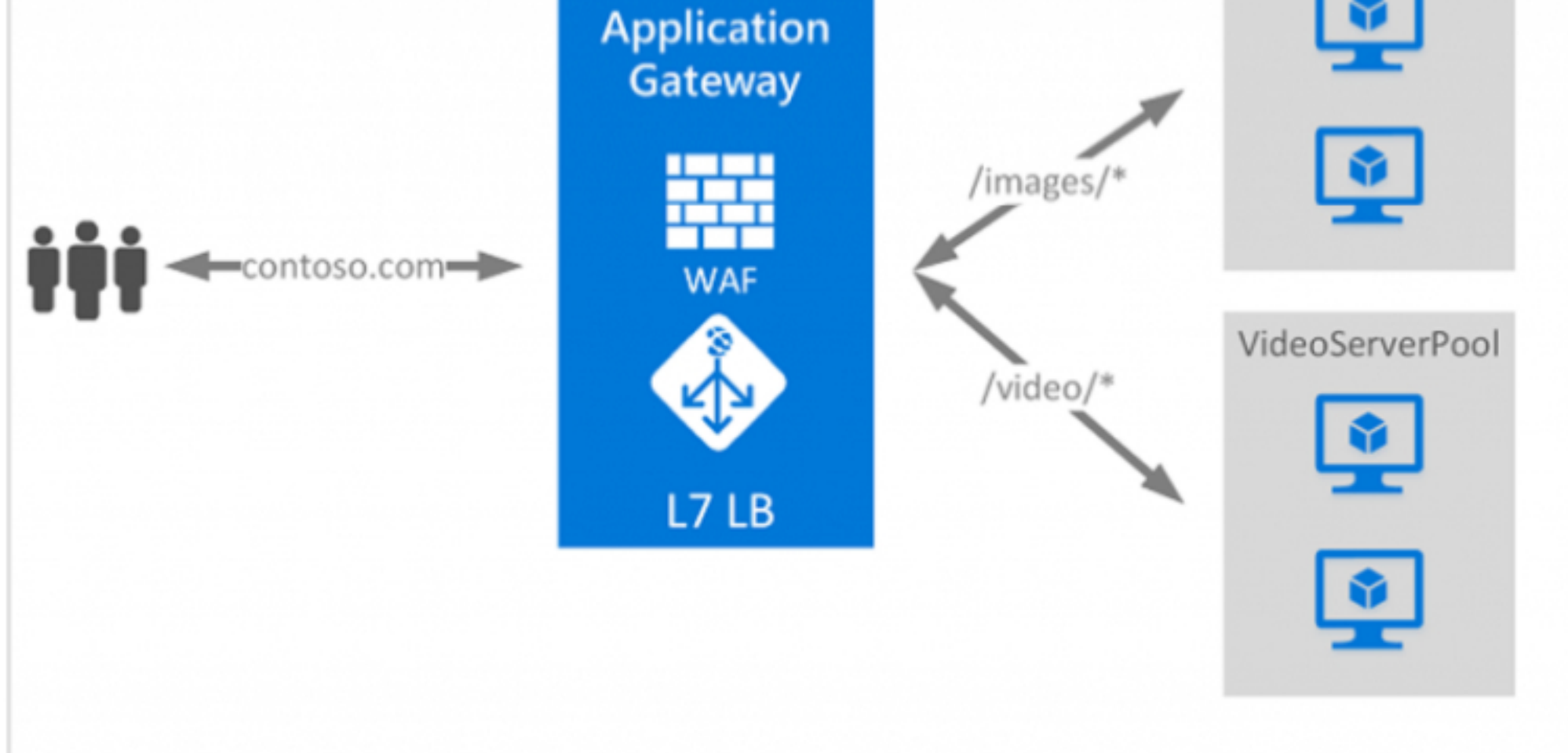
- Traditional load balancers operate at the transport layer (OSI layer 4 – TCP and UDP) and route traffic based on source IP address and port, to a destination IP address and port.

A bird's eye view.



- With Application Gateway, you can make routing decisions based on additional attributes of an HTTP request, such as URI path or host headers.
- For example, you can route traffic based on the incoming URL. So if /images is in the incoming URL, you can route traffic to a specific set of servers (known as a pool) configured for images.
- If /video is in the URL, that traffic is routed to another pool that's optimized for videos.

Visual representation of previous slide. This type of routing is known as application layer (OSI layer 7) load balancing. Azure Application Gateway can do URL-based routing and more.



Secure Socket Layer (SSL/TLS) termination

- Application gateway supports SSL/TLS termination at the gateway, after which traffic typically flows unencrypted to the backend servers.
- This feature allows web servers to be unburdened from costly encryption and decryption overhead. But sometimes unencrypted communication to the servers is not an acceptable option.
- This can be because of security requirements, compliance requirements, or the application may only accept a secure connection.
- For these applications, application gateway supports end to end SSL/TLS encryption.

Autoscaling

- Application Gateway or WAF deployments under Standard_v2 or WAF_v2 SKU support autoscaling and can scale up or down based on changing traffic load patterns.
- Autoscaling also removes the requirement to choose a deployment size or instance count during provisioning.

Zone Redundancy

- An Application Gateway or WAF deployments under Standard_v2 or WAF_v2 SKU can span multiple Availability Zones, offering better fault resiliency and removing the need to provision separate Application Gateways in each zone.

Static VIP

- The application gateway VIP on Standard_v2 or WAF_v2 SKU supports static VIP type exclusively.
- This ensures that the VIP associated with application gateway doesn't change even over the lifetime of the Application Gateway.

URL-based routing

- URL Path Based Routing allows you to route traffic to back-end server pools based on URL Paths of the request.
- One of the scenarios is to route requests for different content types to different pool.
- For example, requests for http://contoso.com/video/* are routed to VideoServerPool, and http://contoso.com/images/* are routed to ImageServerPool.
- DefaultServerPool is selected if none of the path patterns match.

Multiple-site hosting

- Multiple-site hosting enables you to configure more than one web site on the same application gateway instance.
- This feature allows you to configure a more efficient topology for your deployments by adding up to 100 web sites to one Application Gateway, or 40 for WAF (for optimal performance).
- Each web site can be directed to its own pool.
- For example, application gateway can serve traffic for contoso.com and fabrikam.com from two server pools called ContosoServerPool and FabrikamServerPool.
- Requests for http://contoso.com are routed to ContosoServerPool, and http://fabrikam.com are routed to FabrikamServerPool.
- Similarly, two subdomains of the same parent domain can be hosted on the same application gateway deployment.
- Examples of using subdomains could include http://blog.contoso.com and http://app.contoso.com hosted on a single application gateway deployment.

Redirection

- A common scenario for many web applications is to support automatic HTTP to HTTPS redirection to ensure all communication between an application and its users occurs over an encrypted path.
- Application Gateway redirection support offers the following capabilities:
 - Global redirection from one port to another port on the Gateway. This enables HTTP to HTTPS redirection on a site.
 - Path-based redirection. This type of redirection enables HTTP to HTTPS redirection only on a specific site area, for example a shopping cart area denoted by /cart/*.
 - Redirect to an external site.

Session affinity

- The cookie-based session affinity feature is useful when you want to keep a user session on the same server.
- By using gateway-managed cookies, the Application Gateway can direct subsequent traffic from a user session to the same server for processing.
- This is important in cases where session state is saved locally on the server for a user session.

Custom error pages

- Application Gateway allows you to create custom error pages instead of displaying default error pages. You can use your own branding and layout using a custom error page.

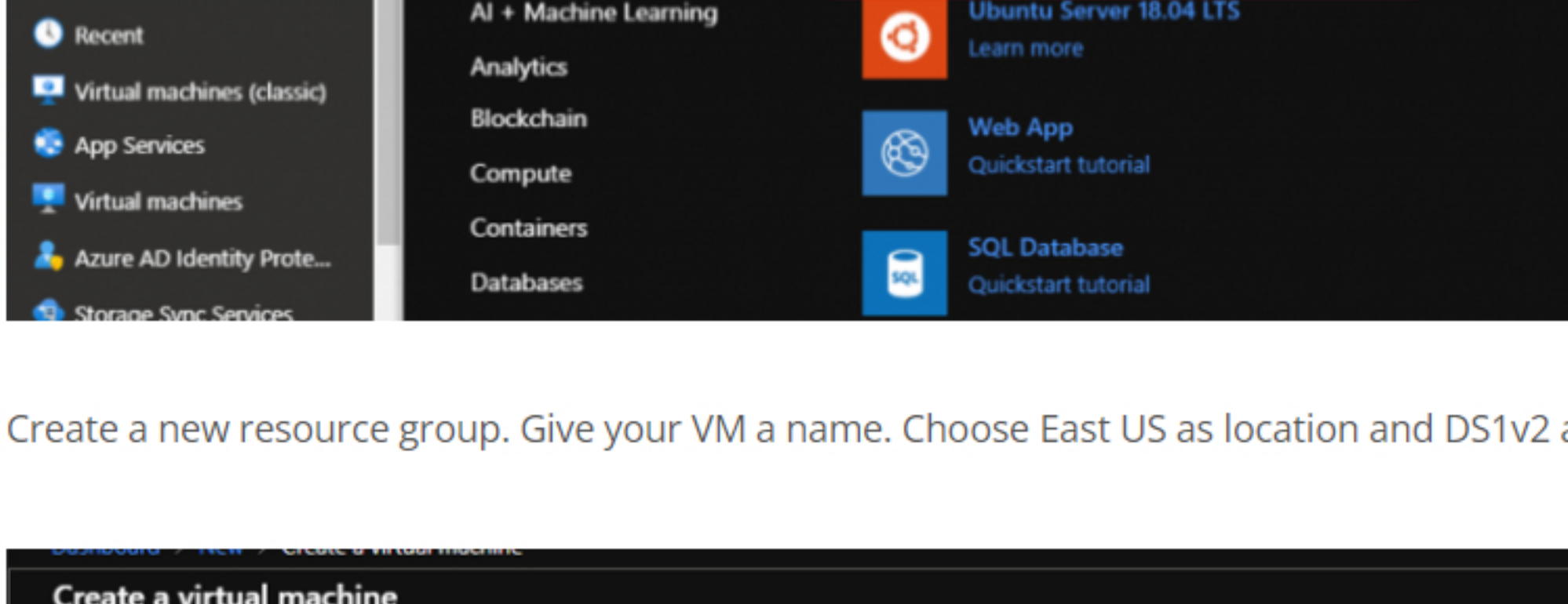
Rewrite HTTP headers

- HTTP headers allow the client and server to pass additional information with the request or the response. Rewriting these HTTP headers helps you accomplish several important scenarios, such as:
 - Adding security-related header fields like HSTS/ X-XSS-Protection.
 - Removing response header fields that can reveal sensitive information.
 - Stripping port information from X-Forwarded-For headers.

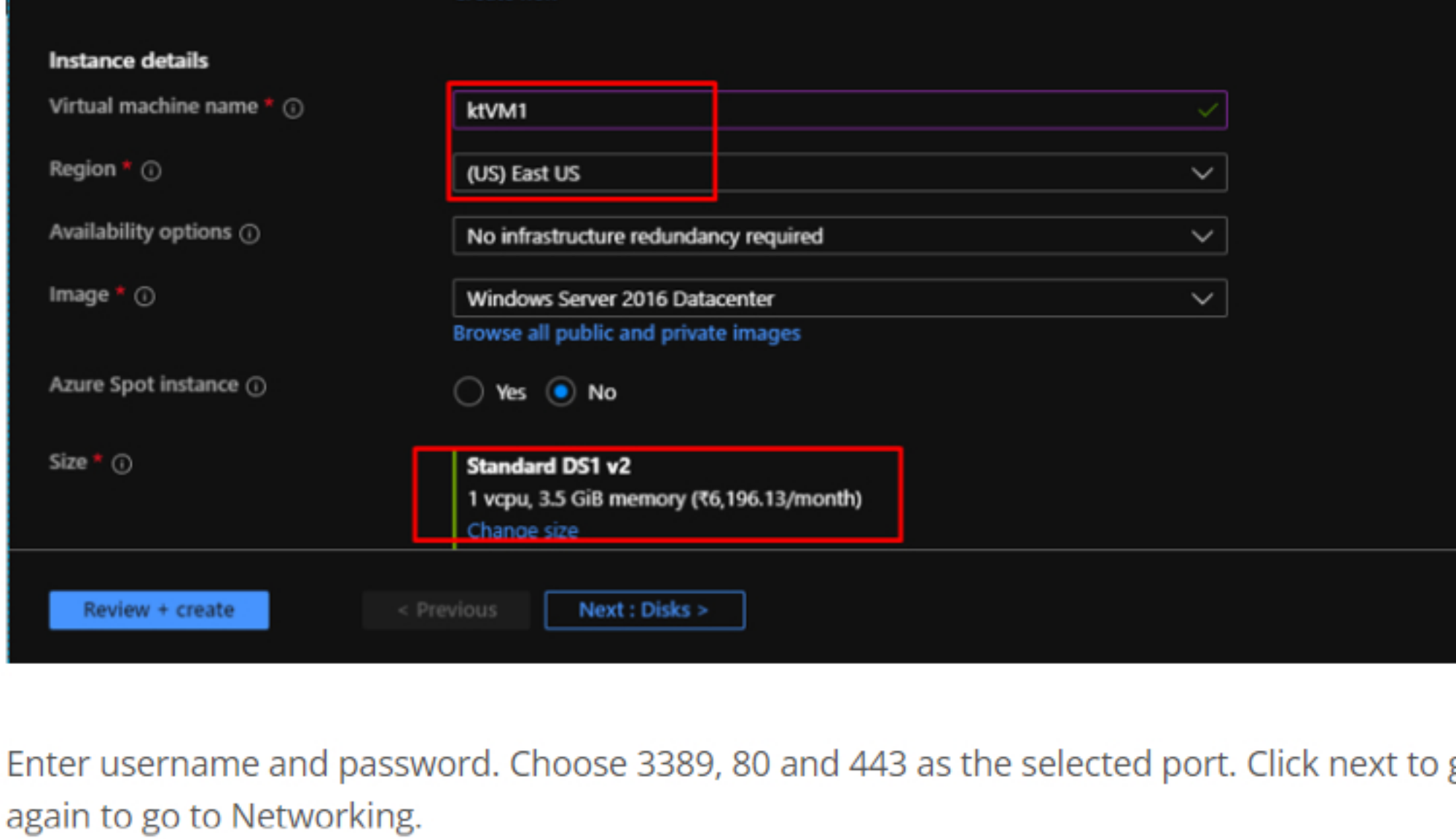
Demo: Create an application gateway with path-based routing rules using

- First of all, we are going to create three virtual machines that are going to be used as backend servers for the application gateway.
- We are also going to install IIS on the virtual machines to verify that the application gateway works as expected.

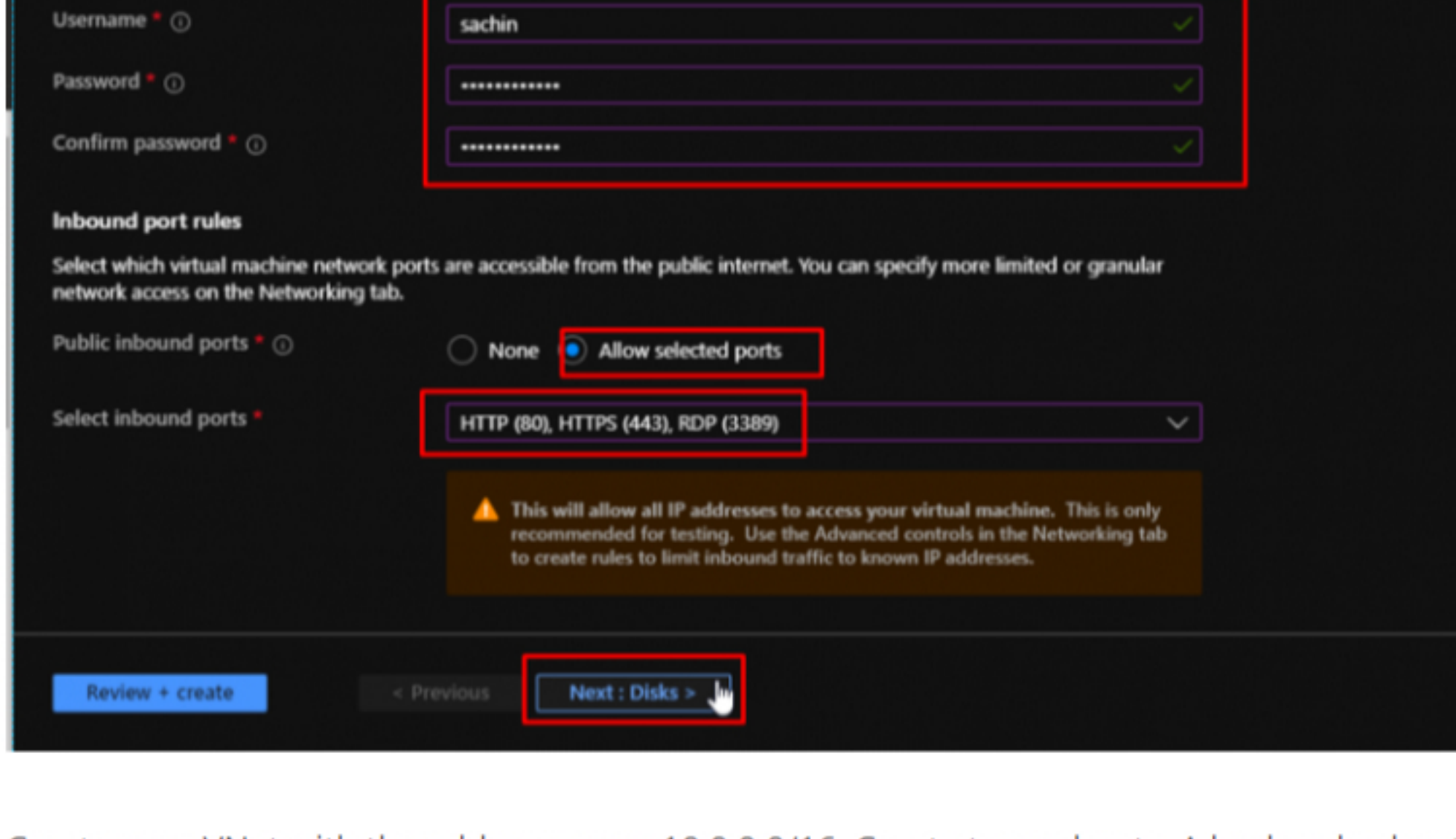
Click Create a resource and select Windows Server 2016 Datacenter.



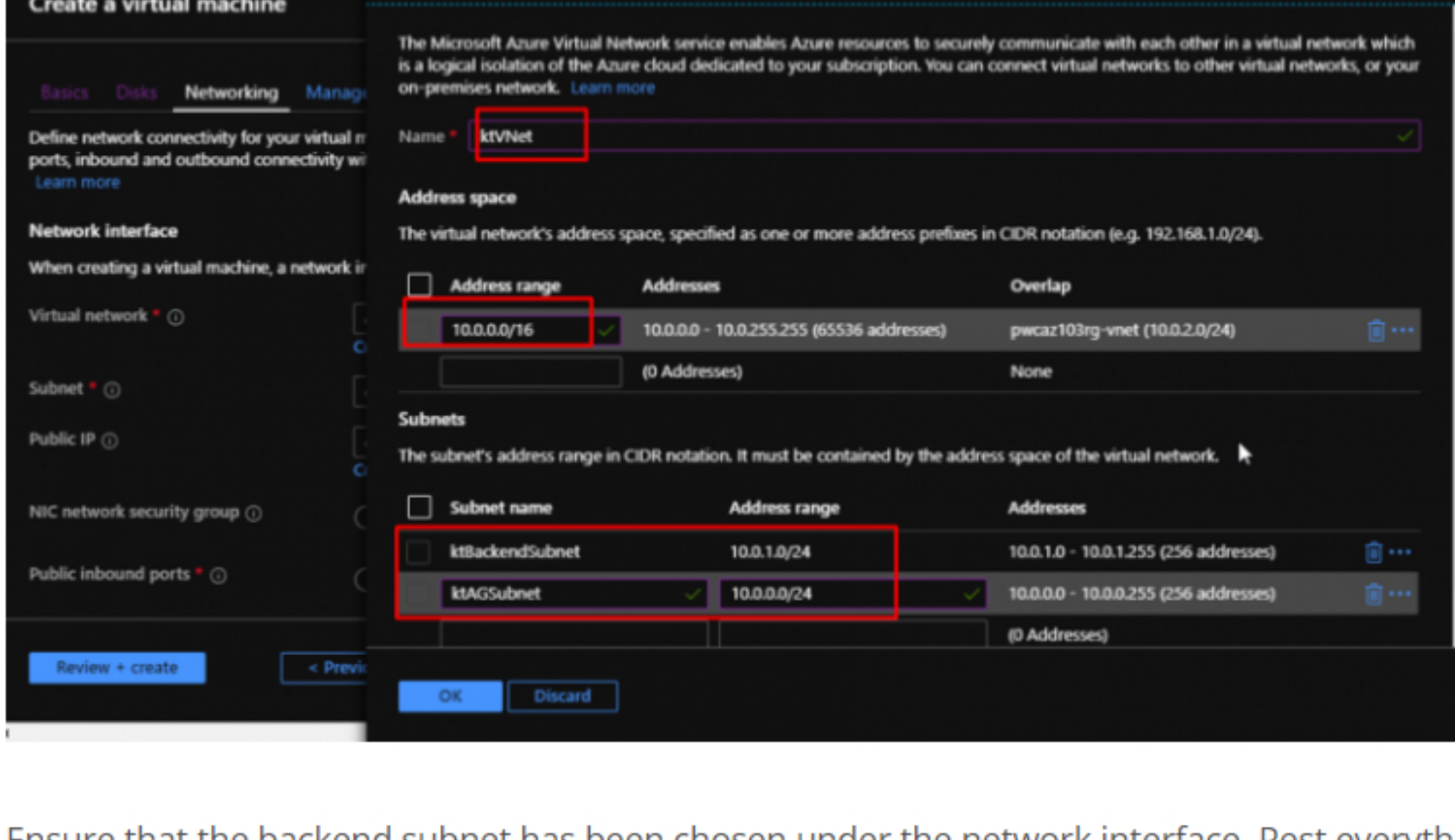
Create a new resource group. Give your VM a name. Choose East US as location and DS1v2 as the size.



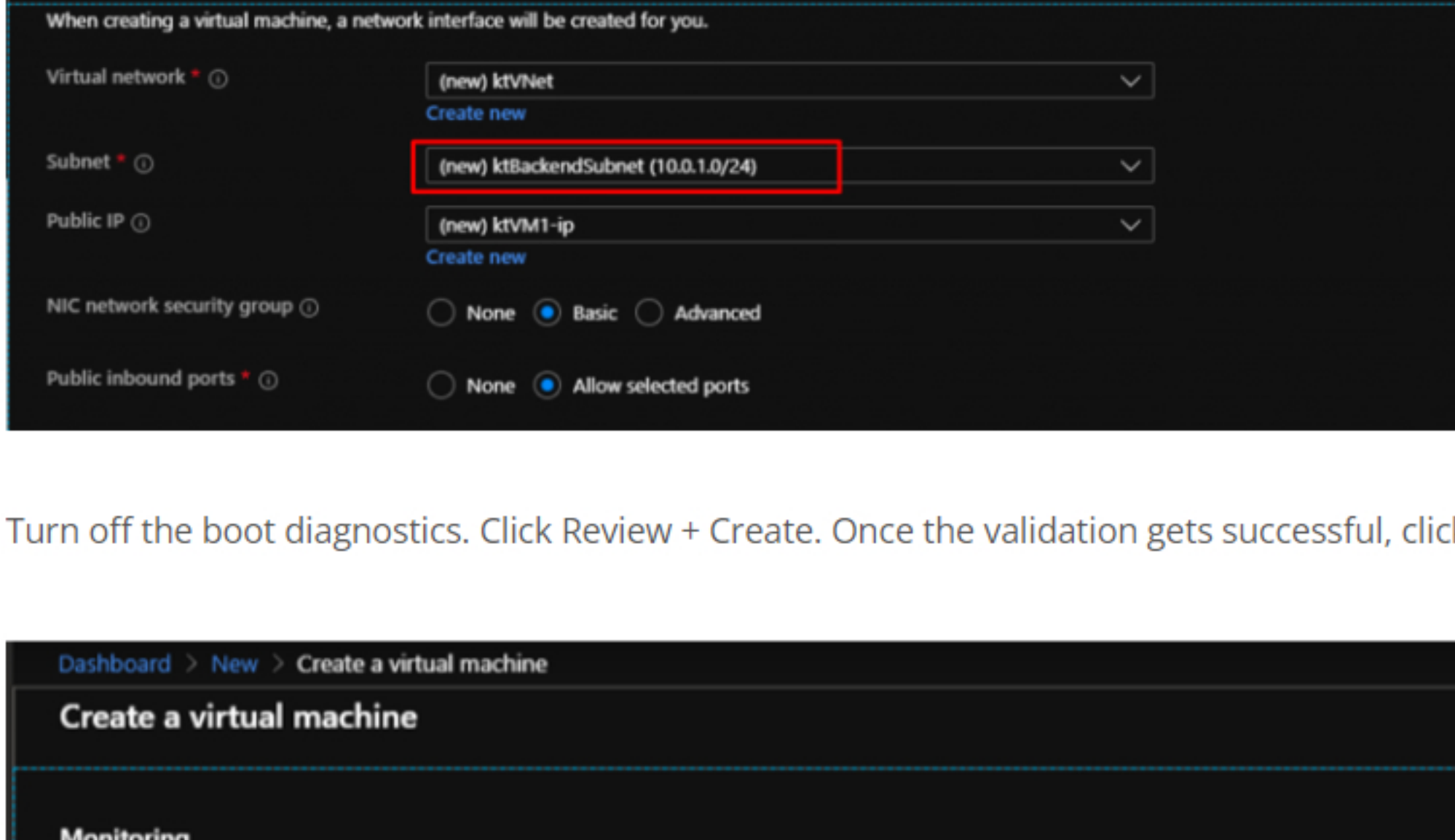
Enter username and password. Choose 3389, 80 and 443 as the selected port. Click next to go to Disks. Click Next again to go to Networking.



Create a new VNet with the address space 10.0.0.0/16. Create two subnets. A backend subnet and an AG subnet with address spaces 10.0.1.0/24 and 10.0.0.0/24 respectively. Click OK.



Ensure that the backend subnet has been chosen under the network interface. Rest everything is default. Click Next.



- Once this VM gets created, create two more VMs in the same resource group.
- Make sure to have the same settings in those two VMs as well.
- MAKE SURE TO KEEP THE SAME VNET THAT YOU CREATED AND BACKEND SUBNET UNDER THE NETWORK INTERFACE.**