**Installing Intel MKL on Azure HBv4 VMs**

**System Overview**

* **Target Platform**: Azure HBv4 VM (x86 CPU with AVX-512)
* **Common Issue**: Default OS disk (/) has only ~30 GB. MKL installation can require 15–20+ GB temporarily.

**Step 1: Resize Your Azure VM's OS Disk (if required)**

1. **Stop the VM** in Azure Portal
   * Navigate to your VM > Click **"Stop"**
2. **Resize the OS Disk**
   * Go to the VM > **"Disks"** > Click the OS Disk (e.g., hbv4-node-osdisk)
   * Click **"Size + performance"**
   * Set disk size to **64 GB** or **128 GB** > Click **"Save"**
3. **Start the VM** again from Azure Portal
4. **Expand the root filesystem** after SSH-ing into the VM:
5. lsblk # Identify root partition (usually /dev/sda1 or /dev/sda2)
6. sudo growpart /dev/sda 1 # or /dev/sda 2 depending on output
7. sudo resize2fs /dev/sda1 # or /dev/sda2
8. df -h # Confirm new size

If growpart is not available:

sudo apt update

sudo apt install cloud-guest-utils

**Step 2: Download Intel OneAPI BaseKit Offline Installer**

1. On your **local machine**, visit:  
   <https://www.intel.com/content/www/us/en/developer/tools/oneapi/base-toolkit-download.html>
2. Choose **Linux** > **Offline Installer (.sh)** and download.
3. Use scp to transfer it to your VM:
   1. scp l\_BaseKit\_p\_2025.1.1.36\_offline.sh azureuser@<VM\_PUBLIC\_IP>:~/

**Step 3: Install Intel OneAPI Toolkit**

1. SSH into your HBv4 VM:
   * ssh azureuser@<VM\_PUBLIC\_IP>
   * chmod +x l\_BaseKit\_p\_2025.1.1.36\_offline.sh
   * sudo ./l\_BaseKit\_p\_2025.1.1.36\_offline.sh
2. Follow the prompts:
   * Accept the EULA
   * Choose default install path (/opt/intel/oneapi)
   * Let it complete

**Step 4: Activate Intel MKL Environment**

source /opt/intel/oneapi/setvars.sh

You should see:

:: initializing oneAPI environment ...

... setvars.sh completed

Verify MKL is active:

echo $MKLROOT

Should output:

/opt/intel/oneapi/mkl/latest