WEEK 13: AZURE SIMULATIONS

TEKsystems Global Services

WORKFORCE DEVELOPMENT

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REVIEW: WEEK 12

- **Overview of Activities:** Brief rundown of all scenarios
- **Group Formation:** Instructions for team creation and role assignments
- **Scenario Walkthroughs:** Step-by-step instructions for each scenario
- **Presentation Preparation:** Guidelines for presenting your findings
- **Q&A and Feedback:** Final discussion and reflection session

- Week 1-2: Introduction to Cloud Technology
- Week 3-5: Cloud Strategy and Architecture
- Week 6-7: Use Cases and Real-World Applications
- Week 8-9: Benefits and Value Proposition
- Week 10-12: Challenges and Risks
- **Week 13-14: Interactive Simulations and Practical Exercises**
- Week 15: Course Review and Final Assessment

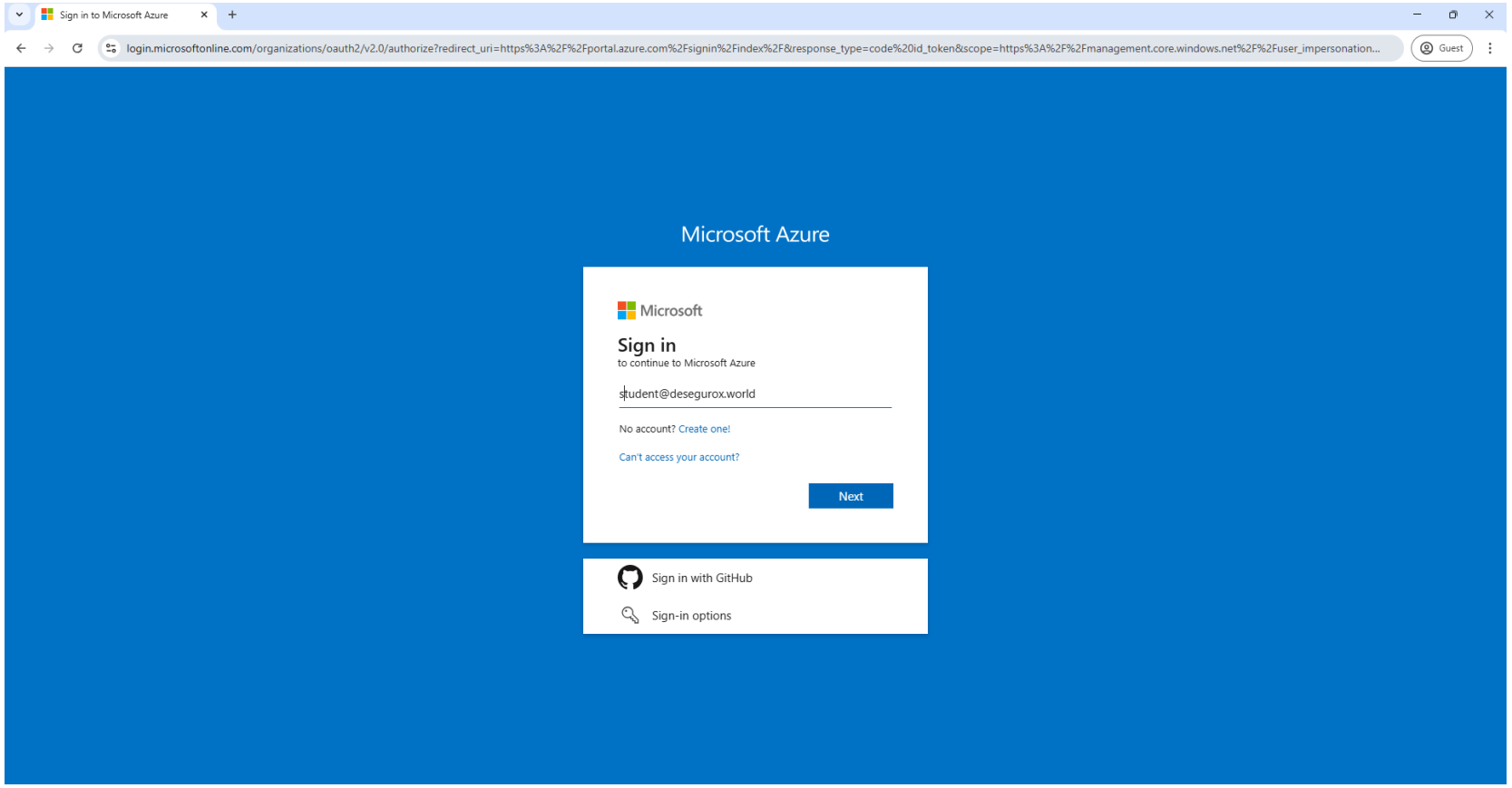
AGENDA

- Familiarize with the Azure Portal interface and navigation.
- Gain practical experience deploying fundamental Azure services.
- Understand the basic configuration options for Virtual Machines, Virtual Networks, and Storage Accounts.
- Learn how to monitor resource health and performance.
- Appreciate the interconnectedness of Azure services.
- Connect hands-on activities to strategic cloud decisions.

AZURE VMS

- Infrastructure as a Service (IaaS) offering.
- On-demand, scalable computing resources.
- Supports Linux, Windows Server, SQL Server, Oracle, IBM, SAP, etc.
- You manage the OS, applications, and configurations. Azure manages the underlying infrastructure

ACCESSING AZURE PORTAL



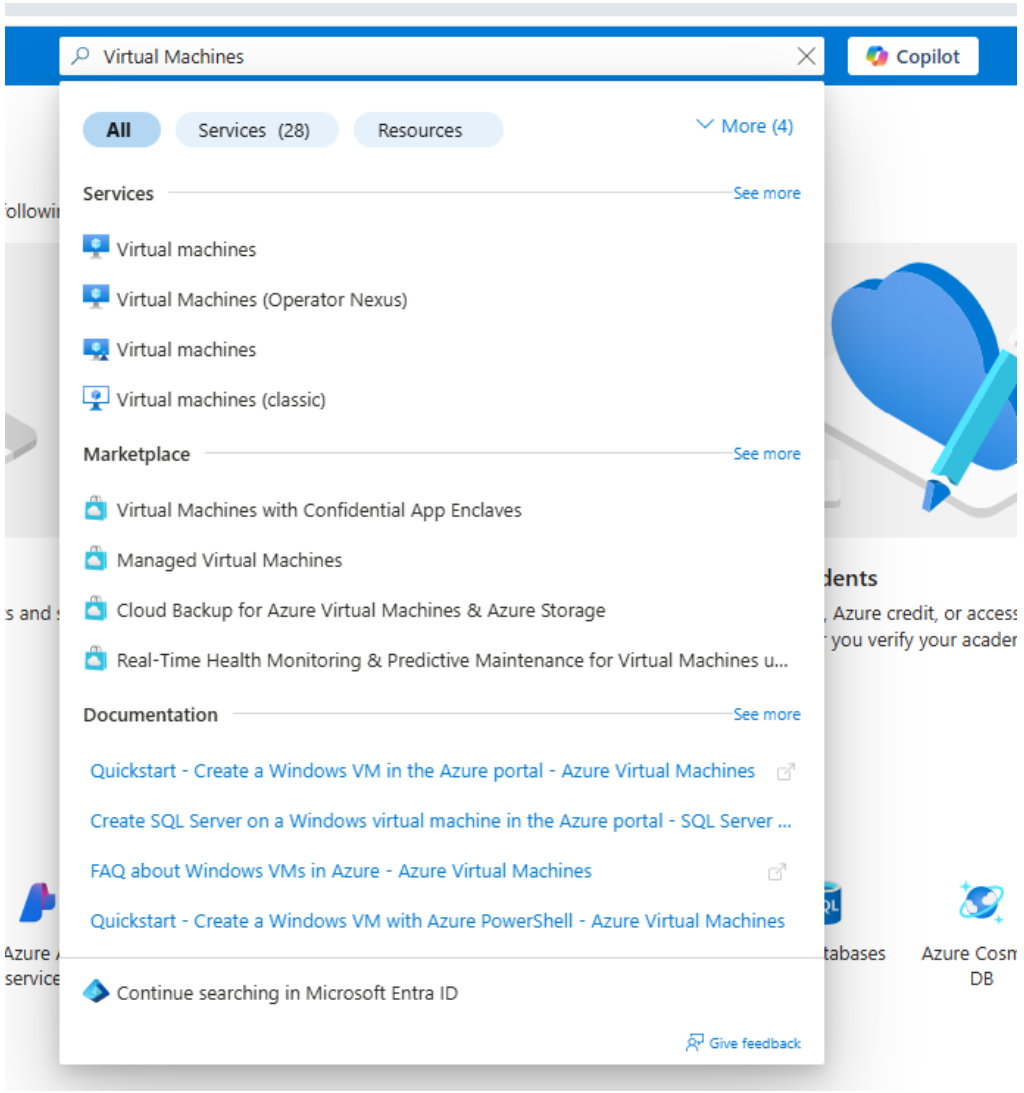
Steps:

- **Navigate:** Open your web browser and go to **portal.azure.com**.
- **Sign In:** Use the credentials provided.

FINDING VIRTUAL MACHINES SERVICE

I. **Search:** In the top search bar, type "Virtual machines".

II. **Select:** Click on "Virtual machines" under the "Services" category.

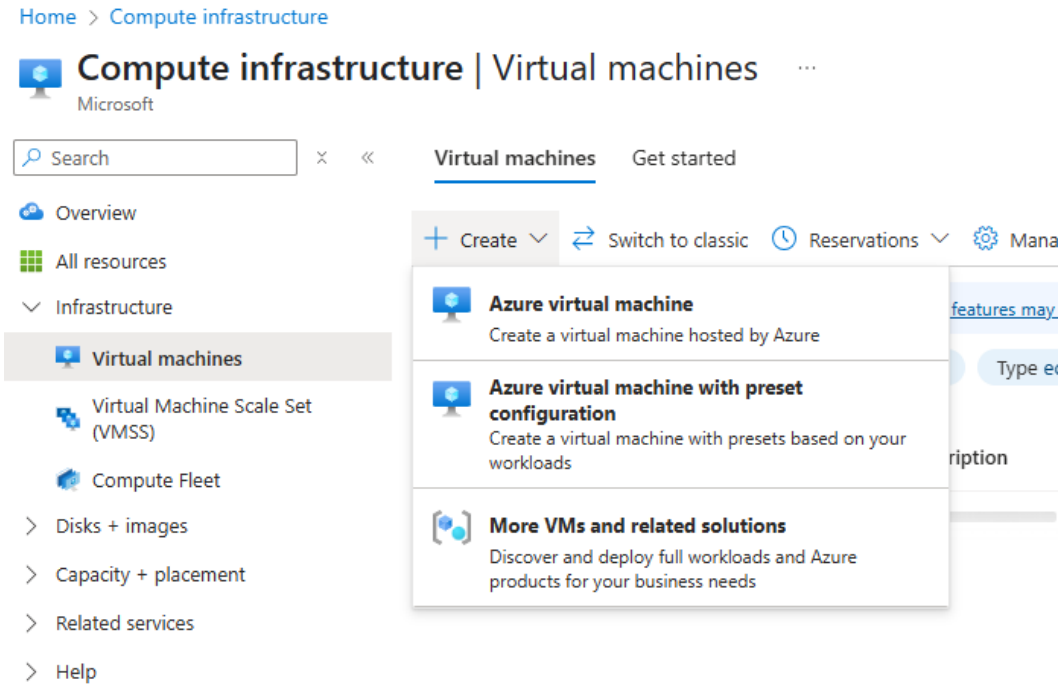


CREATING A VIRTUAL MACHINE

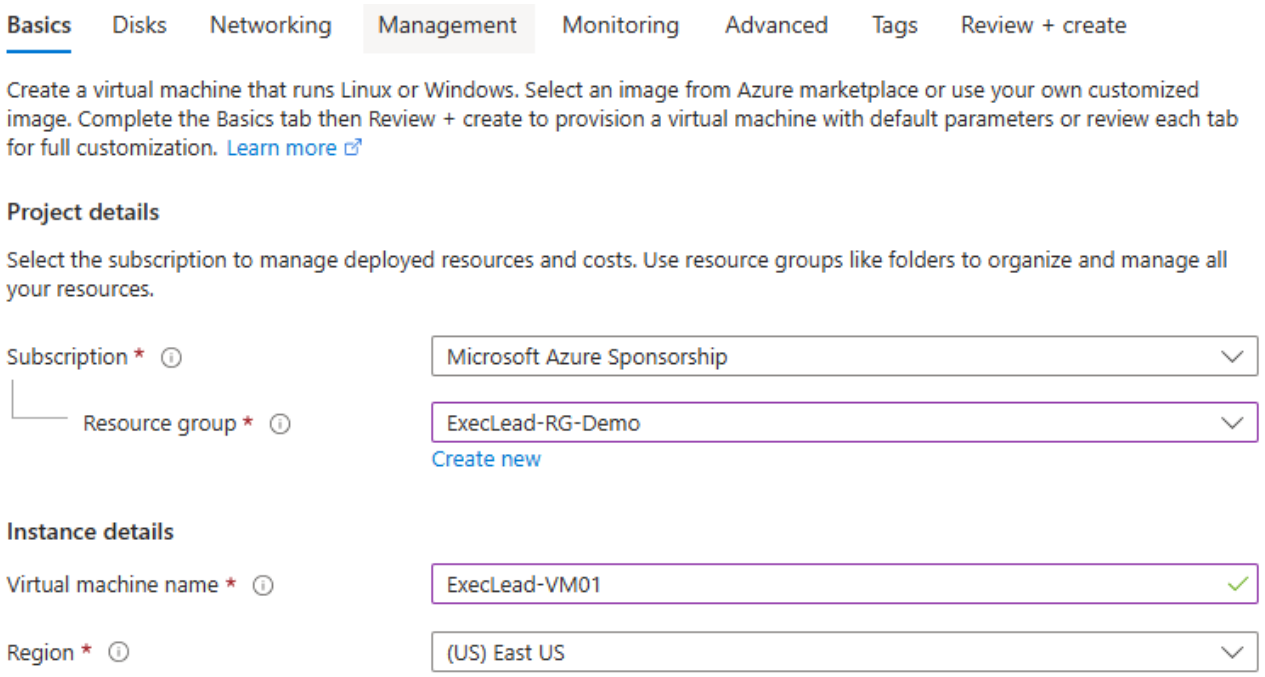
Steps:

I. Click Create: On the "Virtual machines" page, click on "+ Create" and then select "Azure virtual machine".

II. Description: This action starts the VM deployment wizard.



VM – BASICS TAB



Subscription: Select your assigned Azure subscription. (Usually pre-selected)

Resource Group: Click "Create new", name it ExecLead-RG-Demo. (Or use an existing one if instructed)

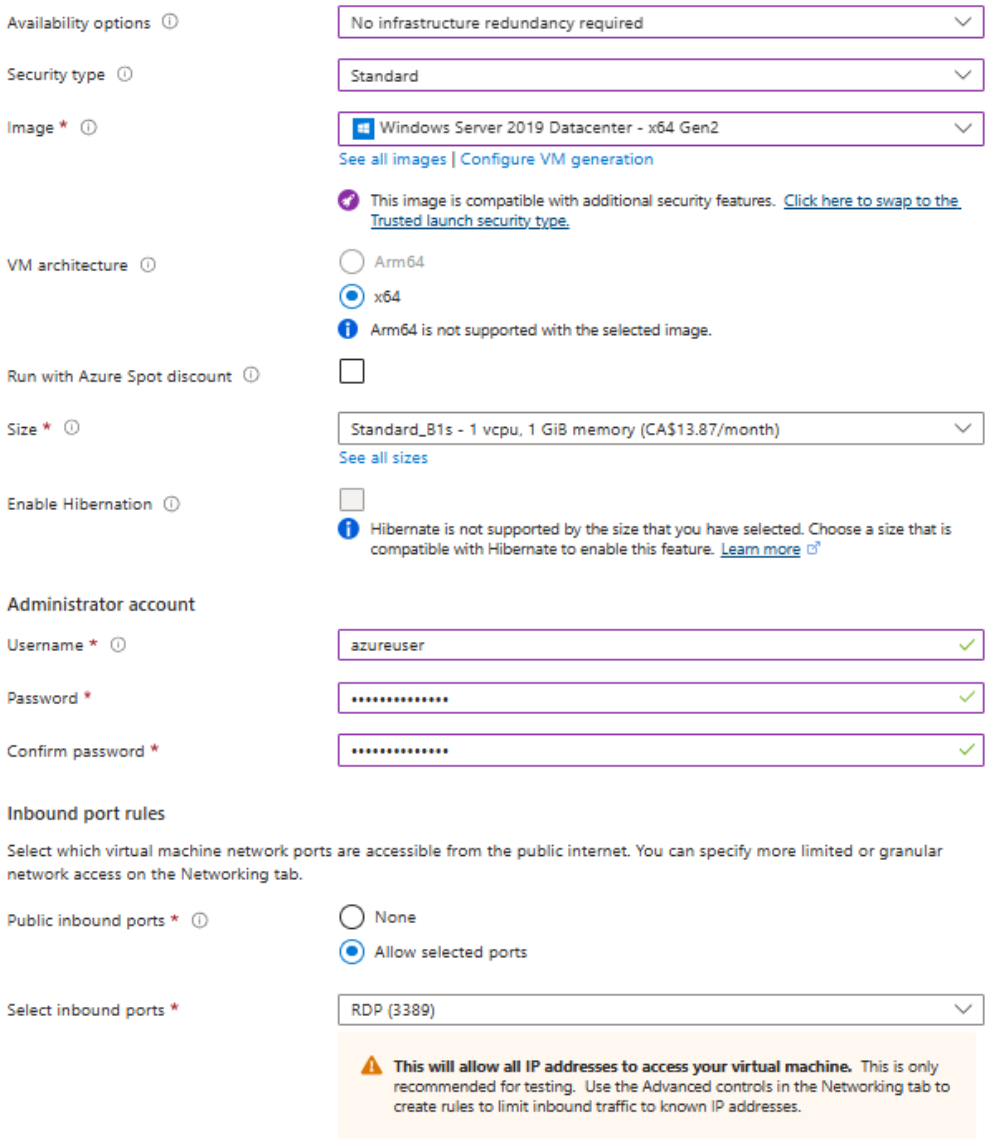
Description: Resource Groups are containers for resources that share a common lifecycle, permissions, and policies.

Virtual machine name: Enter ExecLead-VM01.

Region: Select a region (e.g., (US) East US).

Description: The geographical location where your VM will be hosted.

VM – BASICS TAB: IMAGE, SIZE, ADMIN ACCOUNT



Availability options: Leave as "No infrastructure redundancy required" for this demo.

Image: Select "Windows Server 2019 Datacenter - Gen2".

- ❑ **Description:** The operating system template for your VM.

Size: Select a size (e.g., Standard_B1s - 1 vCPU, 1 GiB memory).

- ❑ **Description:** Defines CPU, RAM, and storage performance of the VM. Directly impacts cost.

Administrator account:

Username: azureuser

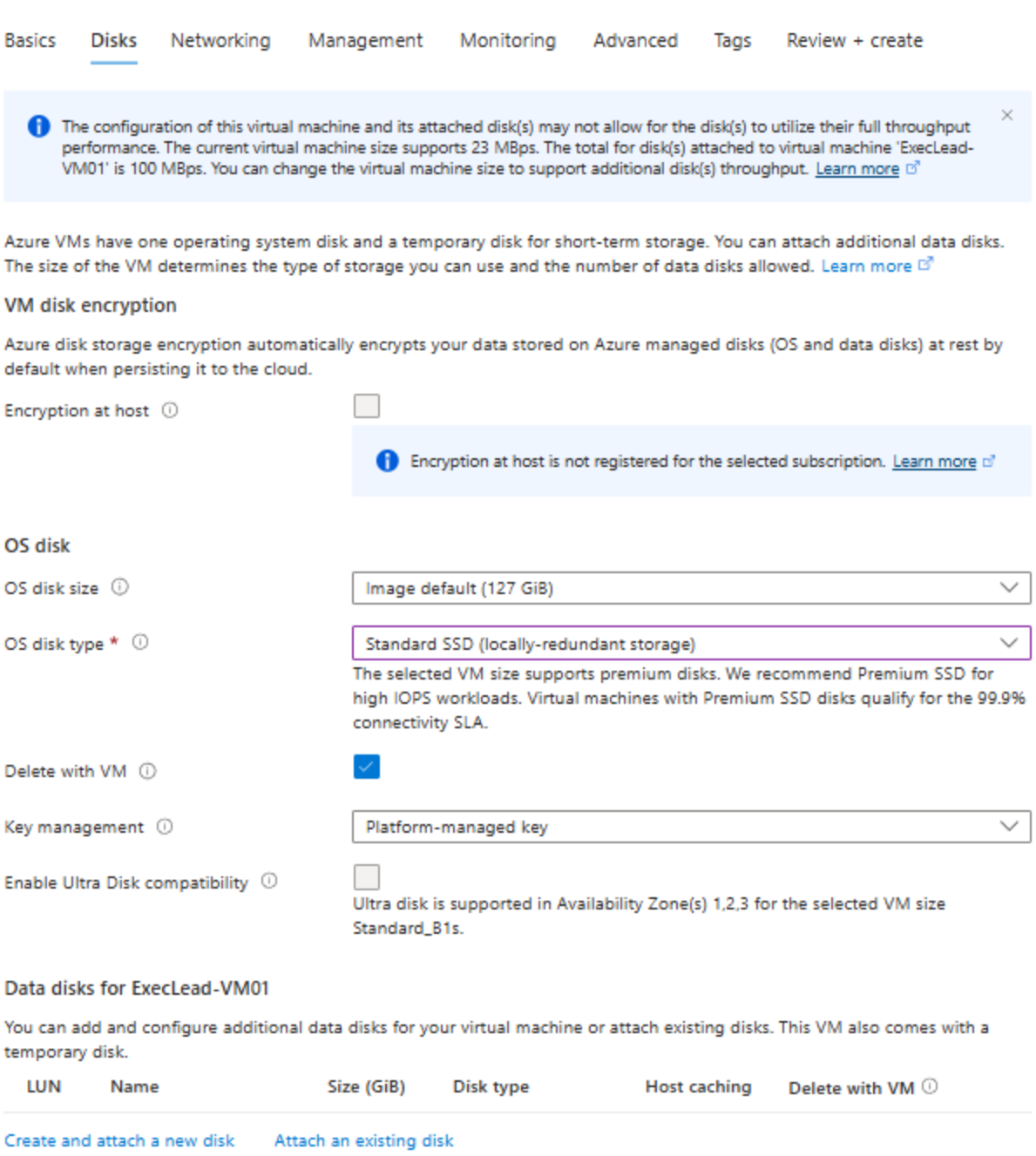
Password: Create a complex password (e.g., P@$$wOrd12345!) and confirm it. Remember this!

Inbound port rules: Select "Allow selected ports". Then check "RDP (3389)".

Description: Allows Remote Desktop Protocol connections for Windows VMs.

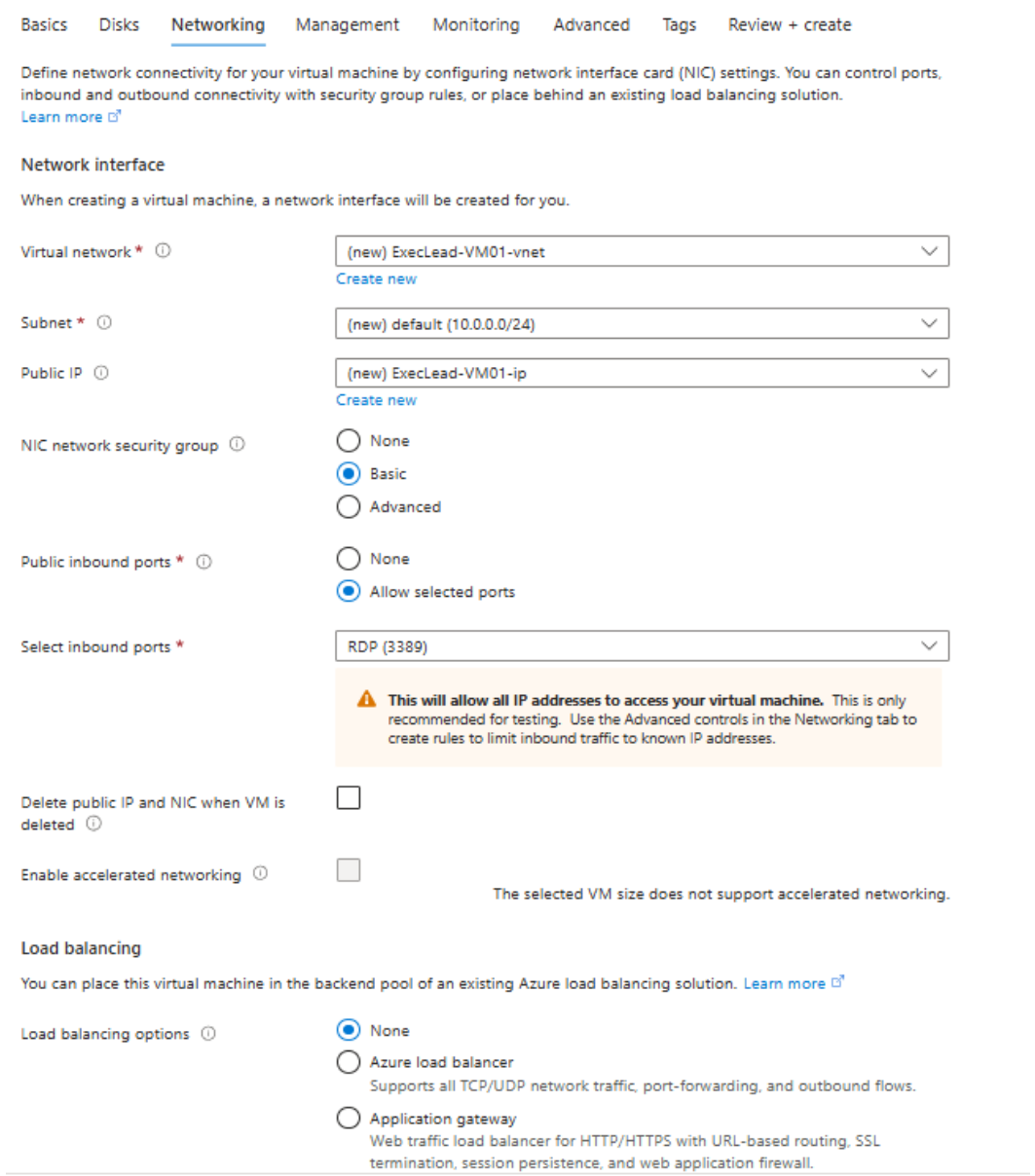
VM – DISKS TAB

- **OS disk type:** Select Standard SSD for a balance of cost and performance.
  - *Description:* Options include Standard HDD, Standard SSD, Premium SSD. Affects performance and cost.
- Leave other settings as default for this demo.



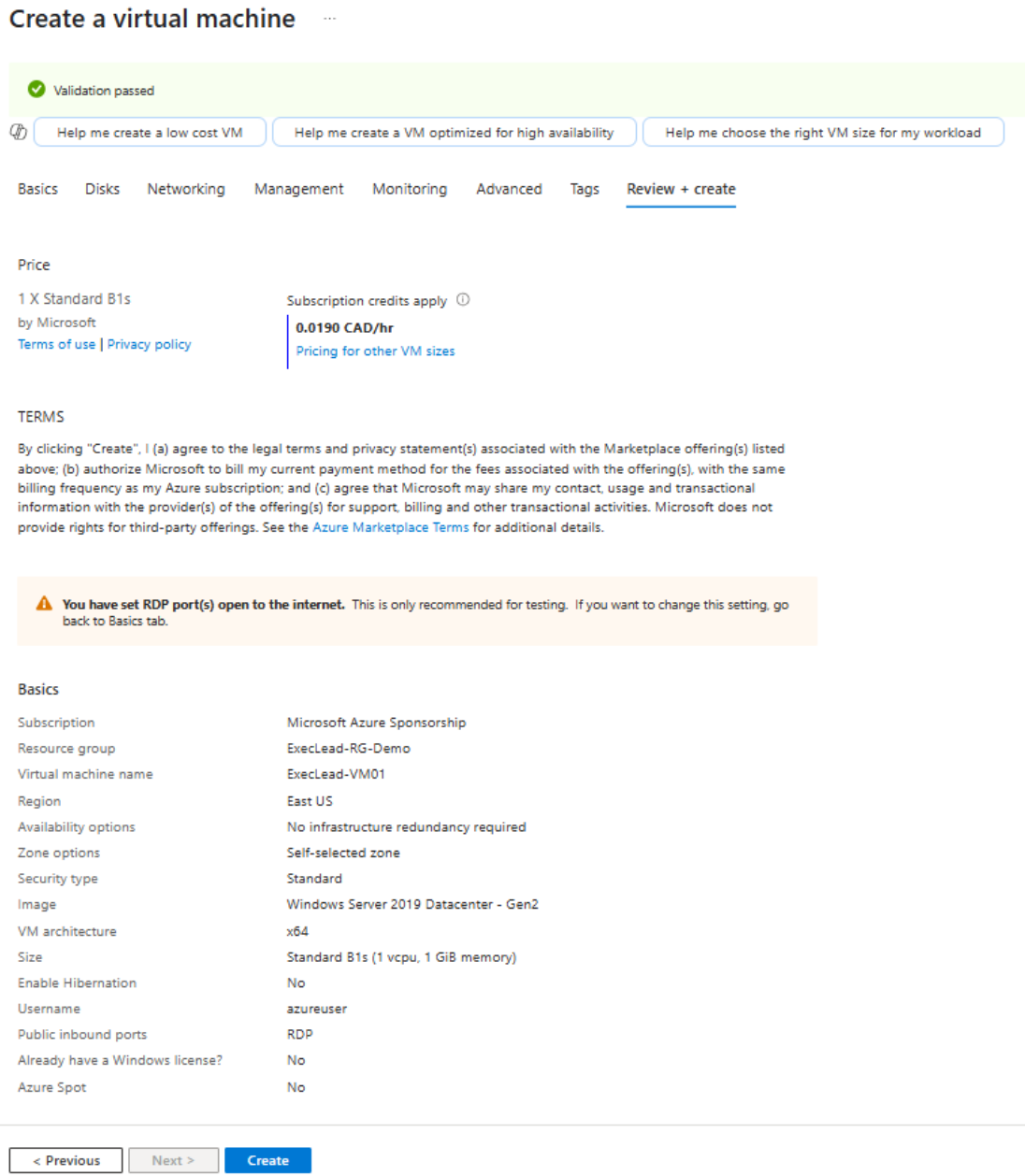
VM – NETWORKING TAB

- **Virtual network:** A new VNet will be created by default based on your resource group name (e.g., ExecLead-RG-Demo-vnet). This is fine for the demo.
- **Subnet:** A default subnet will also be created.
- **Public IP:** A new Public IP will be created. This allows connection from the internet.
- **NIC network security group:** Select Basic.
- **Public inbound ports:** Confirm "Allow selected ports" is chosen and "RDP (3389)" is checked.



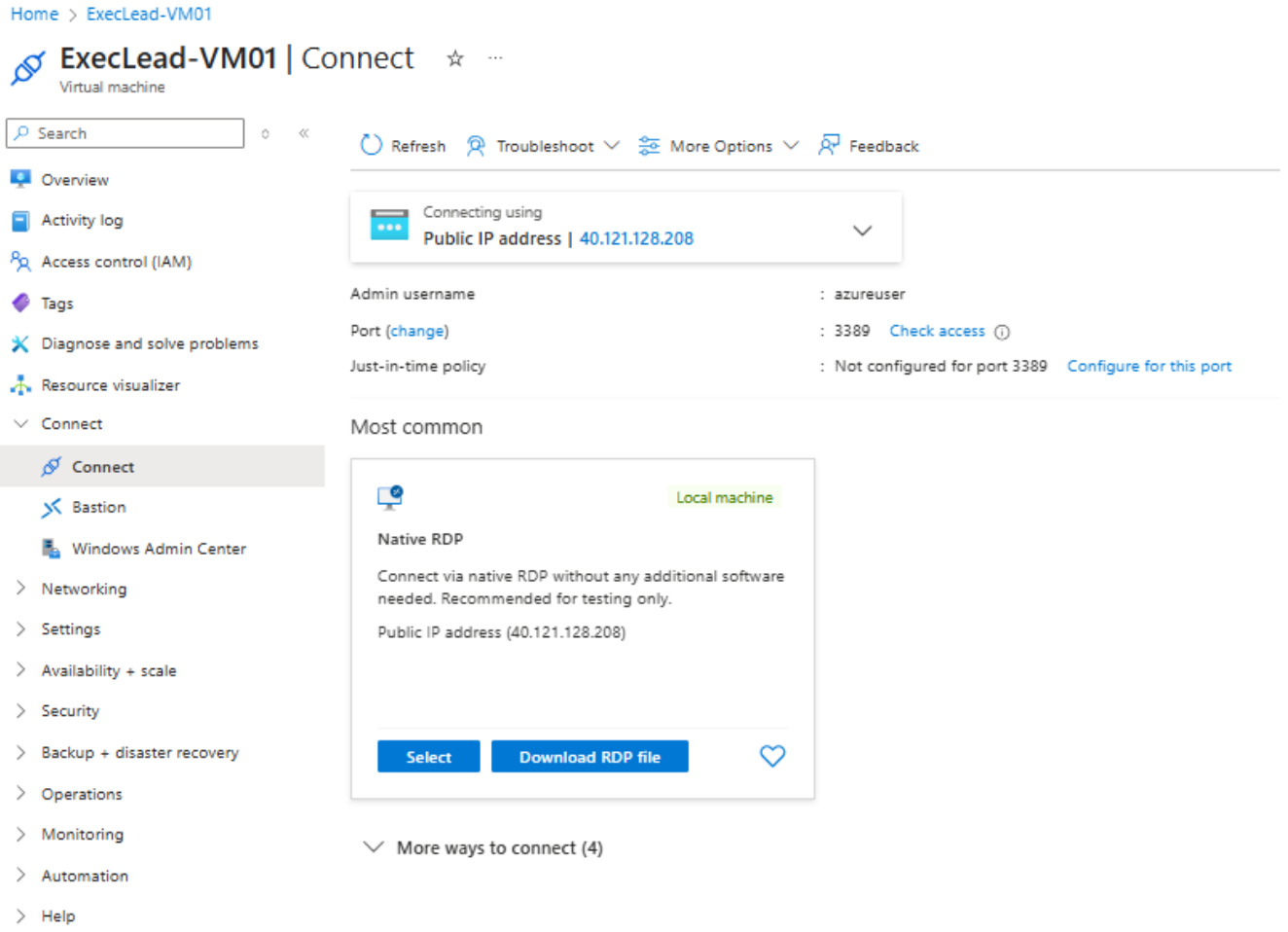
VM – REVIEW + CREATE

- **Review Settings:** Azure will validate your configuration. If it passes, you'll see "Validation passed". Review the summary to ensure settings are as expected.
- **Create:** Click the "Create" button at the bottom.

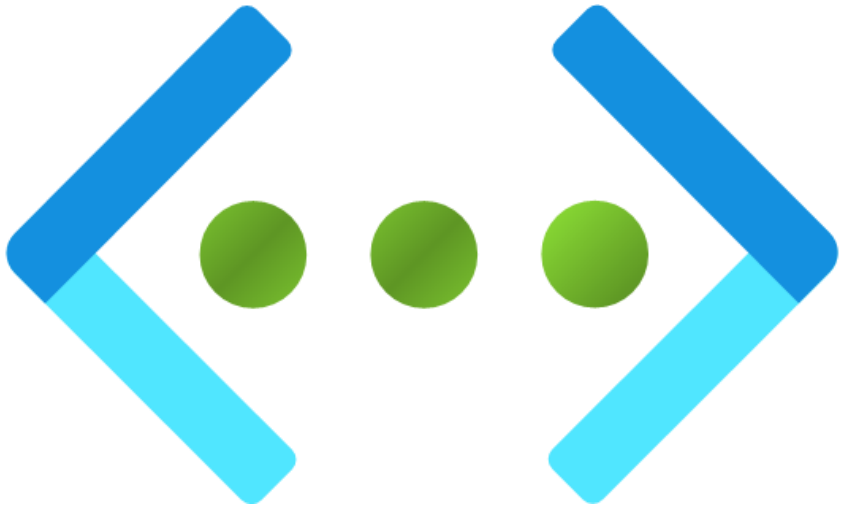


VM – DEPLOYMENT & CONNECTION

- **Monitor Deployment:** You'll be taken to a deployment screen. Wait for it to complete ("Your deployment is complete").
- **Go to Resource:** Click "Go to resource".
- **Connect:** On the VM's "Overview" page, click "Connect" and select "RDP".
- **Download RDP File:** Download the RDP file.
- **Open RDP File:** Run the downloaded file, click "Connect", and enter the administrator credentials you created (e.g., azureuser and P@$$wOrd12345!).



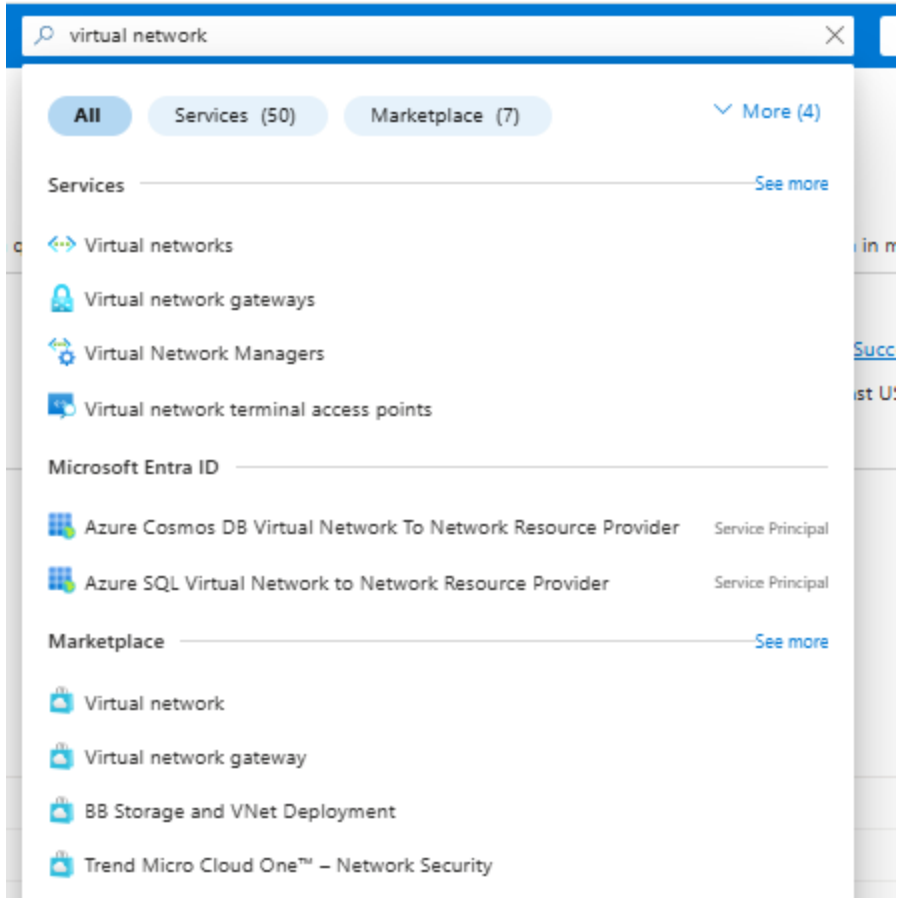
AZURE VIRTUAL NETWORKS (VNETS)



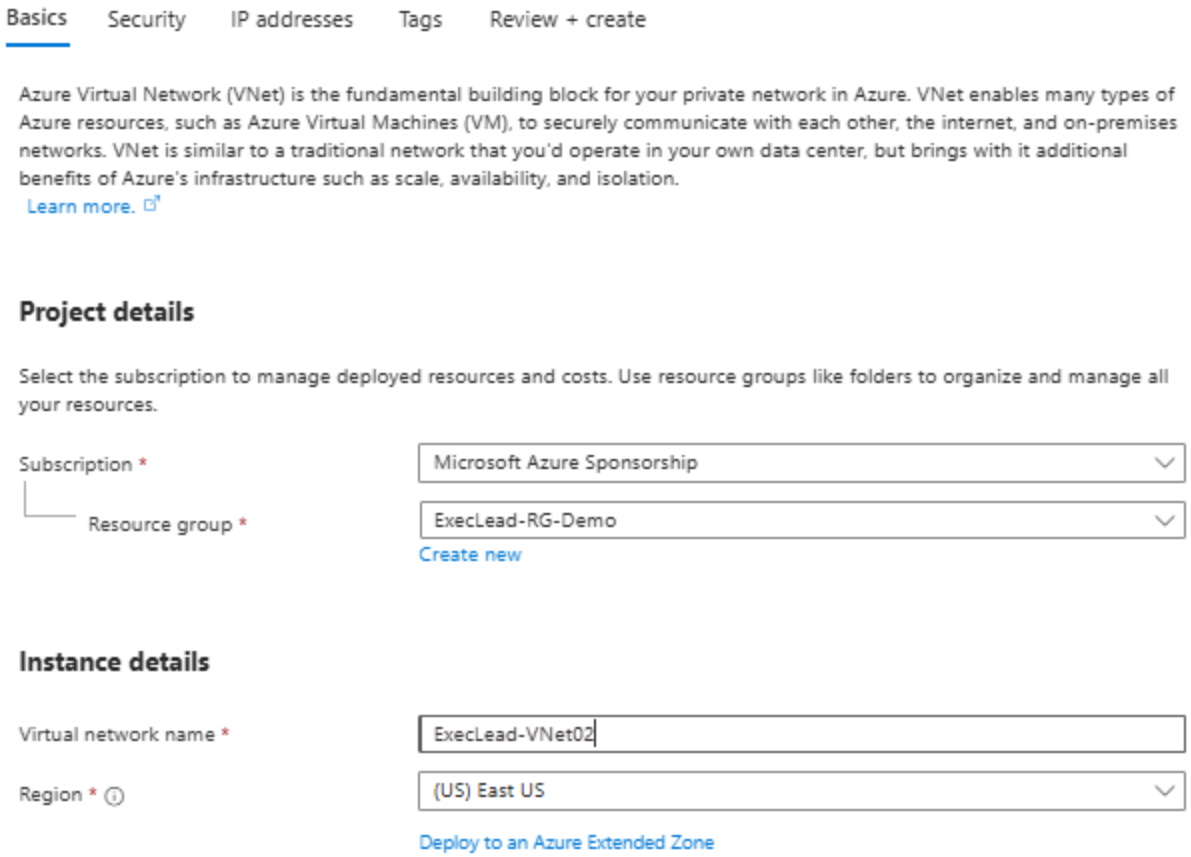
- Your private network in Azure.
- Enables Azure resources to securely communicate with each other, the internet, and on-premises networks.
- Provides isolation, segmentation (subnets), routing, and filtering (NSGs).
- Fundamental for network architecture and security.

FINDING THE VNET SERVICE

- Navigate: In the Azure Portal search bar, type "Virtual networks".
- Select: Click on "Virtual networks" under "Services".



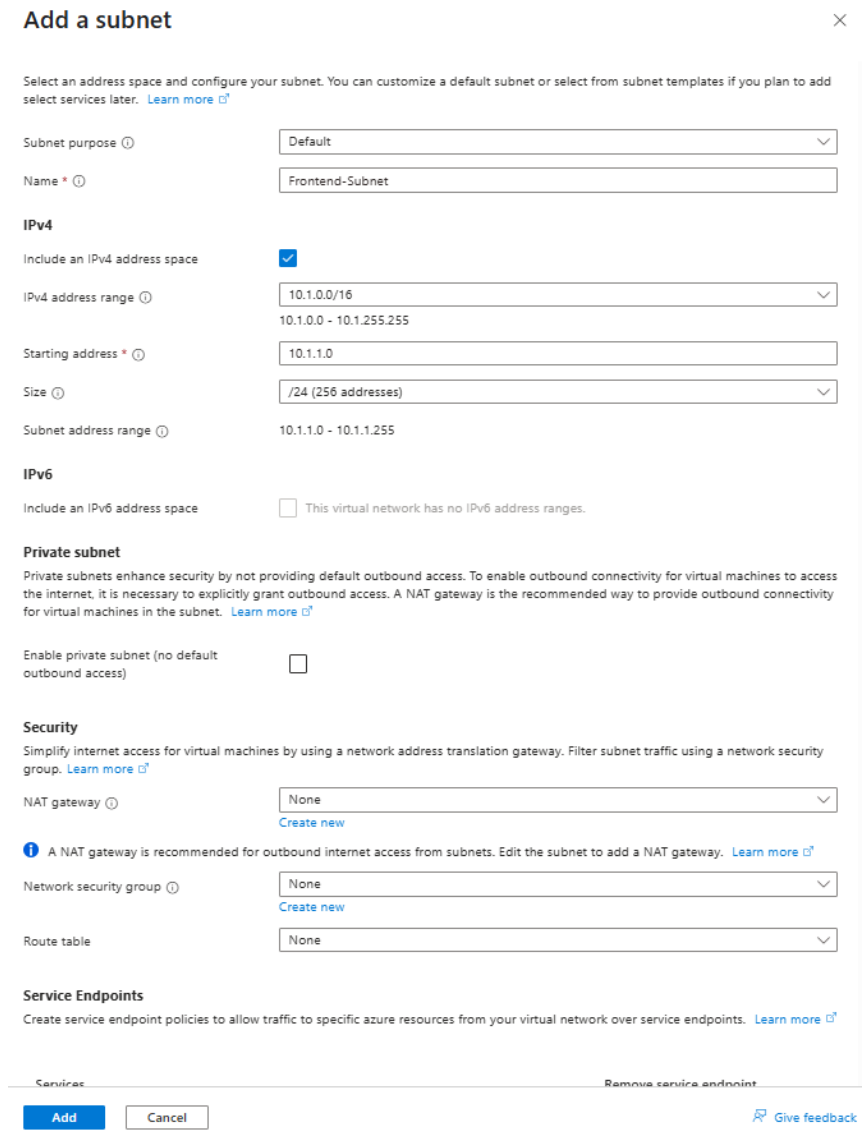
CREATING THE VNET SERVICE



- Click "**+ Create**".
- **Subscription:** Select your subscription.
- **Resource Group:** Select the ExecLead-RG-Demo Resource Group we created earlier.
- **Name:** Enter ExecLead-VNet02.
- **Region:** Select the same region as your VM (e.g., (US) East US).

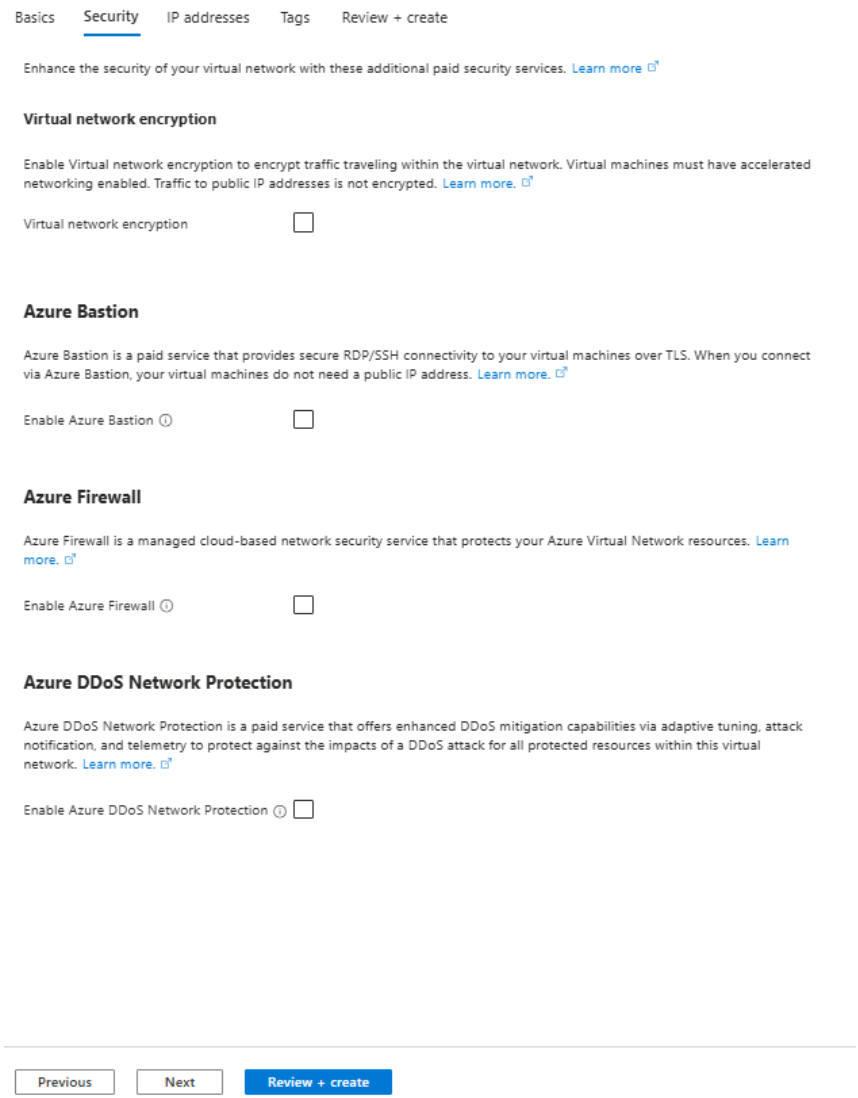
DEFINING IP ADDRESSES

- **IPv4 address space:** Enter 10.1.0.0/16.
- **Description:** The overall private IP range for this VNet. /16 provides ~65,000 addresses.
- Subnets:
  - Click "+ Add subnet".
- **Subnet name:** Frontend-Subnet
- **Subnet address range:** 10.1.1.0/24 (/24 provides ~250 addresses)
- Click "Add".
- **(Optional) Add another subnet:** Backend-Subnet with range 10.1.2.0/24.

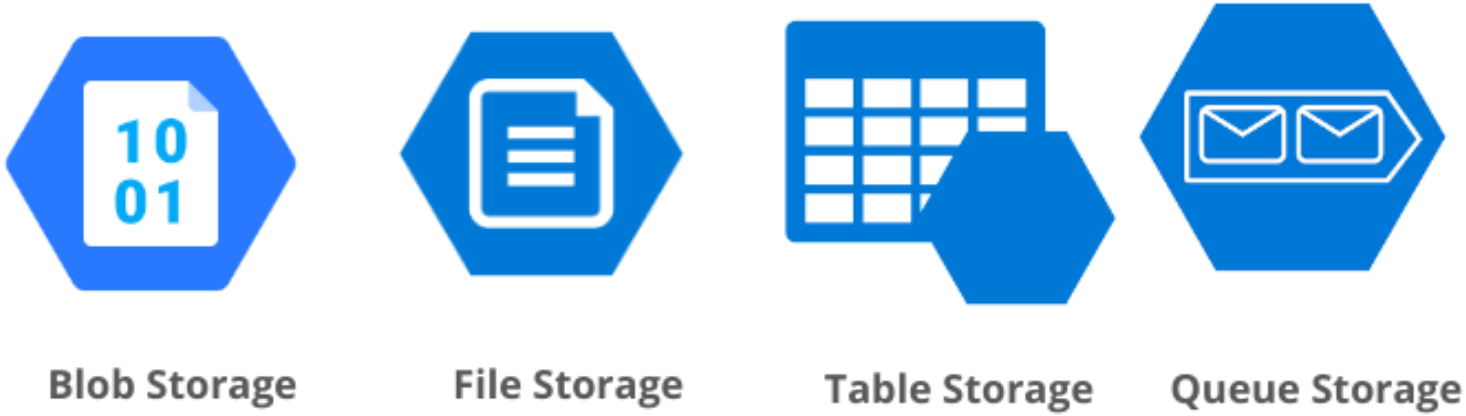


REVIEW + CREATE VIRTUAL NETWORK

- **Security Tab (Optional):** Briefly show the options for BastionHost, DDoS Protection, Firewall. We will NOT enable these for this demo to keep it simple and control costs.
  - **Description:** These are advanced security services.
- Click "Review + create".
- **Validation:** Wait for "Validation passed".
- Click "Create"

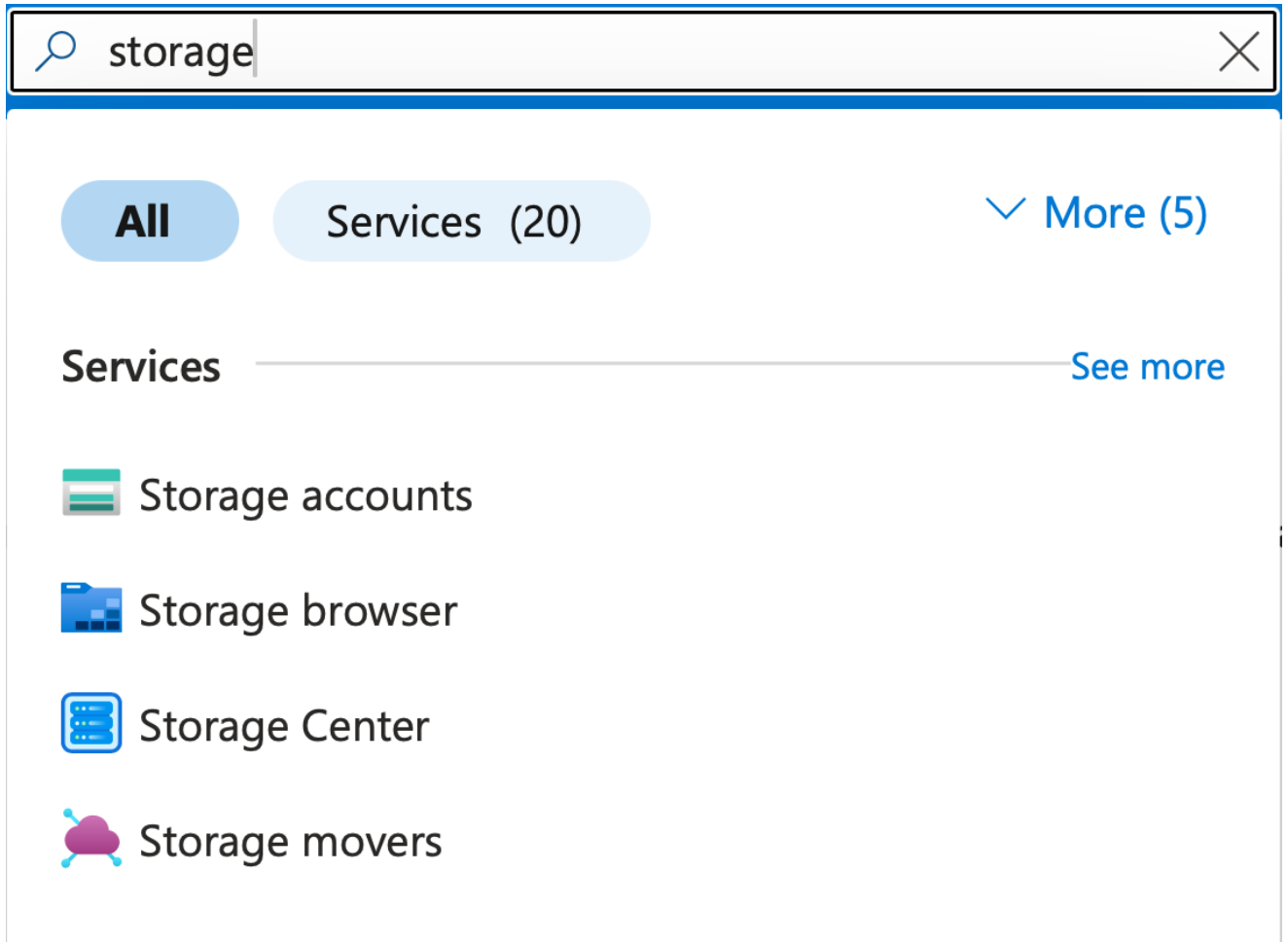


AZURE STORAGE ACCOUNTS



- Provides scalable, secure, and highly available cloud storage.
- Supports various data types:
- Blobs: Object storage for unstructured data (documents, videos, backups).
- Files: Managed file shares (SMB protocol).
- Queues: Messaging for decoupling applications.
- Tables: NoSQL key-value store.
- Multiple redundancy options (LRS, GRS, RA-GRS, ZRS).

FINDING THE STORAGE ACCOUNT SERVICE



Steps:

- Navigate: In the Azure Portal search bar, type "Storage accounts".
- Select: Click on "Storage accounts" under "Services".

STORAGE ACCOUNT – BASICS TAB

Click "+ Create".

Subscription: Select your subscription.

Resource Group: Select ExecLead-RG-Demo.

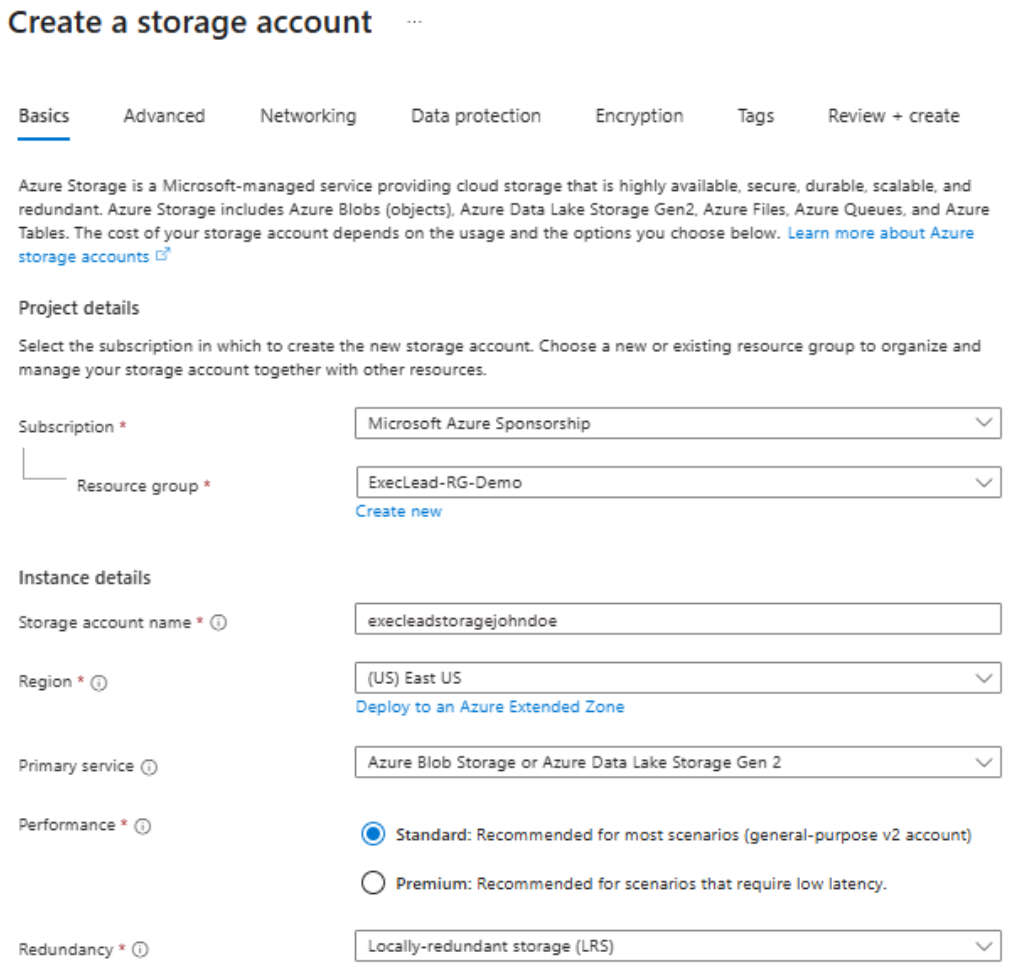
Storage account name: Enter a globally unique name (lowercase letters and numbers only, e.g., execleadstorage + your initials + random numbers like execleadstoragejohndoe123).

Region: Select the same region (e.g., (US) East US).

Performance: Select Standard. (Premium is for low-latency workloads like VM disks).

Redundancy: Select Locally-redundant storage (LRS).

Description: Lowest cost, protects against disk/node failure within one datacenter.



STORAGE ACCOUNT – ADVANCED + REVIEW TAB

Advanced Tab (Optional): Briefly show "Blob access tier (default)" is Hot.

- ❑ **Description:** Hot tier for frequently accessed data.

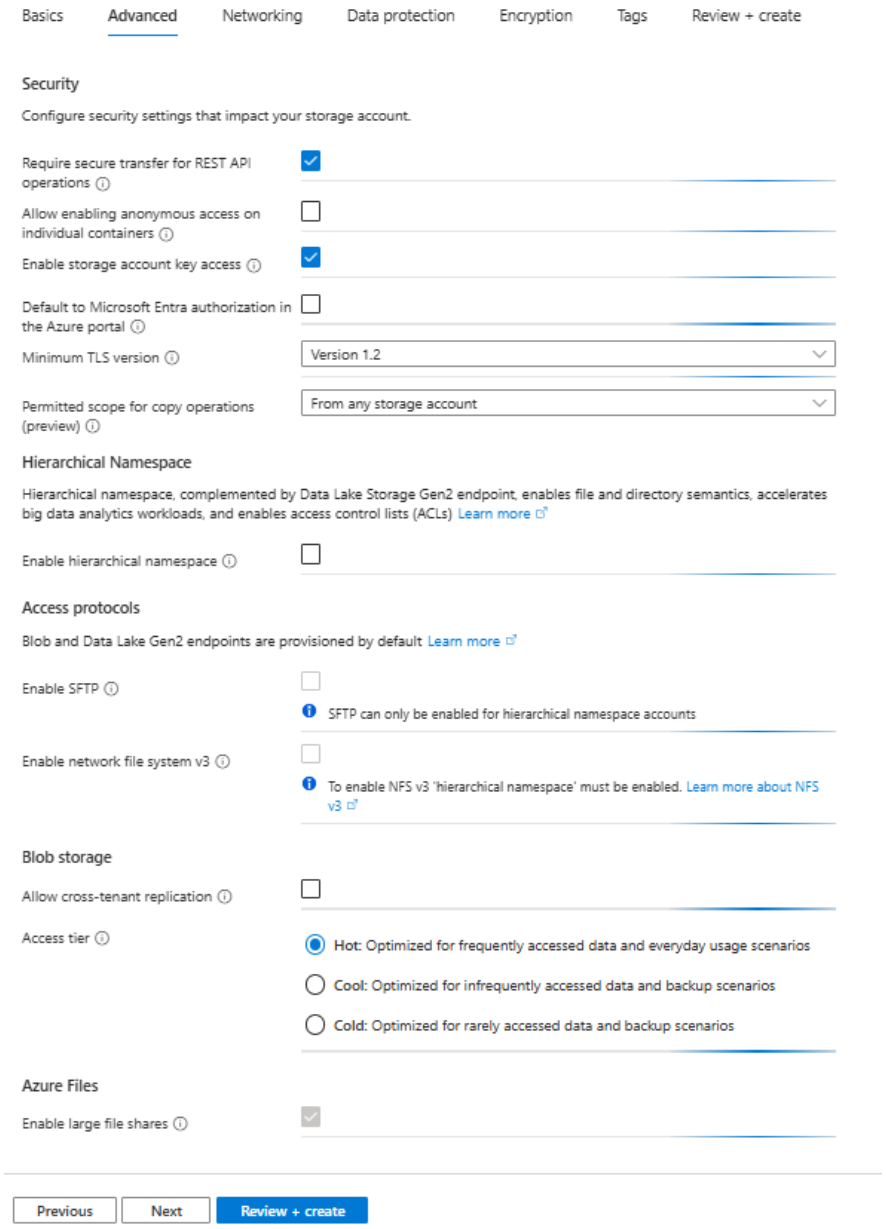
  Cool/Archive for less frequent, lower cost.

Skip "Networking", "Data protection", "Encryption", "Tags" for this basic demo.

Click **"Review + create".**

Validation: Wait for "Validation passed".

Click "Create".

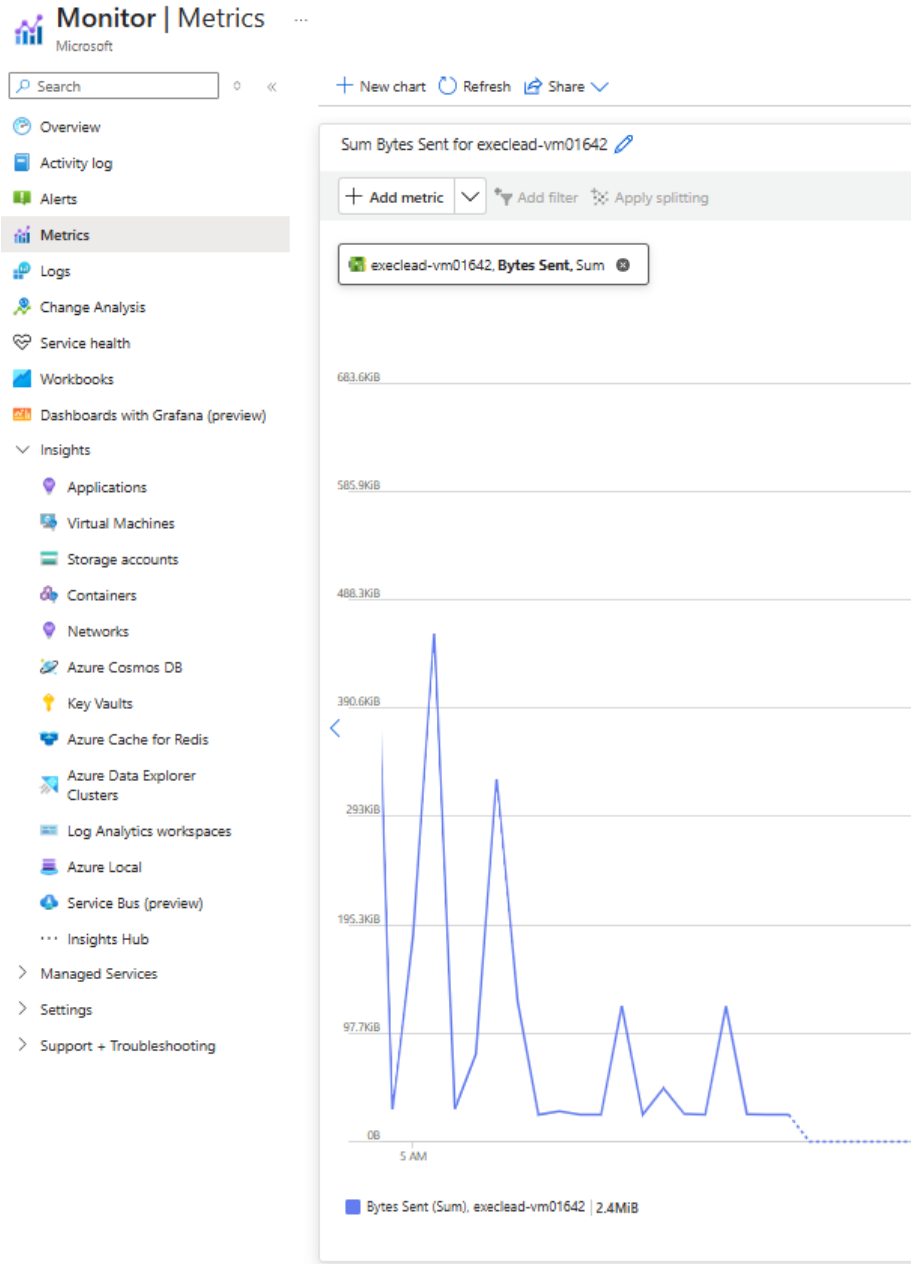


AZURE MONITOR

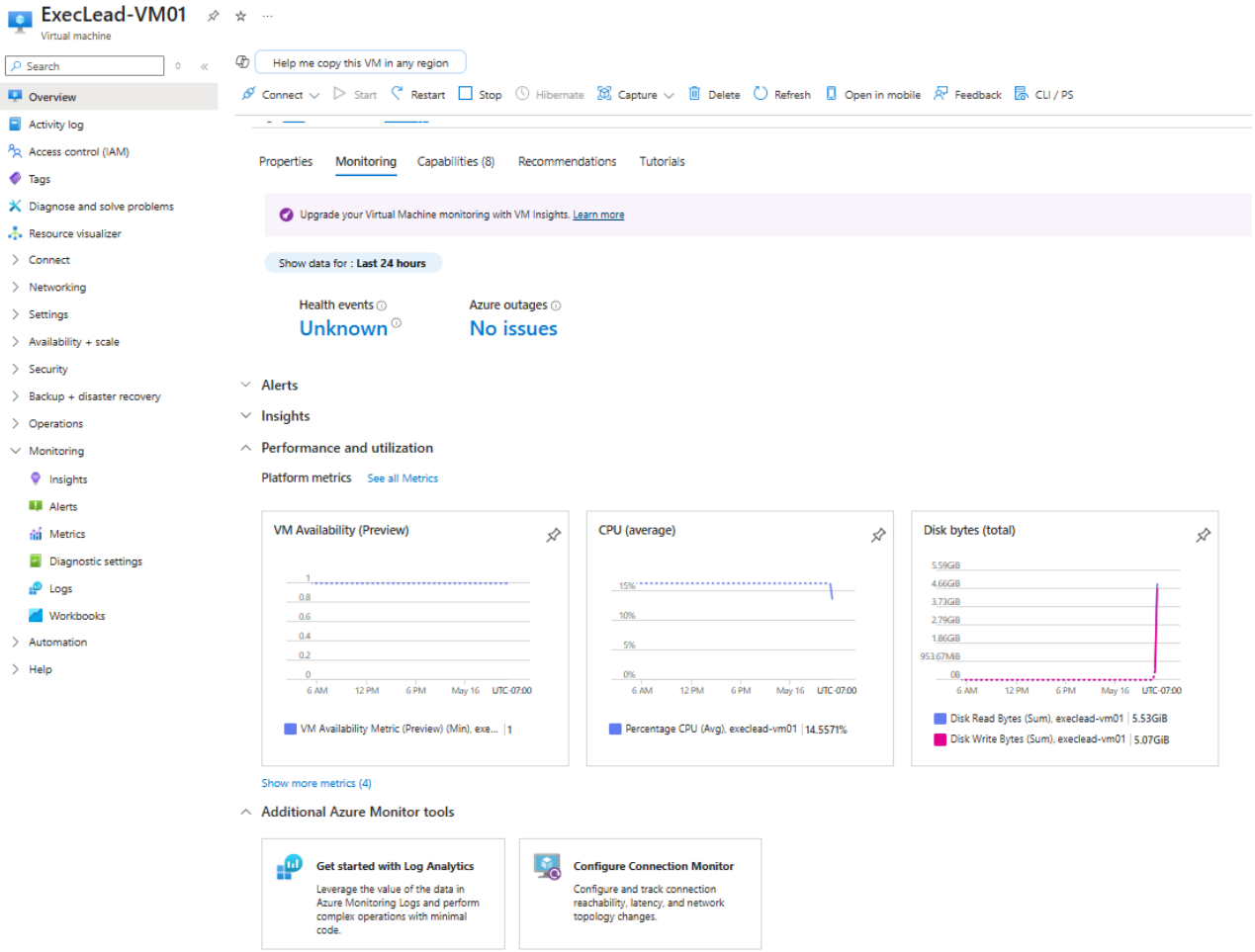
- ❑ Comprehensive monitoring solution for Azure resources and hybrid environments.
- ❑ Collects, analyzes, and acts on telemetry data.

Key capabilities:

- **Metrics:** Numerical performance data.
- **Logs:** Activity logs, diagnostic logs, application logs.
- **Alerts:** Proactive notifications for critical conditions.
- **Dashboards & Workbooks:** Visualization of data.
- **Insights:** Curated monitoring experiences for specific services.

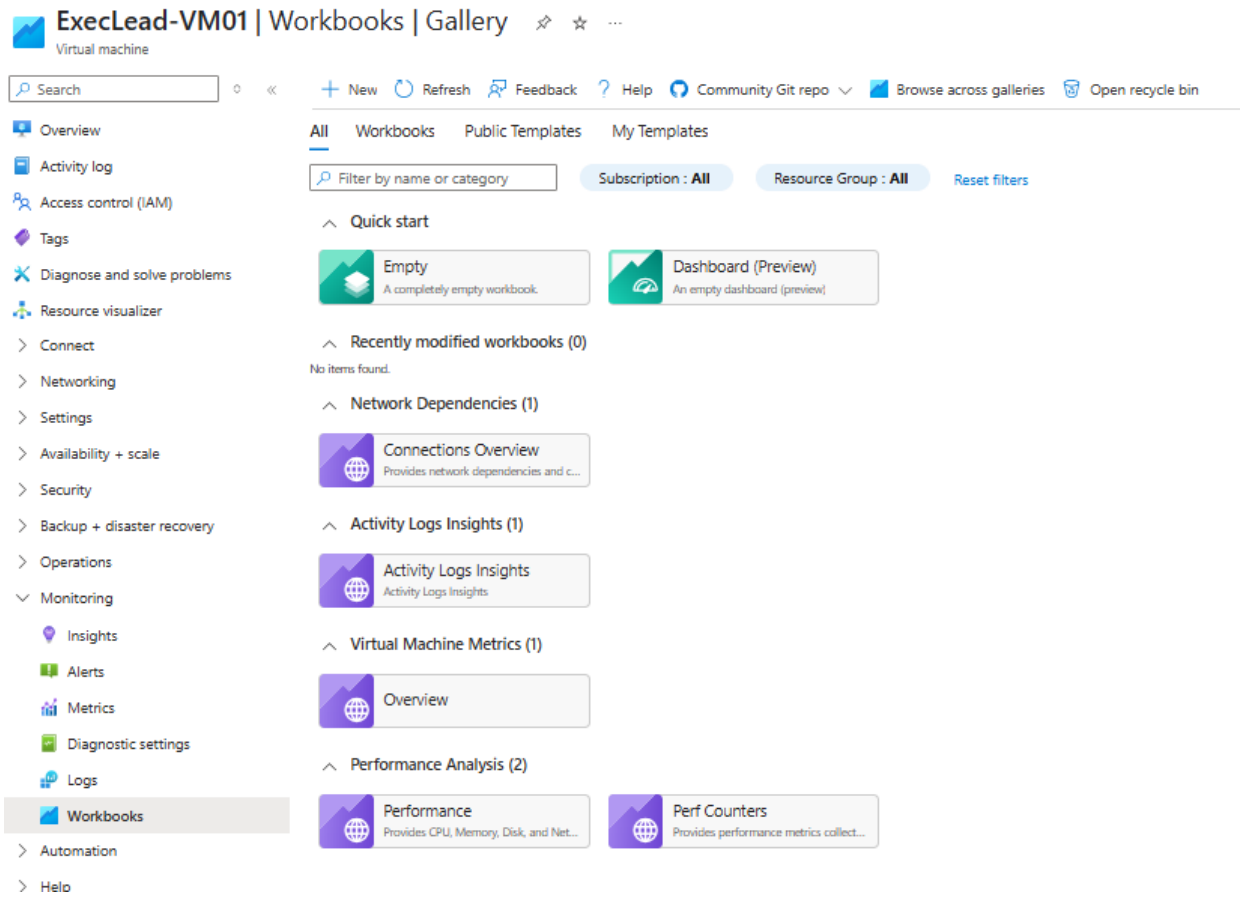


EXPLORING VM METRICS



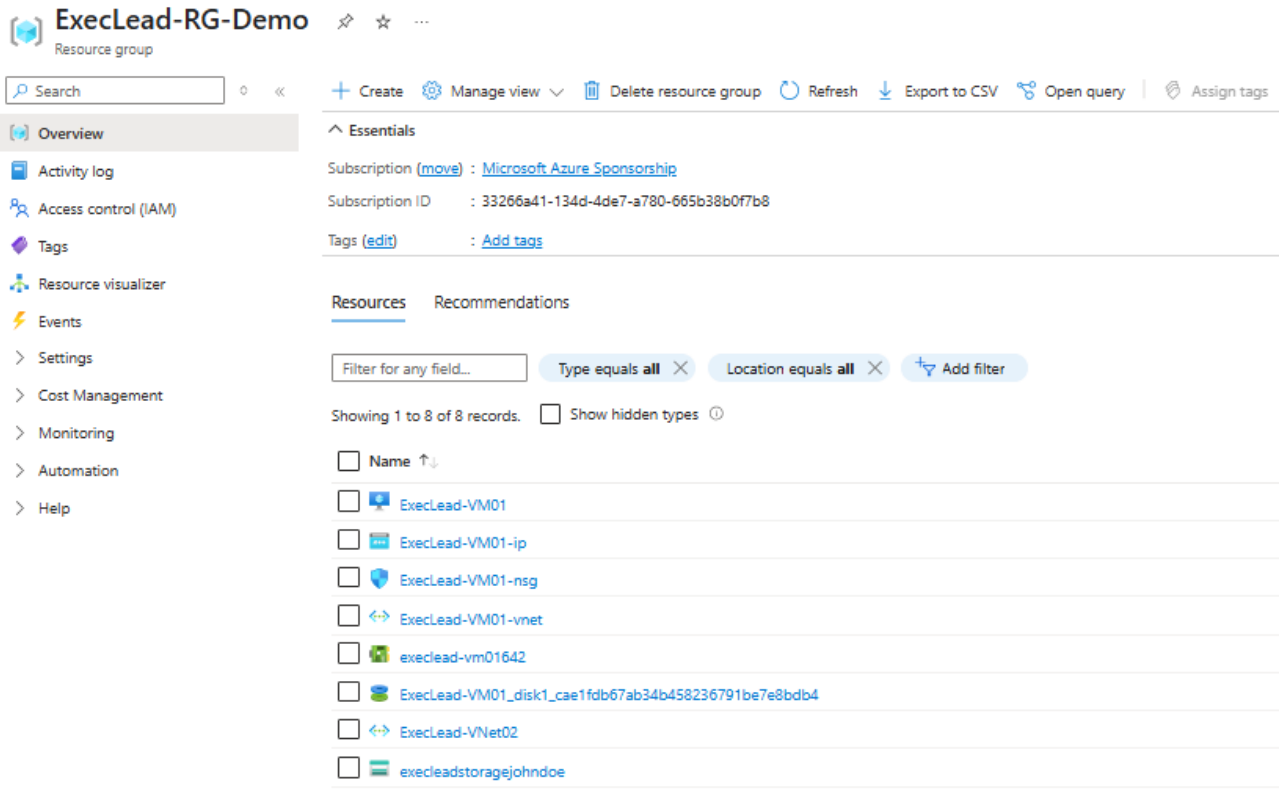
- **Overview Page:** The VM's "Overview" page by default shows some key metrics like CPU, Network, Disk.
- **Metrics Blade:** For more detail, in the left-hand menu for the VM, scroll down to the "Monitoring" section and click on "Metrics".
- **Add Metric:** Select a metric like Percentage CPU. Observe the chart.
- **Add more metrics:** Try adding Network In Total or Disk Read Bytes.

EXPLORING VM METRICS – ACTIVITY LOG



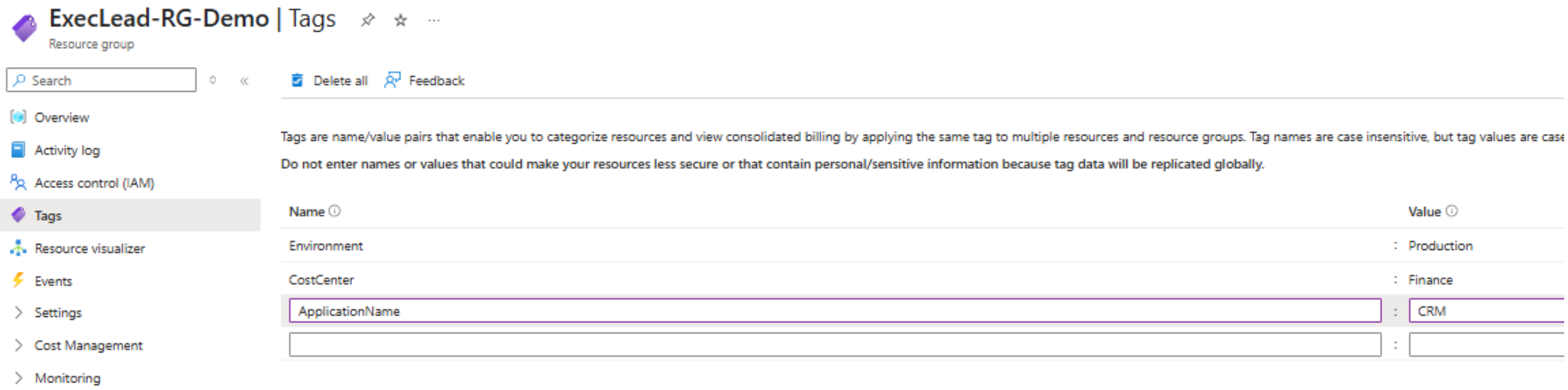
- **Navigate:** In the left-hand menu for the VM, under "Monitoring" (or sometimes higher up), click on “Workbooks” then select "Activity log Insights".
- **Review Events:** Observe the list of operations performed on this VM (e.g., Create, Start, Update).
- The Activity Log shows all control-plane operations performed on a resource. It's an audit trail.

MANAGING RESOURCE GROUPS



- All resources we created (ExecLead-VM01, ExecLead-VNet02, execleadstorage..., NICs, IPs, Disks) are in ExecLead-RG-Demo.
- Logical container for grouping related resources for an application or project.
- Simplifies management, billing, and access control.
- Deleting a Resource Group deletes all resources within it.

MANAGING RESOURCES: TAGGING



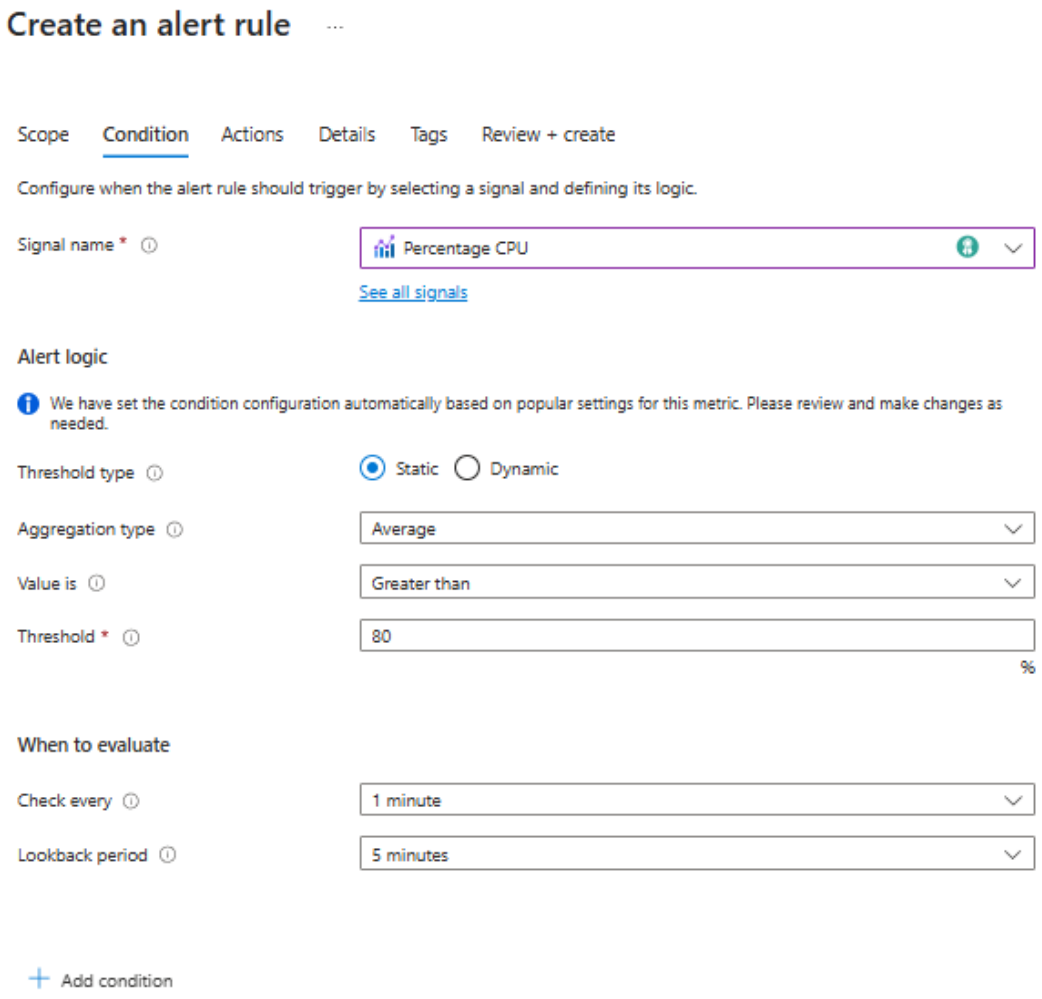
- ❑ Tags are key/value pairs applied to Azure resources.

Used for:

- Organizing resources across Resource Groups.
- Cost tracking and billing reports (filter by tag).
- Automation (scripts can act on tagged resources).
- Applying policies.

- ❑ Example: Environment:Production, Owner:jane.doe@company.com, Project:Alpha.

SETTING UP A BASIC ALERT (CONCEPTUAL)



Azure Monitor allows proactive alerting.

- ❑ Condition: Define a threshold (e.g., CPU > 80% for 5 mins).
- ❑ Action Group: Define what happens when the alert fires (e.g., send an email, SMS, trigger an Azure Function).
- ❑ Navigate to Azure Monitor -> Alerts -> + Create alert rule.
- ❑ Select a resource (e.g., your VM), define condition, create/select action group.
- ❑ Description: Alerts notify you of important conditions, enabling quick response.

POP QUIZ:

In the simulation, RDP port 3389 was opened to "Any" source for the Windows VM. From a leadership perspective overseeing a production environment, what is the most significant risk associated with this configuration that you would want your team to mitigate?

A. Increased data egress costs due to RDP traffic.
B. High exposure to internet-based brute-force attacks and potential unauthorized access.
C. The VM will not be able to communicate with other services in its Virtual Network.
D. It prevents the use of Azure Monitor for tracking VM performance.

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POP QUIZ:

The course outline emphasizes the importance of tagging resources (e.g., Environment:Training, CostCenter:ITDept). Even though it was briefly mentioned in the simulation, what is the *most* significant benefit of implementing a consistent tagging strategy?

A. Tags enable accurate cost allocation, improved financial reporting, and showback/chargeback to departments.

B. Tags automatically apply security patches to tagged resources.
C. Tags significantly increase the performance of the tagged resources.
D. Tags are required for resources to communicate with each other across different regions

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POP QUIZ:

The simulation involved creating all resources (VM, VNet, Storage Account) within a single Resource Group named ExecLead-RG-Demo. What is the primary strategic advantage of this approach for managing the lifecycle of these *temporary demo* resources?

A. It automatically load balances traffic across the resources within the group.
B. It simplifies the process of deleting all associated demo resources simultaneously, preventing orphaned resources and costs.
C. It provides enhanced network isolation by default between the resources in the group.
D. It reduces the individual cost of each resource when grouped together.

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REFLECTION

Task: Individually write down one key insight from today's session
Focus: Reflect on how integrated risk management can be applied in your role
Discussion: Share your insight with a partner or small group
Documentation: Record your reflection in your personal action plan worksheet
Outcome: Strengthen your personal commitment to continuous improvement

COURSE REVIEW

- Tangible Understanding: Gained a feel for how cloud resources are provisioned and configured.
- Strategic Implications of Choices: VM size, region, storage redundancy, network design – all have cost, performance, and security impacts.
- Agility & Speed: Witnessed how quickly infrastructure can be deployed.
- Importance of Governance: Resource Groups, Tagging, and RBAC are essential for control and cost management.
- Monitoring is Key: Azure Monitor provides visibility for operational excellence, security, and cost optimization.
- Security is Pervasive: Security considerations (NSGs, RDP access, Bastion, Firewalls) are present at every step.

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NEXT WEEK: SIMULATIONS

Next week, we shift from the whiteboard to the Azure Portal with guided hands-on labs. You'll deploy core Azure services like virtual machines and web apps—not just to click buttons, but to understand the architecture and rationale behind each configuration. We'll walk through virtual networking and storage account setups, focusing on best practices for both security and performance.

Then we'll introduce Azure Monitor and related tools to help you track costs, usage, and performance in real time. For governance, we'll touch on resource policies—how organizations can enforce rules at scale.

Q&A AND OPEN DISCUSSION


THANK
YOU