

# Arc, på tvers av skyer og ned til bakken

**Petter Arnesen**

Aztek | @pettertech

**MVP**  
Dagen

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# Petter Arnesen

Aztek

Microsoft Azure MVP

@PetterTech

[youtube.com/pettertech](https://youtube.com/pettertech)



# Arc, på tvers av skyer og ned til bakken

Hva?

Hvordan?

Hvorfor?

Hvor starte?

Demo?

# Azure Arc

Hva er det?

# Hva er Azure Arc?

*“Azure Arc is a bridge that extends the Azure platform to help you build applications and services with the flexibility to run across datacenters, at the edge, and in multicloud environments”*

# Hva er Azure Arc?

*“Azure management av ting som ikke er i Azure”*

# Hva er Azure Arc?

- Arc-enabled Servers
- Arc-enabled Kubernetes
- Arc-enabled SQL
- Arc-enabled vSphere (Preview)
- Arc-enabled SCVMM (Preview)
- Arc-enabled Azure Stack HCI (Preview)


















# i-0128fd3acc47ac5b0

☆ ...

Server - Azure Arc


 Search

<<

-  Overview
-  Activity log
-  Access control (IAM)
-  Tags
-  Diagnose and solve problems
- Settings
-  Connect (preview)
-  Security
-  Extensions
-  Properties
-  Locks
- Operations
-  Policies
-  Machine Configuration
-  Automanage

 Delete

 Refresh

 Advisor (1 of 3): Log Analytics agent should be installed on Linux-based Azure Arc-enabled machines

^ Essentials


Resource group ( <a href="#">move</a> )	: MVPDagen-demos	Computer name	: ip-172-31-89-188
Status	: Connected	FQDN	: unknown
Location ( <a href="#">move</a> )	: West Europe	Operating system	: Ubuntu 22.04.1 LTS
Subscription ( <a href="#">move</a> )	: Microsoft Azure MVP Sponsorship	Operating system version	: 5.15.0-1019-aws
Subscription ID	:	Cloud provider	: AWS
Agent version	: 1.23.02105.466	Manufacturer	: Xen
		Model	: HVM domU

Tags ([edit](#))


: Project : jumpstart\_arcbox

Capabilities


Tutorials



**Update management**  
Enable consistent control and compliance of your machine.



**Logs**  
Enable additional monitoring capabilities.



**Monitoring insights**  
Enable additional monitoring capabilities.

# Hva er Azure Arc?

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# ArcBox-SQL

🌟 ☆ ...




SQL Server - Azure Arc

«




🔄 Refresh

🗑️ Delete


🗨️ Feedback

-  Overview
-  Access control (IAM)
-  Diagnose and solve problems

Settings

-  Environment Health
-  Extended Security Updates
-  Properties

Security

-  Microsoft Defender for Cloud

Automation

-  Tasks (preview)

Support + troubleshooting

-  New Support Request

⚠️ The Environment Health assessment will soon be upgraded to a much richer SQL Server Best Practice Assessment (SQL BPA). At that point, you may have to re-configure the assessment and continue to get SQL Server assessments. You can still access the previous health assessments by querying the table SQLAssessmentRecommendation from the workspace used by Environment Health assessments. You can also query and export the previous assessment data into Excel. See the steps at [Integrate Log Analytics and](#)

⌵ Essentials

Resource group	: <a href="#">MVPDagen-demos</a>	Version	: SQL Server 2019
Status	: Connected	Edition	: Developer
Location	: West Europe	Computer name	: <a href="#">ArcBox-SQL</a>
Subscription	: <a href="#">Microsoft Azure MVP Sponsorship</a>	Operating system	: windows
Subscription ID	:	Cores	: 2
		License type	: Free
		Host Type	: ---

Tags ([edit](#)) : [Click here to add tags](#)

Capabilities Properties



**Microsoft Defender for Cloud**  
Continuously monitor for potential security vulnerabilities and recommendations.



**Environment Health**  
Environment Health provides a mechanism to evaluate the configuration of your SQL Server.

# Hva er Azure Arc?

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# Azure Arc

Hvordan fungerer det?

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For servere:  
Installer agent



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Installer agent

For Kubernetes:

Azure CLI kommando

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Installer agent

For Kubernetes:

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For SQL:

Agent + extension

# Hvordan fungerer det?

For servere:

Installer agent

For Kubernetes:

Azure CLI kommando

For SQL:

Agent + extension

For vCenter, SCVMM og

Azure Stack HCI:

Resource bridge

# Azure Arc

Hvorfor er det kult?

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Samme control plane for “alt”

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC (PIM? CA?)

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging



# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

Azure Monitor

# Hvorfor er det kult?

Samme control plane for “alt”      Custom locations

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

Azure Monitor

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

Azure Monitor

Custom locations

Kjør Azure tjenester  
utenfor Azure

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

Azure Monitor

Custom locations

Kjør Azure tjenester  
utenfor Azure

Change tracking / Inventory

# Hvorfor er det kult?

Samme control plane for “alt”

Azure RBAC

Tagging

Azure Policy

Defender for Cloud

Azure Monitor

Custom locations

Kjør Azure tjenester  
utenfor Azure

Change tracking / Inventory

+++

# Azure Arc

Hvor starte?



# Hvor starte?

For læring

For implementering

# Hvor starte?

For læring

Arc-enable en server

For implementering



# Add a server with Azure Arc ...

- ✓ Prerequisites
- ✓ Resource details
- ✓ Tags
- 4** Download and run script

## 1. Download or copy the following script

```
15 # Install the hybrid agent
16 & "$env:TEMP\install_windows_azcmagent.ps1";
17
18 # Run connect command
19 & "$env:ProgramW6432\AzureConnectedMachineAgent\azcmagent.exe" connect
--resource-group "$env:RESOURCE_GROUP" --tenant-id "$env:TENANT_ID" --location
"$env:LOCATION" --subscription-id "$env:SUBSCRIPTION_ID" --cloud "$env:CLOUD"
--correlation-id "$env:CORRELATION_ID";
20 }
21 catch {
22     $logBody = @{subscriptionId="$env:SUBSCRIPTION_ID";
resourceGroup="$env:RESOURCE_GROUP";tenantId="$env:TENANT_ID";location="$env:LOCATION";
correlationId="$env:CORRELATION_ID";authType="$env:AUTH_TYPE";messageType=$_.
FullyQualifiedErrorId;message="$_.Exception";};
23     Invoke-WebRequest -Uri "https://gbl.his.arc.azure.com/log" -Method "PUT" -Body
($logBody | ConvertTo-Json) | out-null;
24     Write-Host -ForegroundColor red $_.Exception;
25 }
26
```

[Previous](#)[Close](#)

# Hvor starte?

## For læring

Arc-enable en server

ArcBox / Azure Arc

Jumpstart

## For implementering



# IT Pros edition

Azure Resource  
Manager (ARM)



Azure Bicep



Hashicorp  
Terraform



ArcBox (IT Pros) Azure Resource Group



ArcBox Workbook



Azure Monitor



Azure Policy



Azure Log Analytics



Microsoft Defender  
for Cloud



Azure Sentinel



ArcBox-SQL  
Azure Arc-enabled  
SQL server



ArcBox-SQL  
Azure Arc-enabled  
server



ArcBox-Win2K19  
Azure Arc-enabled  
server



ArcBox-Win2K22  
Azure Arc-enabled  
server



ArcBox-Ubuntu  
Azure Arc-enabled  
server



ArcBox-CentOS  
Azure Arc-enabled  
server



ArcBox-SQL  
Nested Hyper-V VM (with SQL installed)



ArcBox-Win2K19  
Nested Hyper-V VM



ArcBox-Win2K22  
Nested Hyper-V VM



ArcBox-Ubuntu  
Nested Hyper-V VM



ArcBox-CentOS  
Nested Hyper-V VM



Azure VM Hyper-V Host  
Windows Server 2022 Datacenter with Hyper-V enabled (Nested Virtualization)



ArcBox Azure Virtual Network



# DevOps edition

Azure Resource  
Manager (ARM)

Azure Bicep

Hashicorp  
Terraform

ArcBox (DevOps) Azure Resource Group



ArcBox Workbook



Azure Monitor



Azure Policy



Azure Log Analytics



Microsoft Defender  
for Cloud



GitOps configurations



Service observability with  
Open Service Mesh (OSM)



Secrets management with  
Azure Key Vault



Sample  
applications



Azure Arc-enabled Kubernetes cluster



Sample  
applications



Azure Arc-enabled Kubernetes cluster



Rancher K3s 1-node  
Kubernetes cluster



Azure VM Ubuntu server



ArcBox-Client  
Azure VM



Kubernetes Cluster API 3-node cluster  
deployed using CAPI Azure provider



ArcBox Azure Virtual Network



# DataOps edition

Azure Resource Manager (ARM)



Azure Bicep



Hashicorp Terraform



ArcBox DataOps Azure Resource Group



ArcBox Workbook



Azure Monitor



Azure Policy



Azure Log Analytics



Azure Tags



Grafana

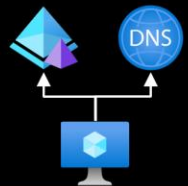
primary site

DR site

ArcBox-Client  
Azure VM installed  
with DBA tools



ArcBox-DC Azure VM  
with Active Directory  
Domain Services + DNS



Sample K8s  
application

App backend  
database



Azure Arc  
Data Controller



Azure Arc-enabled  
SQL Managed Instance

Azure Arc-enabled Kubernetes cluster

Primary Azure Kubernetes Service (AKS)  
3-node cluster

Sample K8s  
application

App backend  
database



Azure Arc  
Data Controller



Azure Arc-enabled  
SQL Managed Instance

Azure Arc-enabled Kubernetes cluster

Kubernetes Cluster API 3-node cluster  
deployed using CAPI Azure provider

Sample K8s  
application

App backend  
database



Azure Arc  
Data Controller



Azure Arc-enabled  
SQL Managed Instance

Azure Arc-enabled Kubernetes cluster

DR Azure Kubernetes Service (AKS)  
3-node cluster

Disaster recovery  
simulation

Virtual network  
peering

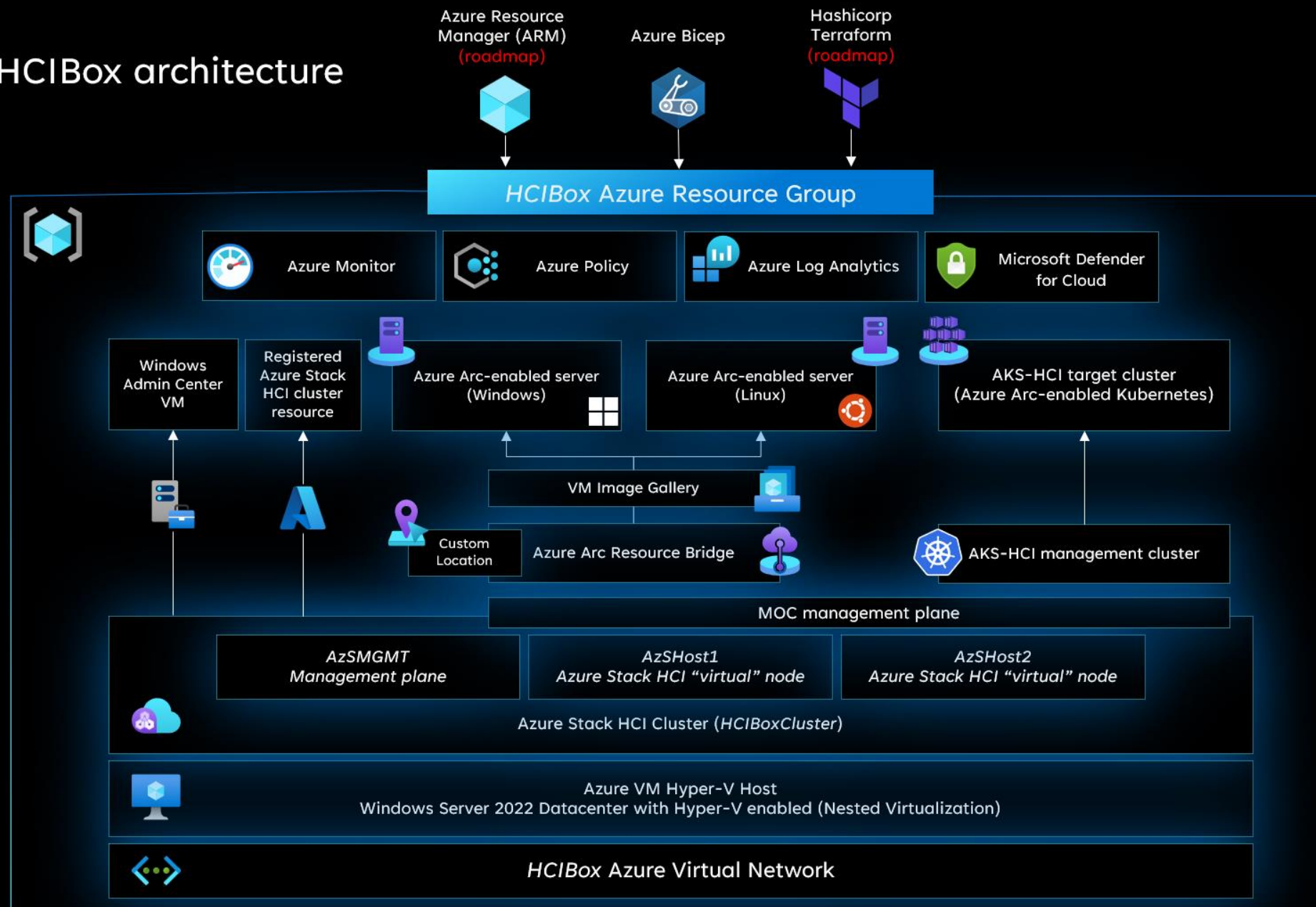
ArcBox primary Azure Virtual Network

ArcBox DR Azure Virtual Network





# HCIBox architecture





# Hvor starte?

## For læring

Arc-enable en server

ArcBox / Azure Arc

Jumpstart

## For implementering

# Hvor starte?

## For læring

Arc-enable en server

ArcBox / Azure Arc

Jumpstart

## For implementering

Planlegg struktur

# Hvor starte?

## For læring

Arc-enable en server

ArcBox / Azure Arc



Jumpstart

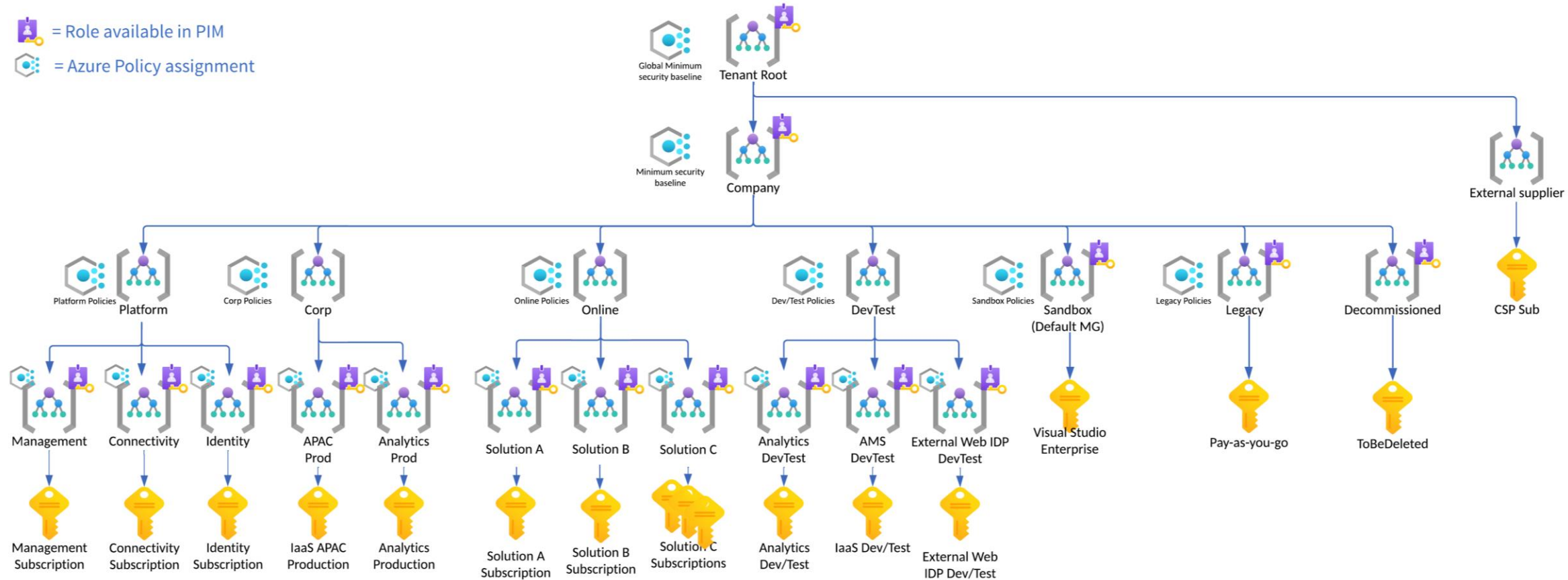
## For implementering

Planlegg struktur

Tenk governance

# Hvor starte?

 = Role available in PIM  
 = Azure Policy assignment





DEMO

# Arc rundtur





Tusen takk!

**MVP**-Dagen