Azure Arc | Quick Guide

Version 24.10

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LinkedIn

Overview of Azure Arc

Azure Arc empowers organizations to innovate and manage infrastructure anywhere—on-premises, in public clouds, or at the edge. It simplifies resource management and extends Azure capabilities beyond the Azure cloud. The platform offers robust governance, monitoring, and security features to ensure consistency across diverse environments.

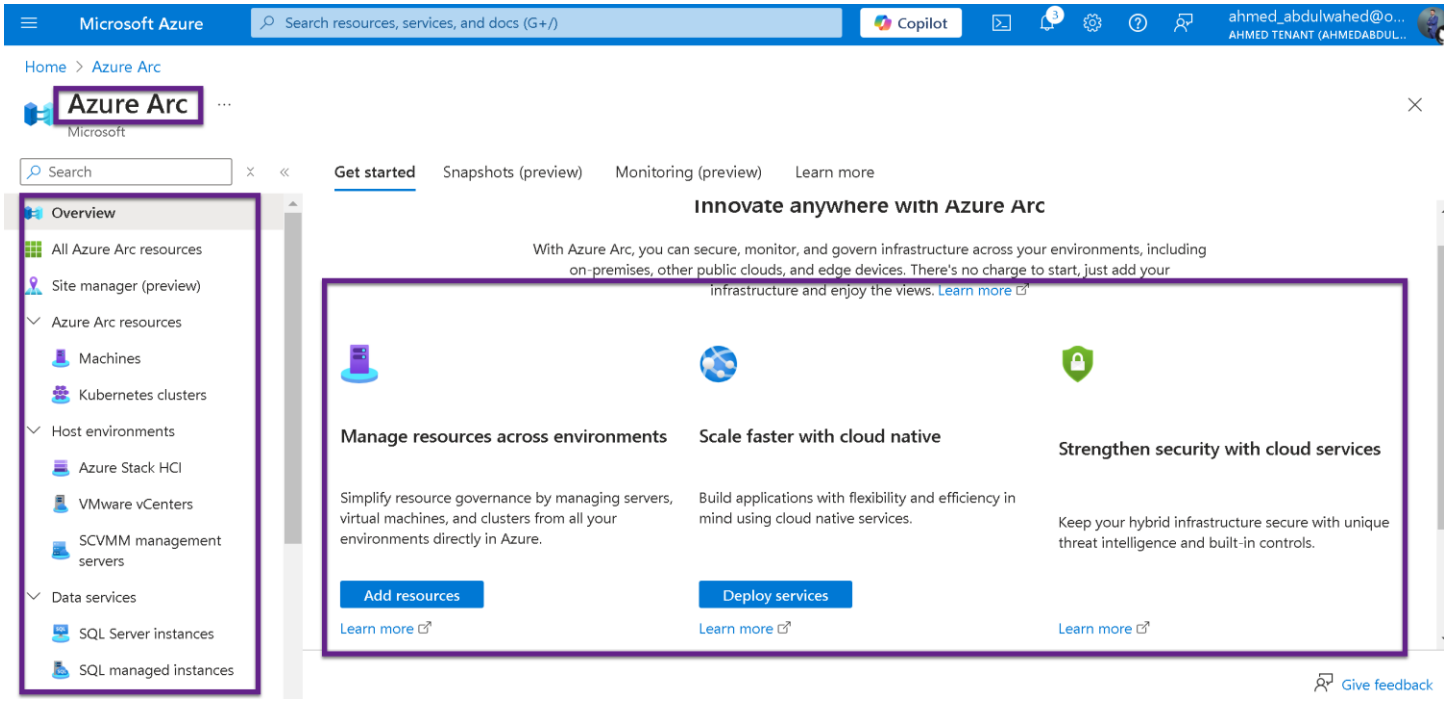
Key Features

1. **Manage Resources Across Environments:** Simplify governance by managing servers, virtual machines, and clusters directly from Azure, regardless of their location.
2. **Scale Faster with Cloud-Native Services:** Build applications using cloud-native technologies, enabling efficiency and flexibility.
3. **Strengthen Security with Cloud Services:** Enhance hybrid infrastructure security with Azure's unique threat intelligence and built-in controls.

Azure Arc Resources

The Azure Arc portal provides a comprehensive view of resources, including:

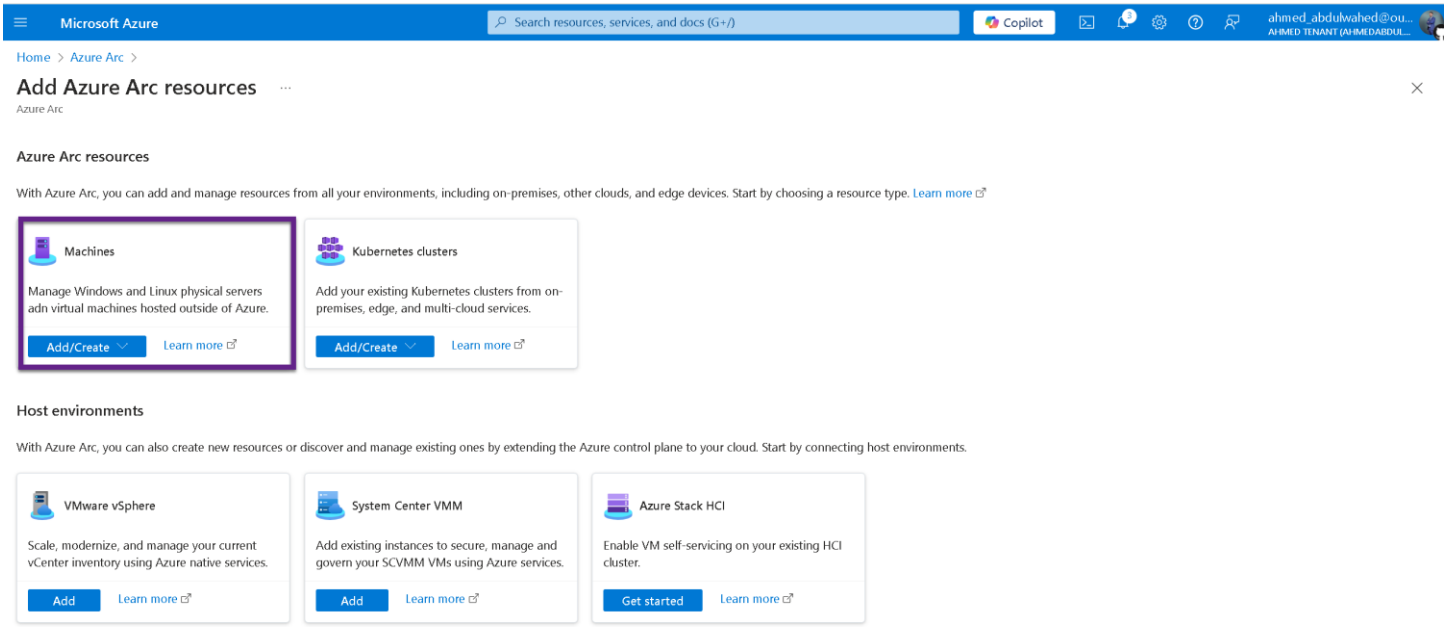
- **Machines:** Manage servers and VMs.
- **Kubernetes Clusters:** Govern containerized applications.
- **Host Environments:** Integrate with Azure Stack HCI, VMware vCenters, and SCVMM.
- **Data Services:** Manage SQL Server instances and SQL managed instances across environments.

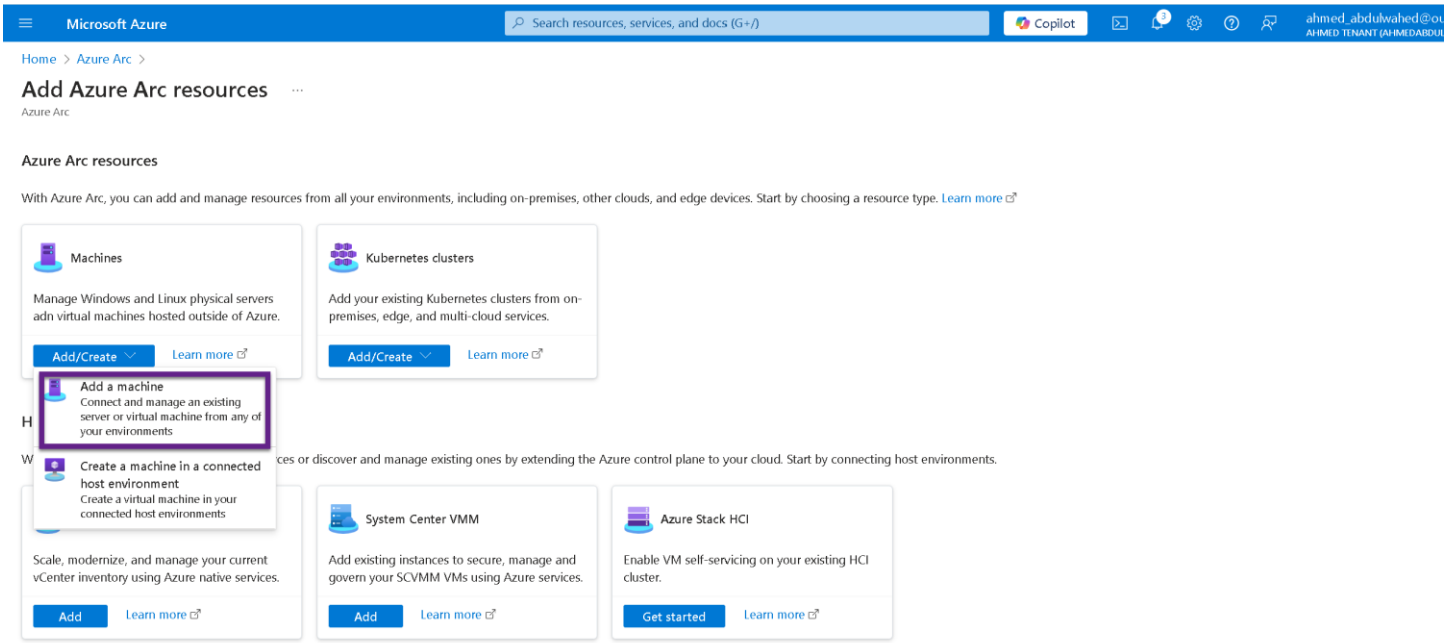


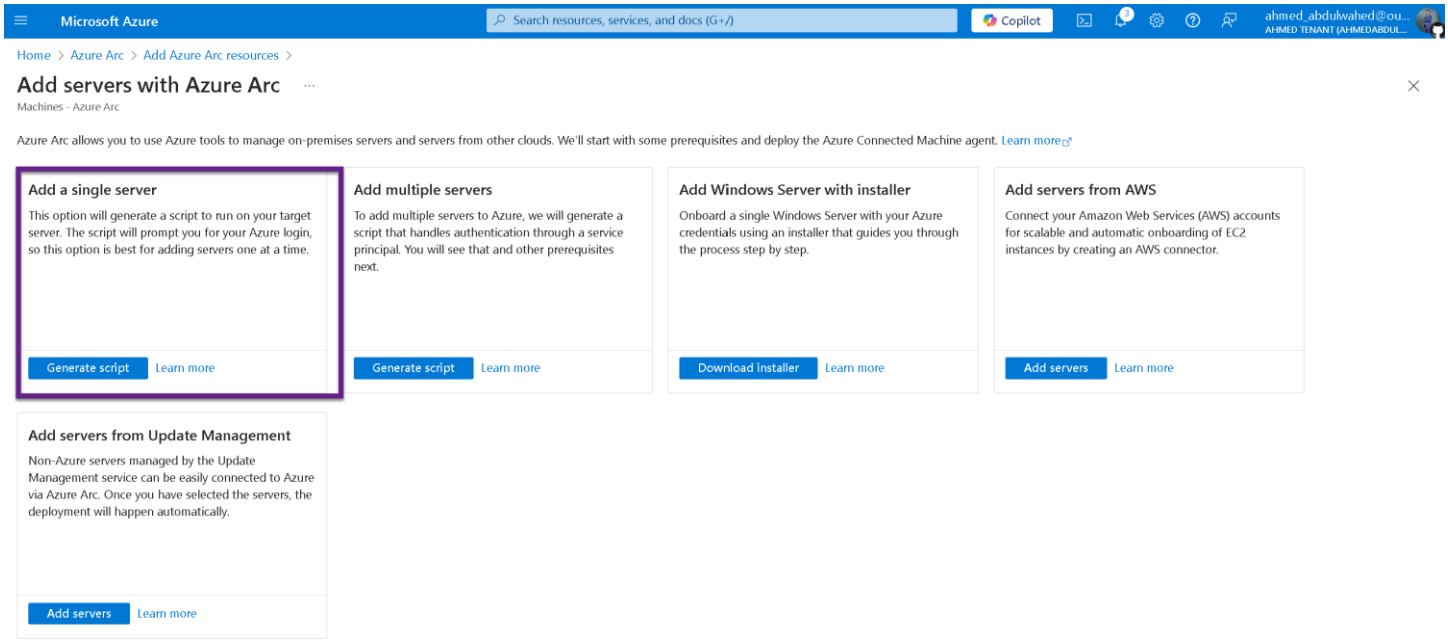
Adding On-Premises Resources with Azure Arc

Azure Arc allows organizations to seamlessly integrate and manage their on-premises resources, including Windows servers, alongside Azure-native resources. This ensures consistent governance, monitoring, and security for a unified hybrid infrastructure.

Key Steps to Add On-Premises Windows Servers



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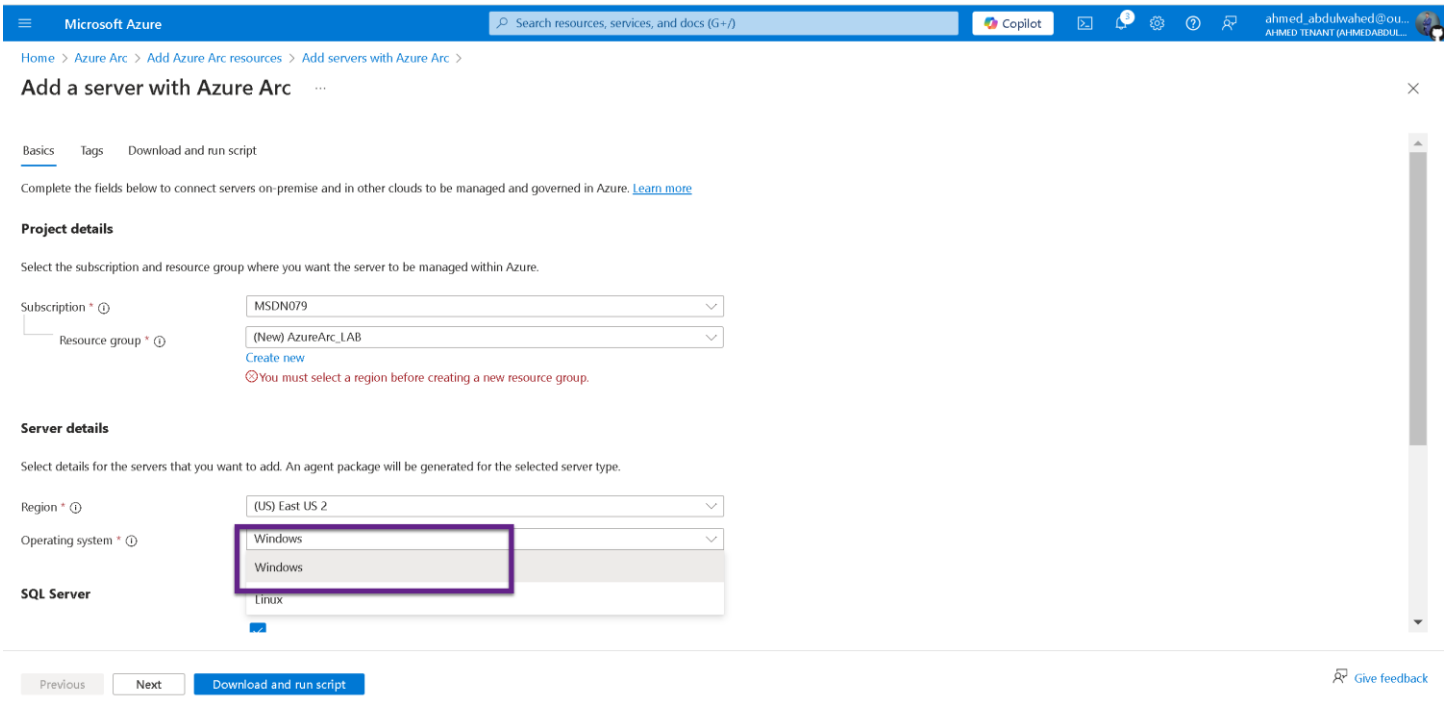
Home > Azure Arc > Add Azure Arc resources >
Add servers with Azure Arc
Machines - Azure Arc
Azure Arc allows you to use Azure tools to manage on-premises servers and servers from other clouds. We'll start with some prerequisites and deploy the Azure Connected Machine agent. Learn more
Add a single server
This option will generate a script to run on your target server. The script will prompt you for your Azure login, so this option is best for adding servers one at a time.
Generate script
Learn more
Add multiple servers
To add multiple servers to Azure, we will generate a script that handles authentication through a service principal. You will see that and other prerequisites next.
Generate script
Learn more
Add Windows Server with installer
Onboard a single Windows Server with your Azure credentials using an installer that guides you through the process step by step.
Download installer
Learn more
Add servers from AWS
Connect your Amazon Web Services (AWS) accounts for scalable and automatic onboarding of EC2 instances by creating an AWS connector.
Add servers
Learn more
Add servers from Update Management
Non-Azure servers managed by the Update Management service can be easily connected to Azure via Azure Arc. Once you have selected the servers, the deployment will happen automatically.
Add servers
Learn more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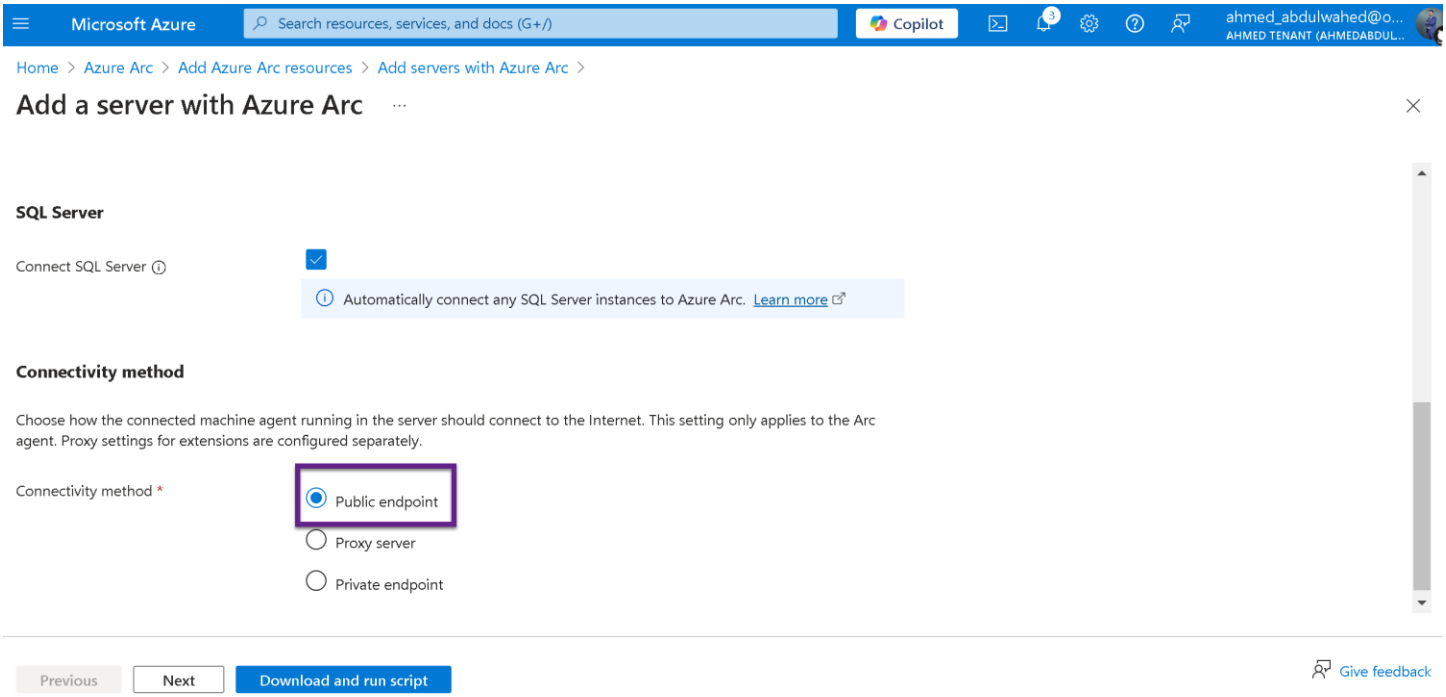
Add a server with Azure Arc
Basics
Tags
Download and run script
Complete the fields below to connect servers on-premise and in other clouds to be managed and governed in Azure. Learn more
Project details
Select the subscription and resource group where you want the server to be managed within Azure.
Subscription *
MSDN079
Resource group *
(New) AzureArc_LAB
Create new
You must select a region before creating a new resource group.
Server details
Select details for the servers that you want to add. An agent package will be generated for the selected server type.
Region *
(US) East US 2
Operating system *
Windows
Windows
Linux
SQL Server
Previous
Next
Download and run script
Give feedback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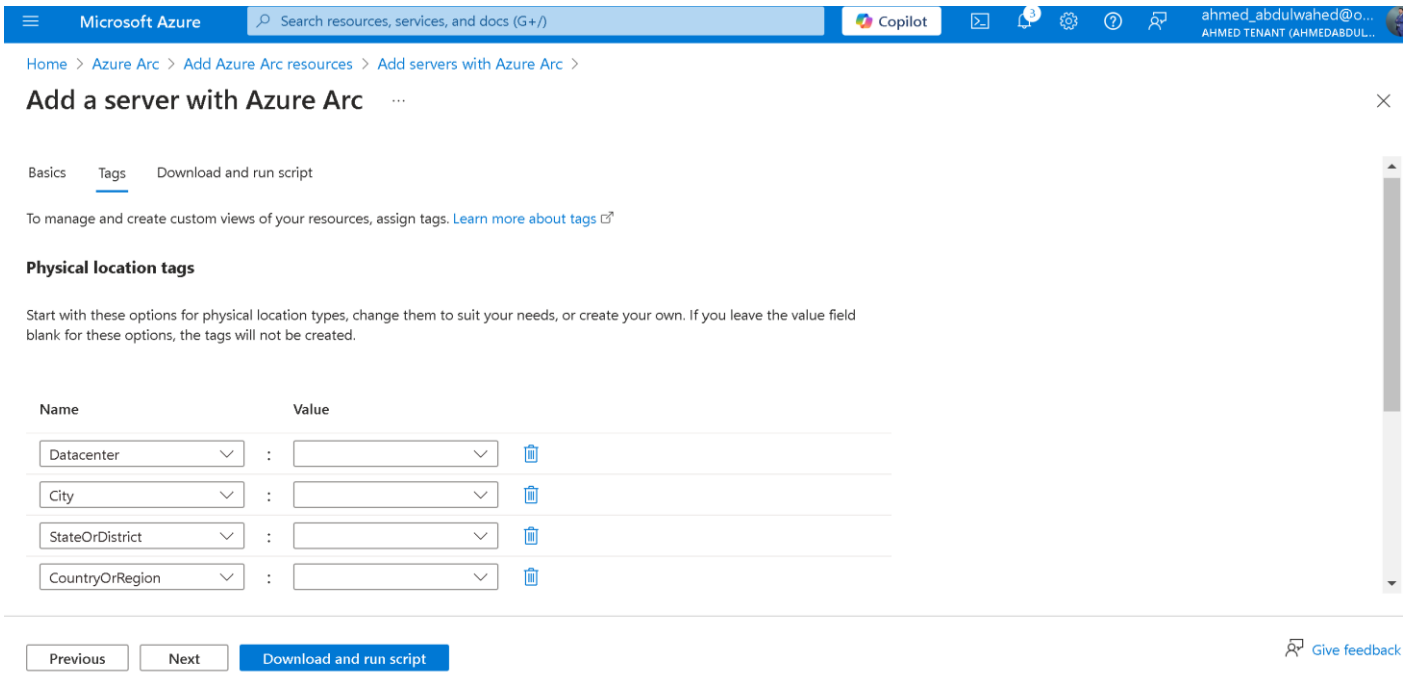
Add a server with Azure Arc
SQL Server
Connect SQL Server
Automatically connect any SQL Server instances to Azure Arc. Learn more
Connectivity method
Choose how the connected machine agent running in the server should connect to the Internet. This setting only applies to the Arc agent. Proxy settings for extensions are configured separately.
Connectivity method *
Public endpoint
Proxy server
Private endpoint
Previous
Next
Download and run script
Give feedback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Add a server with Azure Arc
Basics
Tags
Download and run script
To manage and create custom views of your resources, assign tags. Learn more about tags
Physical location tags
Start with these options for physical location types, change them to suit your needs, or create your own. If you leave the value field blank for these options, the tags will not be created.
Name
Value
Datacenter
City
StateOrDistrict
CountryOrRegion
Previous
Next
Download and run script
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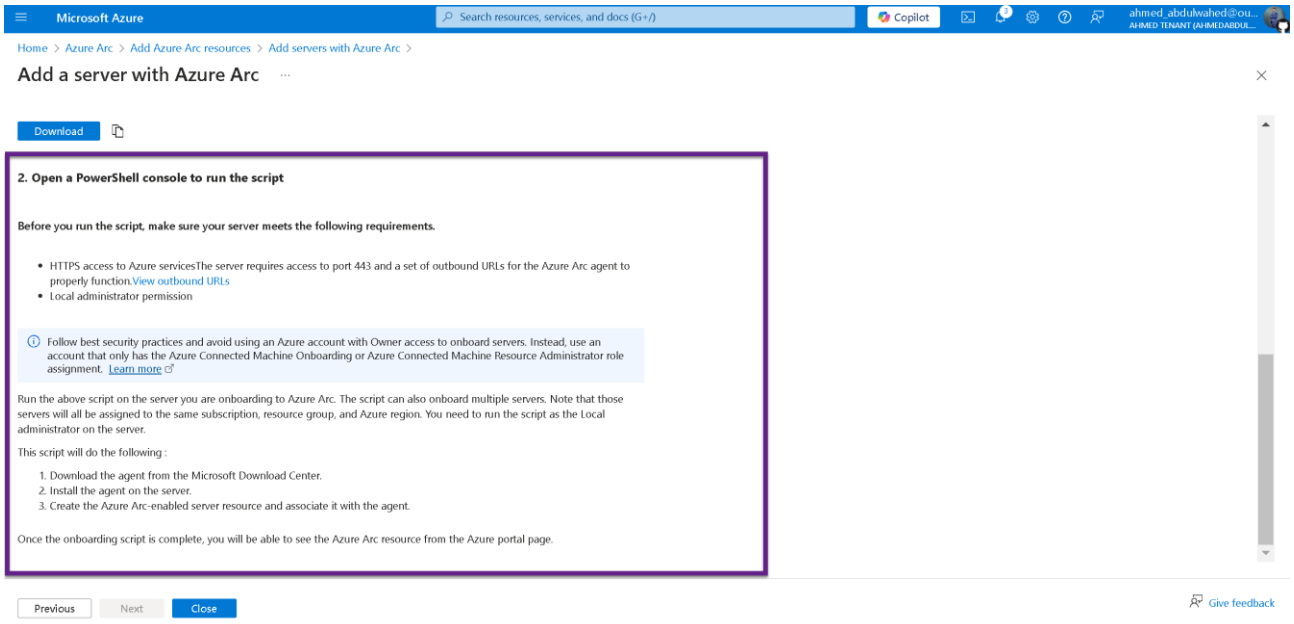
Azure Arc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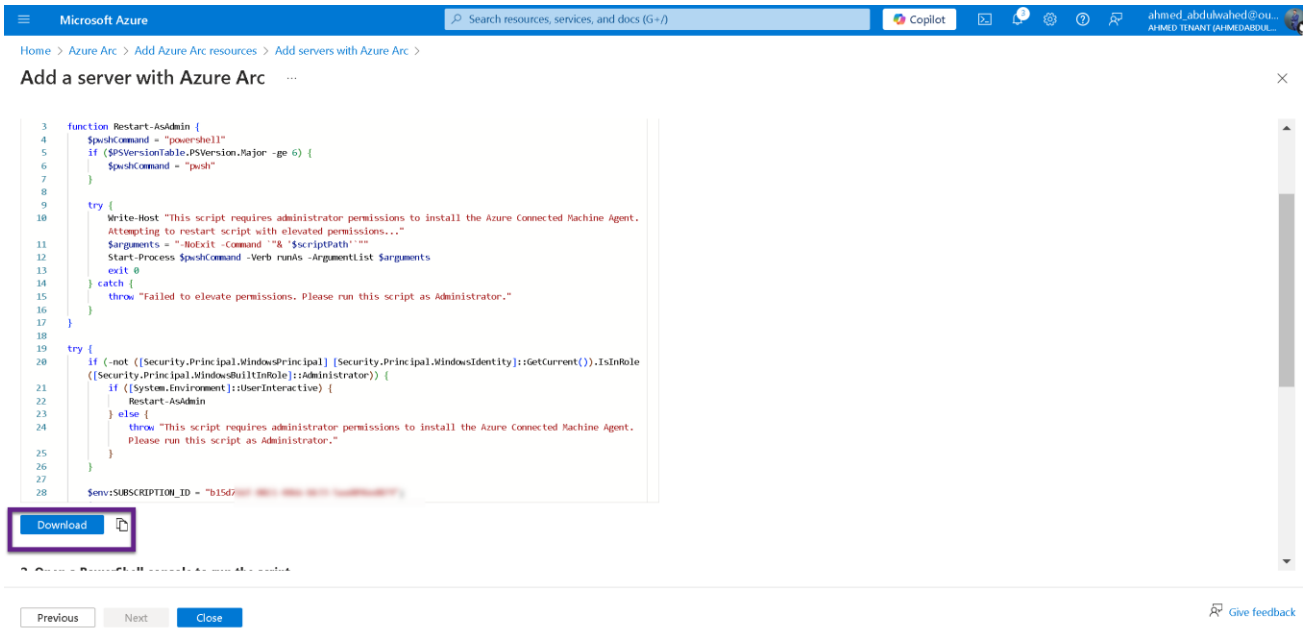
Home > Azure Arc > Add Azure Arc resources > Add servers with Azure Arc >
Add a server with Azure Arc
Download
2. Open a PowerShell console to run the script
Before you run the script, make sure your server meets the following requirements.
HTTPS access to Azure servicesThe server requires access to port 443 and a set of outbound URLs for the Azure Arc agent to properly function.View outbound URLs
Local administrator permission
Follow best security practices and avoid using an Azure account with Owner access to onboard servers. Instead, use an account that only has the Azure Connected Machine Onboarding or Azure Connected Machine Resource Administrator role assignment. Learn more
Run the above script on the server you are onboarding to Azure Arc. The script can also onboard multiple servers. Note that those servers will all be assigned to the same subscription, resource group, and Azure region. You need to run the script as the Local administrator on the server.
This script will do the following :
1. Download the agent from the Microsoft Download Center.
2. Install the agent on the server.
3. Create the Azure Arc-enabled server resource and associate it with the agent.
Once the onboarding script is complete, you will be able to see the Azure Arc resource from the Azure portal page.
Previous
Next
Close
Give feedback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Home > Azure Arc > Add Azure Arc resources > Add servers with Azure Arc >
Add a server with Azure Arc
function Restart-AsAdmin {
$pwshCommand = "powershell"
if ($PSVersionTable.PSVersion.Major -ge 6) {
$pwshCommand = "pwsh"
}
try {
Write-Host "This script requires administrator permissions to install the Azure Connected Machine Agent.
Attempting to restart script with elevated permissions..."
$arguments = "-NoExit -Command `"& '$scriptPath'`""
Start-Process $pwshCommand -Verb runAs -ArgumentList $arguments
exit 0
} catch {
throw "Failed to elevate permissions. Please run this script as Administrator."
}
}
try {
if (-not ([Security.Principal.WindowsPrincipal] [Security.Principal.WindowsIdentity]::GetCurrent()).IsInRole
([Security.Principal.WindowsBuiltInRole]::Administrator)) {
if ([System.Environment]::UserInteractive) {
Restart-AsAdmin
} else {
throw "This script requires administrator permissions to install the Azure Connected Machine Agent.
Please run this script as Administrator."
}
}
$env:SUBSCRIPTION_ID = "b15d7
Download
Previous
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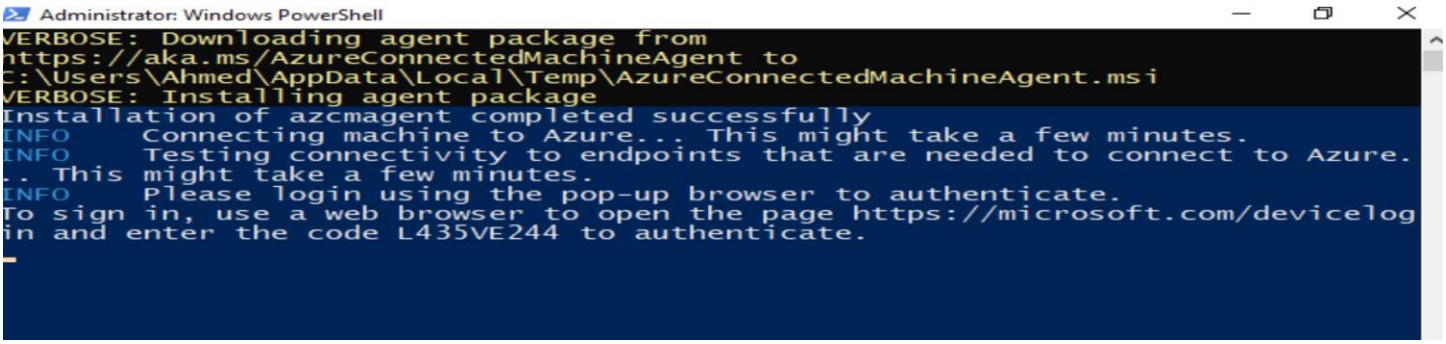
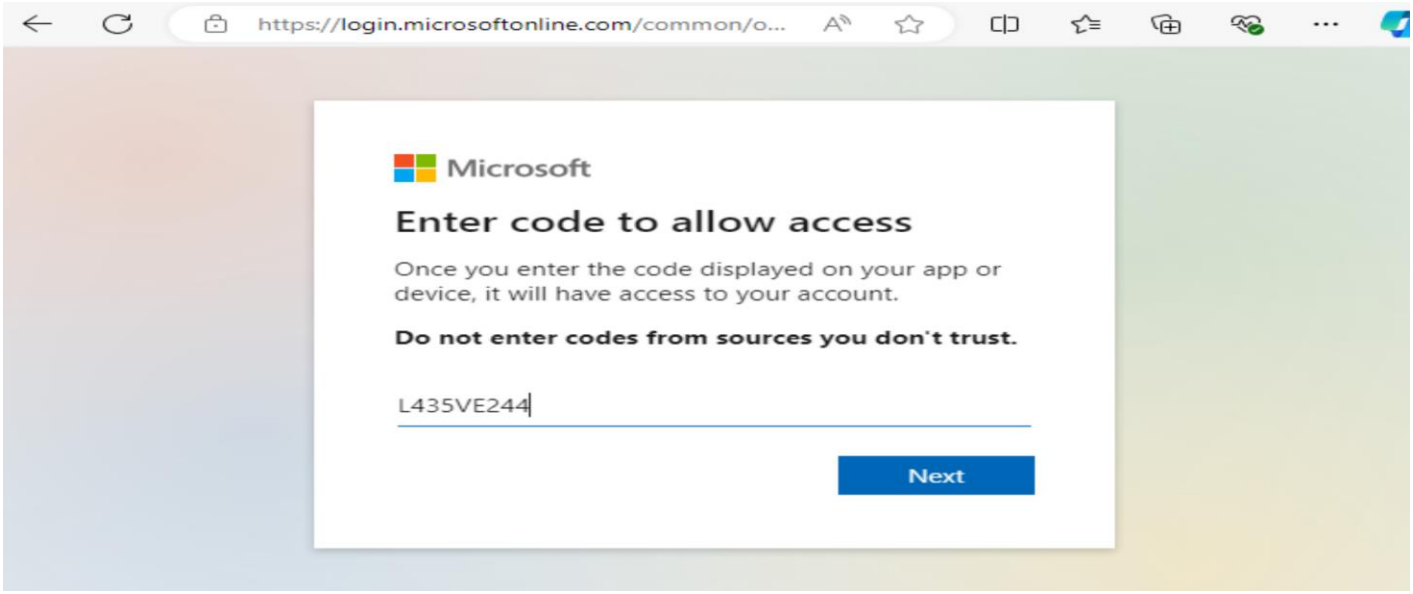
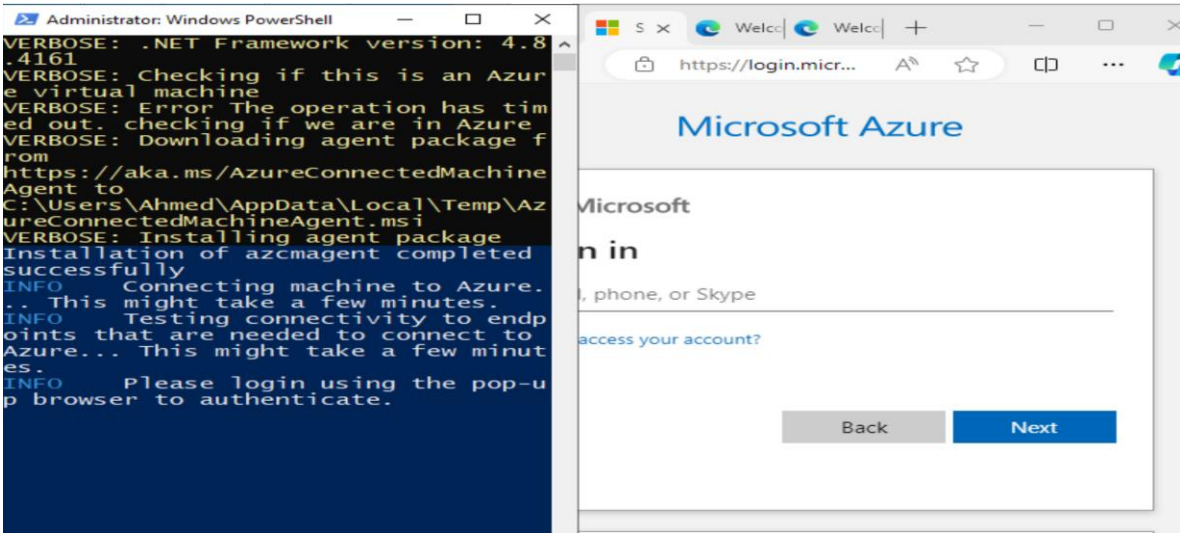
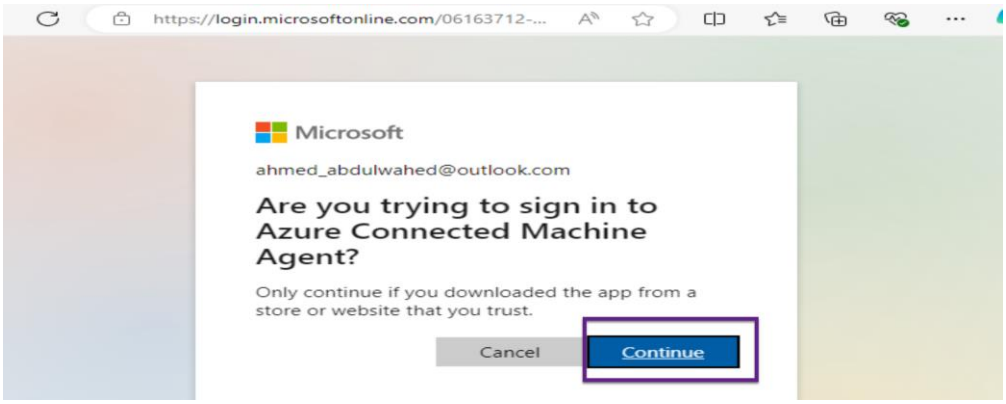
Azure Arc

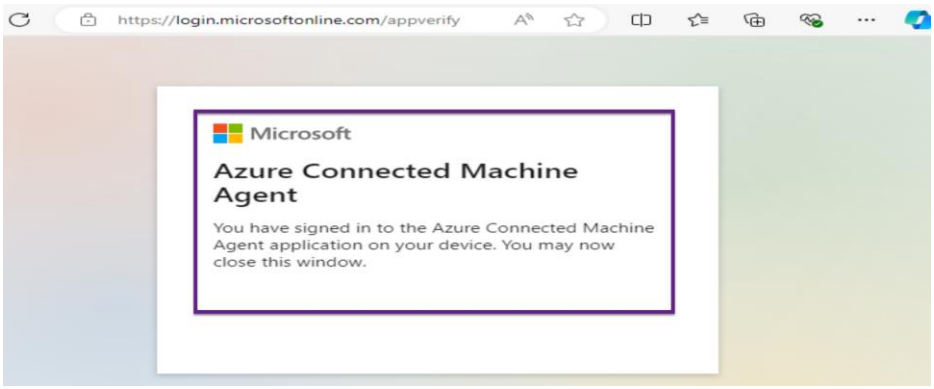
Run the downloaded script on on-premises servers you want to add to Azure Arch and follow the below steps

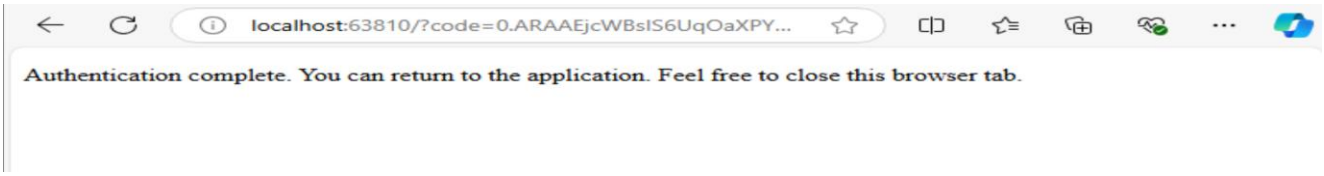


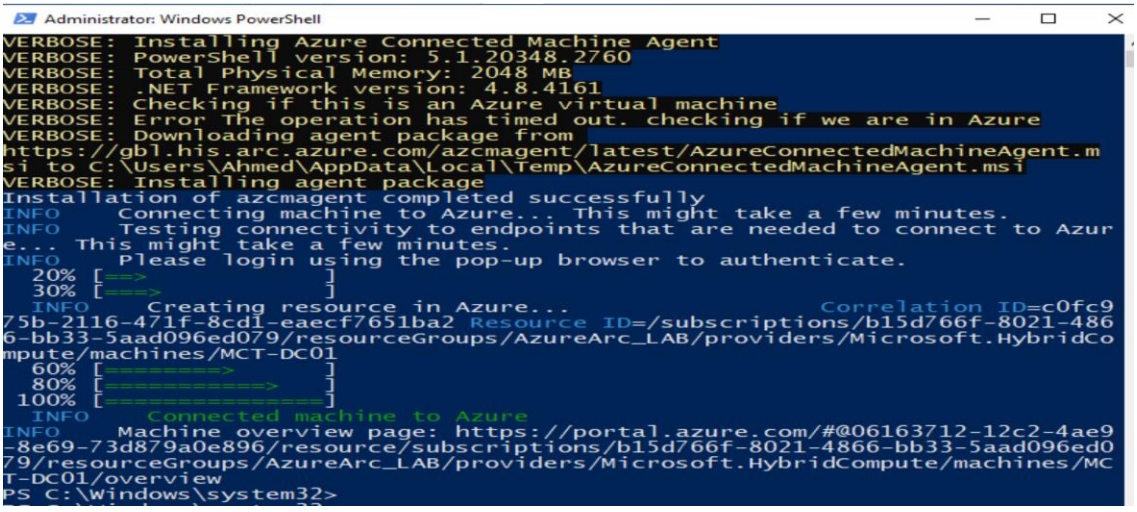





https://login.microsoftonline.com/06163712-...
Microsoft
ahmed_abdulwahed@outlook.com
Are you trying to sign in to Azure Connected Machine Agent?
Only continue if you downloaded the app from a store or website that you trust.
Cancel
Continue

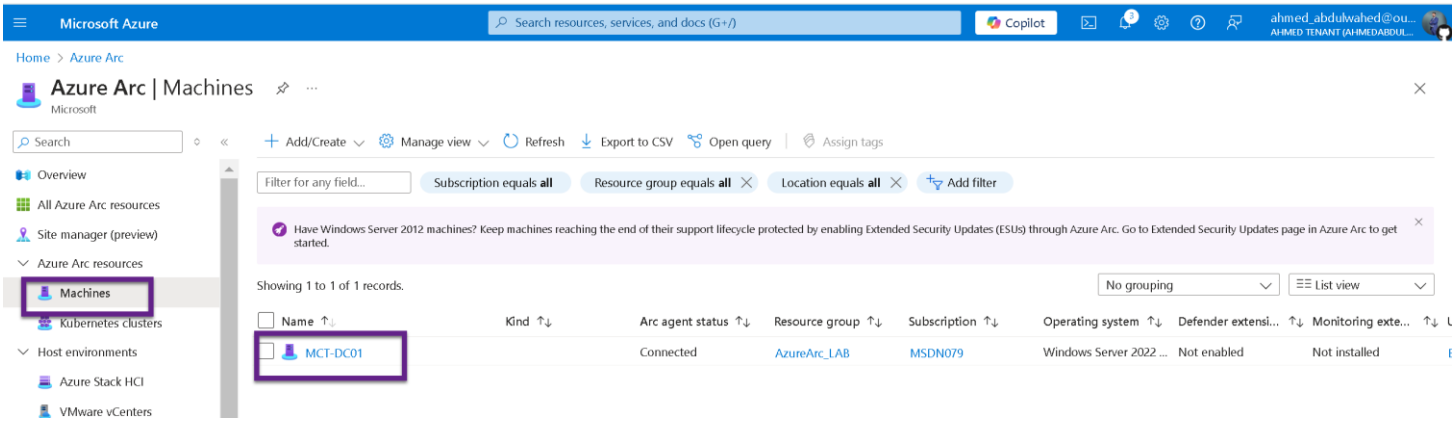

https://login.microsoftonline.com/appverify
Microsoft
Azure Connected Machine Agent
You have signed in to the Azure Connected Machine Agent application on your device. You may now close this window.


localhost:63810/?code=0.ARAAEjcWBsIS6UqOaXPY...
Authentication complete. You can return to the application. Feel free to close this browser tab.


Administrator: Windows PowerShell
VERBOSE: Installing Azure Connected Machine Agent
VERBOSE: PowerShell version: 5.1.20348.2760
VERBOSE: Total Physical Memory: 2048 MB
VERBOSE: .NET Framework version: 4.8.4161
VERBOSE: Checking if this is an Azure virtual machine
VERBOSE: Error The operation has timed out. checking if we are in Azure
VERBOSE: Downloading agent package from
https://gbl.his.arc.azure.com/azcmagent/latest/AzureConnectedMachineAgent.msi to C:\Users\Ahmed\AppData\Local\Temp\AzureConnectedMachineAgent.msi
VERBOSE: Installing agent package
Installation of azcmagent completed successfully
INFO Connecting machine to Azure... This might take a few minutes.
INFO Testing connectivity to endpoints that are needed to connect to Azure... This might take a few minutes.
INFO Please login using the pop-up browser to authenticate.
20% [==>]
30% [===>]
INFO Creating resource in Azure... Correlation ID=c0fc975b-2116-471f-8cd1-eaecf7651ba2 Resource ID=/subscriptions/b15d766f-8021-4866-bb33-5aad096ed079/resourceGroups/AzureArc_LAB/providers/Microsoft.HybridCompute/machines/MCT-DC01
60% [=========>]
80% [============>]
100% [================]
INFO Connected machine to Azure
INFO Machine overview page: https://portal.azure.com/#@06163712-12c2-4ae9-8e69-73d879a0e896/resource/subscriptions/b15d766f-8021-4866-bb33-5aad096ed079/resourceGroups/AzureArc_LAB/providers/Microsoft.HybridCompute/machines/MCT-DC01/overview
PS C:\Windows\system32>

Azure Arc

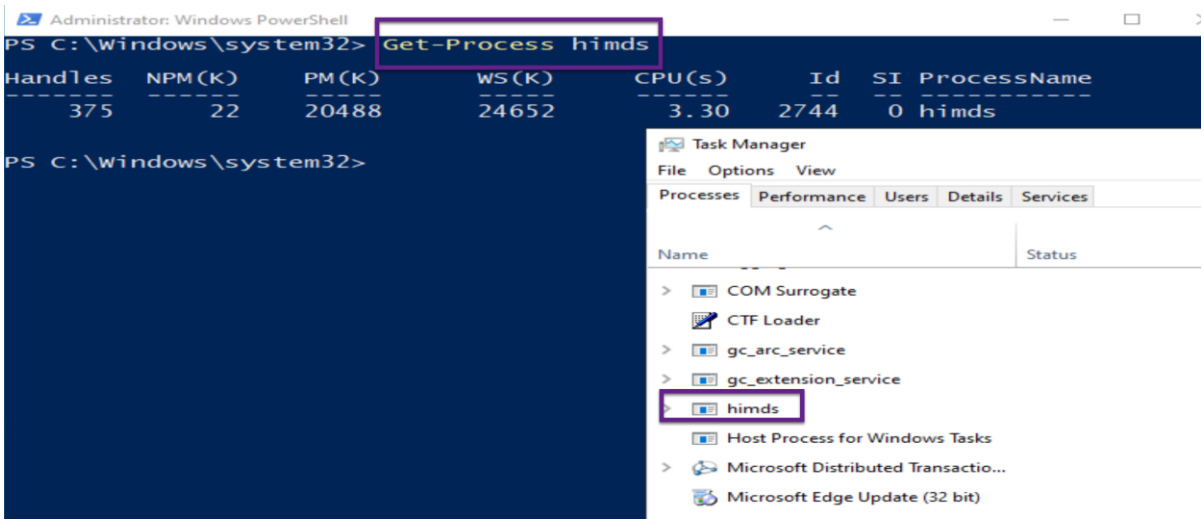
Once on-premises Windows servers are added to Azure Arc, they are visible under the **Machines** section. Azure Arc provides a centralized interface to monitor and manage across your hybrid environment.



Importance of Monitoring Himds

The **himds** process is critical for Azure Arc operations as it facilitates communication between the Azure portal and the Arc-enabled server. Monitoring its performance ensures:

- Proper functionality of Azure Arc.
- Early detection of resource usage spikes or issues.

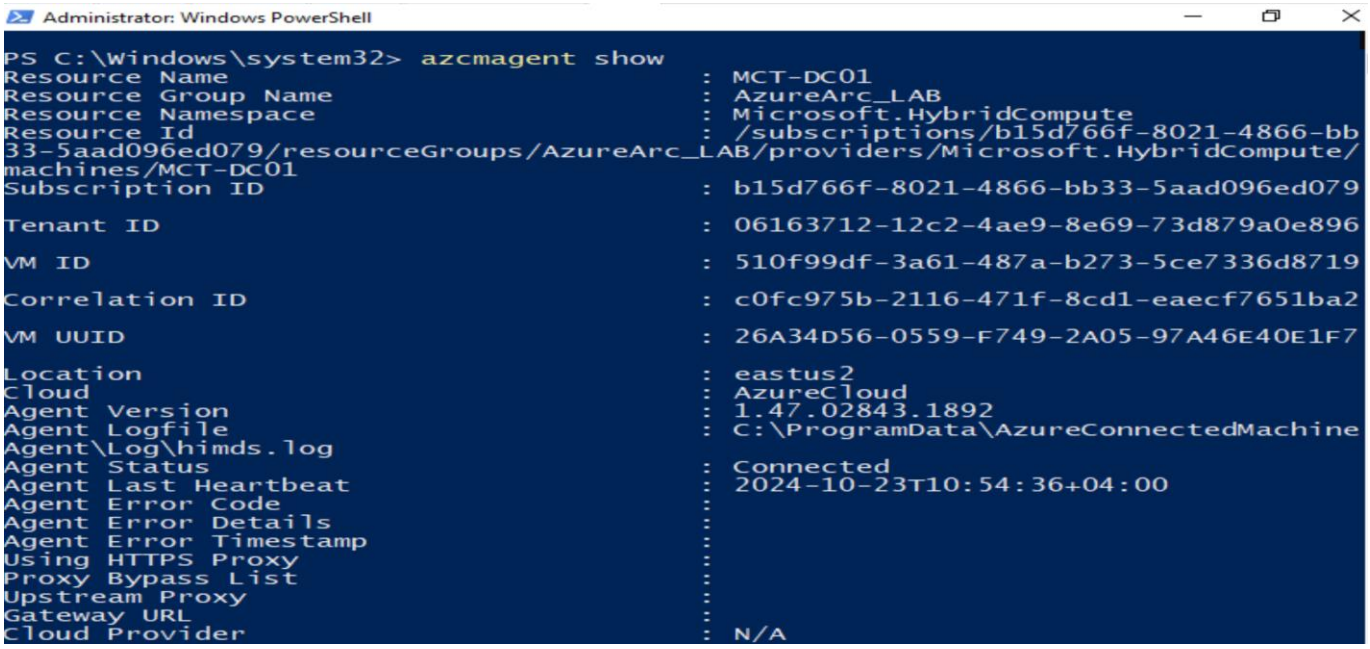


Azure Connected Machine Agent Details

The Azure Connected Machine agent (azcmagent) is a critical component that enables Azure Arc to manage hybrid resources. The azcmagent show command outputs comprehensive details about the agent's configuration and status.

Key Details in the Screenshot

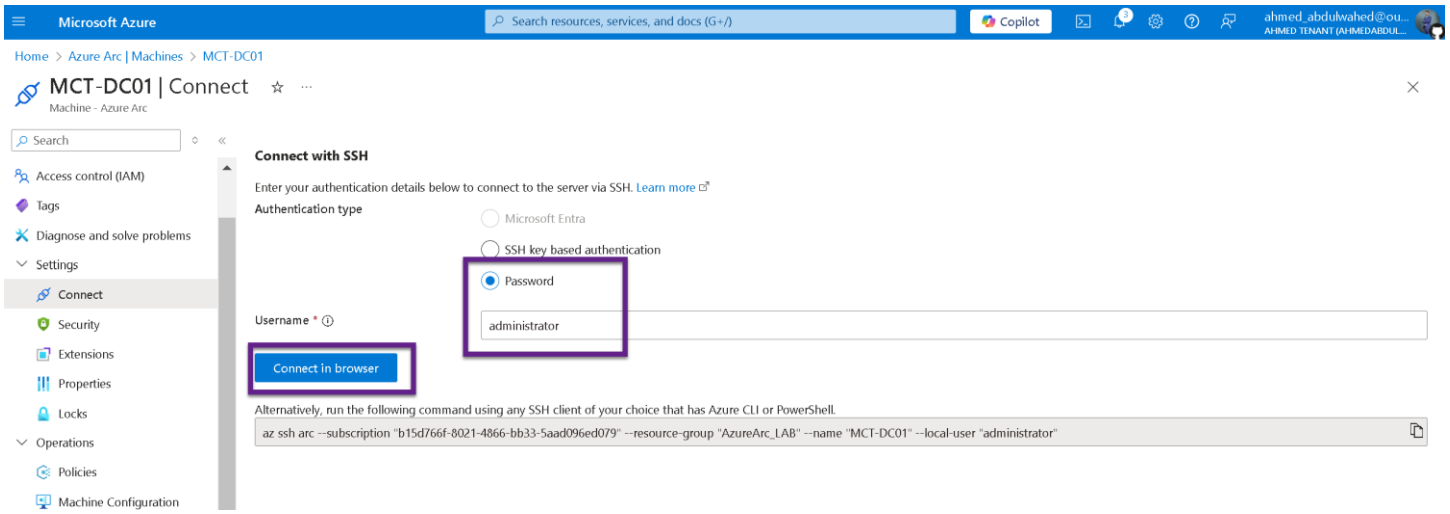
1. **Resource Identification**:
   - **Resource Name**: MCT-DC01 (the server's name in Azure Arc).
   - **Resource Group Name**: AzureArc_LAB (the resource group the server belongs to in Azure).
   - **Resource Namespace**: Microsoft.HybridCompute (indicating the Azure Arc service).
   - **Resource ID**: The unique identifier for the connected machine within Azure.
2. **Subscription and Tenant Information**:
   - **Subscription ID**: b15d766f-... (subscription under which the server is managed).
   - **Tenant ID**: 06163712-... (Azure AD tenant ID for authentication).
3. **VM Information**:
   - **VM ID**: Unique identifier for the server.
   - **VM UUID**: Universally unique identifier for the server in Azure Arc.
4. **Agent Status**:
   - **Cloud**: Indicates the cloud environment (AzureCloud in this case).
   - **Agent Version**: 1.47.02843.1892 (current version of the agent).
   - **Agent Logfile**: C:\ProgramData\AzureConnectedMachine\Log\himds.log (path to the log file for troubleshooting).
   - **Agent Status**: Connected (indicating successful communication with Azure).
   - **Agent Last Heartbeat**: Timestamp of the last communication with Azure, showing it is actively monitored.
5. **Cloud Location**:
   - **Location**: eastus2 (Azure region associated with this machine).



Azure Arc

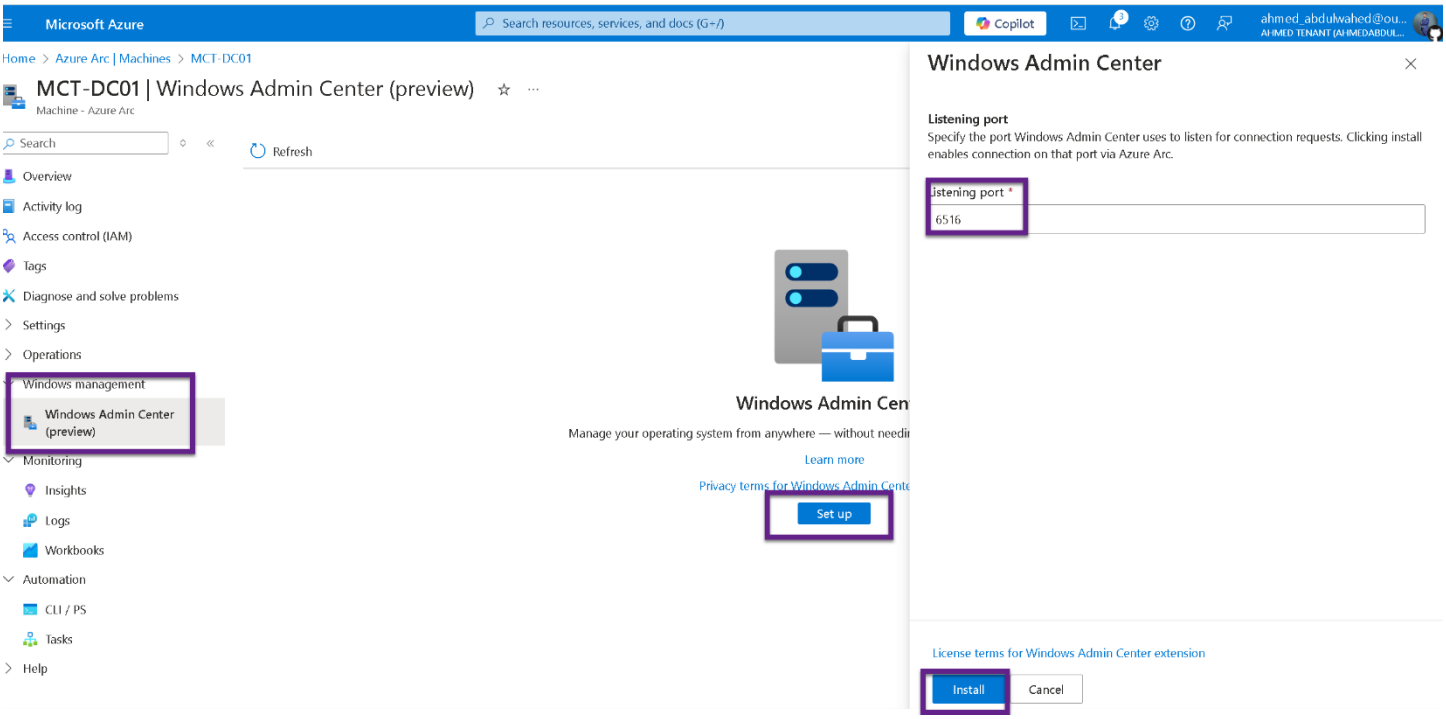
Secure Connection to Azure Arc-Enabled Servers

Azure Arc allows administrators to securely connect to on-premises or hybrid servers using various authentication methods.



Setting Up Windows Admin Center via Azure Arc

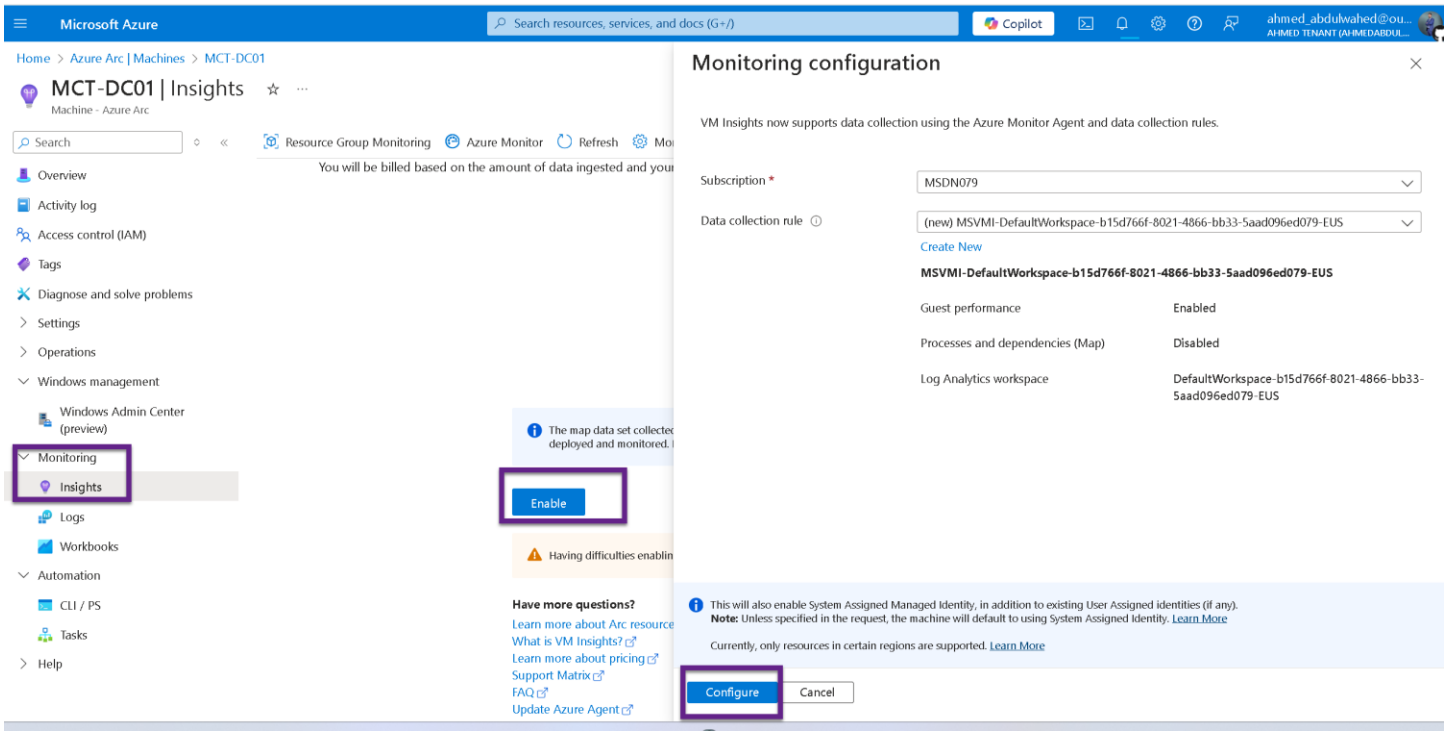
Windows Admin Center **(WAC)** provides a centralized management interface for Windows Server environments. Using Azure Arc, WAC can be installed and configured to enable seamless management of hybrid and on-premises servers through the Azure portal.

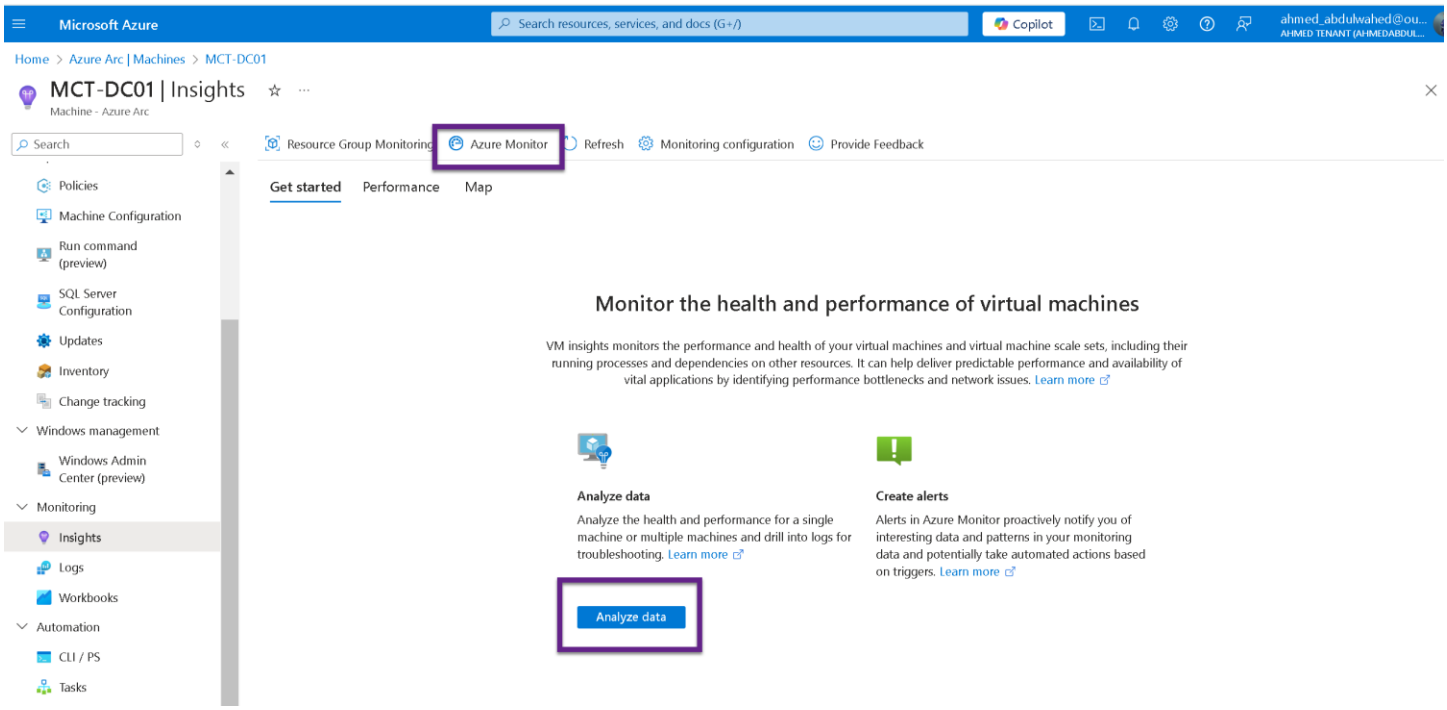


Azure Arc

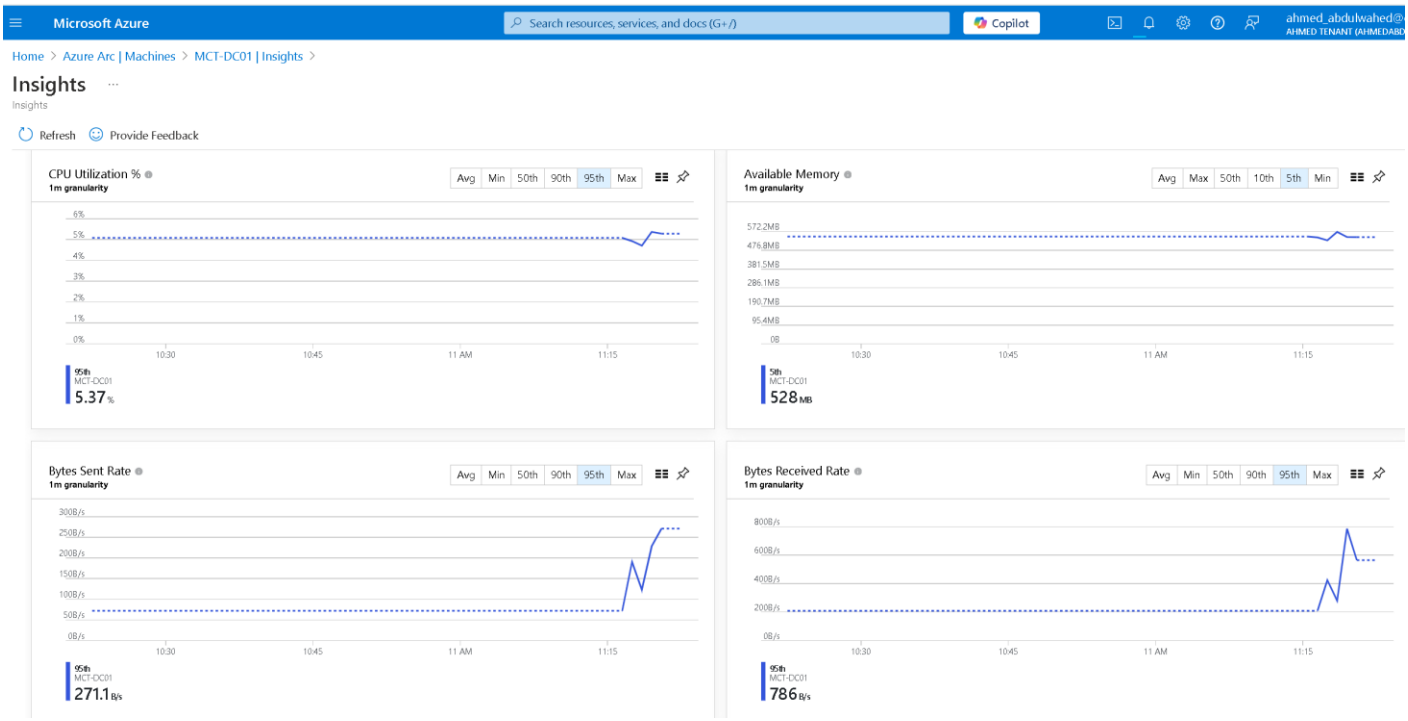
Enabling Insights Monitoring for Azure Arc-Enabled Servers

Azure Monitor's **VM Insights** provides detailed performance monitoring and dependency mapping for Azure Arc-enabled machines. This enables proactive tracking of guest performance, resource utilization, and application dependencies.



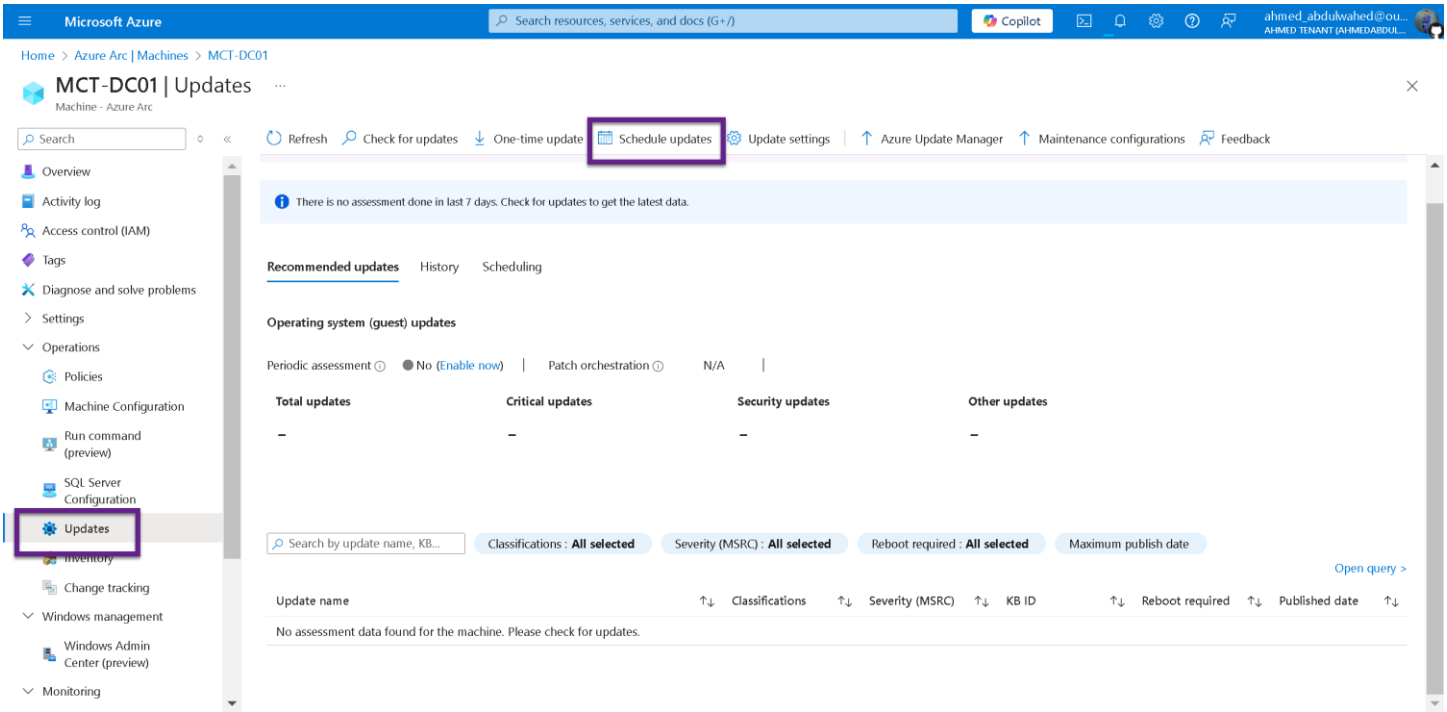


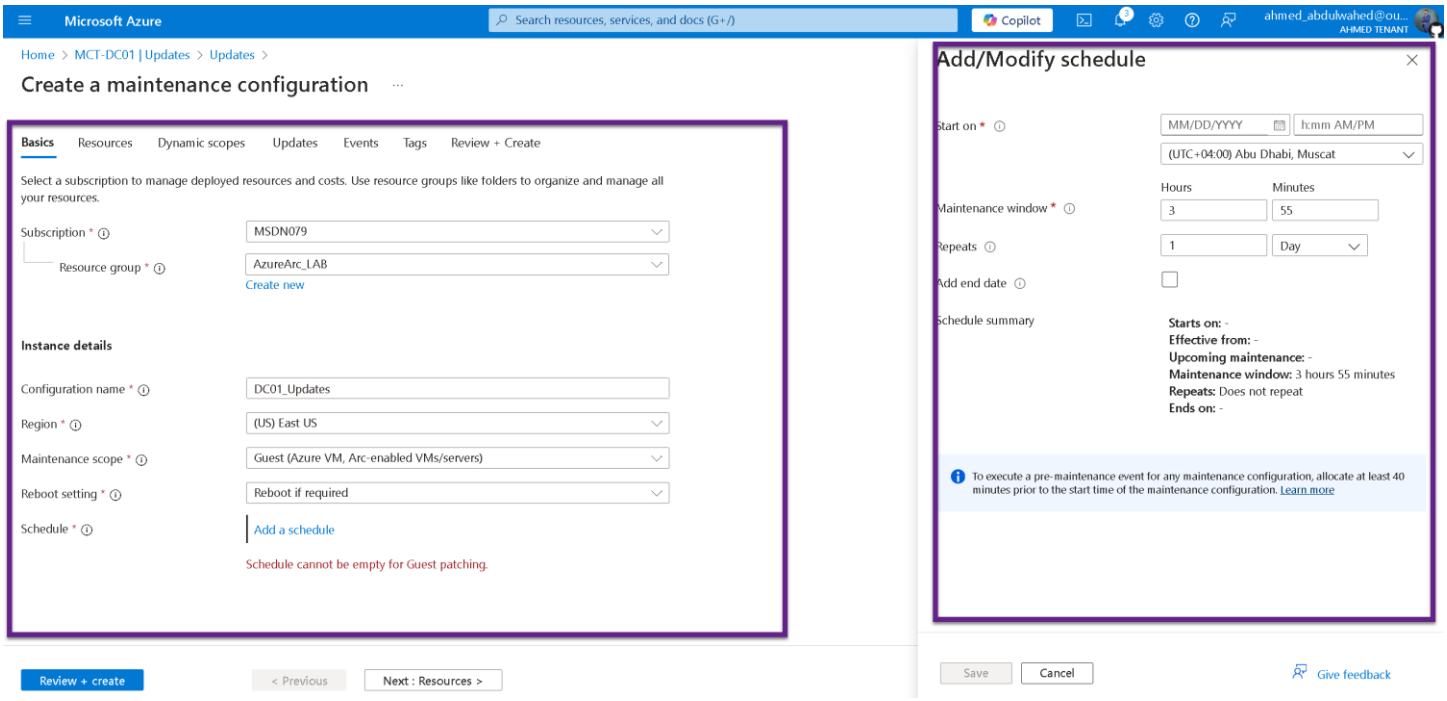
Azure Arc



Managing Updates for Azure Arc-Enabled Servers

Azure Arc provides centralized update management for hybrid machines, enabling administrators to schedule and apply updates across environments from the Azure portal.

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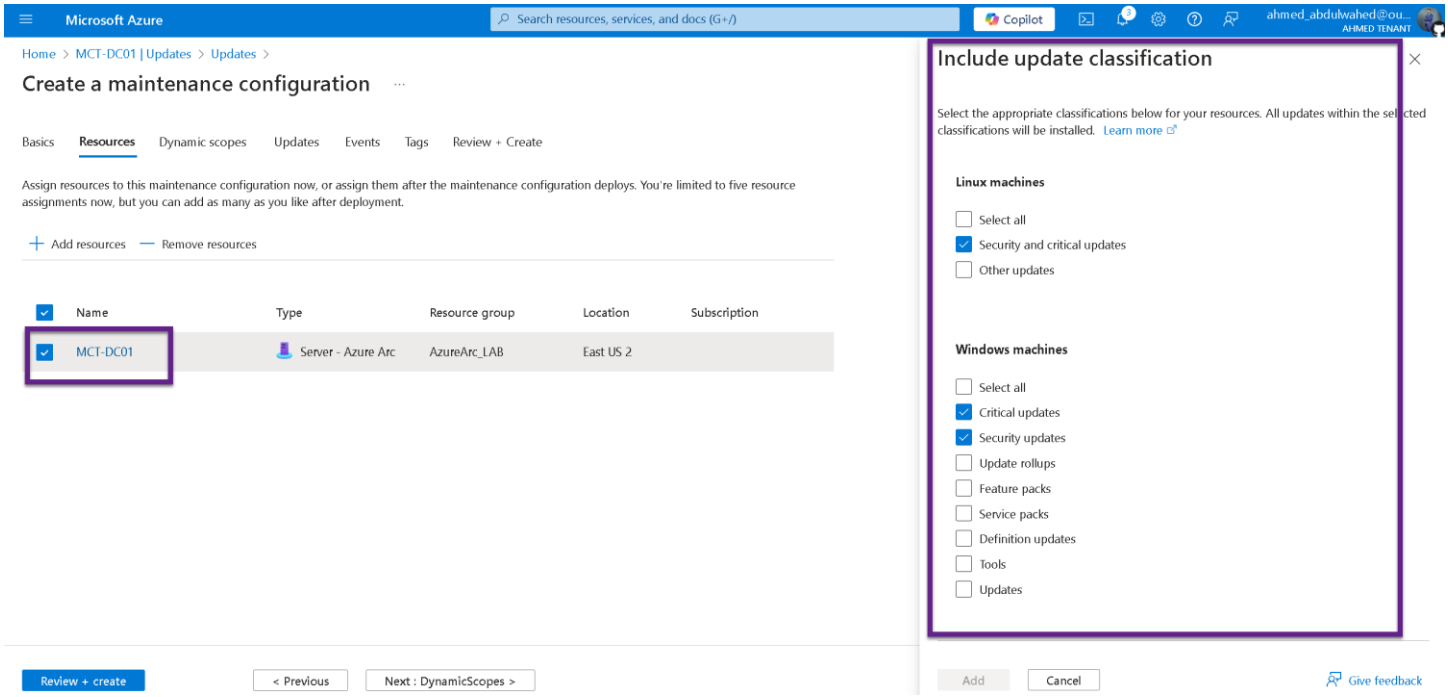
Home > MCT-DC01 | Updates > Updates >
Create a maintenance configuration
Basics
Resources
Dynamic scopes
Updates
Events
Tags
Review + Create
Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.
Subscription *
MSDN079
Resource group *
AzureArc_LAB
Create new
Instance details
Configuration name *
DC01_Updates
Region *
(US) East US
Maintenance scope *
Guest (Azure VM, Arc-enabled VMs/servers)
Reboot setting *
Reboot if required
Schedule *
Add a schedule
Schedule cannot be empty for Guest patching.
Review + create
< Previous
Next : Resources >
Add/Modify schedule
Start on *
MM/DD/YYYY
h:mm AM/PM
(UTC+04:00) Abu Dhabi, Muscat
Maintenance window *
Hours
Minutes
3
55
Repeats
1
Day
Add end date
Schedule summary
Starts on: -
Effective from: -
Upcoming maintenance: -
Maintenance window: 3 hours 55 minutes
Repeats: Does not repeat
Ends on: -
To execute a pre-maintenance event for any maintenance configuration, allocate at least 40 minutes prior to the start time of the maintenance configuration. Learn more
Save
Cancel
Give feedback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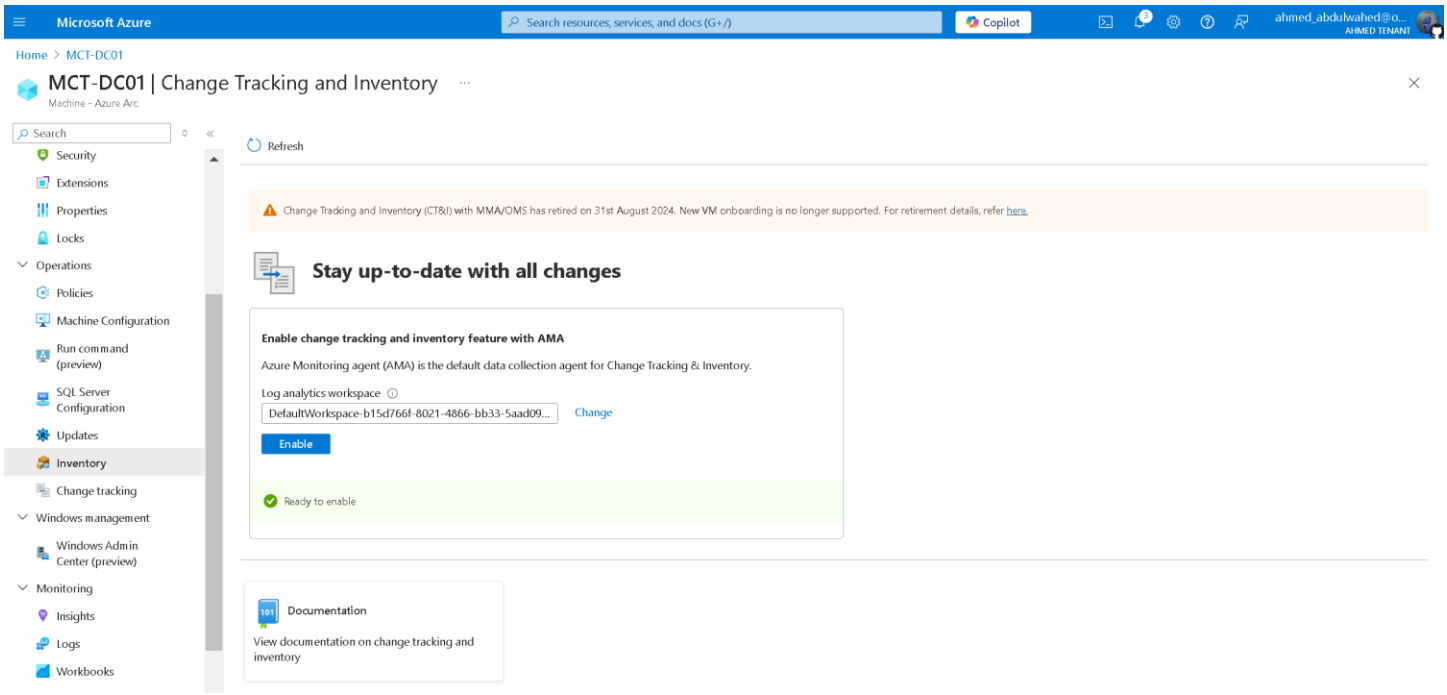
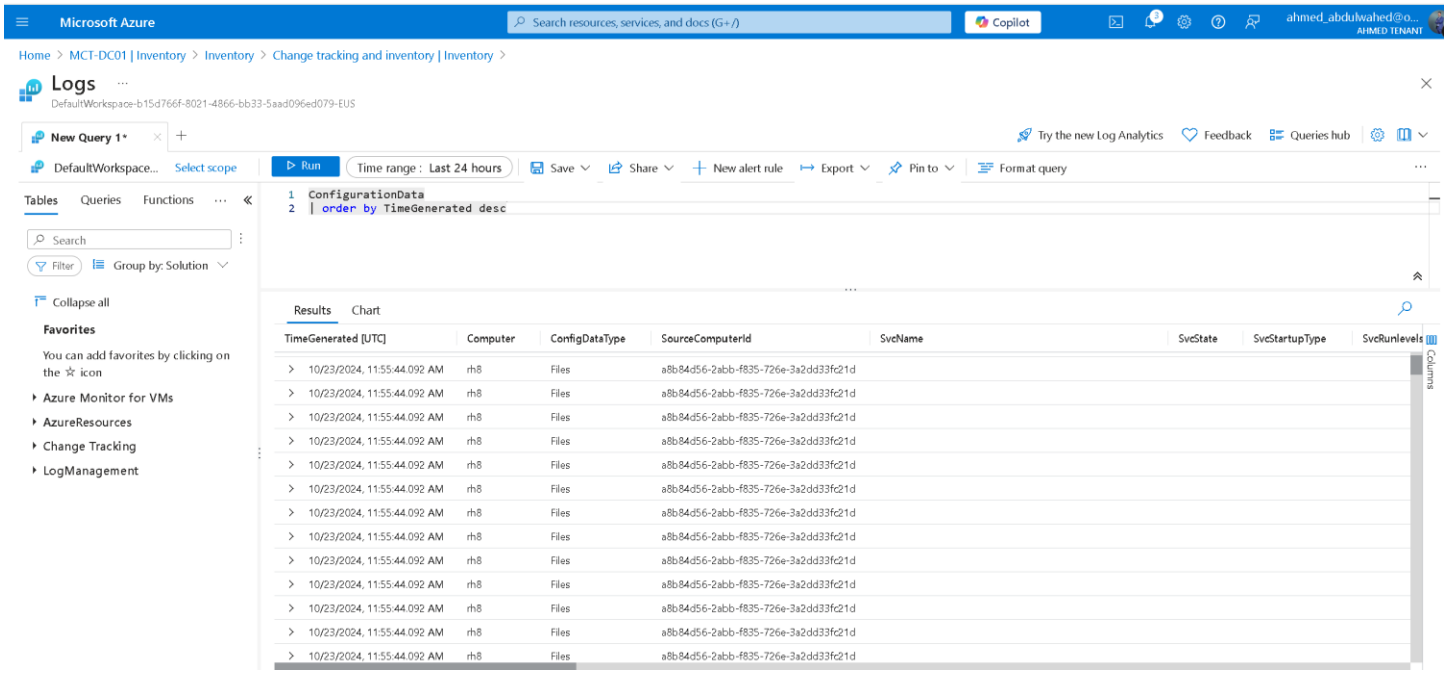
Home > MCT-DC01 | Updates > Updates >
Create a maintenance configuration
Basics
Resources
Dynamic scopes
Updates
Events
Tags
Review + Create
Assign resources to this maintenance configuration now, or assign them after the maintenance configuration deploys. You're limited to five resource assignments now, but you can add as many as you like after deployment.
Add resources
Remove resources
Name
Type
Resource group
Location
Subscription
MCT-DC01
Server - Azure Arc
AzureArc_LAB
East US 2
Review + create
< Previous
Next : DynamicScopes >
Include update classification
Select the appropriate classifications below for your resources. All updates within the selected classifications will be installed. Learn more
Linux machines
Select all
Security and critical updates
Other updates
Windows machines
Select all
Critical updates
Security updates
Update rollups
Feature packs
Service packs
Definition updates
Tools
Updates
Add
Cancel
Give feedback

Change Tracking and Inventory in Azure Arc

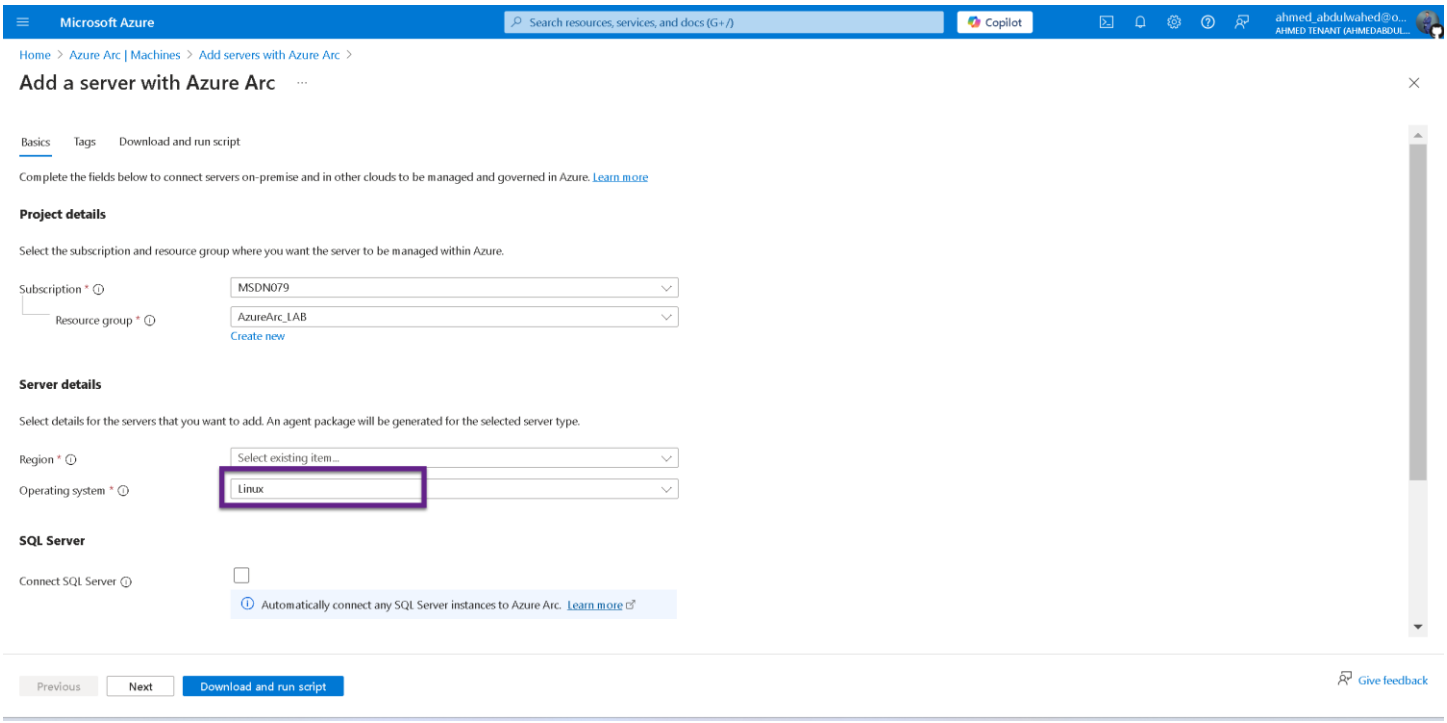
The **Change Tracking and Inventory** feature in Azure Arc provides a centralized way to monitor and track changes made to servers, ensuring compliance and improving operational efficiency.

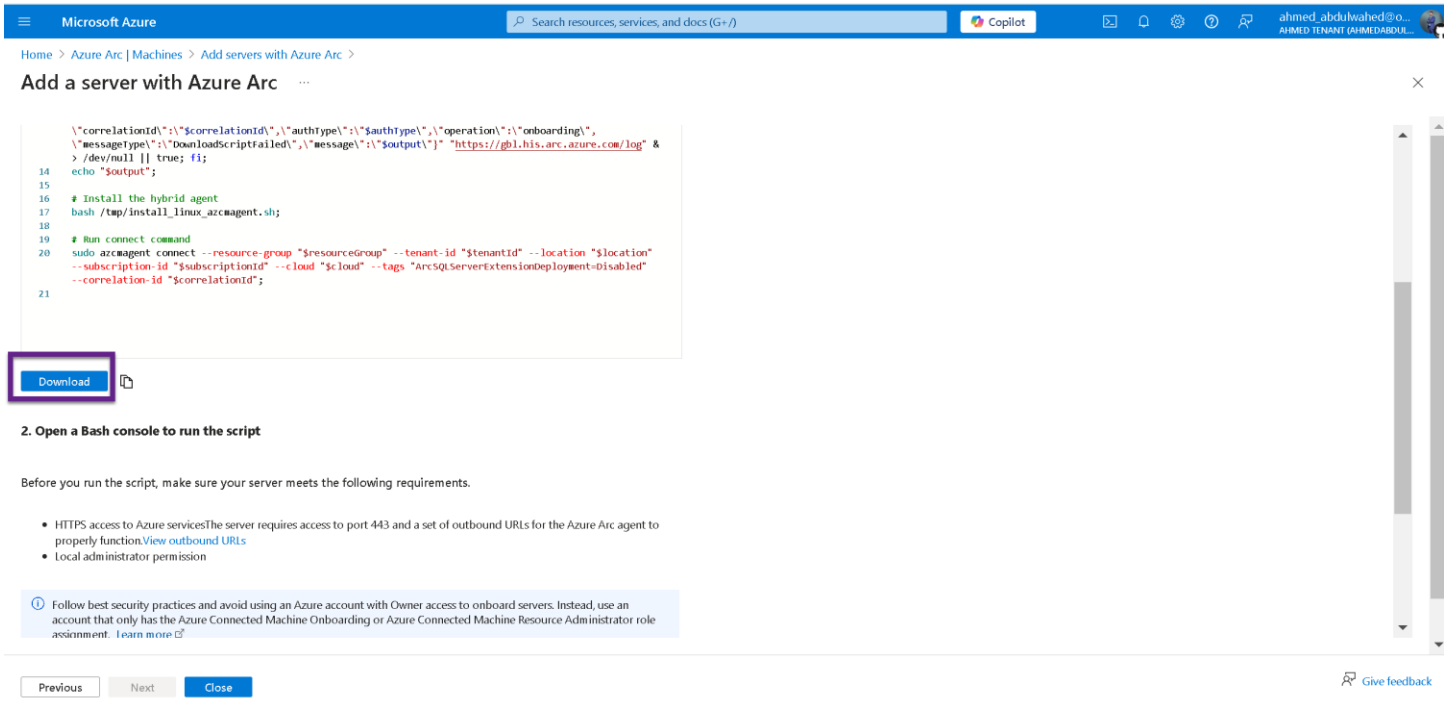




Azure Arc

Key Steps to Add On-Premises Linux Servers





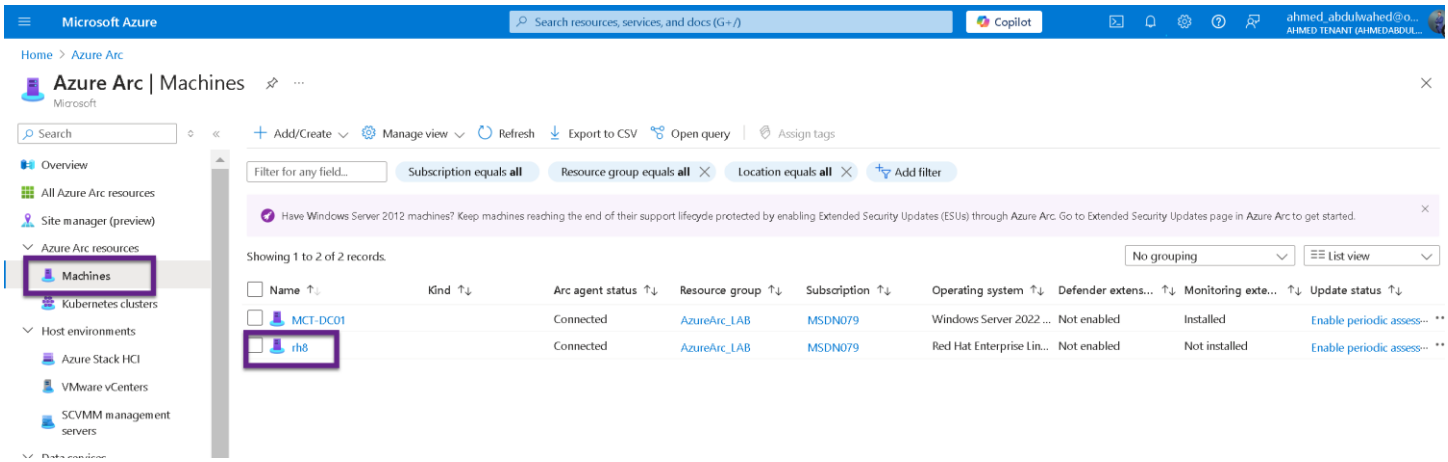
Run the downloaded script on On-Premises Linux Servers

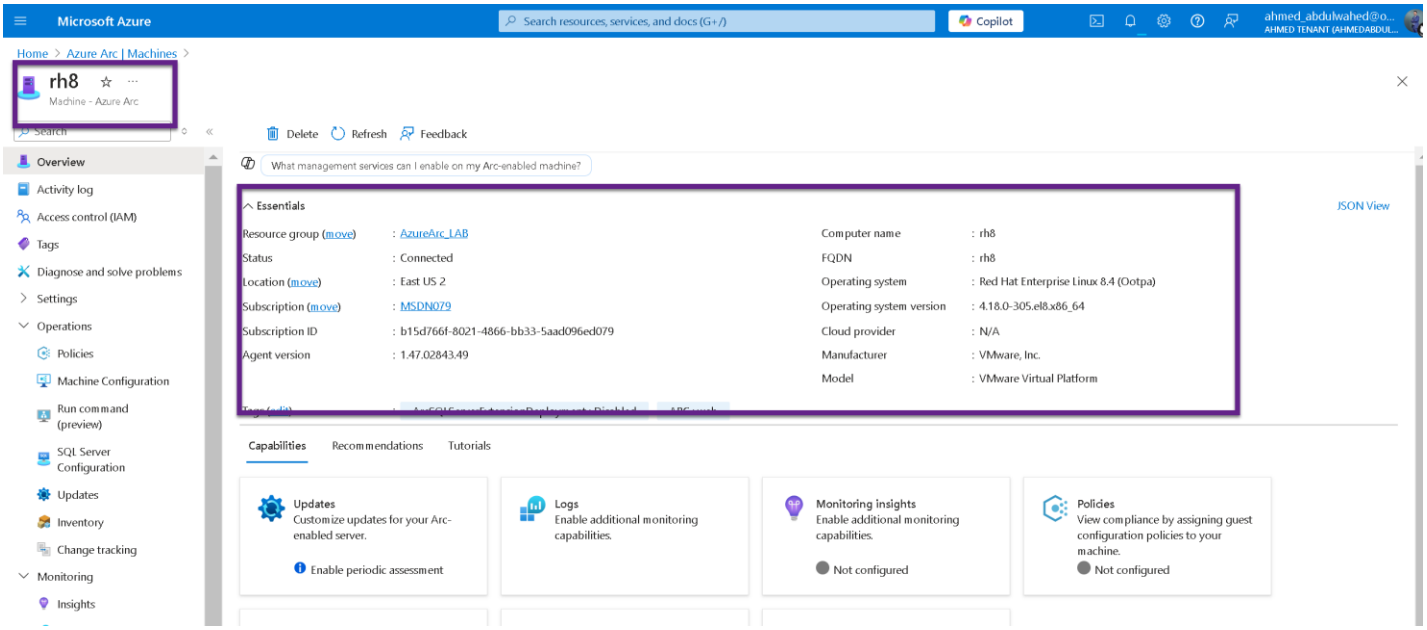
```
Total download size: 73 M
Installed size: 205 M
Downloading Packages:
azcmagent-1.47.02843-49.x86_64.rpm                                  3.4 MB/s |  73 MB     00:21
--------------------------------------------------------------------------------------------------
Total                                                               3.4 MB/s |  73 MB     00:21
warning: /var/cache/dnf/packages-microsoft-com-prod-37360e73ce94b4be/packages/azcmagent-1.47.02843-49.x8
_64.rpm: Header V4 RSA/SHA256 Signature, key ID be1229cf: NOKEY
packages-microsoft-com-prod                                         3.1 kB/s | 983  B     00:00
Importing GPG key 0xBE1229CF:
 Userid     : "Microsoft (Release signing) <gpgsecurity@microsoft.com>"
 Fingerprint: BC52 8686 B50D 79E3 39D3 721C EB3E 94AD BE12 29CF
 From       : https://packages.microsoft.com/keys/microsoft.asc
Key imported successfully
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
```

```
[root@rh8 ~]# ll
total 12
-rw-------. 1 root root 2794 Sep 29 22:18 anaconda-ks.cfg
-rw-rw-rw-. 1 root root    0 Oct 16 20:14 f1
-rw-r--r--. 1 root root 1193 Oct 23 00:37 OnboardingScript.sh
-rw-------. 1 root root 2119 Sep 29 22:18 original-ks.cfg
[root@rh8 ~]# bash OnboardingScript.sh
--2024-10-23 00:38:09--  https://gbl.his.arc.azure.com/azcmagent-linux
Resolving gbl.his.arc.azure.com (gbl.his.arc.azure.com)... 172.202.64.10, 172.202.65.10, 2603:1030:13:20
::10, ...
Connecting to gbl.his.arc.azure.com (gbl.his.arc.azure.com)|172.202.64.10|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [text/plain]
Saving to: '/tmp/install_linux_azcmagent.sh'

     0K .......... .......... .......... .                      250K=0.1s

2024-10-23 00:38:10 (250 KB/s) - '/tmp/install_linux_azcmagent.sh' saved [32155]
Using 'curl' for downloads
Total physical memory: 1833356 kB
Platform type:  x86_64:Linux
Retrieving distro info from /etc/os-release...
Configuring for Redhat 8...
Using 'dnf' instead of 'yum'
Updating Subscription Management repositories.
```

```
STARTING EXT

  Verifying        : azcmagent-1.47.02843-49.x86_64                                          1/1
Installed products updated.

Installed:
  azcmagent-1.47.02843-49.x86_64

Complete!
Latest version of azcmagent is installed.
INFO    Connecting machine to Azure... This might take a few minutes.
INFO    Testing connectivity to endpoints that are needed to connect to Azure... This might take a few mi
nutes.
To sign in, use a web browser to open the page https://microsoft.com/devicelogin and enter the code DAVQ9
P9Y8 to authenticate.
  20% [==>           ]
  30% [===>          ]
  INFO    Creating resource in Azure...                 Correlation ID=91acb30d-503a-4b5b-b03c-2aeb03b56b
a8 Resource ID=/subscriptions/b15d766f-8021-4866-bb33-5aad096ed079/resourceGroups/AzureArc_LAB/providers/
Microsoft.HybridCompute/machines/rh8
  60% [========>     ]
  80% [==========>   ]
 100% [===============]
  INFO    Connected machine to Azure
INFO    Machine overview page: https://portal.azure.com/#@06163712-12c2-4ae9-8e69-73d879a0e896/resource/s
ubscriptions/b15d766f-8021-4866-bb33-5aad096ed079/resourceGroups/AzureArc_LAB/providers/Microsoft.HybridC
ompute/machines/rh8/overview
```

Red Hat Enterprise Linux (rh8) Successfully Connected to Azure Arc





Performance Insights for Red Hat in Azure Arc