MC2MC Rocket Talk:

Our Adventures with **Azure Local**

savaco

About me

Microsoft Solutions Partner
Microsoft Cloud

savaco
IT's about impact

Olivier Debonne

Technology Expert @ Savaco

More than 25 years of IT experience

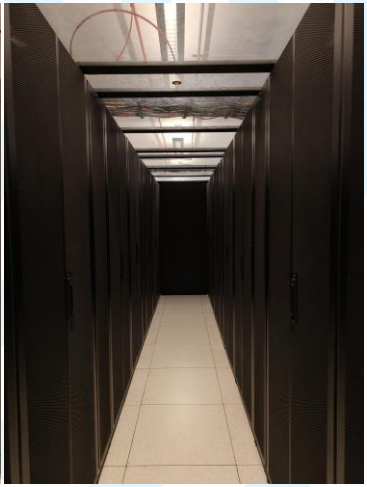
- All the way back to the Windows NT 4.0 era
- Today my focus is Entra, Microsoft 365 and Azure
- Has a passion for retro computing

@olivierdebonne

https://www.linkedin.com/in/olivierdebonne

A bit of background information

- Since 2012, Savaco runs a top-tier data center in the Kortrijk offices
- The data center is 100% based on VMware technology
- The management layer of the environment consists of:
  - *Its own hardware, including compute and (SAN) storage*
  - *A separate VMware vSphere cluster*
  - *30-ish virtual machines*
- We needed to look for a replacement…
  - *Ageing hardware (4-year renewal cycle)*
  - *Yes, because of Broadcom!*



Azure Local in Microsoft's portfolio

Azure Stack Edge

Cloud-managed appliance to run AI, ML, IoT, and other workloads locally

Azure Local

Hyperconverged solution (versatile, very scalable)

Azure Stack Hub

High-end cloud-native integrated system

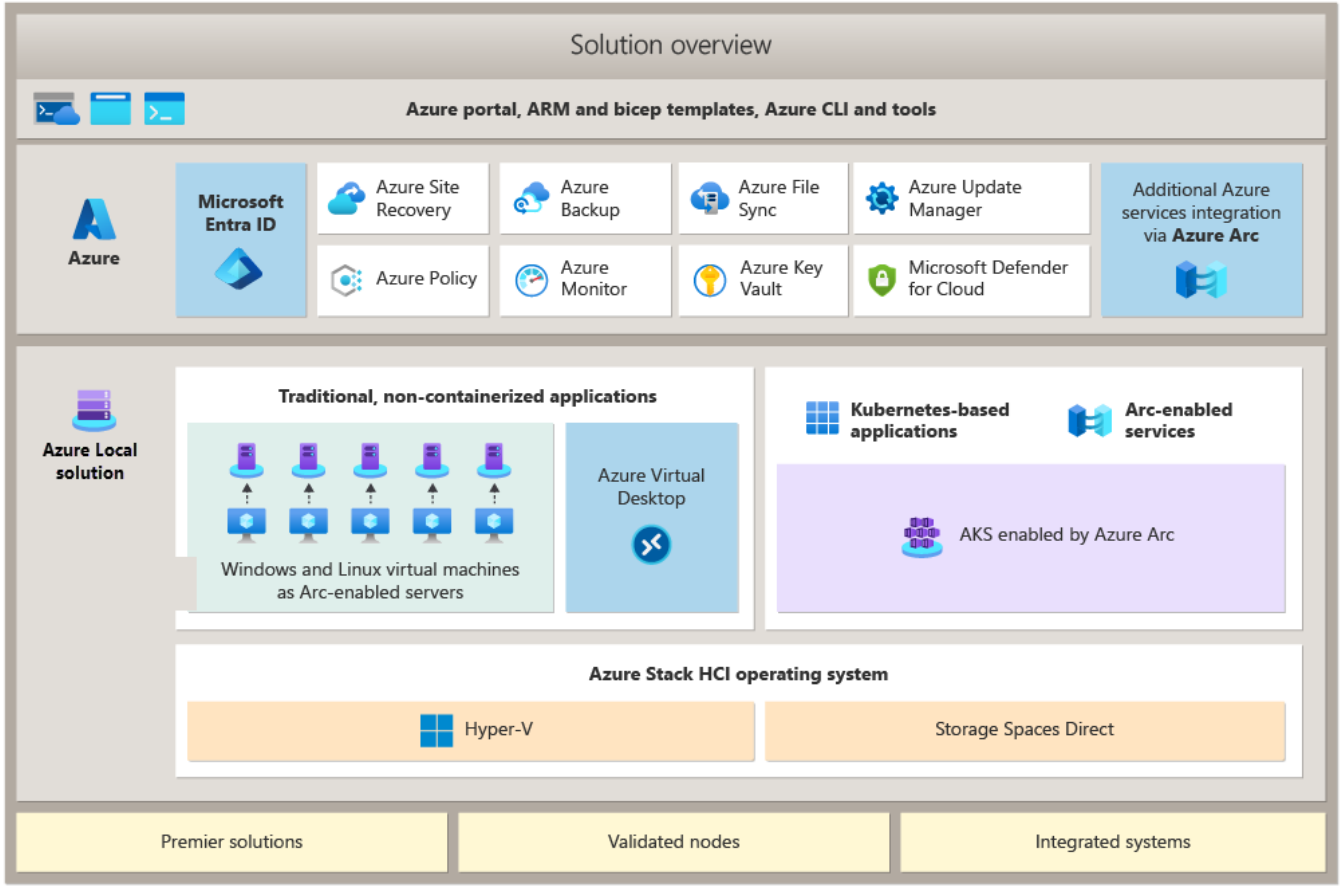
What is Azure Local?

- First announced at Microsoft Ignite 2024
- Formerly known as Azure Stack HCI
- Easiest way to bring Azure services to your data center
- Support for specific workloads:
  - *Azure Arc-enabled virtual machines*
  - *Azure Kubernetes Service (AKS) for Azure Local*
- And thanks to Enabled by Azure Arc also app, data and AI services
- Run Azure Virtual Desktop (AVD) outside Azure
- Unified management and visibility (in the Azure Portal)
- Flexible pricing model

Architecture

- Hyperconverged infrastructure (HCI) solution
- Underlaying OS is called the Azure Stack HCI operating system
- Based on existing Windows Server technologies:
  - *Hyper-V*
  - *Failover Clustering*
  - *Storage Spaces Direct*
- Secure by default, hardened by design
  - *TPM 2.0, Secure Boot, VBS, HVCI, BitLocker, Windows Defender Firewall*
- Azure Arc Resource Bridge
- Simple upgrade from Azure Stack HCI 23H2 (name change)
- Azure Stack HCI name remains for 22H2 and older

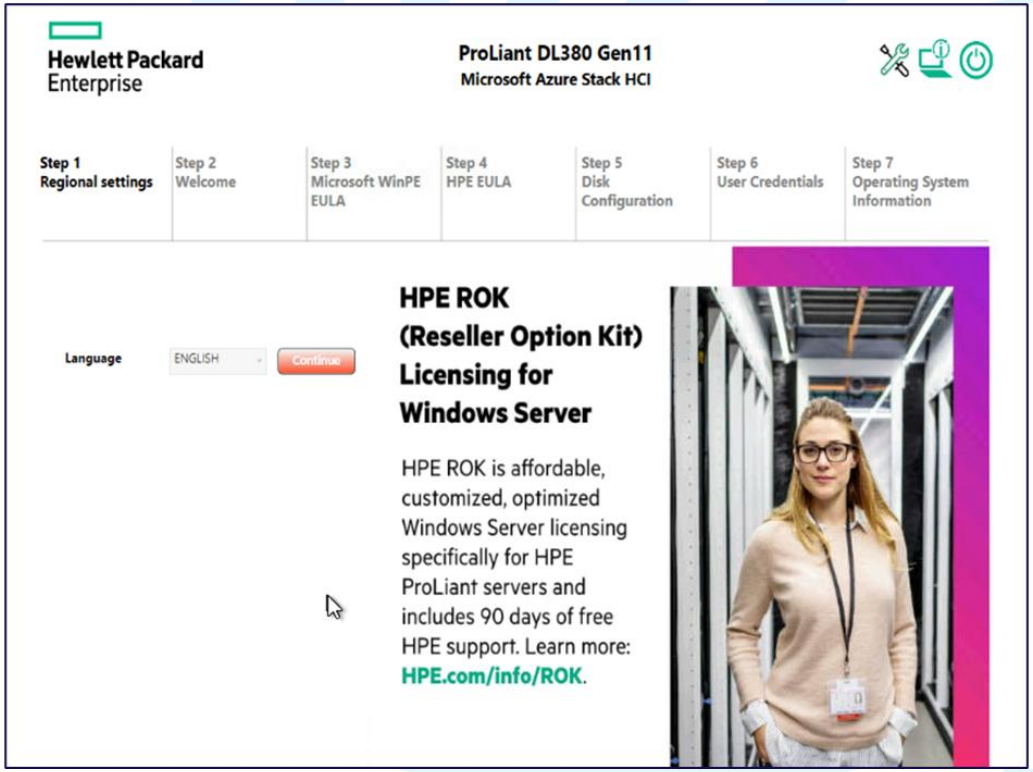
Architecture overview



How to buy Azure Local hardware?

- Preferably validated hardware from a hardware vendor
  - https://azurestackhcisolutions.azure.microsoft.com/#/catalog
- Two machines with 2x24 cores, 768 GB RAM with full-flash NVMe storage, 4X 25 GbE NICs (based on HPE ProLiant DL380 Gen11)
- Pre-loaded with the Azure Stack HCI operating system
- Support for GPUs (and GPU partitioning or GPU-P)

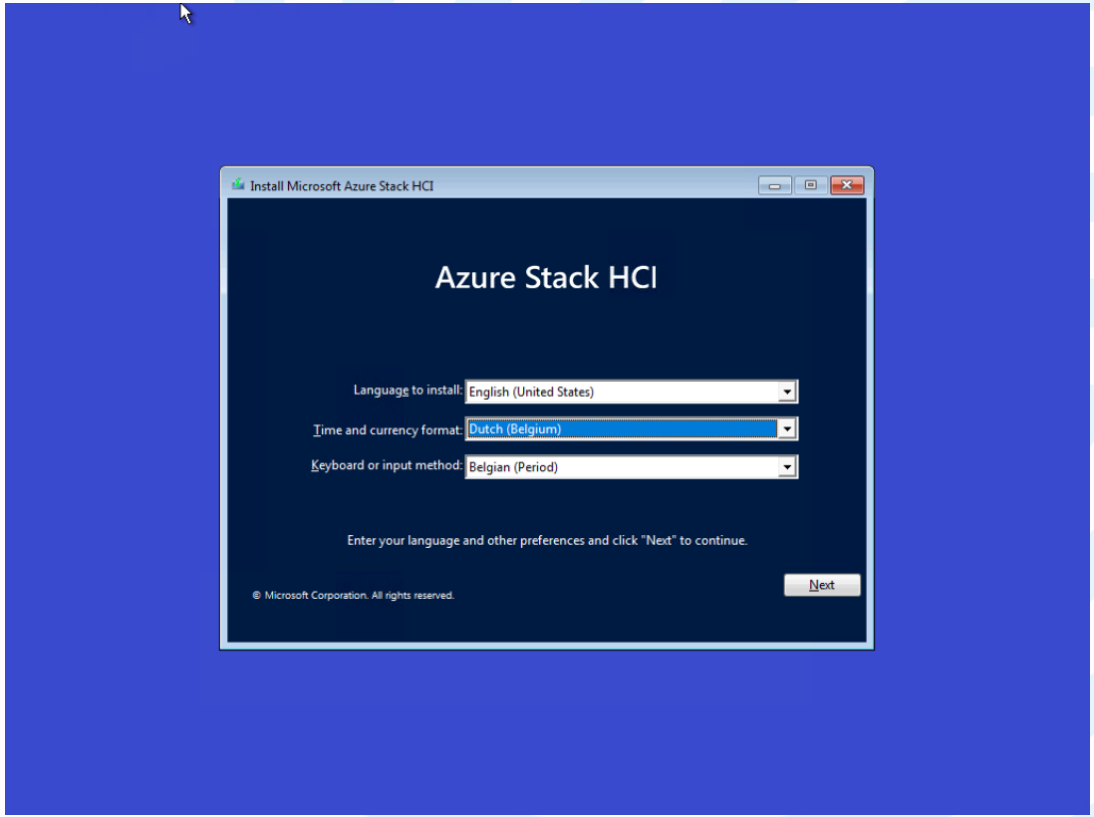
First boot experience



First ~~boot experience~~ bummer

- We've purchased an Integrated system, easy-peasy right?
- The machines were pre-installed with Azure Stack HCI operating system, version 22H2
- No upgrade path to the latest and greatest, 23H2 (at the time)
- Azure Arc VM management for version 22H2 is no longer be supported after February 15, 2024
- There is no 23H2 ISO you can download (from HPE)

Manual (re)installation of the machines



Important pre-requisites and installation steps

- You need an Azure subscription
- You need an Active Directory domain
- Prep your on-premises Active Directory:
  - Using the AsHciADArtifactsPreCreationTool PS module
  - In the end, all objects will reside in their own OU
- Install the machines with the latest 23H2 ISO from Microsoft
- Perform some basic configuration:
  - Loads and loads of manual steps to follow meticulously
  - The Azure Stack HCI operating system is based on server core
- Register required resource providers
- Onboard the machines in Azure Arc
- Environment Checker tool

Do’s and don’ts

- Do update the firmware of the machines
- Don’t use any kind of RAID for your storage
- Do update the drivers in the operating system (HPE SPP)
- Do use the same local Administrator password on the machines
- Do not forget to add the SBE (specific vendor extension)
- Do make sure to properly configure your NICs properly
- Do enable the Hyper-V role (fixed)
- Do configure Windows Defender Firewall exceptions
- Don’t run Windows Updates
- Don’t join the machines to the domain
- Be careful with (limiting) Internet access & TLS inspection

Deployment of Azure Local

- Two options:
  - *Manually, using the Azure portal*
  - *Using an ARM or Bicep template*
- Deployment takes hours to complete
- If deployments fails:
  - *Troubleshooting can be very hard and cumbersome*
  - *But you can fix the issue and resume deployment*
- But eventually, things will go green!
  - *And an Azure Local resource will be created*

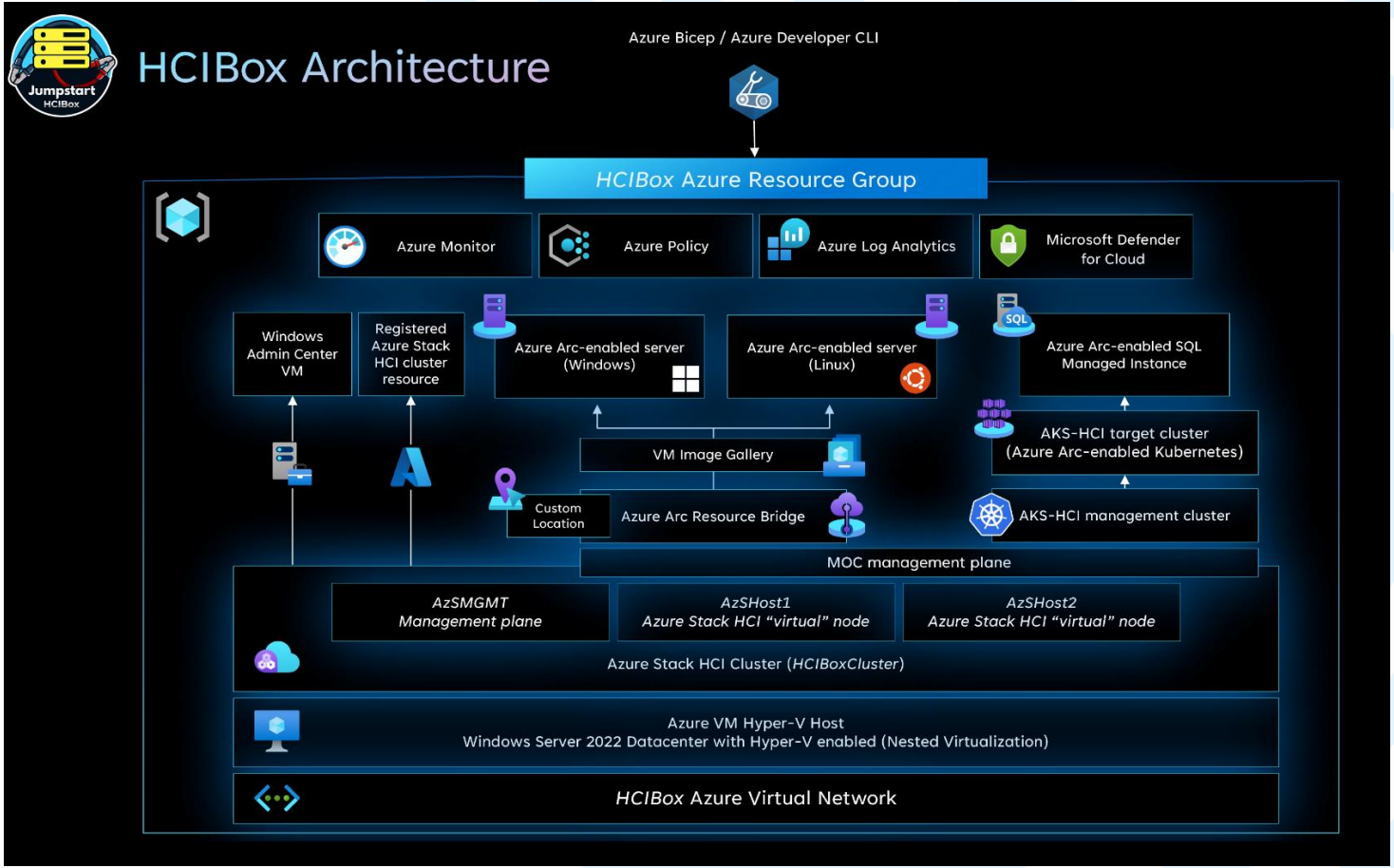
In the end, sweet victory!

https://www.vecteezy.com/photo/32941380-hiking-up-mountain-peak-at-sunrise-success-achieved

It’s demo time

- You can run Azure Local as a VM for testing purposes
- There is a better option, Arc Jumpstart HCIBox
  - *https://jumpstart.azure.com/azure_jumpstart_hcibox*
- All you need is an Azure subscription
- A Bicep template deploys the entire environment using nested virtualization
  - *E32s_v5 (32 vCPUs, 256 GB RAM)*
  - *P30 OS disk (1 TB)*
  - *8x P15 data disks (256 GB each)*
- Ideal for hands-on skilling, labs, training events, product demos, proof-of-concept projects

It’s demo time



Advantages/strengths

- Enterprise-grade hyperconverged infrastructure platform
- Notably cheaper than VMware('s hyperconverged platform)
- Works with regular/legacy network topologies, as well as SDN
- Windows Admin Center remains possible for basic management
- Support for modern, containerized apps using AKS
- Use Azure (hybrid) services in the edge
  - *Azure Policy, Azure Update Manager, and many more…*
- Bring Azure Virtual Desktop to your own data center
- Tight integration with Azure Monitor
- Free Windows Hotpatching for Windows Server Datacenter: Azure Edition
- Leverage Infrastructure-as-code to deploy:
  - *Virtual machines*
  - *Azure Kubernetes Service (AKS)*
- Migrate VMs from VMware using Azure Migrate (gotcha, Broadcom!)

Disadvantages/weaknesses

- It's not VMware… but it's not SCVMM either
- At times, it feels like a beta…
- Only resources deployed via Azure are visible in Azure (as an Azure Local virtual machine kind)
- Currently, VM management is very rudimentary:
  - *Changes in VM size require a restart*
  - *Cannot change the size of the data disks*
  - *Changes to virtual machines are not (always) reflected in Azure*

And what does it cost?

- With an OEM license from a hardware vendor
  - *Includes updates and upgrades to Azure Local and AKS*
  - *Windows Server guests remain on Windows Server 2022 (or earlier)*
- In a pay-as-you-go subscription model
  - *$10 per physical core, per month*
  - *$23.3 per physical core, per month for guest VMs running Windows Server (all versions)*
- Window Server Datacenter customers with active Software Assurance can use Azure Hybrid Benefit
- Comes with a 60-day trial built-in
- Azure Virtual Desktop Service Fee
  - *$10 per physical core, per month*
  - *$0.01 per virtual core, per hour*

A peek into the (near) future

- New low-spec, low-cost hardware options
- Azure Local with disconnected operations
- Active Directory is no longer a required identity provider
  - *Leveraging local identities with Azure Key Vault*
- Zero-touch provisioning
  - *Deployment of the machines and the instance is so much easier*
- Support for Network Security Groups (NSG)
- Trusted launch for VMs (Secure Boot, vTPM, etc.)
- New AI workloads are announced
- Future replacement for Azure Stack Edge and Azure Stack Hub

Questions? Well, I have a question!

In which year was **Azure Stack HCI** first announced?

(tip: it was not during a Microsoft Ignite conference)

March 26, **2019**[1]

And thank you for joining the session!

[1] Announcing Azure Stack HCI: A new member of the Azure Stack family | Microsoft Azure Blog (blog announcement prior to **Hybrid Cloud Virtual Event** on March 28, 2019)