Overview

Microsoft Azure has provided public cloud services since 2010. Microsoft has also offered private cloud technologies with Microsoft Windows Server Hyper-V, System Center, and Azure Pack. Yet because these public and private cloud services were created using different technologies, they were not as consistent as they might have been.

Microsoft Azure Stack Hub changes this. This new offering provides a subset of Azure public cloud services as software that can be deployed in enterprise data centers and in data centers run by service providers.

Azure Stack Hub makes Azure services available in a consistent way across the global public cloud provided by Microsoft, hosted public clouds offered by service providers, and private clouds within enterprises. It accomplishes this by using the same API for both the public Azure cloud services and the private Azure Stack Hub cloud services. Providing cloud technology in this way lets on-premises environments and service providers fully participate in the innovation and agility that Azure cloud technologies bring.

Links to Azure Stack Hub Development Kit

The current version can be found at https://azure.microsoft.com/en-us/overview/azure-stack/development-kit/. Also found at this location is complete documentation detailing how to deploy the solution. Note that this is a large download file.
Solution overview
Cisco public

Differences between evaluation and generally available production code

The evaluation code, or Proof Of Concept (POC), is an environment for learning and demonstrating Azure Stack Hub features. It lets you deploy all required components on a single physical machine to create an environment for evaluating key concepts and capabilities and validating the extensibility model for APIs. The production code for Azure Stack Hub requires a minimum of four specifically configured hosts purchased as an integrated system.

Microsoft provides a publicly available download that will automatically build a POC environment. This environment should not to be used for production. The POC runs in a suite of virtual machines that emulate an Azure Stack Hub implementation. In a POC environment, all the Azure Stack Hub virtual machines run on a single physical host. The production Azure Stack Hub starts with a minimum of four physical hosts and grows as required to address customer requirements. As you can imagine, there will be significant performance differences between the evaluation or development kit and the production environments.

From a functional standpoint, though, the POC will work much like a production Azure Stack Hub system.

Server Requirements

Before you deploy the Azure Stack Hub Development Kit, make sure your computer meets the requirements listed in Table 1.

Table 1. https://docs.microsoft.com/en-us/azure/azure-stack/azure-stack-deploy
Requirements for Deploying Microsoft Azure Stack Hub Development Kit

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disk drives: Operating system</td>
<td>1 OS disk with a minimum of 200 GB available for system partition (Solid-State Disk [SSD] or Hard-Disk Drive [HDD])</td>
<td>1 OS disk with a minimum of 200 GB available for system partition (SSD or HDD)</td>
</tr>
<tr>
<td>Disk drives: General Azure Stack Hub POC data</td>
<td>4 disks, each with a minimum of 240 GB of capacity (SSD or HDD); all available disks will be used</td>
<td>4 disks, each with a minimum of 400 GB of capacity (SSD or HDD); all available disks will be used</td>
</tr>
<tr>
<td>Computing: CPU</td>
<td>Dual-socket with 16 physical cores (total)</td>
<td>Dual-socket with 20 physical cores (total)</td>
</tr>
<tr>
<td>Computing: Memory</td>
<td>192 GB of RAM</td>
<td>256 GB of RAM</td>
</tr>
<tr>
<td>Computing: BIOS</td>
<td>Hyper-V enabled (with SLAT support)</td>
<td>Hyper-V Enabled (with SLAT support)</td>
</tr>
<tr>
<td>Network: Network Interface Card (NIC)</td>
<td>Windows Server 2012 R2 or 2016 certification required for NIC*; no specialized features required</td>
<td>Windows Server 2012 R2 or 2016 certification required for NIC*; no specialized features required</td>
</tr>
<tr>
<td>Hardware logo certification</td>
<td>Certified for Windows Server 2012 R2 or Windows Server 2016*</td>
<td>Certified for Windows Server 2012 R2 or Windows Server 2016*</td>
</tr>
</tbody>
</table>

© 2020 Cisco and/or its affiliates. All rights reserved.
Cisco evaluation configuration

As Table 1 shows, you have a significant amount of leeway in your configuration for testing purposes.

Cisco has certified its Cisco UCS® C240 M5L and C240 M5sx Rack Servers (large form factor) for use in Azure Stack Hub. Microsoft requires system vendors to certify a complete system—memory, processor, NIC, Host Bus Adapter (HBA), disk drives, BIOS, firmware, etc.—as an integrated solution. It is not supported in any other noncertified configurations. In other words, customers cannot pick and choose the components they want to use for an Azure Stack Hub deployment unless the system vendor has certified that specific configuration with Microsoft.

Even though has certified the C240 M5L and C240 M5sx, you can use any of the Cisco UCS C-Series Rack Servers that can be configured to meet the server requirements listed in Table 1 for this single server POC environment. If your plans are to run the POC or development kit on hardware that will be as much like a production system from Cisco you should configure it on a C240 M5L.

There are some significant differences between the configuration on which the POC can run and the configuration that will be required for a production environment:

• The production environment will require the Cisco SAS HBA. The POC can use a RAID controller, but the disks must be configured in pass-through mode. RAID controllers are not supported in the production environment.
• The production environment will require systems configured with Cisco UCS Manager. The POC can use standalone servers.
• The production environment will be configured with SSDs on the SAS HBA. The POC does not require SSD storage.

Note that C240 M5L or C240 M5sx configured for single-node Azure Stack Hub Development Kit code cannot be upgraded to an Azure Stack Hub node for the integrated system to be bundled and sold with production versions of Azure Stack Hub.

Benefits of using the Azure Stack Hub development kit

Deploying an Azure Stack Hub Development Kit does more than just allow you to “kick the tires” of the technology. This is a working environment, albeit one that does not perform at production levels. Knowledge gained from deploying an Azure Stack Hub Development kit or POC is readily transferrable to either Azure or Azure Stack Hub.

Here are some benefits you may experience as a result of deploying an Azure Stack Hub Development Kit:

• For application developers, Azure Stack Hub brings Microsoft’s most advanced development platform into the organization, with ongoing updates. Because your developers have access to these modern technologies, they can build better applications more quickly. They can learn to use Azure Stack Hub for developing applications to be deployed either on premises or in the cloud because the APIs are the same in both cloud technologies.
• Applications and data can be moved between Azure Stack Hub and Azure unchanged for both Windows Server and Linux. Because Azure Stack Hub includes Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) options, developers can create applications using both approaches without worrying that those applications will run only in the public cloud or in their private cloud. With Azure and Azure Stack Hub, both options are available. This feature also means that cloud managers can learn what it takes to rebalance their workloads across public and private clouds as their requirements change.
• You get simplified infrastructure management. Microsoft has run a public cloud for many years and has learned a great deal about how to build and manage cloud infrastructure. Azure Stack Hub brings this expertise to enterprises and service providers, letting you benefit from Microsoft’s experience. You can see how this solution might fit into your environment.
• Knowledge of Azure technology is relevant across both private and public clouds. This skill-set portability allows you to more easily deploy people where they’re most needed; you don’t need to maintain groups of people with different abilities for different kinds of clouds.

© 2020 Cisco and/or its affiliates. All rights reserved.
Solution overview
Cisco public

- Because Azure Stack Hub provides a ready-to-use solution, enterprises can create a private cloud without the complexity of older approaches. This private cloud can then be linked with Azure to create a hybrid cloud, or it can remain separate. In either case, enterprises get innovative cloud services while still keeping all their code and data inside their own firewalls, something that’s often required to address regulations, concerns about data sovereignty, and other issues.

- Internal IT organizations can provide the cloud services their developers demand. Rather than adopting the public cloud, with the security and regulatory challenges this can bring, developers get these services in house.

- Service providers can offer innovative cloud services anywhere in the world. Rather than create their own cloud offerings or struggle with complex open-source options, service providers can take advantage of Microsoft’s large and continuing investment in cloud technology (including documentation and training). A service provider can evaluate Azure Stack Hub before it is publicly available to determine how well it fits into the provider’s portfolio of products.

Deployment

As previously noted, Microsoft provides complete documentation for deploying the Azure Stack Hub Development Kit on your test machine. Note that you will need access to the physical console or a Keyboard, Video Screen, and Mouse (KVM) during the installation process.

1. Here is a summary of the deployment process:
   You are downloading a downloader application that will control the download of the components.
3. After the download is complete, run the extraction program to extract the initial components. One of the components extracted is a large virtual hard disk (about 52 GB) that is used to create a deployment image for your targeted machine.
4. Run a script to build the deployment image. The script asks for various parameters unique to your particular environment. After the script runs, the host is rebooted using the deployment image by booting from the virtual hard disk.
5. You then log into the server and run a few more scripts, again entering information unique to your particular environment.
6. Come back in 2 to 6 hours, depending on speed of your processors, memory, and disk.
7. Log into Azure Stack Hub and start learning.

Microsoft has put a significant amount of effort into the Azure Stack Hub deployment scripts, making the installation process relatively easy. Obviously, you will need to enter information such as passwords and IP addresses that are unique to your environment. Other than that, however, the scripts perform all the main work.

Azure billing

Note that access to Microsoft Azure services may require a monthly payment. Check with [https://www.microsoft.com/](https://www.microsoft.com/) or your Microsoft sales representative for more information.

Cisco support limits

At Cisco, we value your candid feedback. Please send any comments, questions, or issues to [https://communities.cisco.com/docs/DOC-71404](https://communities.cisco.com/docs/DOC-71404).

Evaluation code or use of this Deployment Kit is by definition a technical preview, and Cisco therefore does not provide any customer support for Azure Stack Hub Development Kit at this time. Please contact your Cisco® sales representative or partner for Cisco UCS C-Series product support and pricing.