DP070: Migrate Open Source Workloads to Azure

Hyper-V Virtual Machine Build Guide

Learning product number: <Insert learning product number here>

Vendor contact email: <enter contact email here>

Vendor support contract expiration: <insert support contract expiration date>

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# Virtual Hard Disk Requirements

# Section 1. MSL Images (not handed-off)

#### Base VHDs Used (created by MSL)

List all MSL base virtual hard disks (VHDs) used in the learning product.

| Base Virtual Hard Disks |
| --- |
| File name |
| N/A |

#### Standard Middle Tier VHDs Used (created by MSL)

List all MSL middle tier virtual hard disks (VHDs) used in the learning product.

| Standard Middle Tier Virtual Hard Disks |
| --- |
| File name |
| N/A |

# Section 2. Course Specific Drives (for hand-off)

#### Custom Middle Tier VHDs (designed specifically for this course)

List all middle tier virtual hard disks (VHDs) created specifically for this course. **Note**: These will be part of the handed off. Ensure that for each image listed, there is a corresponding section in the Build Guide to create the image.

| Virtual Hard Disks | Parent |
| --- | --- |
| File name | File name |
| N/A |  |

#### Course Specific Differencing VHDs (designed specifically for this course)

List all virtual hard disks (VHDs) used in the learning product created specifically for this course. List the parent (middle tier or base image) VHD. **Note**: These will be part of the hand-off. Ensure that for each image listed, there is a corresponding section in the Build Guide to create the image.

| Virtual Hard Disks | Parent |
| --- | --- |
| File name | File name |
| N/A |  |

#### Course Specific Monolithic VHDs (designed specifically for this course) – Includes Allfiles.vhd

List all stand-alone (monolithic) virtual hard disks (VHDs) used in the learning product created specifically for this course. Note: These will be part of the hand-off. Ensure that for each image listed, there is a corresponding section in the Build Guide to create the image.

| Virtual Hard Disks |
| --- |
| File name |
| DP070-LON-DEV-01.vhd |

# Section 3. Repurposed Drives (for hand-off) (if applicable)

#### Repurposed Middle Tiers & Existing Course Differencing Drives (leveraged from existing MSL course)

List all VHDs repurposed from existing courses. Note: Do not make any changes to these images. If you make any changes, they will become a course specific drive, and you should list it in the appropriate table.

| Virtual Hard Disks |
| --- |
| File name |
| N/A |

# Section 4. Rearm information (if applicable)

#### Virtual Hard Disk Rearm Settings for Operating Systems

List all bootable virtual hard disks (VHDs) that have an OS that requires rearming. These are the top tier differencing drives, or monolithic images.

| Virtual Hard Disks (Bootable only) | OS | Rearm  (For Windows Server 2012) |
| --- | --- | --- |
| File name | The operating system used | Yes/No - # of times run |
| N/A |  |  |

#### Virtual Hard Disk Rearm Settings for Applications

List all bootable virtual hard disks (VHDs) that have applications installed that require rearming. These are the top tier differencing drives, or monolithic images.

| Virtual Hard Disks (Bootable only) | Application | Rearm  (For Windows Server 2012) |
| --- | --- | --- |
| File name |  | Yes/No - # of times run |
| N/A |  |  |

# Virtual Machine Settings

#### Virtual Machines

List all virtual machines (VMs) used in the learning product created specifically for this course. List all of the VHDs used in the virtual machine. **Note**: Ensure that for each virtual machine listed, there is a corresponding section in the Build Guide to create the virtual image.

| VM Name | Computer Name | VHDs | Requires Internet Access? | Memory | Networking | ISO attached? | Description & Settings |
| --- | --- | --- | --- | --- | --- | --- | --- |
| *Name* | *Usually the name of the virtual machine without the number of the course.* | *List all the VHDs used for this Virtual Machine (to include:)*   * *Monolithic drives* * *Course Specific Differencing Drive* * *AllFiles* | *Indicate Yes/No as appropriate* | *If dynamic memory is used, list min & max.* | *List the number of emulated NICS. Also list if NICs are Legacy or Synthetic* | *List the name of the ISO (if required)* | *Describe the role of the virtual machine in the learning product* |
| DP070-LON-DEV-01 | LON-DEV-01 | Hard Disk 1: DP070-LON-DEV-01.vhd | Yes | 8192 | Networking: Internal Synthetic | N/A | Ubuntu client machine |

#### Virtual Machines, Module mappings and Dependencies

List all modules in the course, and the names of all of the virtual machines used in each. For modules with multiple labs, separate the virtual machine column by the lab.

| Module | Virtual machine | Dependencies |
| --- | --- | --- |
| 1 | DP070-LON-DEV-01 | N/A |
| 2 | DP070-LON-DEV-01 | N/A |
| 3 | DP070-LON-DEV-01 | N/A |
| 4 | DP070-LON-DEV-01 | N/A |

#### Classroom Configuration

| Virtual Machine Name | Computer Name | Internet Protocol (IP) Address | Domain Name System (DNS) Server | Default Gateway |
| --- | --- | --- | --- | --- |
| DP070-LON-DEV-01 | LON-DEV-01 | 172.16.0.20 | *A valid DNS account for your network* | 172.16.0.1 |

# Software & additional files in virtual machines

e following table shows all the software needed to set up the virtual machines for this learning product, including the version, whether the version that was tested for the learning product is retail or evaluation, and where the software can be obtained. Record the same information for software that is included in the course as an ISO image to be used in conjunction with the virtual machines.

The table also includes a column to track whether the product group has approved inclusion of the software for the life of the product and a column to track compliance verification.

## Software installed in virtual machines

| Filled in by VM Developer | | | | | | Filled in by FTE requesting permission | | Filled in by Compliance PM |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Software  &  Version | Installed as part of | Source Location | Where Installed | Software Usage / Justification | EULA in TFS  <*name*> | Software Entry  Link | QERM  or  CPx | Verifying Build Guide |
| **Technology (ie SQL or Office etc)** | | | | | | | | |
| None |  |  |  |  |  |  |  |  |
| **Non-Microsoft IP (such as OSS-3rd Party) <if none, put “None”>** | | | | | | | | |
| Ubuntu 18.04.3 LTS |  |  |  |  |  |  |  |  |
| **Software installed from Updates <if none, put “None”>** | | | | | | | | |
| None |  |  |  |  |  |  |  |  |
| **Install bits located on VM or attached ISO (not installed) <if none, put “None”>** | | | | | | | | |
| None |  |  |  |  |  |  |  |  |

## Additional Files installed in virtual machines

| Filled in by VM Developer | | | | Internal Use Only |
| --- | --- | --- | --- | --- |
| File Name | Source Location | Where Installed | How is this used? |
| **Non-Software files (Text Files, Office Docs, PowerShell Scripts, configuration files, etc)** | | | | |
| None |  |  |  |  |

# User Accounts

The following table lists all user or group accounts used in the learning product. These accounts should be localized using MILS-approved names. List only accounts created specifically for this course, or changes to existing accounts.

| User or Group Name | Logon Name  (include location) | Password (NA for group accounts) | Other Account Properties |
| --- | --- | --- | --- |
| azureuser | azureuser | Pa55w.rd | N/A |

#### Setup Files

The following table lists all installation files that are not already listed in the software section and that are required for the creation of the virtual machines. (For example, a script to configure AD or create a share).

| File or Folder Name | Path in Source Depot |
| --- | --- |
| N/A |  |

# Creating Stand Alone Drives (Monolithic)

This section lists any Stand Alone drives created for this learning product. This does not include Microsoft Learning base images.

**IMPORTANT**: You should always use existing MSL base drives and MSL Middle Tier drives when available. Monolithic drives should only be created if an existing base image is not available or will not suffice for your course. You should contact the MSL Technologist for guidance prior to developing your own monolithic (stand-alone) drives.

**Note**: You must create the directory structure where you will create the hard disk file prior to creating the files. If the folder location where you are creating the hard disk file does not exist, Hyper-V will display an error indicating that the file cannot be created because the folder location was not found.

#### Create the DP070-LON-DEV-01 Stand Alone Drive

1. In **Hyper-V Manager** (Start, All Programs, Administrative Tools, Hyper-V Manager), click the host computer name, and in the **Actions** pane, click **New**, and then click **Hard Disk**.
2. In the **New Virtual Hard Disk Wizard**, on the **Before You Begin** page, click **Next**.
3. On the **Choose Disk Format** page, click **VHD**, and then click **Next**.
4. On the **Choose Disk Type** page, ensure **Dynamically expanding** is selected, and then click **Next**.
5. On the **Specify Name and Location** page, in the **Name** box, type **DP070-LON-DEV-01.vhd**, and in the **Location** box, type **C:\Program Files\Microsoft Learning\DP070\Drives\**, and then click **Next**.
6. On the **Configure Disk** page, ensure that **Create a new virtual hard disk** is selected, and then click **Next**.
7. On the **Completing the** **New Virtual Hard Disk Wizard** page, click **Finish**.

# Configure Networking in Hyper-V Manager

1. In **Hyper-V Manager** (Start, All Programs, Administrative Tools, Hyper-V Manager), click the host computer name, and in the **Actions** pane, click **Virtual Switch Manager**.
2. In **Virtual Switch Manager**, in the **What type of virtual switch do you want to create?** box, click **Private**, and then click **Create Virtual Switch**.
3. In the **Name** box, type **Private Network**, ensure that **Private network** is selected, and then click **OK**.

# Create the Virtual Machine

1. In **Hyper-V Manager** (Start, All Programs, Administrative Tools, Hyper-V Manager), click the host computer name, and in the **Actions** pane, click **New**, and then click **Virtual Machine**.
2. In the **New Virtual Machine Wizard**, on the **Before You Begin** page, click **Next**.
3. On the **Specify Name and Location** page, in the **Name box**, type **DP070-LON-DEV-01**, select the **Store the virtual machine in a different location** check box, and in the **Location** box type **C:\Program Files\Microsoft Learning\DP070\Drives\**, and then click **Next**.
4. On the **Specify Generation** page, click **Generation 1**, and then click **Next**.
5. On the **Assign Memory** page, in the **Startup memory** box, type **8192**, and then click **Next**.
6. **O**n the **Configure Networking** page, in the **Connection** list, click **Private Network**, and then click **Next**.
7. On the **Connect Virtual Hard Disk** page, click **Use an existing virtual hard disk**, and in the **Location** box, type **C:\Program Files\Microsoft Learning\DP070\Drives\DP070-LON-DEV-01.vhd**, and then click **Next**.
8. **On the Completing the New Virtual Machine Wizard page, click Finish**.
9. Start Internet Explorer, and browse to [**https://ubuntu.com/download/desktop**](https://ubuntu.com/download/desktop).
10. In the **Ubuntu 18.04.3 LTS** section, click **Download**.
11. In the message notification, download the **Ubuntu-18.04.3-desktop-amd64.iso** file to a suitable location.
12. Wait for the download to complete, and then close Internet Explorer.
13. In **Hyper-V Manager**, under **Virtual Machines**, right-click **DP070-LON-DEV-01**, and then click **Settings**.
14. In the **Settings for** **DP070-LON-DEV-01** dialog box, under **IDE Controller 1**, click **DVD Drive**.
15. In the **Media** section, click **Image file**, enter the location of the downloaded **Ubuntu-18.04.3-desktop-amd64.iso** file, and then click **Apply**.
16. In the **Settings for** **DP070-LON-DEV-01** dialog box, click **Processor**, in the **Number of virtual processors** box, enter **4**.
17. In the **Management** section, click **Checkpoints**, click **Standard checkpoints**, and then click **OK**.

Note**:** You should document the settings for the virtual machine. These settings should match the settings from the Virtual Machines table given earlier.

**Start and Connect to the Virtual Machine**

1. In **Hyper-V Manager**, under **Virtual Machines**, right-click **DP070-LON-DEV-01**, and then click **Start**.
2. Right-click **DP070-LON-DEV-01**, and then click **Connect**.
3. Wait for the virtual machine to start.

**Configure the Virtual Machine**

Important:It is essential that the information provided here is complete enough for localization to re-create the virtual machines. If localization cannot re-create the Virtual Server environment, they will contact the vendor and may even need to contact courseware support. This is the only record of what the vendor has done to create the virtual machine environment.

#### Configure Ubuntu

1. On the **Language** page, ensure **English** is selected, and then press Enter.
2. On the **ubuntu** page, press the down arrow to highlight **Install Ubuntu**, and then press Enter.
3. In the **Install** dialog box, on the **Welcome** page, ensure **English** is selected, and then click **Continue**.
4. On the **Keyboard layout** page, ensure **English (US)** is selected, and then click **Continue**.
5. On the **Updates and other software** page, ensure **Normal installation** is selected, and then click **Continue**.
6. On the **Installation type** page, ensure **Erase disk and install Ubuntu** is selected, and then click **Install Now**.
7. In the **Write the changes to disks?** dialog box, click **Continue**.
8. In the **Install** dialog box, on the **Where are you?** page, in the text box, type **Los Angeles Time**, and then click **Continue**.
9. On the **Who are you?** page, enter the details as follows, and then click **Continue**:
   * **Your name**: azureuser
   * **Your computer’s name**:LON-DEV-01
   * **Pick a username**: azureuser
   * **Choose a password**: Pa55w.rd
   * **Confirm your password**: Pa55w.rd
10. Wait while Ubuntu installs.
11. In the **Installation Complete** dialog box, click **Restart Now**.
12. When the **Please remove the installation medium, then press ENTER** message appears, press Enter.
13. When the virtual machine reboots, login as **azureuser** with the password **pa55w.rd**.
14. In the **What’s new in Ubuntu** dialog box, click **Next**.
15. In the **Livepatch** dialog box, click **Next**.
16. In the **Help improve Ubuntu** dialog box, click **No, don’t send system info**, and then click **Next**.
17. In the **Ready to go** dialog box, click **Done**.

#### Configure Network Settings in the Virtual Machine

1. On the Desktop, in the top right corner, click the drop-down arrow, click **Wired Off**, and then click **Wired Settings**.
2. In the **Network** dialog box, in the **Wired** section, click the cog icon.
3. In the **Wired** dialog box, on the **Details** tab, clear the **Make available to other users** check box.
4. On the **IPv4** tab, enter the details as follows, and then click **Apply**:
   * **IPv4 Method**: Manual
   * **Addresses**:
     + **Address**: 172.16.0.20
     + **Gateway**: 172.16.0.1
   * **DNS**: *A valid DNS account for your network*
5. Close the **Network** dialog box.

#### Install Updates

1. On the Desktop, click **Show Applications**, scroll down, and then click **Software Updater**.
2. In the **Software Updater** dialog box, click **Install Now**.
3. In the **Software Updater** dialog box, click **Restart Now**.
4. When the virtual machine reboots, login as **azureuser** with the password **pa55w.rd**.
5. Click **Activities**, type **terminal**, right-click the **Terminal** icon, and then click **Add to Favorites**.

#### Install PostgreSQL 10

1. On the Desktop, click **Show Applications**, scroll down, and then click **Terminal**.
2. In the Terminal, at the prompt, type the following command, and then press Enter:

sudo bash

1. At the **Password** prompt, type **Pa55w.rd**, and then press Enter.
2. At the prompt, type the following command, and then press Enter:

echo deb <https://apt.postgresql.org/pub/repos/apt/> bionic-pgdg main > /etc/apt/sources.list.d/pgdg.list

1. At the prompt, type the following command, and then press Enter:

wget --quiet -O - <https://www.postgresql.org/media/keys/ACCC4CF8.asc> | sudo apt-key add -

1. At the prompt, type the following command, and then press Enter:

sudo apt-get update

1. At the prompt, type the following command, and then press Enter:

apt-get install postgresql-10

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.
2. At the prompt, type the following command, and then press Enter:

apt-get install pgadmin4

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.
2. Click **Activities**, type **pgadmin**, right-click the **pgadmin4** icon, click **Add to Favorites**, and then **Activities**.

#### Install VS Code

1. Start Firefox, and browse to [**https://code.visualstudio.com/download**](https://code.visualstudio.com/download).
2. On the **Download Visual Studio Code** page, click the **.deb** button.
3. In the **Opening** **code\_1.38.0-1567547996\_amd64.deb** dialog box, ensure **Open with Software Install (default)** is selected, and then click **OK**.
4. In the **code** window, click **Install**.
5. In the **Authentication Required** dialog box, in the **Password** box, type **Pa55w.rd**, and then click **Authenticate**.

#### Install Chrome

1. In Firefox, browse to [**https://www.google.com/chrome/**](https://www.google.com/chrome/).
2. On the **Get more done with the new Chrome** page, click the **Download Chrome** button.
3. On the **Download Chrome for Linux** page, ensure **64 bit .deb (For Debian/Ubuntu)** is selected, and then click **Accept and Install**.
4. In the **Opening google-chrome-stable\_current\_amd64.deb** dialog box, ensure **Open with Software Install (default)** is selected, and then click **OK**.
5. In the **google-chrome-stable** window, click **Install**.
6. In the **Authentication Required** dialog box, in the **Password** box, type **Pa55w.rd**, and then click **Authenticate**.
7. Close the **google-chrome-stable** window.

#### Install .Net Core 2.2

1. In the Terminal, at the prompt, type the following command, and then press Enter:

wget -q https://packages.microsoft.com/config/ubuntu/18.04/packages-microsoft-prod.deb -O packages-microsoft-prod.deb

1. At the prompt, type the following command, and then press Enter:

sudo dpkg -i packages-microsoft-prod.deb

1. At the prompt, type the following command, and then press Enter:

sudo add-apt-repository universe

1. At the prompt, type the following command, and then press Enter:

sudo apt-get install apt-transport-https

1. At the prompt, type the following command, and then press Enter:

sudo apt-get update

1. At the prompt, type the following command, and then press Enter:

sudo apt-get install dotnet-sdk-2.2=2.2.102-1

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.

#### Install MySQL 5.7 Community Server

1. In the Terminal, at the prompt, type the following command, and then press Enter:

sudo apt-get update

1. At the prompt, type the following command, and then press Enter:

sudo apt-get install mysql-server

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.
2. At the prompt, type the following command, and then press Enter:

sudo apt-get install mysql-workbench

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.
2. Click **Activities**, type **mysql**, right-click the **MySQL Workbench** icon, click **Add to Favorites**, and then click **Activities**.

#### Install Git

1. In the Terminal, at the prompt, type the following command, and then press Enter:

sudo apt install git

1. At the **Do you want to continue?** prompt, type **y**, and then press Enter.
2. In the Terminal, at the prompt, type the following command, and then press Enter:

exit

1. At the prompt, type the following command, and then press Enter:

exit

# To Prepare the Virtual Machine for Hand-off

1. With the VM running, merge any Snapshots created during development.  
   **Important Note**: Snapshots are not supported for the final hand off of any virtual machines for MSL and any ISO’s that are mounted to the VM must be disconnected.
2. Shut down the virtual machine (Do NOT reboot).
3. Export the virtual machine to **C:\Export**.
4. Browse to **C:\Export\** and compress the export folder for each virtual machine.